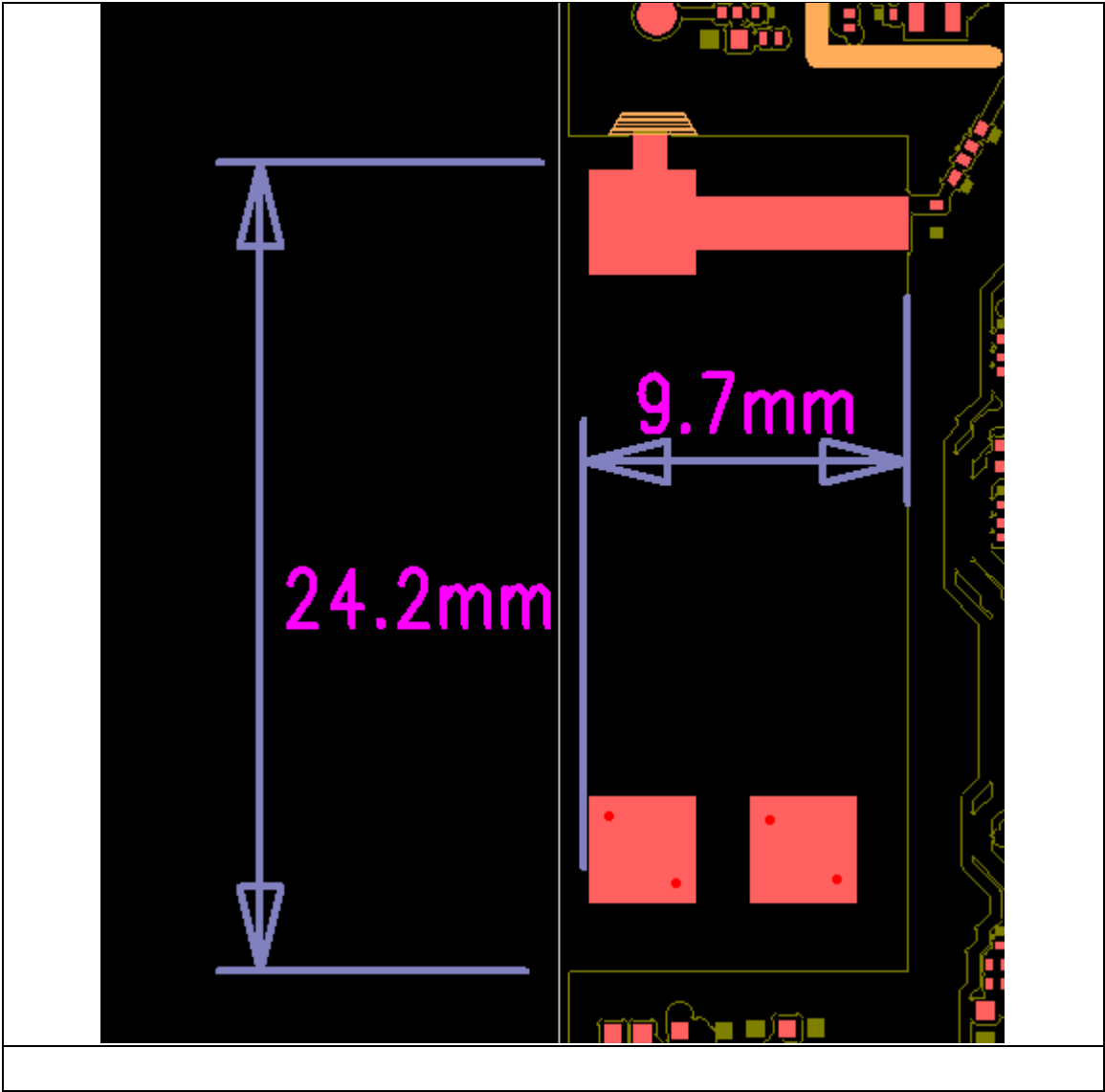


Antenna Information

|                                |                                      |
|--------------------------------|--------------------------------------|
| Manufacturer                   | Queclink Wireless Solutions Co., Ltd |
| Antenna Type                   | PCB ANTENNA                          |
| Antenna Model                  | PCB ANTENNA FOR L5                   |
| Antenna Part Number            | /                                    |
| Antenna Frequency Range        | 1176MHz ± 10MHz                      |
| Antenna Input Power Limitation | /                                    |
| Antenna Peak Gain              | 1.64                                 |
| Antenna Dimension (LxHxW)      | 24mm                                 |

