

# Regulatory WWAN Antenna Information

## ASUS CZ1104

### [INNOWAVE antenna]

|   |   |                          |
|---|---|--------------------------|
| <b>Tx Antenna</b>                       |   |                          |
| Vendor (Manufacturer)                   | INNOWAVE  |                          |
| Parts Number                            | Main Antenna:   | F001C8712190001          |
|   | Auxiliary Antenna:  | F001C8712590001(RX only) |
| <b>Address of Vendor (Manufacturer)</b> | No.2,Qianmei Road,Dongkeng Town,Dongguan City,Guangdong Province, China |                          |
| <b>Transmitter Module</b>               |   |                          |
| WWAN Module                             | FM101-GL  |                          |

# Antenna Information

## Section 1. Antenna Assembly Specifications

Green = FM101-GL  
 Gray = No Support Plan

### Main Antenna

| Antenna Part Number               | Manufacturer | Antenna Type | Cable Assembly Part Number and Information  | Frequency (MHz)   |         | Cable Loss (dB) | Peak Gain (including cable loss) |                |             |
|-----------------------------------|--------------|--------------|---|---|---------|-----------------|----------------------------------|----------------|-------------|
|                                   |              |              |   |   |         |                 | Horizontal (dBi)                 | Vertical (dBi) | Total (dBi) |
| Main<br>F001C8712190001           | Inno wave    | PIFA         | 1. Cable P/N:<br>RF 1.13LL<br>2. Diameter:1.13mm<br>50 ohm coaxial cable<br>3. Cable length:<br>Main :530 mm<br>Aux : 360 mm<br>4. Connector P/N:<br>ST-4 or Equivalent | EU/ANZ/CN/Japan<br>UMTS/HSPA<br>(UMTS 2100, Band 1)<br>(UE-UTRA, Band 1, n1)                                | 1920.00 | 1.11            | -4.95                            | -2.38          | -0.94       |
|                                   |              |              |   |   | 1950.00 | 1.12            | -5.73                            | -2.96          | -1.26       |
|                                   |              |              |   |   | 1980.00 | 1.12            | -3.81                            | -2.75          | -1.60       |
|                                   |              |              |   | FCC Part 24<br>GSM/GPRS/EDGE<br>(GSM 1900)<br>UMTS/HSPA/EVDO<br>(UMTS1900, Band 2)<br>(UE-UTRA, Band 2, n2) | 1850.00 | 1.09            | -4.04                            | -0.81          | -0.04       |
|                                   |              |              |   |   | 1880.00 | 1.10            | -4.42                            | -1.71          | -0.58       |
|                                   |              |              |   |   | 1910.00 | 1.10            | -3.98                            | -2.06          | -1.42       |
|                                   |              |              |   | EU/ANZ/CN/Japan<br>GSM/GPRS/EDGE<br>(GSM 1800, Band 3)<br>(UE-UTRA, Band 3, n3)                             | 1710.00 | 1.05            | -4.25                            | -5.38          | -1.95       |
|                                   |              |              |   |   | 1747.50 | 1.05            | -2.57                            | -1.45          | 1.09        |
|                                   |              |              |   |   | 1785.00 | 1.06            | -4.56                            | -1.30          | 0.96        |
|                                   |              |              |   | FCC Part 27<br>UMTS(AWS) / HSPA<br>(UMTS, Band 4)<br>(UE-UTRA, Band 4)                                      | 1710.00 | 1.05            | -4.25                            | -5.38          | -1.95       |
|                                   |              |              |   |   | 1732.50 | 1.05            | -3.60                            | -3.16          | -0.1        |
|                                   |              |              |   |   | 1755.00 | 1.06            | -2.55                            | -1.71          | 0.65        |
|                                   |              |              |   | FCC Part 22<br>GSM/GPRS/EDGE<br>(GSM 850)<br>ANZ<br>(UMTS850, Band 5)<br>(UE-UTRA, Band 5, n5)              | 824.00  | 0.69            | -5.92                            | -1.94          | -1.32       |
|                                   |              |              |   |   | 836.50  | 0.70            | -5.99                            | -1.29          | -0.79       |
|                                   |              |              |   |   | 849.00  | 0.70            | -5.73                            | -0.23          | 0.16        |
|                                   |              |              |   | Japan<br>(UMTS, Band 6)   | 830.00  | 0.69            | -6.45                            | -2.06          | -0.32       |
|                                   |              |              |   |   | 835.00  | 0.70            | -6.28                            | -1.93          | -0.47       |
|                                   |              |              |   |   | 840.00  | 0.70            | -5.6                             | -0.84          | -0.36       |
|                                   |              |              |   | FCC Part 27<br>CA/EU/ANZ<br>(UE-UTRA, Band 7, n7)   | 2500.00 | 1.26            | -4.75                            | 0.49           | 1.18        |
|                                   |              |              |   |   | 2535.00 | 1.27            | -3.23                            | 0.78           | 1.39        |
|                                   |              |              |   |   | 2570.00 | 1.27            | -3.76                            | 1.08           | 1.77        |
|                                   |              |              |   | EU/ANZ/Japan<br>UMTS/HSPA<br>(UMTS 900, Band 8)<br>(UE-UTRA, Band 8, n8)                                    | 880.00  | 0.71            | -6.07                            | 0.90           | 1.19        |
|                                   |              |              |   |   | 897.50  | 0.71            | -6.15                            | -0.14          | 0.65        |
|                                   |              |              |   |   | 915.00  | 0.71            | -4.89                            | -1.87          | -1.54       |
|                                   |              |              |   | Japan<br>(WCDMA, Band 9)  | 1844.9  |                 |                                  |                |             |
|                                   |              |              |   |   | 1862.5  |                 |                                  |                |             |
|                                   |              |              |   |   | 1879.9  |                 |                                  |                |             |
|                                   |              |              |   | FCC Part 27<br>(UE-UTRA, Band 12, n12)  | 699.00  | 0.67            | -6.4                             | -3.11          | -1.85       |
|                                   |              |              |   |   | 707.50  | 0.67            | -5.08                            | -3.66          | -1.71       |
|                                   |              |              |   |   | 716.00  | 0.67            | -4.06                            | -2.12          | -0.91       |
| FCC Part 27<br>(UE-UTRA, Band 13) | 777.00       | 0.68         | -5.68   | -2.86   | -0.79   |                 |                                  |                |             |
|                                   | 782.00       | 0.68         | -5.47   | -2.62   | -0.34   |                 |                                  |                |             |
|                                   | 787.00       | 0.68         | -5.82   | -2.44   | -0.45   |                 |                                  |                |             |
| FCC Part 90<br>(UE-UTRA, Band 14) | 788.00       | 0.68         | -5.92   | -1.91   | -0.57   |                 |                                  |                |             |
|                                   | 793.00       | 0.68         | -6.18   | -1.97   | -0.74   |                 |                                  |                |             |
|                                   | 798.00       | 0.68         | -5.49   | -1.98   | -0.76   |                 |                                  |                |             |
| FCC Part 27<br>(UE-UTRA, Band 17) | 704.00       | 0.67         | -4.68   | -3.39   | -0.98   |                 |                                  |                |             |
|                                   | 710.00       | 0.67         | -4.01   | -2.92   | -0.87   |                 |                                  |                |             |
|                                   | 716.00       | 0.67         | -4.06   | -2.12   | -0.77   |                 |                                  |                |             |
| Japan<br>(UE-UTRA, Band 18)       | 815.00       | 0.69         | -5.34   | -2.24   | -0.93   |                 |                                  |                |             |
|                                   | 822.50       | 0.69         | -5.94   | -1.31   | -0.98   |                 |                                  |                |             |
|                                   | 830.00       | 0.69         | -6.45   | -2.06   | -0.32   |                 |                                  |                |             |

