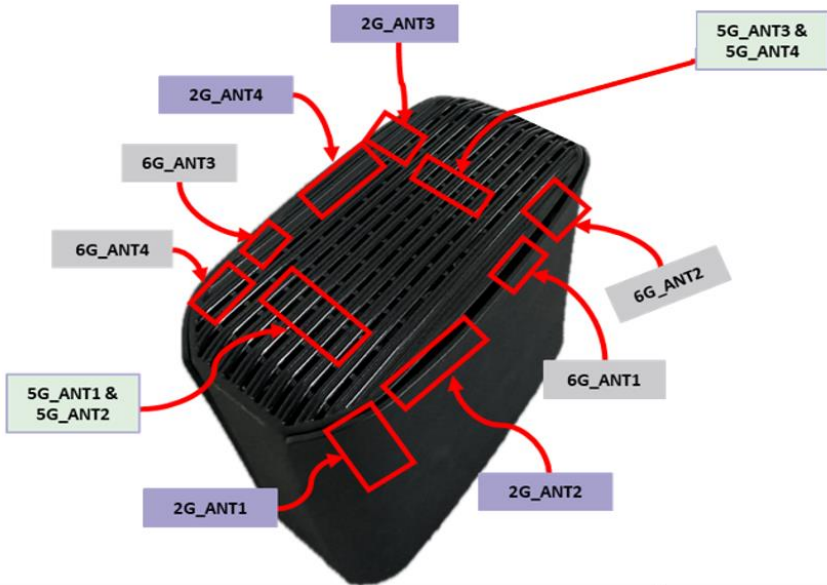
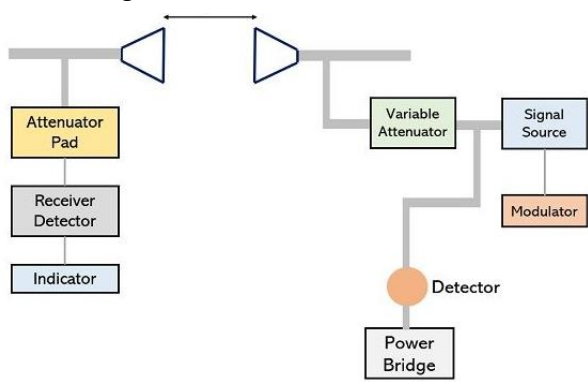
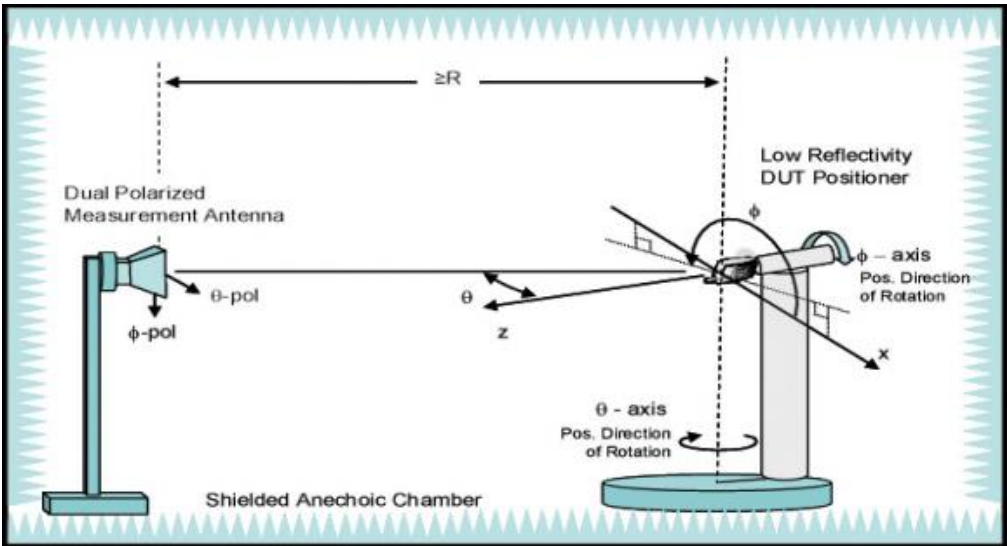