Antenna Photo

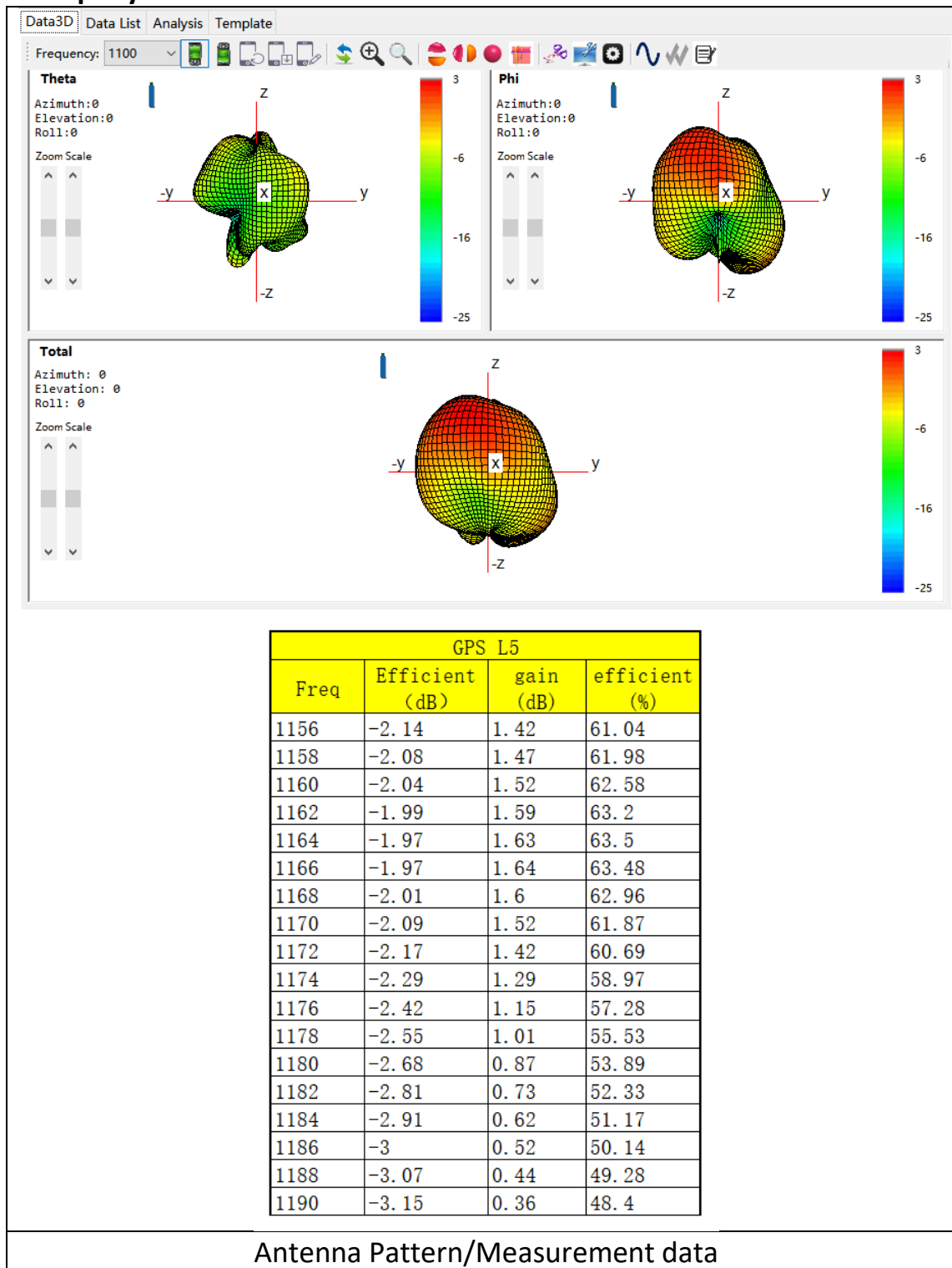


## Company Letter Head

**Antenna Pattern/Gain Measurement data/Table:**



## Company Letter Head

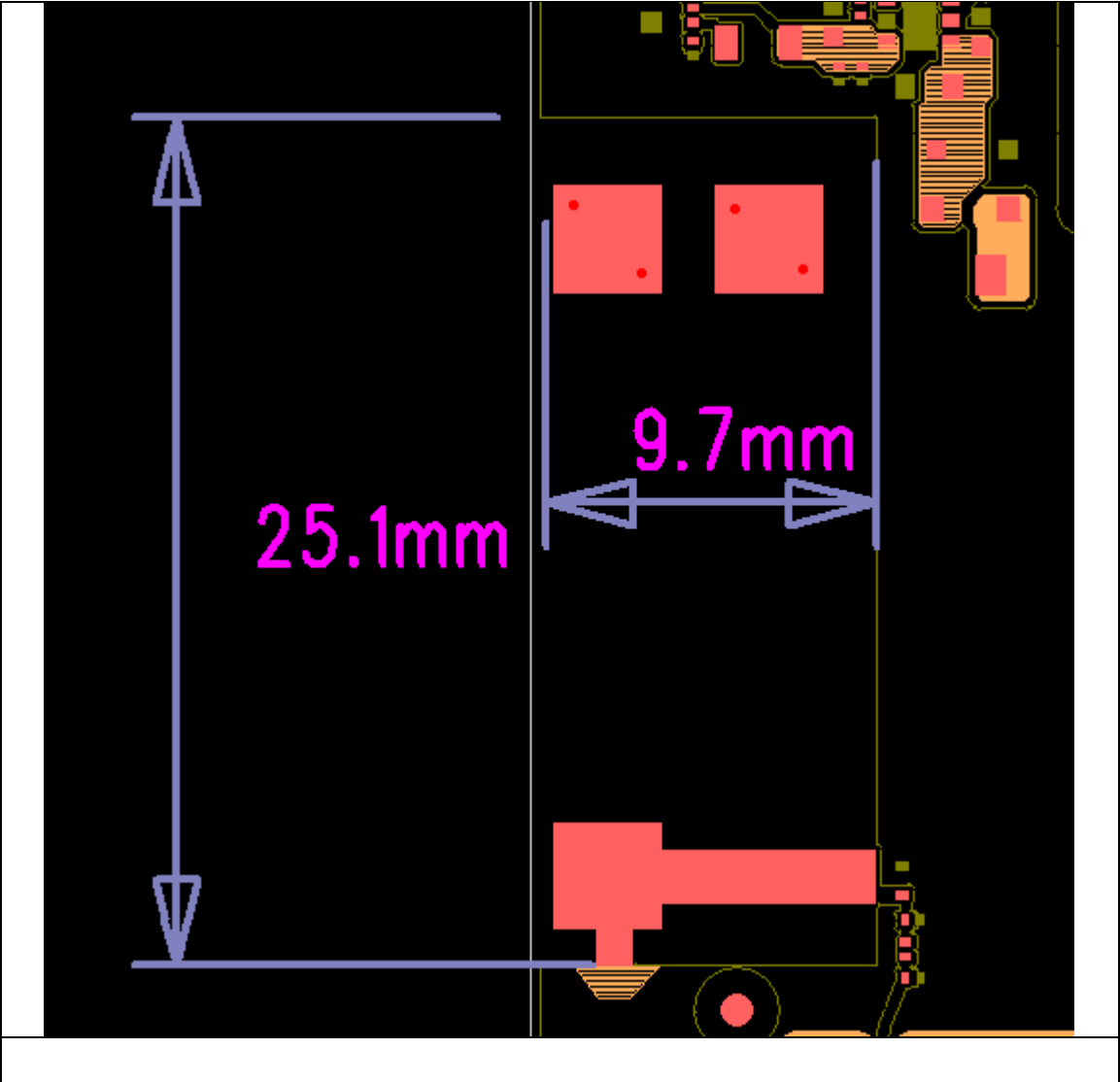


Antenna Pattern/Measurement data

Company Letter Head

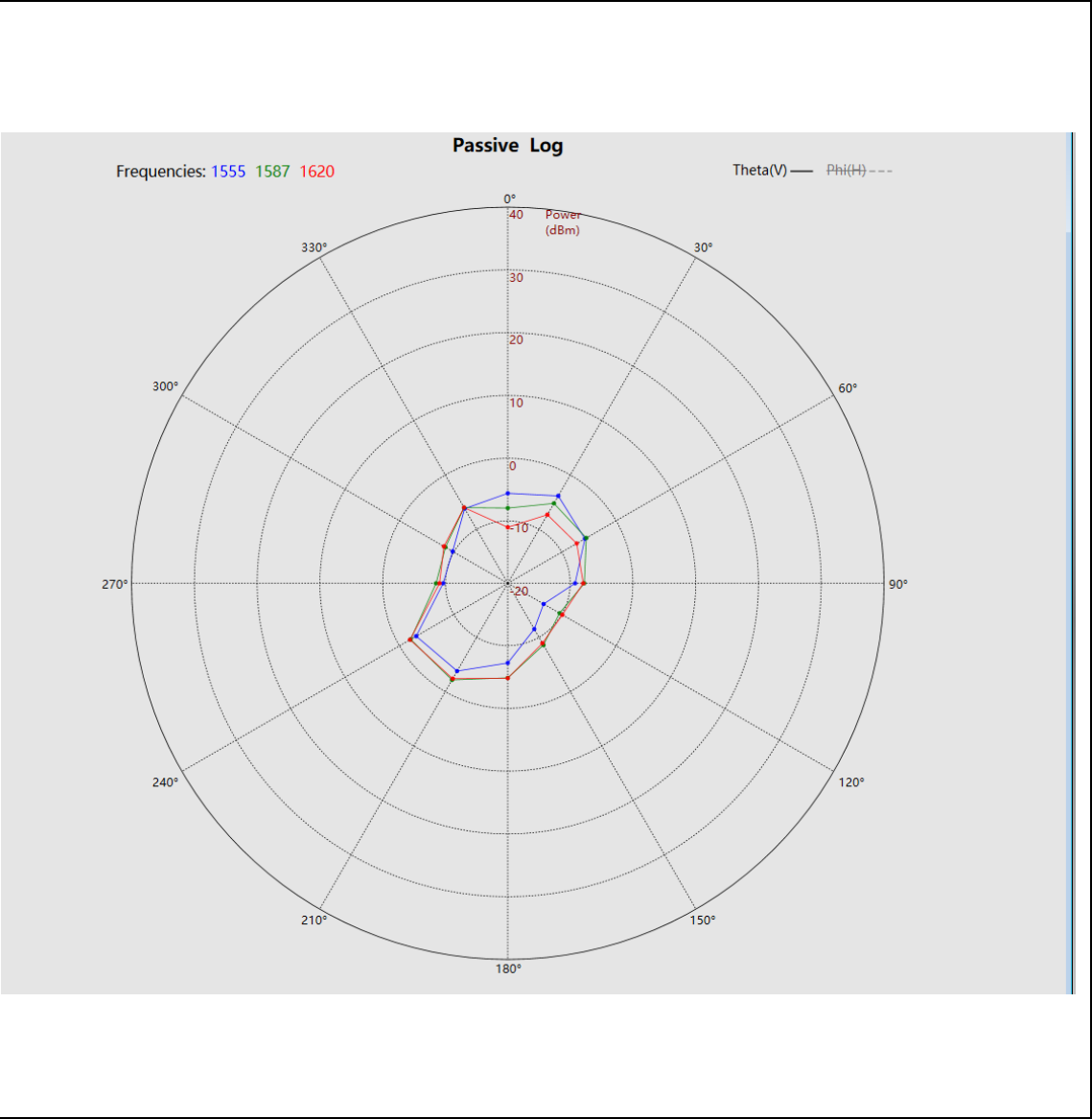
|                                |                                          |
|--------------------------------|------------------------------------------|
| Manufacturer                   | Queclink Wireless Solutions Co., Ltd     |
| Antenna Type                   | PCB ANTENNA                              |
| Antenna Model                  | PCB ANTENNA FOR L1                       |
| Antenna Part Number            | /                                        |
| Antenna Frequency Range        | 1560MHz<br>1575.42MHz ± 10MHz<br>1602MHz |
| Antenna Input Power Limitation | /                                        |
| Antenna Peak Gain              | 0.43                                     |
| Antenna Dimension (LxHxW)      | 24mm                                     |