|  |         |      |       |       |       |
|--|---------|------|-------|-------|-------|
| Japan<br>(UMTS, Band 19)<br>(UE-UTRA, Band 19)                         | 830.00  | 0.69 | -6.45 | -2.06 | -0.32 |
|  | 837.50  | 0.70 | -6.38 | -1.64 | 0.37  |
|  | 845.00  | 0.70 | -5.75 | -1.49 | 0.37  |
| EU<br>(UE-UTRA, Band 20,<br>n20)                                       | 832.00  | 0.70 | -6.87 | -1.88 | -0.29 |
|  | 847.00  | 0.70 | -5.51 | -0.66 | 0.35  |
|  | 862.00  | 0.70 | -5.79 | -0.01 | 1.02  |
| FCC Part 24<br>(UE-UTRA, Band 25)                                      | 1850.00 | 1.09 | -4.04 | -0.81 | -0.04 |
|  | 1882.50 | 1.10 | -4.58 | -0.65 | 0.47  |
|  | 1915    | 1.10 | -4.88 | -2.2  | -0.65 |
| FCC Part 90, 22H<br>(UE-UTRA, Band 26)                                 | 814.00  | 0.69 | -6.58 | -2.01 | -0.78 |
|  | 831.50  | 0.69 | -5.63 | -0.85 | -0.06 |
|  | 849.00  | 0.70 | -5.73 | -0.23 | 0.16  |
| EU/ANZ/Japan<br>(UE-UTRA, Band 28,<br>n28)                             | 703.00  | 0.67 | -5.53 | -2.49 | -1.20 |
|  | 725.50  | 0.67 | -4.11 | -1.06 | -0.42 |
|  | 748.00  | 0.68 | -3.54 | -1.28 | -0.05 |
| FCC Part 27<br>CA<br>(UE-UTRA, Band 29)<br>* Down link only            | 717.00  | 0.67 | -3.63 | -1.60 | -0.26 |
|  | 722.50  | 0.67 | -4.70 | -1.87 | -0.29 |
|  | 728.00  | 0.67 | -4.03 | -1.08 | -0.14 |
| FCC Part 27<br>(UE-UTRA, Band 30)                                      | 2305.00 | 1.22 | -3.47 | -0.65 | 0.17  |
|  | 2310.00 | 1.22 | -3.71 | -0.74 | 0.06  |
|  | 2315.00 | 1.22 | -3.63 | -0.10 | 0.47  |
| EU<br>(LTE, Band 32)<br>* Down link only                               | 1452.00 |      |       |       |       |
|  | 1474.00 |      |       |       |       |
|  | 1496.00 |      |       |       |       |
| EU<br>(LTE Band 34)  | 2010.00 |      |       |       |       |
|  | 2017.50 |      |       |       |       |
|  | 2025.00 |      |       |       |       |
| EU/CN<br>(UE-UTRA, Band 38,<br>n38)                                    | 2570.00 | 1.27 | -3.76 | 1.08  | 1.70  |
|  | 2595.00 | 1.28 | -5.13 | 0.47  | 1.30  |
|  | 2620.00 | 1.28 | -6.67 | -0.04 | 0.56  |
| CN<br>(TD-SCDMA, Band 39)  | 1880.00 | 1.10 | -4.42 | -1.71 | -0.58 |
|  | 1900.00 | 1.10 | -4.21 | -1.67 | -0.6  |
|  | 1920.00 | 1.10 | -4.95 | -2.38 | -0.94 |
| EU/ANZ/CN<br>(UE-UTRA, Band 40)  | 2300.00 | 1.22 | -1.74 | -1.80 | -0.30 |
|  | 2350.00 | 1.23 | -4.89 | -1.52 | -0.64 |
|  | 2400.00 | 1.24 | -3.45 | -1.34 | -0.19 |
| FCC Part 27<br>US/CN/Japan<br>(UE-UTRA, Band 41,<br>n41)               | 2496.00 | 1.26 | -4.37 | 0.20  | 0.69  |
|  | 2593.00 | 1.28 | -4.90 | 0.38  | 1.12  |
|  | 2690.00 | 1.31 | -7.01 | -0.12 | -0.10 |
| FCC Part 96<br>CA/EU/Japan<br>(LTE Band 42)                            | 3400.00 | 1.49 | 0.94  | -3.10 | 1.25  |
|  | 3500.00 | 1.51 | -0.07 | 0.26  | 1.67  |
|  | 3600.00 | 1.53 | -0.85 | 2.02  | 2.20  |
| (LTE Band 43)  | 3600.00 | 1.53 | -0.85 | 2.02  | 2.20  |
|  | 3700.00 | 1.55 | 1.25  | 1.22  | 2.10  |
|  | 3800.00 | 1.57 | 1.88  | 0.96  | 3.08  |
| FCC Part 15, 90, 95<br>(LTE Band 46)<br>TD Unlicensed, LAA<br>RCV only | 5150.00 |      |       |       |       |
|  | 5537.00 |      |       |       |       |
|  | 5925.00 |      |       |       |       |
| FCC Part 96<br>(LTE Band 48)   | 3550.00 | 1.52 | -1.74 | 0.48  | 0.75  |
|  | 3625.00 | 1.53 | -0.86 | 1.81  | 0.96  |
|  | 3700.00 | 1.55 | -1.25 | 1.22  | 0.84  |
| FCC Part 27<br>(LTE, Band 66, n66)                                     | 1710.00 | 1.05 | -4.25 | -5.38 | -1.95 |
|  | 1745.00 | 1.05 | -2.05 | -1.25 | 1.05  |
|  | 1780.00 | 1.06 | -3.52 | -2.40 | -0.33 |
| FCC Part 24, 27<br>(LTE Band 71, n71)                                  | 663.00  | 0.66 | -5.79 | -2.87 | -2.26 |
|  | 680.50  | 0.66 | -6.21 | -3.72 | -2.14 |
|  | 698.00  | 0.67 | -5.91 | -3.08 | -1.15 |
| FCC/EU/CN/JP   | 3300.00 |      |       |       |       |

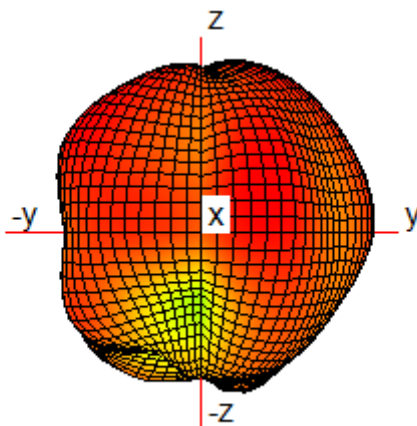
|                         |         |  |  |                                     |         |  |  |  |  |
|-------------------------|---------|--|--|-------------------------------------|---------|--|--|--|--|
|                         |         |  |  | <b>(5G NR Band 77)</b>              | 3750.00 |  |  |  |  |
|                         |         |  |  |                                     | 4200.00 |  |  |  |  |
|                         |         |  |  | <b>EU/CN/JP<br/>(5G NR Band 78)</b> | 3300.00 |  |  |  |  |
|                         |         |  |  |                                     | 3550.00 |  |  |  |  |
|                         |         |  |  |                                     | 3800.00 |  |  |  |  |
|                         |         |  |  | <b>CN/JP<br/>(5G NR Band 79)</b>    | 4400.00 |  |  |  |  |
|                         |         |  |  |                                     | 4700.00 |  |  |  |  |
|                         |         |  |  |                                     | 5000.00 |  |  |  |  |
|                         |         |  |  | <b>Japan<br/>(UE-UTRA, Band 21)</b> | 1477.90 |  |  |  |  |
|                         |         |  |  |                                     | 1455.40 |  |  |  |  |
|                         |         |  |  |                                     | 1462.90 |  |  |  |  |
|                         |         |  |  | <b>Japan<br/>J-CDMA</b>             | 815.00  |  |  |  |  |
|                         |         |  |  |                                     | 824.70  |  |  |  |  |
|                         |         |  |  |                                     | 836.52  |  |  |  |  |
|                         |         |  |  |                                     | 848.31  |  |  |  |  |
|                         |         |  |  |                                     | 870.00  |  |  |  |  |
|                         |         |  |  |                                     | 880.20  |  |  |  |  |
|                         |         |  |  |                                     | 897.60  |  |  |  |  |
|                         |         |  |  |                                     | 914.80  |  |  |  |  |
|                         |         |  |  |                                     | 925.00  |  |  |  |  |
| 940.00                  |         |  |  |                                     |         |  |  |  |  |
| <b>Japan<br/>J-CDMA</b> | 1922.40 |  |  |                                     |         |  |  |  |  |
|                         | 1950.00 |  |  |                                     |         |  |  |  |  |
|                         | 1977.60 |  |  |                                     |         |  |  |  |  |

## Section 2. Radiation characteristics of antenna

Radiation characteristic in 1920MHz ~ 1980MHz (EU/ANZ/CN/JP: UMTS/HSDPA, Band 1, n1)

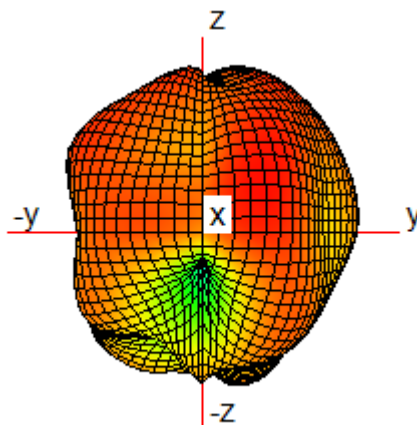
Main antenna: 1920.00 MHz

| 1920.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.95 |
| Vertical Peak(dBi)    | -2.38 |



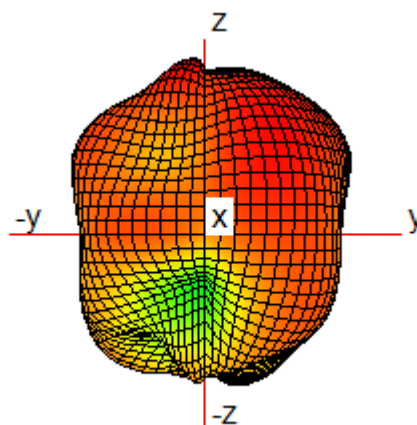
Main antenna: 1950.00 MHz

| 1950.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.73 |
| Vertical Peak(dBi)    | -2.96 |



Main antenna: 1980.00 MHz

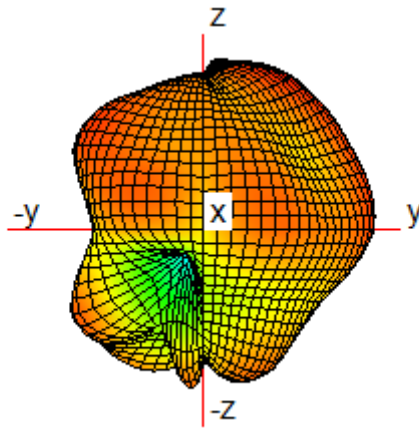
| 1980.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.81 |
| Vertical Peak(dBi)    | -2.75 |



**Radiation characteristic in 1850MHz ~ 1910MHz (FCC Part 24 PCS, Band 2, n2)**

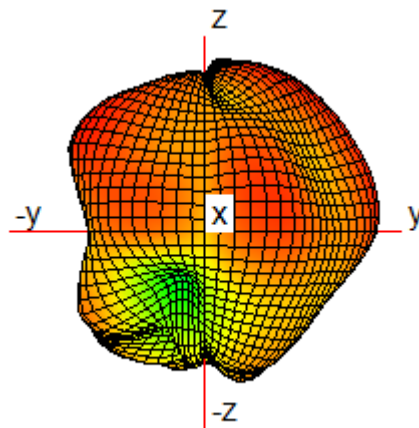
**Main antenna: 1850.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>1850.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-4.04</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-0.81</b> |