## W1700K Antenna Test Report

| Antenna System Description |                                                                                                                |               |        |           |
|----------------------------|----------------------------------------------------------------------------------------------------------------|---------------|--------|-----------|
| Brand name                 | Gemtek                                                                                                         |               |        |           |
| Manufacturer               | Gemtek Technology Co., Ltd.<br>No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352. |               |        |           |
| Geometric placement        |                             |               |        |           |
|                            | Ant NO                                                                                                         | Tx-Rx         | Type   | connector |
|                            | 2G_Ant1                                                                                                        | 2.4G<br>Tx-Rx | dipole | UFL       |
|                            | 2G_Ant2                                                                                                        |               | dipole | UFL       |
|                            | 2G_Ant3                                                                                                        |               | dipole | UFL       |
|                            | 2G_Ant4                                                                                                        |               | dipole | UFL       |
|                            | 5G_Ant1                                                                                                        | 5G<br>Tx-Rx   | dipole | UFL       |
|                            | 5G_Ant2                                                                                                        |               | dipole | UFL       |
|                            | 5G_Ant3                                                                                                        |               | dipole | UFL       |
|                            | 5G_Ant4                                                                                                        |               | dipole | UFL       |
|                            | 6G_Ant1                                                                                                        | 6G<br>Tx-Rx   | dipole | UFL       |
|                            | 6G_Ant2                                                                                                        |               | dipole | UFL       |
|                            | 6G_Ant3                                                                                                        |               | dipole | UFL       |
|                            | 6G_Ant4                                                                                                        |               | dipole | UFL       |
|                            | Support Band                                                                                                   |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |
|                            |                                                                                                                |               |        |           |

| Measurement Quantity                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation bands of EUT                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wi-Fi 2.4GHz : 2.412 / 2.4835 GHz                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wi-Fi 5GHz / 6GHz : UNII-1 / 2A / 2C / 3 / 5 / 6 / 7 / 8 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Measurement Method                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                          | <p><b>Absolute gain</b></p>  <p>Suppose the two antennas (transmitting and receiving) are separated at a distance <math>r</math>. Here, <math>P_t</math> and <math>P_r</math> represent the transmitted and received power respectively. While <math>A_{et}</math> and <math>A_{er}</math> are the effective apertures of transmitting and receiving antennas.</p> <p>As the two antennas are identical. Therefore, <math>A_{et} = A_{er} = \frac{G_0 \lambda^2}{4\pi}</math></p> <p>By Friis's transmission equation, <math>\frac{P_r}{P_t} = \left(\frac{A_{et} A_{er}}{\lambda^2 r^2}\right) = \left(\frac{G_0 \lambda^2}{4\pi}\right) \left(\frac{G_0 \lambda^2}{4\pi}\right) \frac{1}{\lambda^2 r^2}</math></p> $\frac{P_r}{P_t} = \left(\frac{G_0 \lambda}{4\pi r}\right)^2$ $\sqrt{\frac{P_r}{P_t}} = \frac{G_0 \lambda}{4\pi r}$ <p>Thus, <math>G_0 = \frac{4\pi r}{\lambda} \sqrt{\frac{P_r}{P_t}}</math></p> <p>While if we consider the effect of direct and indirect rays in case of ground reflection then,</p> $G_0 = \frac{4\pi r}{\lambda F} \sqrt{\frac{P_r}{P_t}}$ <p>: <math>F</math> is the propagation constant due to interference.</p> <p><i>Gain = <math>\frac{\text{Maximum amount of power received from subject antenna}}{\text{Maximum amount of power received from reference antenna}}</math></i></p> <p>Hence, <math>G = \frac{P_1}{P_2}</math></p> |