Antenna Photo

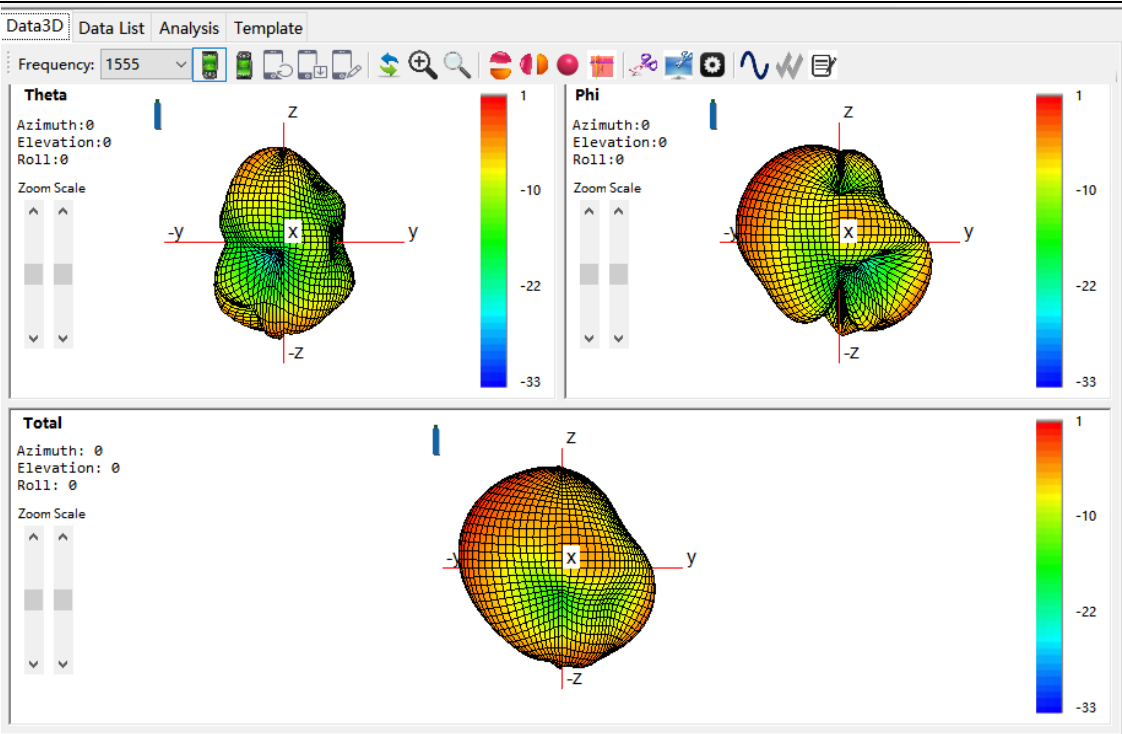


Company Letter Head

Antenna Pattern/Gain Measurement data/Table:



Company Letter Head



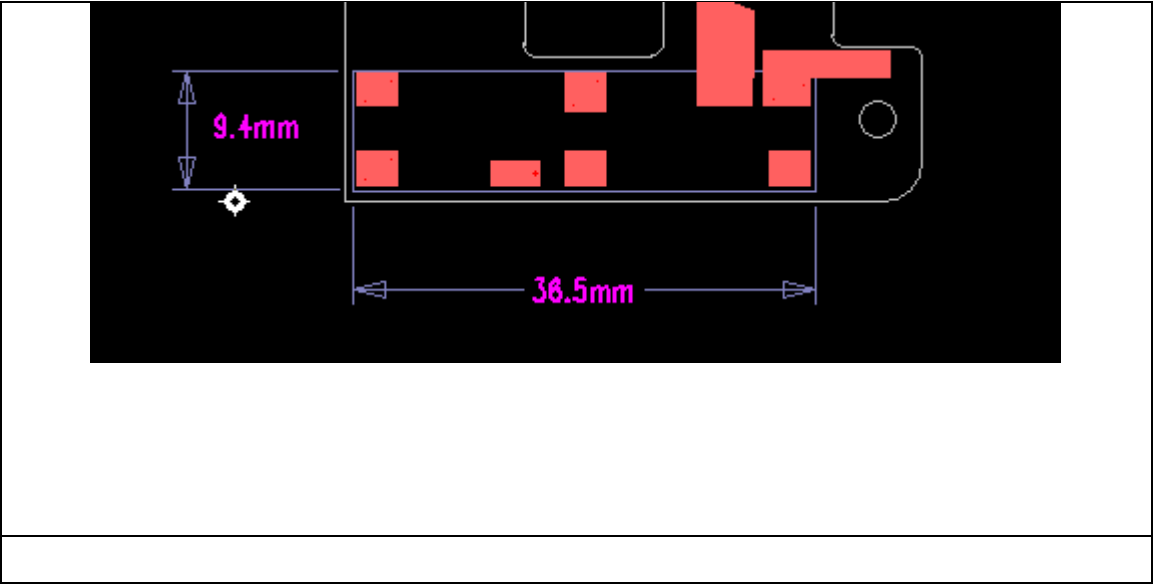
| GPS L1 |                |           |               |
|--------|----------------|-----------|---------------|
| Freq   | Efficient (dB) | gain (dB) | efficient (%) |
| 1563   | -3.1           | 0.41      | 48.99         |
| 1564   | -3.08          | 0.43      | 49.19         |
| 1565   | -3.07          | 0.43      | 49.33         |
| 1566   | -3.06          | 0.43      | 49.45         |
| 1567   | -3.05          | 0.43      | 49.58         |
| 1568   | -3.04          | 0.42      | 49.69         |
| 1569   | -3.02          | 0.41      | 49.85         |
| 1570   | -3.01          | 0.4       | 49.99         |
| 1571   | -3.01          | 0.39      | 50.06         |
| 1572   | -3             | 0.37      | 50.1          |
| 1573   | -2.99          | 0.36      | 50.18         |
| 1574   | -2.99          | 0.35      | 50.23         |
| 1575   | -3             | 0.33      | 50.14         |
| 1576   | -3.01          | 0.31      | 50.03         |
| 1577   | -3.01          | 0.29      | 49.96         |
| 1578   | -3.02          | 0.27      | 49.87         |
| 1579   | -3.03          | 0.25      | 49.78         |
| 1580   | -3.04          | 0.23      | 49.69         |
| 1581   | -3.06          | 0.19      | 49.47         |
| 1582   | -3.07          | 0.16      | 49.26         |
| 1583   | -3.08          | 0.13      | 49.17         |
| 1584   | -3.09          | 0.1       | 49.07         |
| 1585   | -3.11          | 0.08      | 48.89         |
| 1586   | -3.12          | 0.05      | 48.71         |
| 1587   | -3.14          | 0.03      | 48.51         |
| 1588   | -3.17          | 0.01      | 48.25         |
| 1589   | -3.19          | 0         | 47.99         |