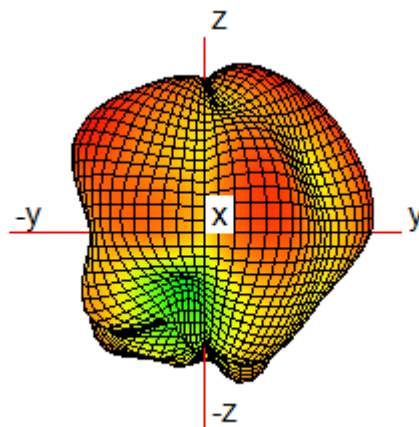
**Main antenna: 1880.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>1880.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-4.42</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-1.71</b> |



**Main antenna: 1910.00 MHz**

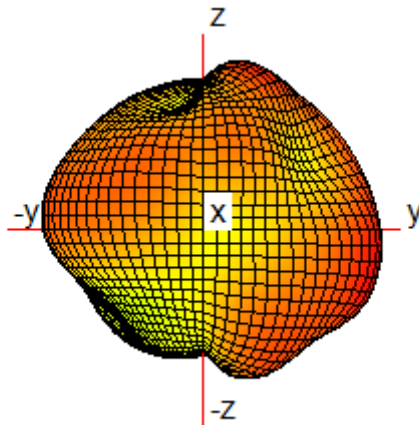
|                              |              |
|------------------------------|--------------|
| <b>1910.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-3.98</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-2.06</b> |



**Radiation characteristic in 1710MHz ~ 1785MHz (EU/ANZ/CN/JP: UE-UTRA, Band 3, n3)**

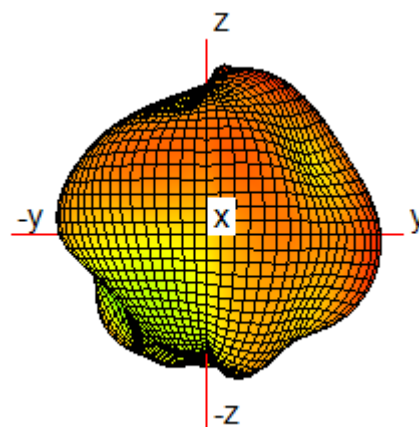
**Main antenna: 1710.00 MHz**

| 1710.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.25 |
| Vertical Peak(dBi)    | -5.38 |



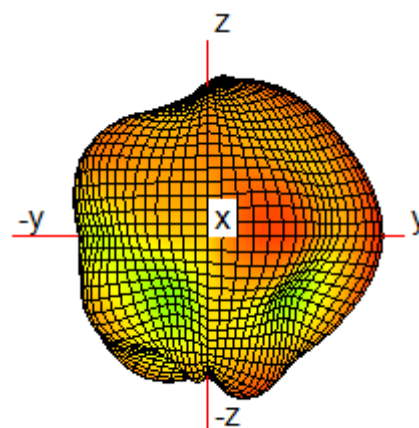
**Main antenna: 1747.50 MHz**

| 1747.50 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -2.57 |
| Vertical Peak(dBi)    | -1.45 |



**Main antenna: 1785.00 MHz**

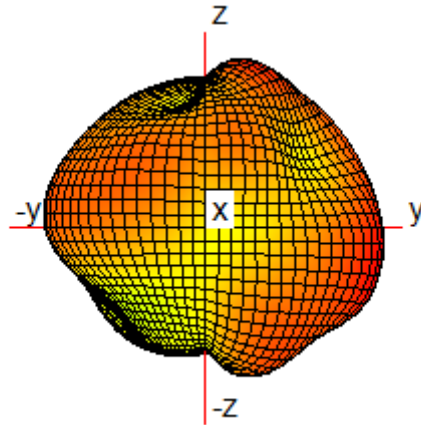
| 1785.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.56 |
| Vertical Peak(dBi)    | -1.3  |



**Radiation characteristic in 1710MHz ~ 1755MHz (FCC Part 27 UMTS(AWS), Band 4)**

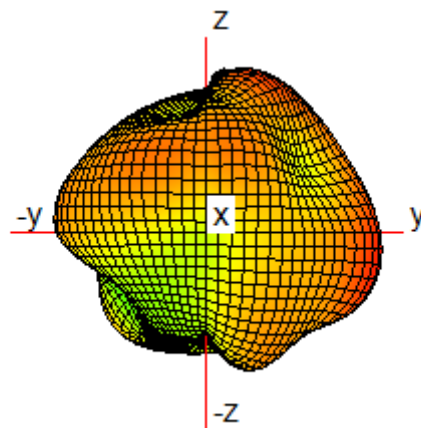
**Main antenna: 1710.00 MHz**

| 1710.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.25 |
| Vertical Peak(dBi)    | -5.38 |



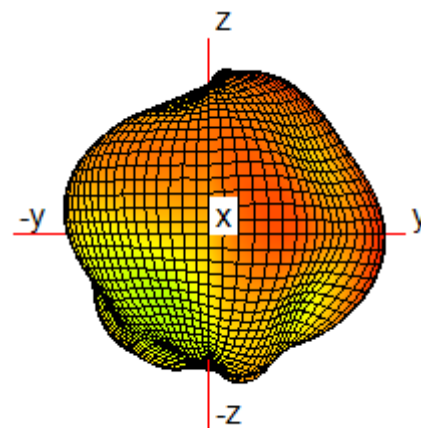
**Main antenna: 1732.50 MHz**

| 1732.50 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.60 |
| Vertical Peak(dBi)    | -3.16 |



**Main antenna: 1755.00 MHz**

| 1755.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -2.55 |
| Vertical Peak(dBi)    | -1.71 |

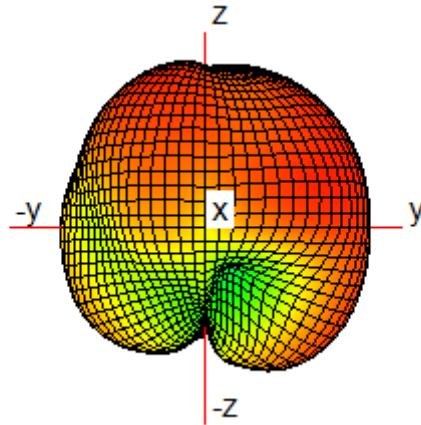




**Radiation characteristic in 824MHz ~ 849MHz (FCC Part 22 Cellular, Band 5, n5)**

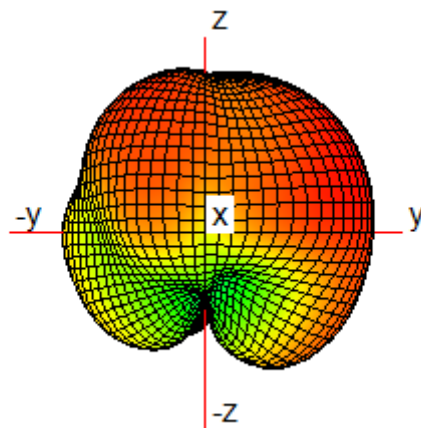
**Main antenna: 824.00 MHz**

| 824.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.92 |
| Vertical Peak(dBi)    | -1.94 |



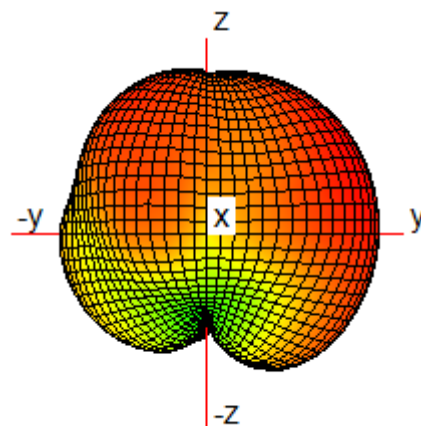
**Main antenna: 836.50 MHz**

| 836.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.99 |
| Vertical Peak(dBi)    | -1.29 |



**Main antenna: 849.0 MHz**

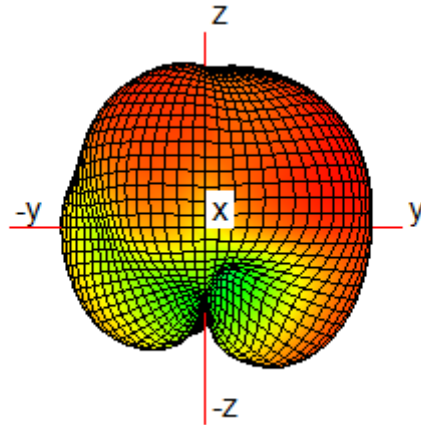
| 849.0 MHz             |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.73 |
| Vertical Peak(dBi)    | -0.23 |



**Radiation characteristic in 830MHz ~ 840MHz (Japan UMTS, Band 6)**

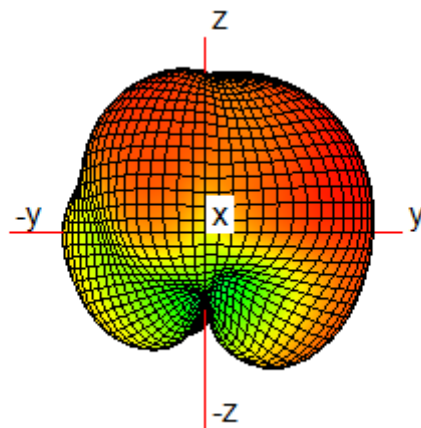
**Main antenna: 830.00 MHz**

| 830.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.45 |
| Vertical Peak(dBi)    | -2.06 |