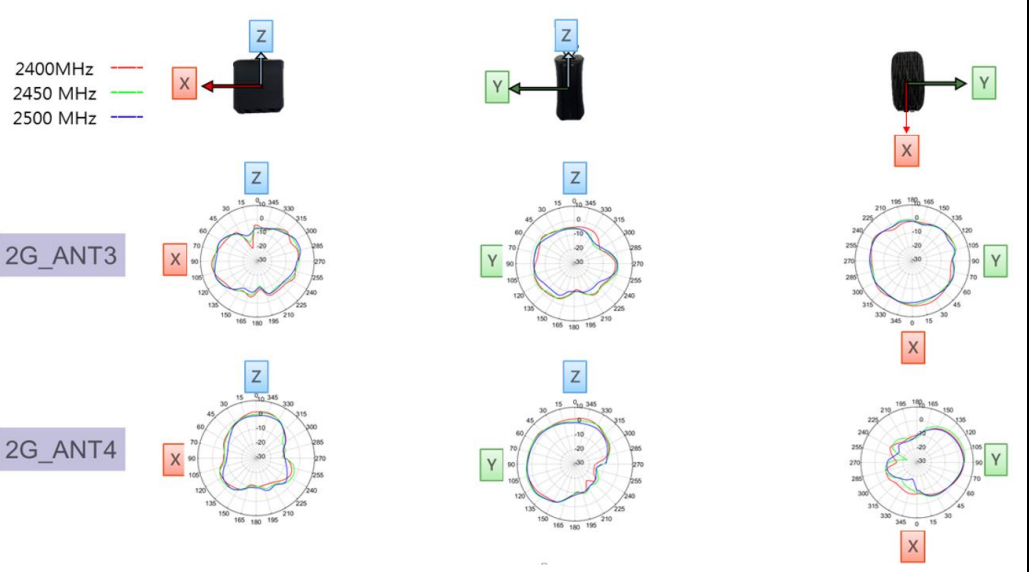
|  |  |
|--|--|
|  |  |
|--|--|

| Measurement Environment |                                                                                      |                 |           |
|-------------------------|--------------------------------------------------------------------------------------|-----------------|-----------|
| Chamber type            | Operation Band: 700 MHz ~ 18 GHz<br>Chamber Size: 7m(L) * 3.5m(W) * 3.5m(H)          |                 |           |
|                         |     |                 |           |
| Antenna type            | Types of measurement antennas (Frequency Range)                                      |                 |           |
| Test Equipment          | Instrument                                                                           | Brand           | Model No. |
|                         | VNA                                                                                  | ROHDE & SCHWARZ | ZNB8      |
| Coordinate difinition   |  |                 |           |

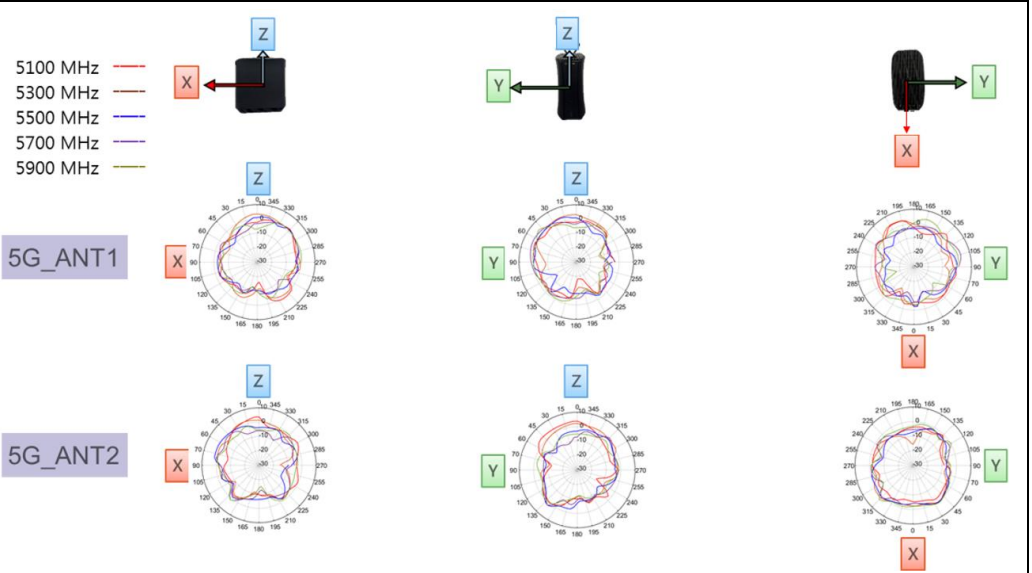
**2G\_ANT1 & ANT2 GainTotal  
(dBi) Pattern**