Antenna Pattern/Measurement data

Company Letter Head

|                                |                                      |
|--------------------------------|--------------------------------------|
| Manufacturer                   | Queclink Wireless Solutions Co., Ltd |
| Antenna Type                   | PCB ANTENNA                          |
| Antenna Model                  | PCB ANTENNA FOR LTE                  |
| Antenna Part Number            | /                                    |
| Antenna Frequency Range        | 690MHz-960MHz<br>1710MHz-2700MHz     |
| Antenna Input Power Limitation | /                                    |
| Antenna Peak Gain              | 0.43                                 |
| Antenna Dimension (LxHxW)      | 24mm                                 |

Antenna Photo



## Company Letter Head

### Antenna Pattern/Gain Measurement data/Table:

| LTE  |                |           |               |  |      |                |           |               |
|------|----------------|-----------|---------------|--|------|----------------|-----------|---------------|
| Freq | Efficient (dB) | gain (dB) | efficient (%) |  | Freq | Efficient (dB) | gain (dB) | efficient (%) |
| 690  | -3.06          | 0.75      | 49.41         |  | 1710 | -4.38          | 0.84      | 36.45         |
| 700  | -2.47          | 1.42      | 56.65         |  | 1720 | -4.35          | 0.83      | 36.69         |
| 710  | -2.09          | 1.86      | 61.81         |  | 1730 | -4.25          | 1.05      | 37.57         |
| 720  | -1.83          | 2.26      | 65.67         |  | 1740 | -3.98          | 1.3       | 39.97         |
| 730  | -1.74          | 2.44      | 67.04         |  | 1750 | -3.84          | 1.34      | 41.33         |
| 740  | -1.68          | 2.53      | 67.97         |  | 1760 | -3.8           | 1.32      | 41.69         |
| 750  | -1.73          | 2.7       | 67.19         |  | 1770 | -3.81          | 1.14      | 41.6          |
| 760  | -1.74          | 2.74      | 66.94         |  | 1780 | -3.65          | 0.93      | 43.2          |
| 770  | -1.61          | 2.87      | 69.06         |  | 1790 | -3.38          | 1.12      | 45.94         |
| 780  | -1.53          | 3.06      | 70.34         |  | 1800 | -3.19          | 1.11      | 47.98         |
| 790  | -1.55          | 3.21      | 69.92         |  | 1810 | -3.23          | 0.74      | 47.49         |
| 800  | -1.49          | 3.3       | 70.99         |  | 1820 | -3.07          | 0.7       | 49.27         |
| 810  | -1.89          | 2.99      | 64.76         |  | 1830 | -2.87          | 0.85      | 51.64         |
| 820  | -2.36          | 2.43      | 58.14         |  | 1840 | -2.69          | 0.76      | 53.81         |
| 830  | -4.03          | 1.37      | 39.56         |  | 1850 | -2.61          | 0.79      | 54.88         |
| 840  | -2.97          | 1.82      | 50.51         |  | 1860 | -2.55          | 0.66      | 55.65         |
| 850  | -2.14          | 2.19      | 61.04         |  | 1870 | -2.5           | 0.62      | 56.25         |
| 860  | -1.92          | 3.41      | 64.29         |  | 1880 | -2.42          | 0.73      | 57.3          |
| 870  | -1.78          | 3.33      | 66.36         |  | 1890 | -2.36          | 0.96      | 58.13         |
| 880  | -1.83          | 3.17      | 65.68         |  | 1900 | -2.09          | 1.33      | 61.79         |
| 890  | -1.77          | 3.12      | 66.46         |  | 1910 | -1.9           | 1.62      | 64.54         |
| 900  | -1.86          | 2.78      | 65.21         |  | 1920 | -1.84          | 1.82      | 65.41         |
| 910  | -1.95          | 2.66      | 63.9          |  | 1930 | -1.79          | 1.96      | 66.27         |