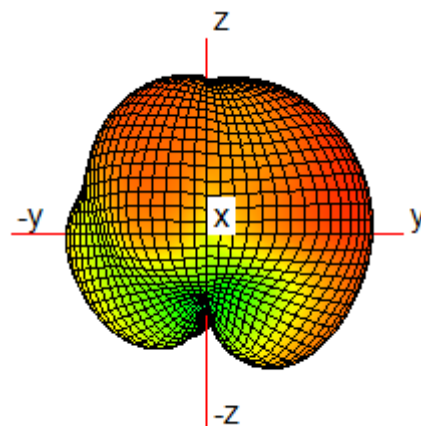
**Main antenna: 835.0 MHz**

| 835.0 MHz             |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.28 |
| Vertical Peak(dBi)    | -1.93 |



**Main antenna: 840.0 MHz**

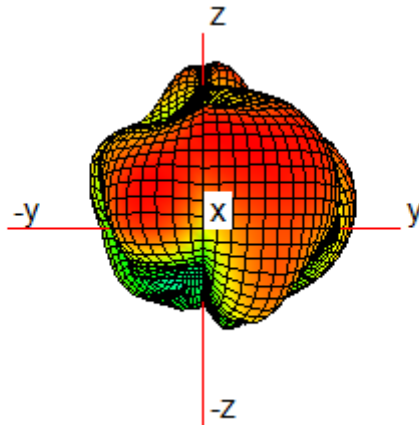
| 840.0 MHz             |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.60 |
| Vertical Peak(dBi)    | -0.84 |



**Radiation characteristic in 2500MHz ~ 2570MHz (CA/EU/ANZ UE-UTRA, Band 7, n7)**

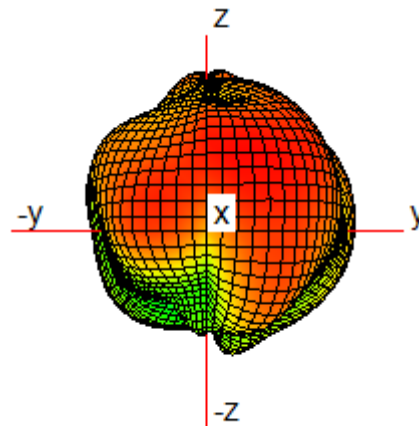
**Main antenna: 2500.00 MHz**

| 2500.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.75 |
| Vertical Peak(dBi)    | 0.49  |



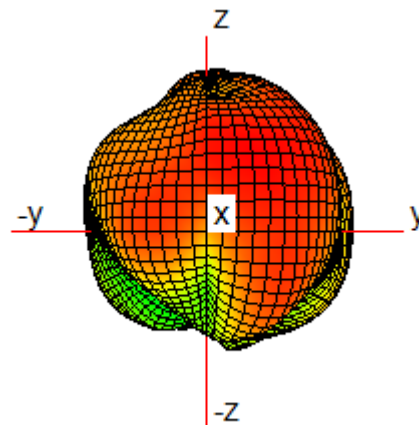
**Main antenna: 2535.00 MHz**

| 2535.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.23 |
| Vertical Peak(dBi)    | 0.78  |



**Main antenna: 2570.00 MHz**

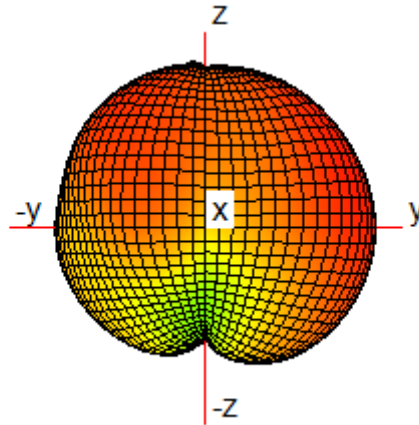
| 2570.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.76 |
| Vertical Peak(dBi)    | 1.08  |



**Radiation characteristic in 880MHz ~ 915MHz (EU/ANZ/JP: Band 8, n8)**

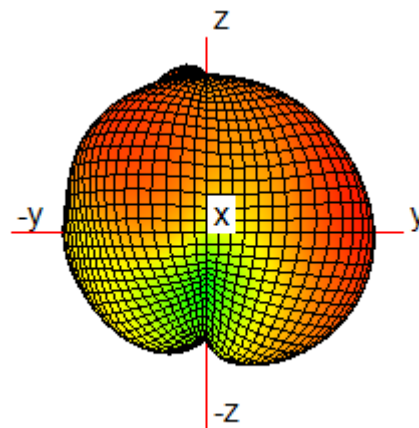
**Main antenna: 880.00 MHz**

| 880.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.07 |
| Vertical Peak(dBi)    | 0.90  |



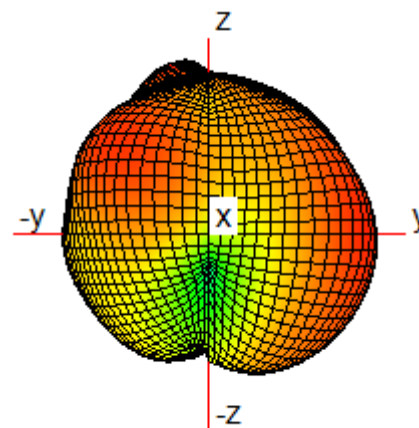
**Main antenna: 897.50 MHz**

| 897.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.15 |
| Vertical Peak(dBi)    | -0.14 |



**Main antenna: 915.00 MHz**

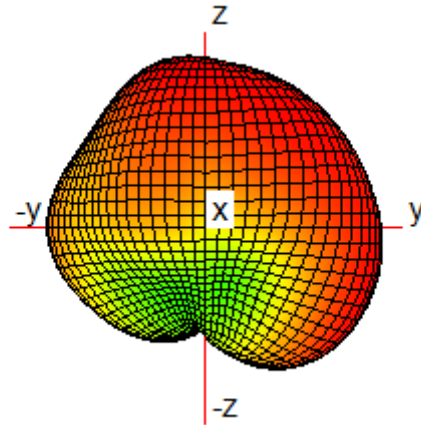
| 915.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.89 |
| Vertical Peak(dBi)    | -1.87 |



Radiation characteristic in 699MHz ~ 716MHz (FCC Part 27 UE-UTRA, Band 12, n12)

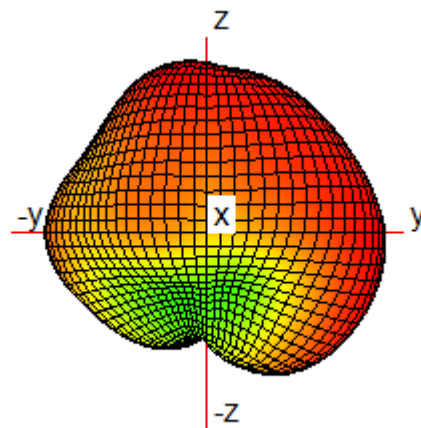
**Main antenna: 699.00 MHz**

| 699.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.40 |
| Vertical Peak(dBi)    | -3.11 |



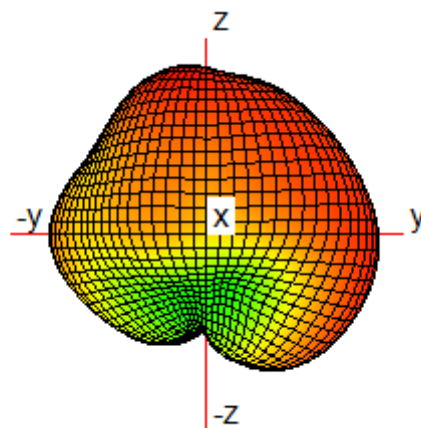
**Main antenna: 707.50 MHz**

| 707.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.08 |
| Vertical Peak(dBi)    | -3.66 |



**Main antenna: 716.00 MHz**

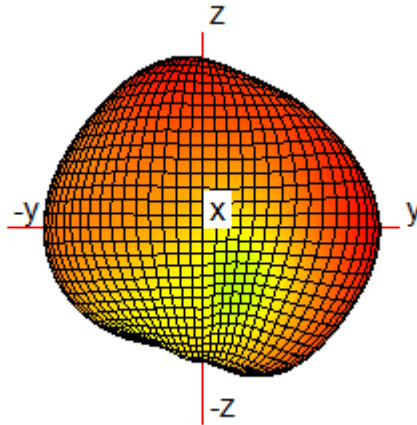
| 716.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.06 |
| Vertical Peak(dBi)    | -2.12 |



**Radiation characteristic in 776MHz ~ 787MHz (FCC Part 27 UE-UTRA, Band 13)**

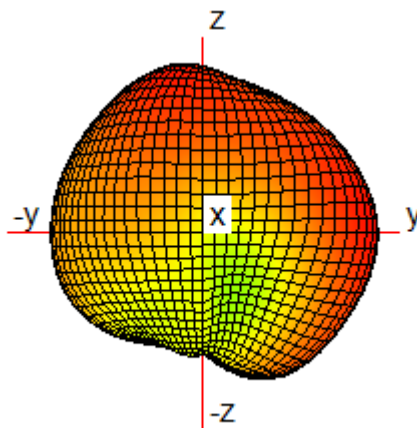
**Main antenna: 777.00 MHz**

| 777.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.68 |
| Vertical Peak(dBi)    | -2.86 |



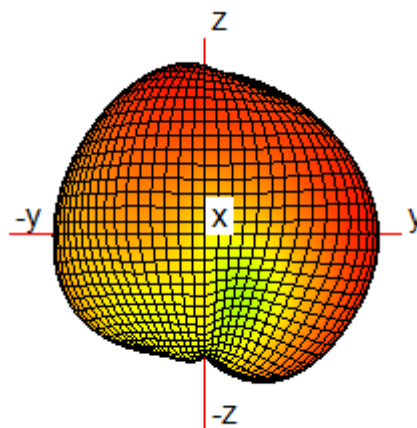
**Main antenna: 782.00 MHz**

| 782.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.47 |
| Vertical Peak(dBi)    | -2.62 |