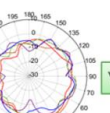
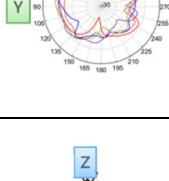
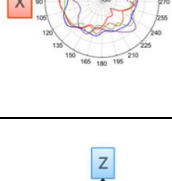
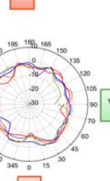
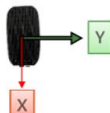
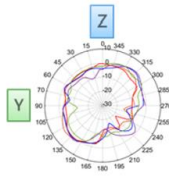
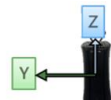
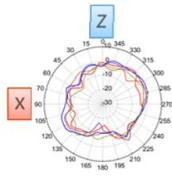
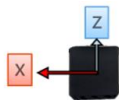
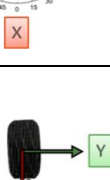
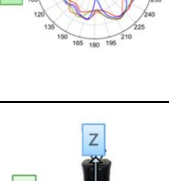
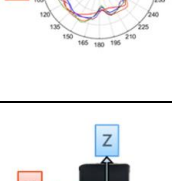
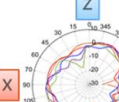
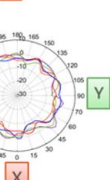
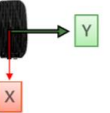
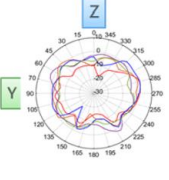
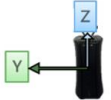
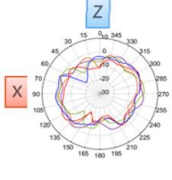
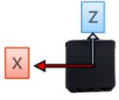
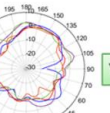
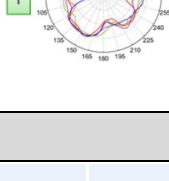
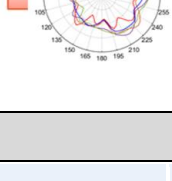
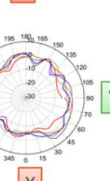
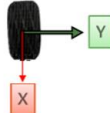
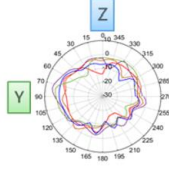
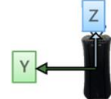
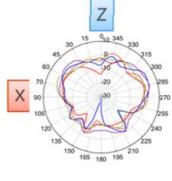
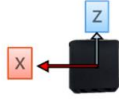