## Company Letter Head

|     |       |      |       |
|-----|-------|------|-------|
| 920 | -2.12 | 2.73 | 61.44 |
| 930 | -2.31 | 2.67 | 58.77 |
| 940 | -2.61 | 2.42 | 54.8  |
| 950 | -2.89 | 2.22 | 51.4  |
| 960 | -3.26 | 2.24 | 47.25 |

|      |       |      |       |
|------|-------|------|-------|
| 1940 | -1.8  | 2.15 | 66.06 |
| 1950 | -1.68 | 2.21 | 67.96 |
| 1960 | -1.66 | 2.22 | 68.16 |
| 1970 | -1.72 | 2.23 | 67.35 |
| 1980 | -1.78 | 2.25 | 66.45 |
| 1990 | -1.8  | 2.31 | 66.05 |
| 2000 | -1.64 | 2.44 | 68.5  |
| 2010 | -1.53 | 2.53 | 70.35 |
| 2020 | -1.56 | 2.51 | 69.82 |
| 2030 | -1.55 | 2.6  | 70    |
| 2040 | -1.61 | 2.56 | 68.98 |
| 2050 | -1.75 | 2.49 | 66.9  |
| 2060 | -1.83 | 2.52 | 65.67 |
| 2070 | -1.94 | 2.51 | 64.03 |
| 2080 | -2.02 | 2.6  | 62.78 |
| 2090 | -2.13 | 2.57 | 61.21 |
| 2100 | -2.26 | 2.53 | 59.46 |
| 2110 | -2.24 | 2.59 | 59.71 |
| 2120 | -2.24 | 2.63 | 59.66 |
| 2130 | -2.33 | 2.56 | 58.5  |
| 2140 | -2.45 | 2.52 | 56.87 |
| 2150 | -2.55 | 2.51 | 55.54 |
| 2160 | -2.59 | 2.49 | 55.14 |
| 2170 | -2.56 | 2.51 | 55.44 |
| 2180 | -2.67 | 2.43 | 54.11 |
| 2190 | -2.64 | 2.47 | 54.44 |
| 2200 | -2.6  | 2.49 | 55.01 |
| 2210 | -2.57 | 2.44 | 55.31 |