**Main antenna: 787.00 MHz**

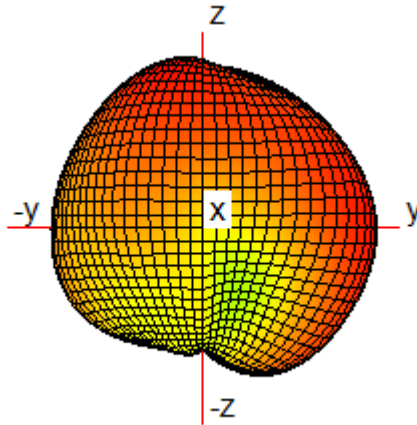
| 787.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.82 |
| Vertical Peak(dBi)    | -2.44 |



**Radiation characteristic in 788MHz ~ 798MHz (FCC Part 90 UE-UTRA, Band 14)**

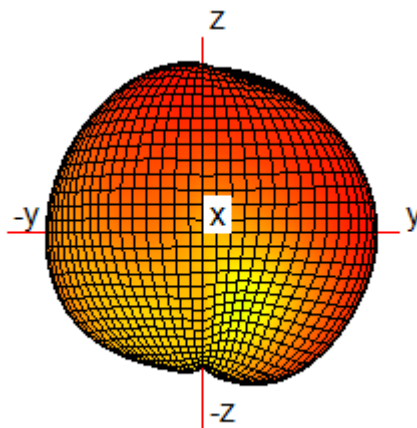
**Main antenna: 788.00 MHz**

| 788.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.92 |
| Vertical Peak(dBi)    | -1.91 |



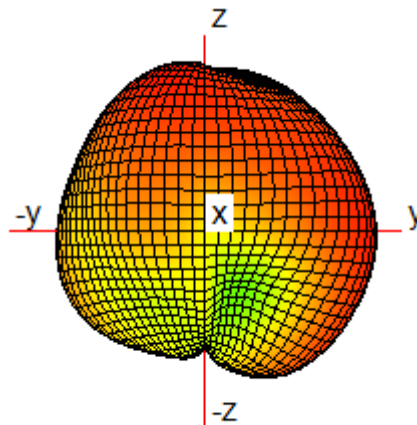
**Main antenna: 793.00 MHz**

| 793.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.18 |
| Vertical Peak(dBi)    | -1.97 |



**Main antenna: 798.00 MHz**

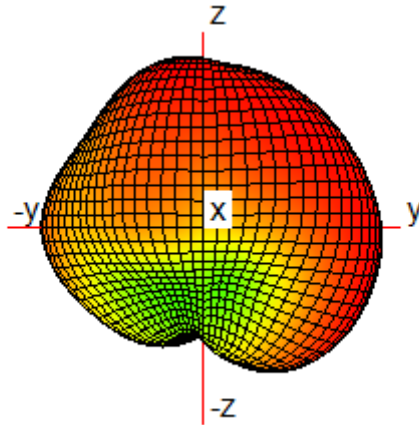
| 798.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.49 |
| Vertical Peak(dBi)    | -1.98 |



**Radiation characteristic in 704MHz ~ 716MHz (FCC Part 27H UE-UTRA, Band 17)**

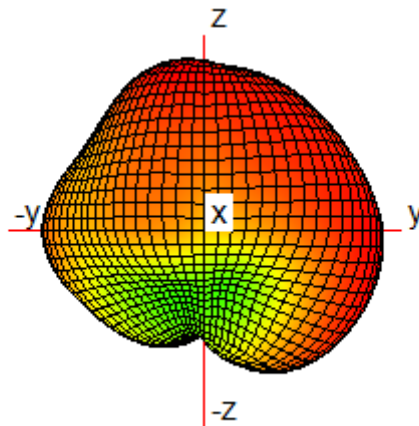
**Main antenna: 704.00 MHz**

| 704.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.68 |
| Vertical Peak(dBi)    | -3.39 |



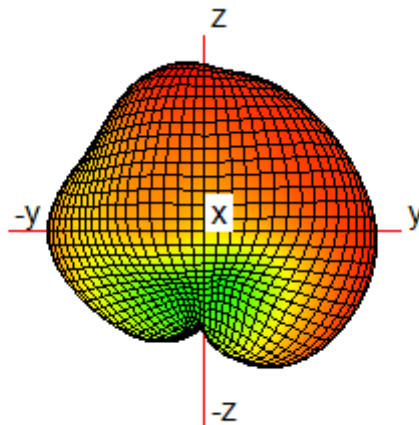
**Main antenna: 710.00 MHz**

| 710.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.01 |
| Vertical Peak(dBi)    | -2.92 |



**Main antenna: 716.00 MHz**

| 716.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.06 |
| Vertical Peak(dBi)    | -2.12 |

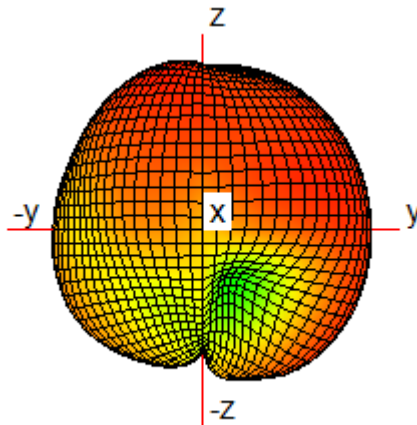




**Radiation characteristic in 815MHz ~ 830MHz (Japan, Band 18)**

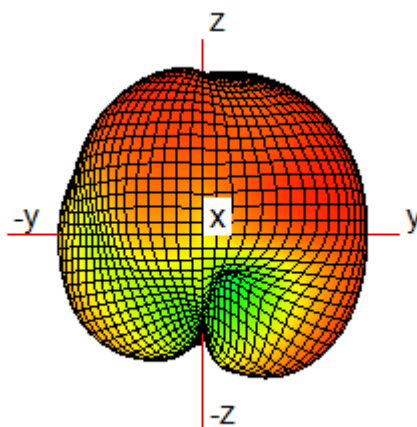
**Main antenna: 815.00 MHz**

| 815.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.34 |
| Vertical Peak(dBi)    | -2.24 |



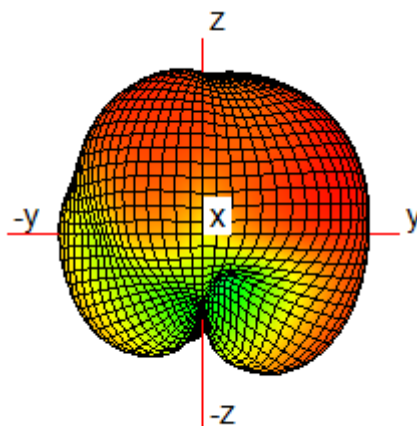
**Main antenna: 822.50 MHz**

| 822.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.94 |
| Vertical Peak(dBi)    | -1.31 |



**Main antenna: 830.00 MHz**

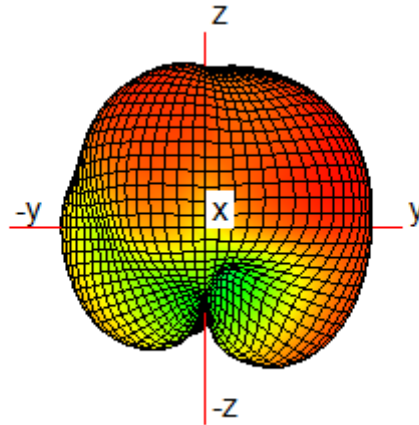
| 830.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.45 |
| Vertical Peak(dBi)    | -2.06 |



**Radiation characteristic in 830MHz ~ 845MHz (Japan, Band 19)**

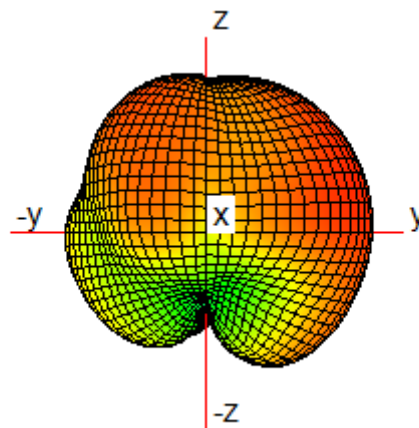
**Main antenna: 830.00 MHz**

| 830.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.45 |
| Vertical Peak(dBi)    | -2.06 |



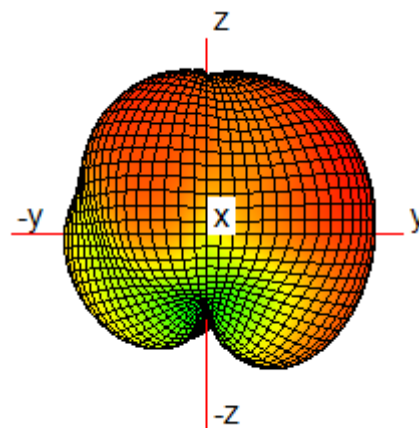
**Main antenna: 837.50 MHz**

| 837.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.38 |
| Vertical Peak(dBi)    | -1.64 |



**Main antenna: 845.00 MHz**

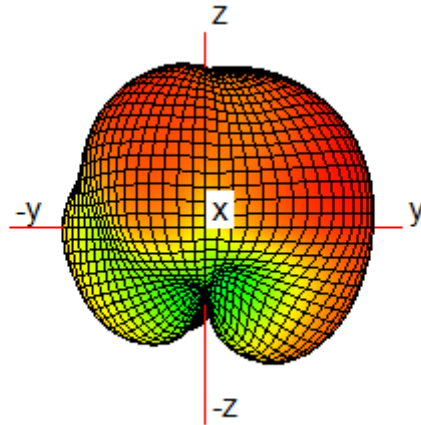
| 845.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.75 |
| Vertical Peak(dBi)    | -1.49 |