**2G\_ANT3 & ANT4 GainTotal  
(dBi) Pattern**



**5G\_ANT1 & ANT2 GainTotal  
(dBi) Pattern**



|                                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |       |
|-------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-------|
| 5G_ANT3 & ANT4 GainTotal<br>(dBi) Pattern |      | <div><div>5100 MHz<br/>5300 MHz<br/>5500 MHz<br/>5700 MHz<br/>5900 MHz</div><div></div></div>                         |  |  |       |
| 6G_ANT1 & ANT2 GainTotal<br>(dBi) Pattern |      | <div><div>5900 MHz<br/>6200 MHz<br/>6500 MHz<br/>6800 MHz<br/>7100 MHz</div><div></div></div>          |  |  |       |
| 6G_ANT3 & ANT4 GainTotal<br>(dBi) Pattern |      | <div><div>5900 MHz<br/>6200 MHz<br/>6500 MHz<br/>6800 MHz<br/>7100 MHz</div><div></div></div> |  |  |       |
| Peak Gain & D.G @2.4G                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |       |
| peak gain & D.G                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |       |
| Frequency (GHz)                           | 2.45 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  | 5.785 |
| 2G_ANT1.Max Gain(dBi)                     | 2.12 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  | 2.21  |
| 2G_ANT2.Max Gain(dBi)                     | 1.81 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  | 1.43  |

|                                                      |               |               |              |               |         |
|------------------------------------------------------|---------------|---------------|--------------|---------------|---------|
| 2G_ANT3.Max Gain(dBi)                                | 2.01          |               |              |               | 2.03    |
| 2G_ANT4.Max Gain(dBi)                                | 2.33          |               |              |               | 1.48    |
| Ant1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/45/240  |               |              |               | theta/1 |
| Ant2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/15/195    |               |              |               | phi/90/ |
| Ant3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/75/135    |               |              |               | theta/7 |
| Ant4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/105/90    |               |              |               | theta/5 |
| Max Gain (dBi)                                       | 2.33          |               |              |               | 2.21    |
| DG [1SS] (dBi)                                       | 4.39          |               |              |               | 5.74    |
| DG [2SS] (dBi)                                       | 2.33          |               |              |               | 2.74    |
| DG [4SS] (dBi)                                       | 2.33          |               |              |               | 2.21    |
| <b>Peak Gain &amp; D.G @5G</b>                       |               |               |              |               |         |
| <b>peak gain &amp; D.G</b>                           |               |               |              |               |         |
| Frequency (GHz)                                      | 5.2           | 5.3           | 5.6          | 5.785         |         |
| 5G_ANT1.Max Gain(dBi)                                | 2.16          | 2.77          | 2.16         | 2.58          |         |
| 5G_ANT2.Max Gain(dBi)                                | 2.22          | 2.84          | 2.97         | 2.05          |         |
| 5G_ANT3.Max Gain(dBi)                                | 2.76          | 2.63          | 2.69         | 2.92          |         |
| 5G_ANT4.Max Gain(dBi)                                | 2.19          | 2.53          | 2.71         | 2.22          |         |
| Ant1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/30/135    | theta/90/195  | theta/60/150 | Phi/60/105    |         |
| Ant2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/15/15   | theta/30/45   | Phi/75/345   | Phi/60/330    |         |
| Ant3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/45/24   | theta/60/165  | Phi/45/240   | Phi/45/255    |         |
| Ant4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/0/15    | theta/15/195  | Phi/45/135   | Phi/60/75     |         |
| Max Gain (dBi)                                       | 2.76          | 2.84          | 2.97         | 2.92          |         |
| DG [1SS] (dBi)                                       | 5.78          | 5.91          | 5.73         | 5.32          |         |
| DG [2SS] (dBi)                                       | 2.78          | 2.91          | 2.97         | 2.92          |         |
| DG [4SS] (dBi)                                       | 2.76          | 2.84          | 2.97         | 2.92          |         |
| <b>Peak Gain &amp; D.G @6G</b>                       |               |               |              |               |         |
| Frequency (GHz)                                      | 6.175         | 6.475         | 6.695        | 6.995         |         |
| 6G_ANT1.(dBi)                                        | 2.07          | 2.63          | 2.31         | 2.18          |         |
| 6G_ANT2.(dBi)                                        | 2.12          | 2.55          | 2.57         | 2.54          |         |
| 6G_ANT3.(dBi)                                        | 2.16          | 2.6           | 2.27         | 2.59          |         |
| 6G_ANT4.(dBi)                                        | 2.62          | 2.13          | 2.4          | 2.45          |         |
| Ant1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/45/15   | Phi/75/270    | Phi/75/315   | Phi/75/45     |         |
| Ant2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | theta/105/300 | theta/105/300 | theta/45/120 | theta/135/330 |         |
| Ant3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/105/45    | Phi/60/240    | Phi/90/45    | Phi/75/30     |         |
| Ant4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/45/180    | Phi/15/180    | Phi/0/15     | Phi/15/180    |         |
| Max Gain (dBi)                                       | 2.62          | 2.63          | 2.57         | 2.59          |         |
| DG [1SS] (dBi)                                       | 5.84          | 5.88          | 5.74         | 5.79          |         |
| DG [2SS] (dBi)                                       | 2.84          | 2.88          | 2.74         | 2.79          |         |