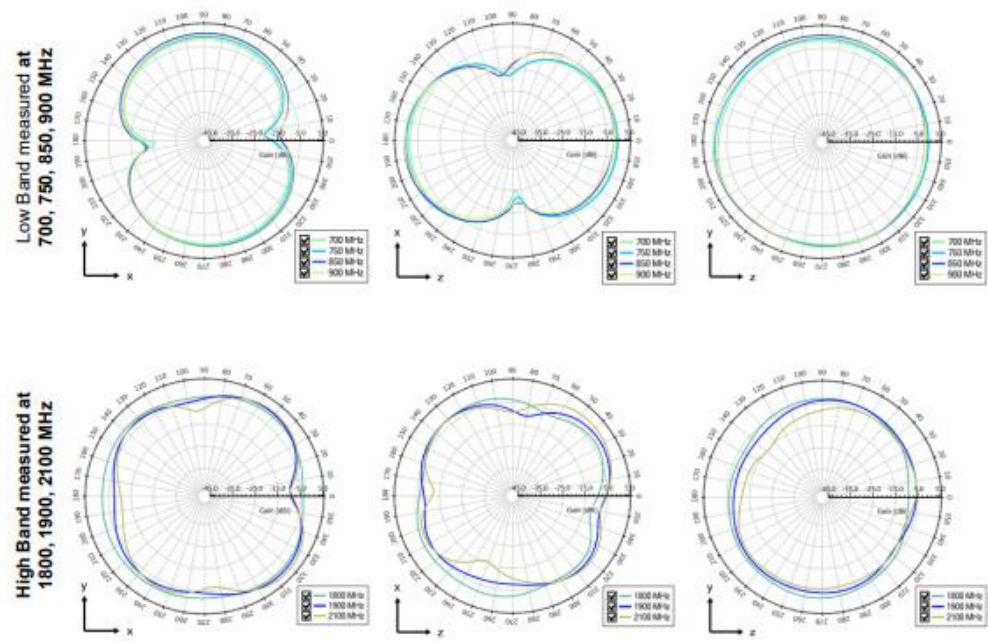
## Company Letter Head

|  |      |       |      |       |
|--|------|-------|------|-------|
|  | 2220 | -2.51 | 2.5  | 56.1  |
|  | 2230 | -2.48 | 2.51 | 56.52 |
|  | 2240 | -2.55 | 2.42 | 55.62 |
|  | 2250 | -2.6  | 2.3  | 54.93 |
|  | 2260 | -2.69 | 2.23 | 53.85 |
|  | 2270 | -2.72 | 2.28 | 53.5  |
|  | 2280 | -2.72 | 2.31 | 53.44 |
|  | 2290 | -2.76 | 2.24 | 52.93 |
|  | 2300 | -2.82 | 2.21 | 52.26 |
|  | 2310 | -2.94 | 2.09 | 50.84 |
|  | 2320 | -3.04 | 1.94 | 49.62 |
|  | 2330 | -3.06 | 1.82 | 49.44 |
|  | 2340 | -3.11 | 1.74 | 48.91 |
|  | 2350 | -3.19 | 1.66 | 47.96 |
|  | 2360 | -3.33 | 1.46 | 46.44 |
|  | 2370 | -3.41 | 1.24 | 45.63 |
|  | 2380 | -3.44 | 1.06 | 45.28 |
|  | 2390 | -3.53 | 0.89 | 44.34 |
|  | 2400 | -3.57 | 0.79 | 43.97 |
|  | 2410 | -3.56 | 0.64 | 44.03 |
|  | 2420 | -3.56 | 0.62 | 44.09 |
|  | 2430 | -3.51 | 0.91 | 44.52 |
|  | 2440 | -3.42 | 1.23 | 45.47 |
|  | 2450 | -3.26 | 1.63 | 47.21 |
|  | 2460 | -3.23 | 1.91 | 47.48 |
|  | 2470 | -3.32 | 1.91 | 46.54 |
|  | 2480 | -3.24 | 2.19 | 47.45 |
|  | 2490 | -3.14 | 2.49 | 48.57 |

## Company Letter Head

|      |       |      |       |
|------|-------|------|-------|
| 2500 | -3.06 | 2.83 | 49.44 |
| 2510 | -2.98 | 3.1  | 50.35 |
| 2520 | -2.92 | 3.29 | 51.01 |
| 2530 | -2.9  | 3.54 | 51.31 |
| 2540 | -2.86 | 3.75 | 51.77 |
| 2550 | -2.8  | 3.89 | 52.46 |
| 2560 | -2.77 | 4.01 | 52.9  |
| 2570 | -2.76 | 4.11 | 52.97 |
| 2580 | -2.86 | 4.13 | 51.8  |
| 2590 | -2.87 | 4.22 | 51.68 |
| 2600 | -2.89 | 4.2  | 51.46 |
| 2610 | -2.98 | 4.22 | 50.32 |
| 2620 | -3.03 | 4.24 | 49.82 |
| 2630 | -3.09 | 4.25 | 49.15 |
| 2640 | -3.15 | 4.3  | 48.43 |
| 2650 | -3.19 | 4.31 | 47.95 |
| 2660 | -3.27 | 4.31 | 47.13 |
| 2670 | -3.27 | 4.34 | 47.05 |
| 2680 | -3.27 | 4.36 | 47.12 |
| 2690 | -3.35 | 4.35 | 46.29 |

Company Letter Head



Antenna Pattern/Measurement data