**Radiation characteristic in 832MHz ~ 862MHz (EU UE-UTRA, Band 20, n20)**

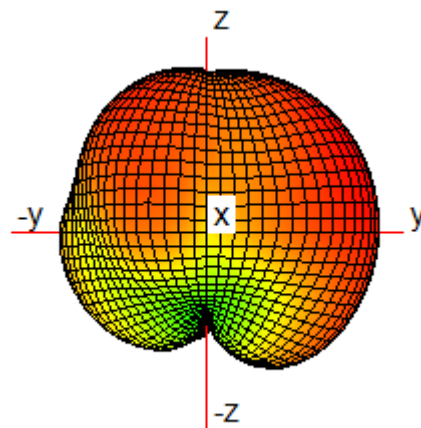
**Main antenna: 832.00 MHz**

| 832.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.87 |
| Vertical Peak(dBi)    | -1.88 |



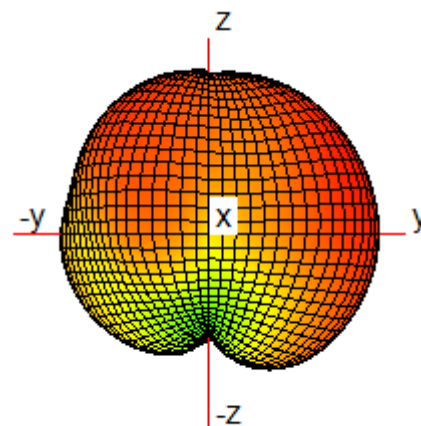
**Main antenna: 847.00 MHz**

| 847.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.51 |
| Vertical Peak(dBi)    | -0.66 |



**Main antenna: 862.00 MHz**

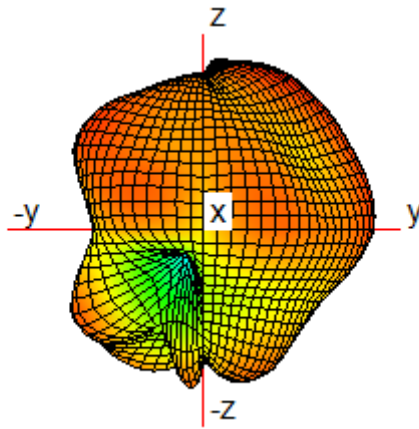
| 862.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.79 |
| Vertical Peak(dBi)    | -0.01 |



Radiation characteristic in 1850MHz ~ 1915MHz (FCC Part 24 UE-UTRA, Band 25)

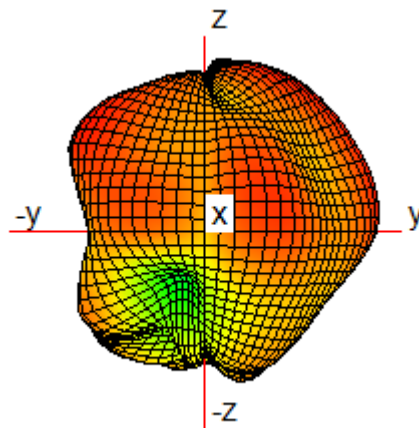
**Main antenna: 1850.00 MHz**

| 1850.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.04 |
| Vertical Peak(dBi)    | -0.81 |



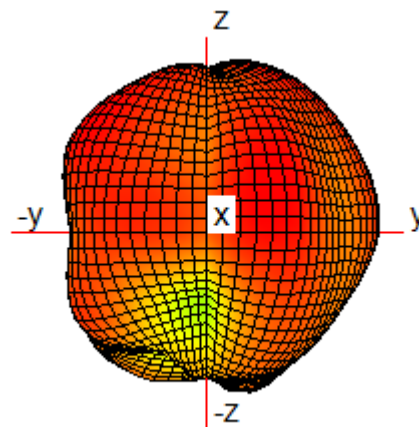
**Main antenna: 1882.50 MHz**

| 1882.50 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.58 |
| Vertical Peak(dBi)    | -0.65 |



**Main antenna: 1915.00 MHz**

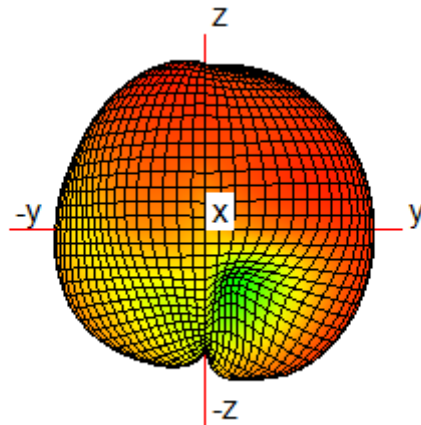
| 1915.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.88 |
| Vertical Peak(dBi)    | -2.20 |



**Radiation characteristic in 814MHz ~ 849MHz (FCC Part 90, 22H UE-UTRA, Band 26)**

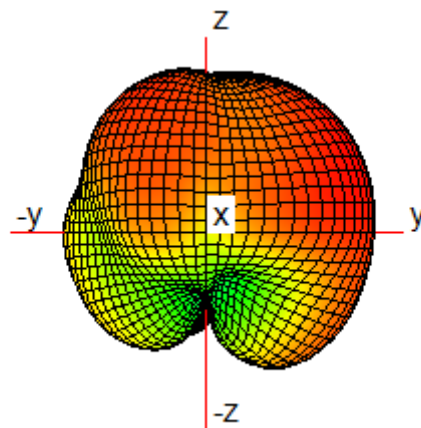
**Main antenna: 814.00 MHz**

| 814.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.58 |
| Vertical Peak(dBi)    | -2.01 |



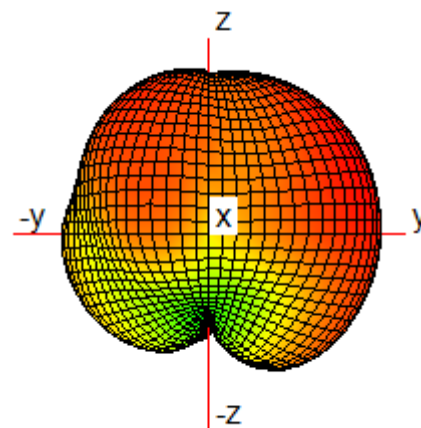
**Main antenna: 831.50 MHz**

| 831.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.63 |
| Vertical Peak(dBi)    | -0.85 |



**Main antenna: 849.00 MHz**

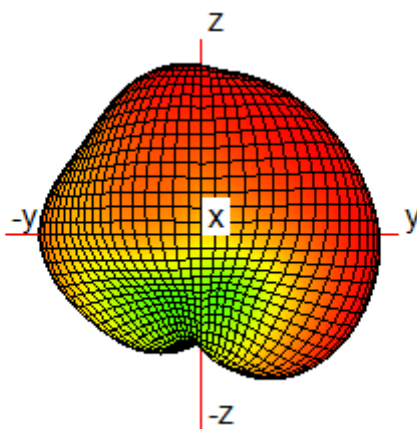
| 849.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.73 |
| Vertical Peak(dBi)    | -0.23 |



**Radiation characteristic in 703MHz ~ 748MHz (EU/ANZ/Japan UE-UTRA, Band 28, 28)**

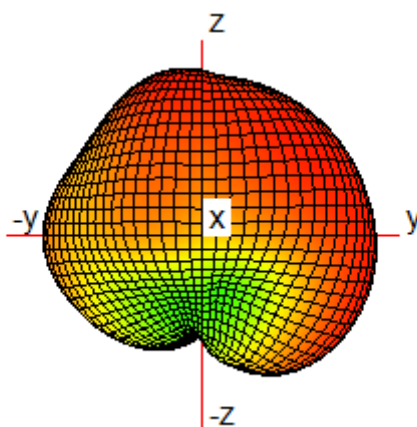
**Main antenna: 703.00 MHz**

| 703.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.53 |
| Vertical Peak(dBi)    | -0.89 |



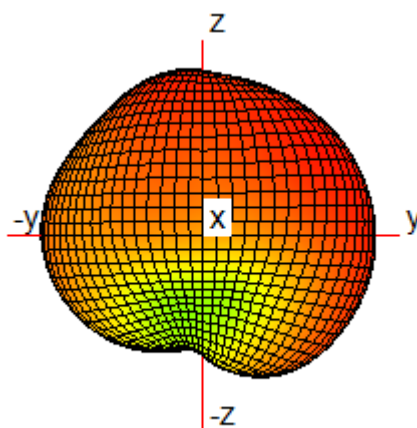
**Main antenna: 725.50 MHz**

| 725.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.11 |
| Vertical Peak(dBi)    | -1.06 |



**Main antenna: 748.00 MHz**

| 748 MHz               |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.54 |
| Vertical Peak(dBi)    | -1.28 |

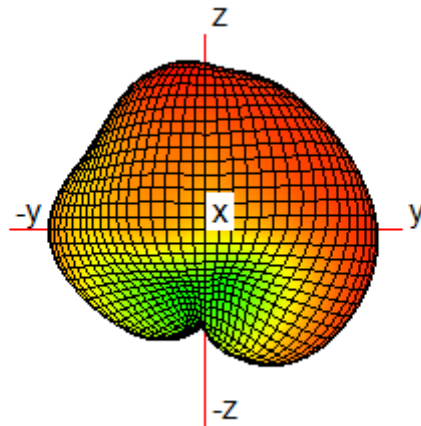


## Radiation characteristic in 717MHz ~ 728MHz (FCC Part 27 UE-UTRA, Band 29)

\* Down link only

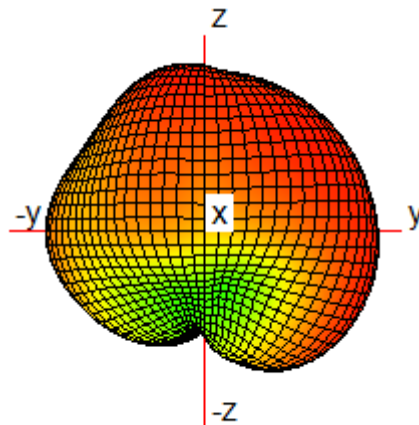
**Main antenna: 717.00 MHz**

| 717.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.63 |
| Vertical Peak(dBi)    | -1.60 |