| DG [4SS] (dBi)           | 2.62          | 2.63          | 2.57         | 2.59          |  |
|--------------------------|---------------|---------------|--------------|---------------|--|
| <b>D.G @2.4G</b>         |               |               |              |               |  |
| <b>D.G</b>               |               |               |              |               |  |
| Frequency (GHz)          | 2.45          |               |              |               |  |
| 2G_ANT1 (dBi)            | -1.12         |               |              |               |  |
| 2G_ANT2 (dBi)            | -4.86         |               |              |               |  |
| 2G_ANT3 (dBi)            | -3.31         |               |              |               |  |
| 2G_ANT4 (dBi)            | 1.47          |               |              |               |  |
| DG [1SS] (dBi)           | 4.39          |               |              |               |  |
| Polarization             | phi           |               |              |               |  |
| Theta                    | 45            |               |              |               |  |
| Phi                      | 315           |               |              |               |  |
| Frequency (GHz)          | 2.45          |               |              |               |  |
| 2G_ANT1 [10^(G/20)]      | 10^(-1.12/20) |               |              |               |  |
| 2G_ANT2 [10^(G/20)]      | 10^(-4.86/20) |               |              |               |  |
| 2G_ANT3 [10^(G/20)]      | 10^(-3.31/20) |               |              |               |  |
| 2G_ANT4 [10^(G/20)]      | 10^(1.47/20)  |               |              |               |  |
| Ant.1 [10^(G/20)] Value  | 0.88          |               |              |               |  |
| Ant.2 [10^(G/20)] Value  | 0.57          |               |              |               |  |
| Ant.3 [10^(G/20)] Value  | 0.68          |               |              |               |  |
| Ant.4 [10^(G/20)] Value  | 1.18          |               |              |               |  |
| Sum All Antenna [Amax]   | 3.32          |               |              |               |  |
| DG [10*log(Amax^2/Nant)] | 4.39          |               |              |               |  |
| <b>D.G @5G</b>           |               |               |              |               |  |
| <b>D.G</b>               |               |               |              |               |  |
| Frequency (GHz)          | 5.2           | 5.3           | 5.6          | 5.785         |  |
| 5G_ANT1 (dBi)            | 2.26          | 2.17          | 0.29         | -3.02         |  |
| 5G_ANT2 (dBi)            | -3.20         | -1.58         | 0.04         | 2.02          |  |
| 5G_ANT3 (dBi)            | 0.20          | -1.02         | 2.19         | 0.62          |  |
| 5G_ANT4 (dBi)            | -1.10         | -0.51         | -5.29        | -3.76         |  |
| DG [1SS] (dBi)           | 5.78          | 5.91          | 5.73         | 5.32          |  |
| Polarization             | theta         | theta         | theta        | theta         |  |
| Theta                    | 105           | 105           | 90           | 105           |  |
| Phi                      | 300           | 300           | 300          | 270           |  |
| Frequency (GHz)          | 5.2           | 5.3           | 5.6          | 5.785         |  |
| 5G_ANT1 [10^(G/20)]      | 10^(2.26/20)  | 10^(2.17/20)  | 10^(0.29/20) | 10^(-3.02/20) |  |
| 5G_ANT2 [10^(G/20)]      | 10^(-3.2/20)  | 10^(-1.58/20) | 10^(0.04/20) | 10^(2.02/20)  |  |
| 5G_ANT3 [10^(G/20)]      | 10^(0.2/20)   | 10^(-1.02/20) | 10^(2.19/20) | 10^(0.62/20)  |  |

|                          |              |              |               |               |
|--------------------------|--------------|--------------|---------------|---------------|
| 5G_ANT4 [10^(G/20)]      | 10^(-1.1/20) | 10^(0.51/20) | 10^(-5.29/20) | 10^(-3.76/20) |
| Ant.1 [10^(G/20)] Value  | 1.30         | 1.28         | 1.03          | 0.71          |
| Ant.2 [10^(G/20)] Value  | 0.69         | 0.83         | 1.00          | 1.26          |
| Ant.3 [10^(G/20)] Value  | 1.02         | 0.89         | 1.29          | 1.07          |
| Ant.4 [10^(G/20)] Value  | 0.88         | 0.94         | 0.54          | 0.65          |
| Sum All Antenna [Amax]   | 3.89         | 3.95         | 3.87          | 3.69          |
| DG [10*log(Amax^2/Nant)] | 5.78         | 5.91         | 5.73          | 5.32          |

#### D.G @6G

|                           |               |               |               |               |
|---------------------------|---------------|---------------|---------------|---------------|
| <b>D.G</b>                |               |               |               |               |
| Frequency (GHz)           | 6.175         | 6.475         | 6.695         | 6.995         |
| 6G_ANT1.(dBi)             | 1.43          | 0.20          | -2.00         | -2.88         |
| 6G_ANT2.(dBi)             | -2.11         | 0.26          | 0.91          | 2.27          |
| 6G_ANT3.(dBi)             | -4.24         | 2.46          | -3.54         | 0.53          |
| 6G_ANT4.(dBi)             | 2.55          | -5.10         | 2.31          | -1.76         |
| DG [1SS] (dBi)            | 5.84          | 5.88          | 5.74          | 5.79          |
| Polarization              | phi           | phi           | theta         | phi           |
| Theta                     | 15            | 15            | 30            | 15            |
| Phi                       | 165           | 180           | 90            | 180           |
| Frequency (GHz)           | 6.175         | 6.475         | 6.695         | 6.995         |
| 6G_ANT1 [10^(G/20)]       | 10^(1.43/20)  | 10^(1.65/20)  | 10^(1.17/20)  | 10^(-2.03/20) |
| 6G_ANT2 [10^(G/20)]       | 10^(-2.11/20) | 10^(-1.54/20) | 10^(-1.87/20) | 10^(-0.66/20) |
| 6G_ANT3 [10^(G/20)]       | 10^(-4.24/20) | 10^(-3.27/20) | 10^(1.13/20)  | 10^(2.82/20)  |
| 6G_ANT4 [10^(G/20)]       | 10^(2.55/20)  | 10^(0.27/20)  | 10^(-3.66/20) | 10^(-4.18/20) |
| 6G_ANT1 [10^(G/20)] Value | 1.18          | 1.02          | 0.79          | 0.72          |
| 6G_ANT2 [10^(G/20)] Value | 0.78          | 1.03          | 1.11          | 1.30          |
| 6G_ANT3 [10^(G/20)] Value | 0.61          | 1.33          | 0.67          | 1.06          |
| 6G_ANT4 [10^(G/20)] Value | 1.34          | 0.56          | 1.30          | 0.82          |
| Sum All Antenna [Amax]    | 3.92          | 3.94          | 3.87          | 3.90          |
| DG [10*log(Amax^2/Nant)]  | 5.84          | 5.88          | 5.74          | 5.79          |