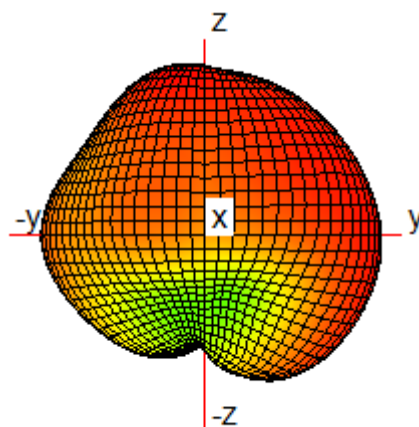
**Main antenna: 722.50 MHz**

| 722.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.70 |
| Vertical Peak(dBi)    | -1.87 |



**Main antenna: 728.00 MHz**

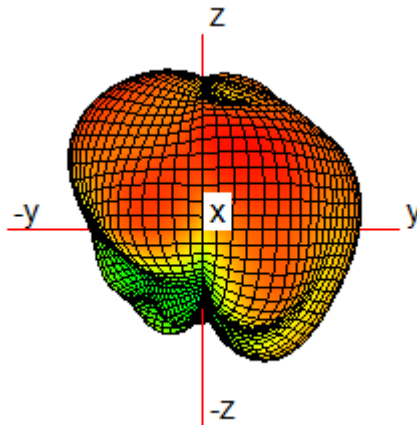
| 728.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.03 |
| Vertical Peak(dBi)    | -1.08 |



**Radiation characteristic in 2305MHz ~ 2315MHz (FCC Part 27 UE-UTRA, Band 30)**

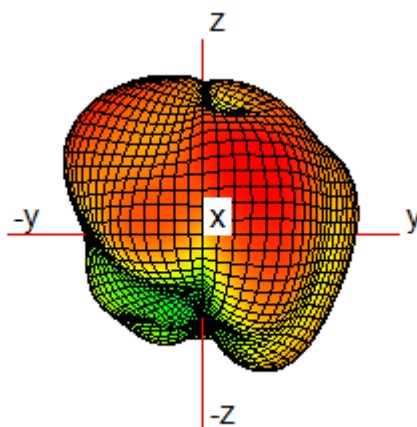
**Main antenna: 2305.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2305.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-3.47</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-0.65</b> |



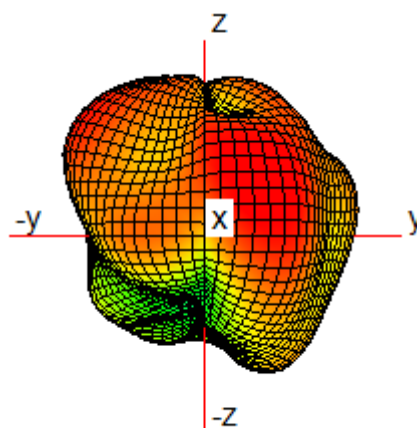
**Main antenna: 2310.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2310.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-3.71</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-0.74</b> |



**Main antenna: 2315.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2315.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-3.63</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-0.10</b> |

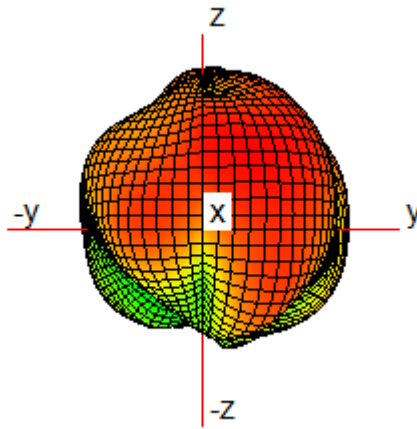




Radiation characteristic in 2570MHz ~ 2620MHz (EU/CN UE-UTRA, Band 38,n38)

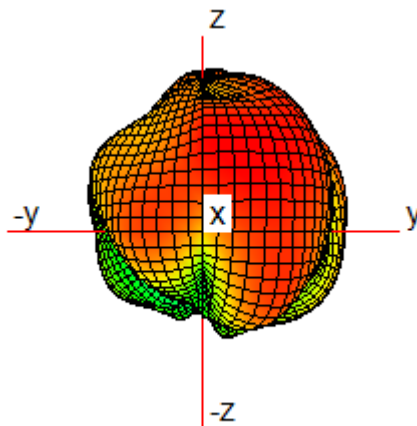
**Main antenna: 2570.00 MHz**

| 2570.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -3.76 |
| Vertical Peak(dBi)    | 1.08  |



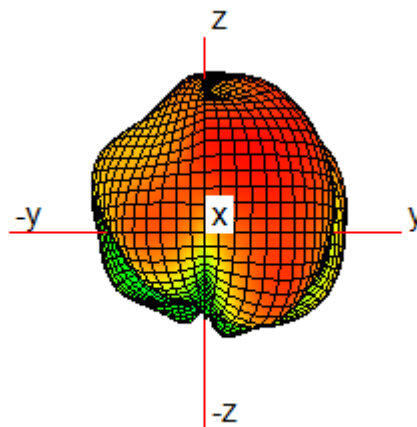
**Main antenna: 2595.00 MHz**

| 2595.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.13 |
| Vertical Peak(dBi)    | 0.47  |



**Main antenna: 2620.00 MHz**

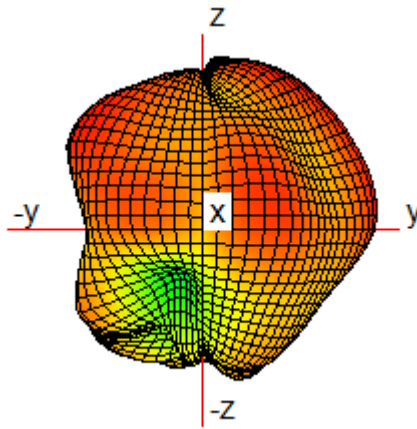
| 2620.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.67 |
| Vertical Peak(dBi)    | -0.04 |



Radiation characteristic in 1880MHz ~ 1920MHz (CN TD-SCDMA, Band 39)

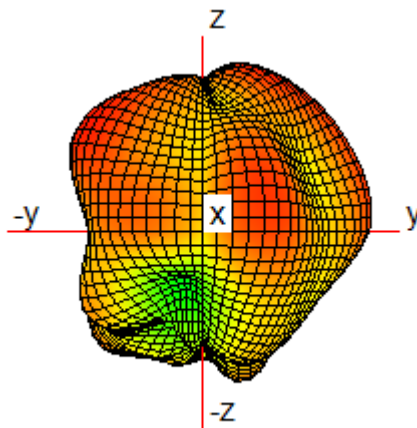
**Main antenna: 1880.00 MHz**

| 1880.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.42 |
| Vertical Peak(dBi)    | -1.71 |



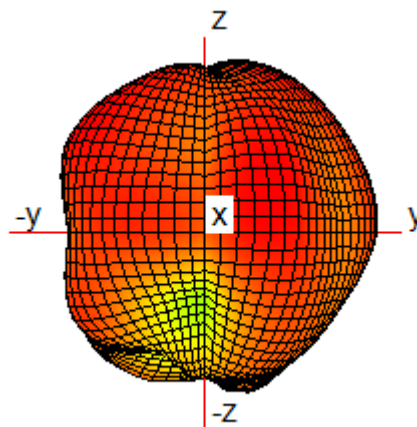
**Main antenna: 1900.00 MHz**

| 1900.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.21 |
| Vertical Peak(dBi)    | -1.67 |



**Main antenna: 1920.00 MHz**

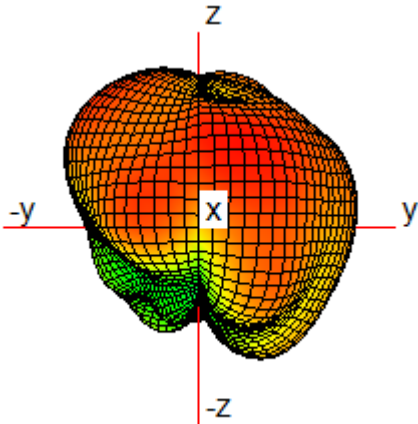
| 1920.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -4.95 |
| Vertical Peak(dBi)    | -2.38 |



Radiation characteristic in 2300MHz ~ 2400MHz (EU/ANZ/CN UE-UTRA, Band 40)

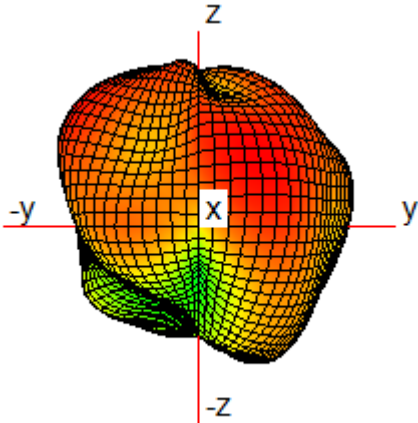
**Main antenna: 2300.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2300.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-1.74</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-1.8</b>  |



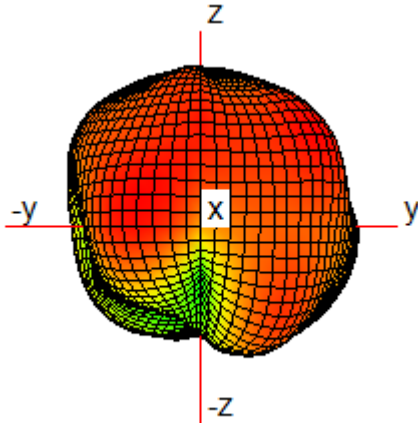
**Main antenna: 2350.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2350.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-4.89</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-1.52</b> |



**Main antenna: 2400.00 MHz**

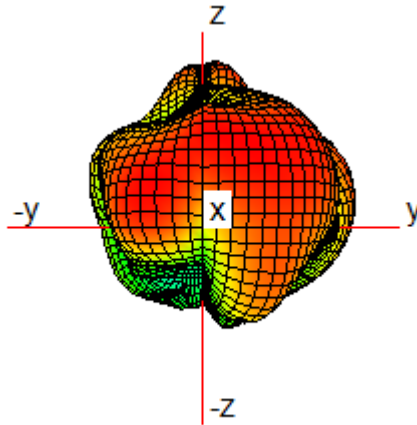
|                              |              |
|------------------------------|--------------|
| <b>2400.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-3.45</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-1.34</b> |



**Radiation characteristic in 2496MHz ~ 2690MHz (FCC Part 27 UE-UTRA, Band 41, n41)**

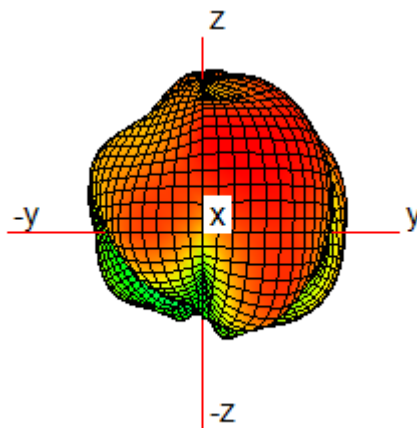
**Main antenna: 2496.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2496.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-4.37</b> |
| <b>Vertical Peak(dBi)</b>    | <b>0.20</b>  |



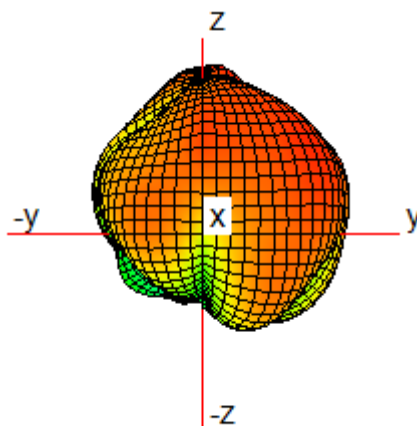
**Main antenna: 2593.00 MHz**

|                              |              |
|------------------------------|--------------|
| <b>2593.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-4.90</b> |
| <b>Vertical Peak(dBi)</b>    | <b>0.38</b>  |



**Main antenna: 2690.00 MHz**

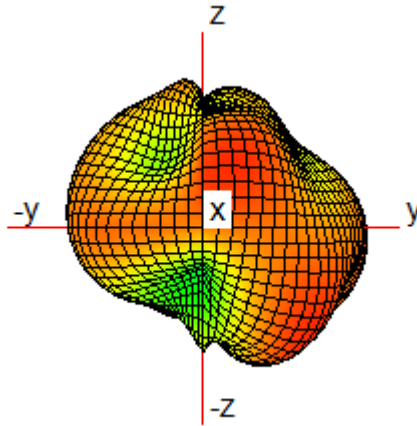
|                              |              |
|------------------------------|--------------|
| <b>2690.00 MHz</b>           |              |
| <b>Horizontal Peak (dBi)</b> | <b>-7.01</b> |
| <b>Vertical Peak(dBi)</b>    | <b>-0.12</b> |



**Radiation characteristic in 3400MHz ~ 3600MHz (FCC Part 96 CA/EU/Japan LTE, Band 42)**

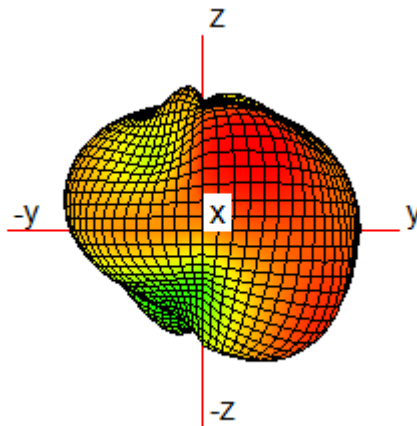
**Main antenna: 3400.00 MHz**

| 3400.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | 0.94  |
| Vertical Peak(dBi)    | -3.10 |



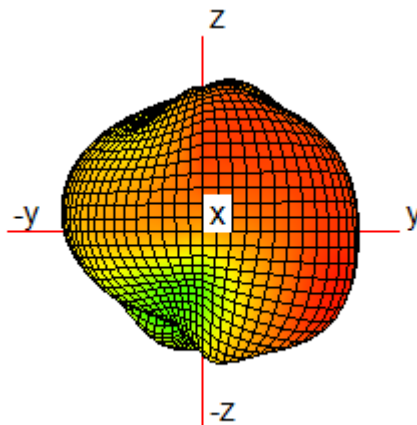
**Main antenna: 3500.00 MHz**

| 3500.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -0.07 |
| Vertical Peak(dBi)    | 0.26  |



**Main antenna: 3600.00 MHz**

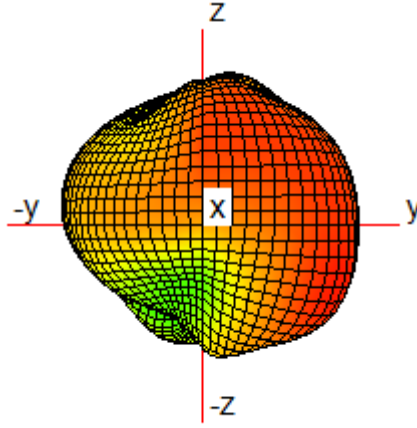
| 3600.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -0.85 |
| Vertical Peak(dBi)    | 2.02  |



**Radiation characteristic in 3600MHz ~ 3800MHz (Band 43)**

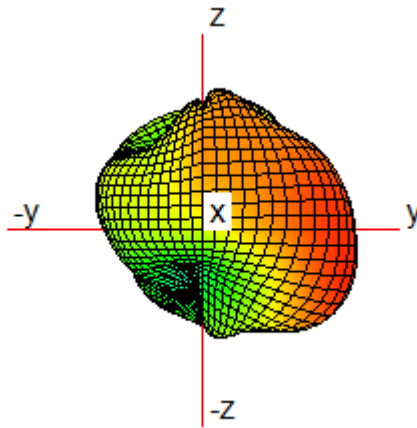
**Main antenna: 3600.00 MHz**

| 3600.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -0.85 |
| Vertical Peak(dBi)    | 2.02  |



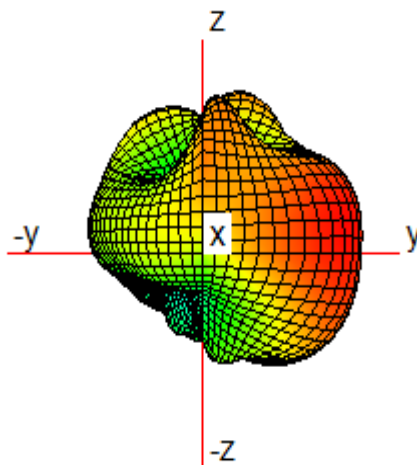
**Main antenna: 3700.00 MHz**

| 3700.00 MHz           |      |
|-----------------------|------|
| Horizontal Peak (dBi) | 1.25 |
| Vertical Peak(dBi)    | 1.22 |



**Main antenna: 3800.00 MHz**

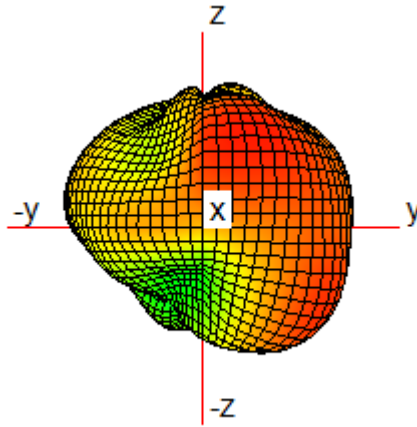
| 3800.00 MHz           |      |
|-----------------------|------|
| Horizontal Peak (dBi) | 1.88 |
| Vertical Peak(dBi)    | 0.96 |



**Radiation characteristic in 3550MHz ~ 3700MHz (FCC Part 96 LTE, Band 48)**

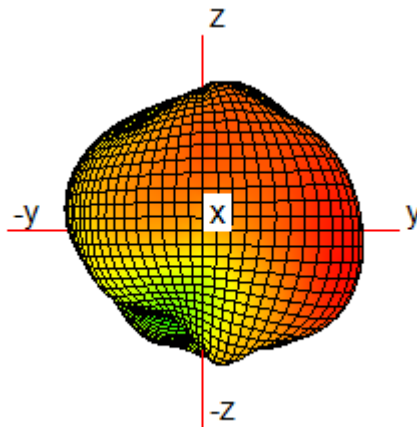
**Main antenna: 3550.00 MHz**

| 3550.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -1.74 |
| Vertical Peak(dBi)    | 0.48  |



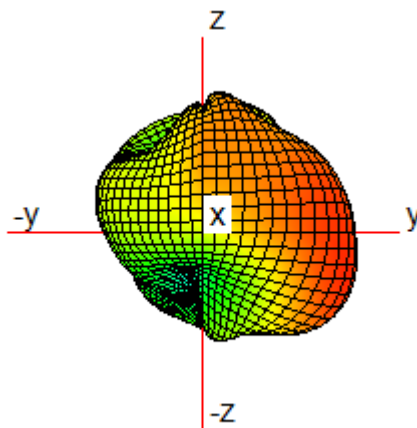
**Main antenna: 3625.00 MHz**

| 3625.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -0.86 |
| Vertical Peak(dBi)    | 1.81  |



**Main antenna: 3700.00 MHz**

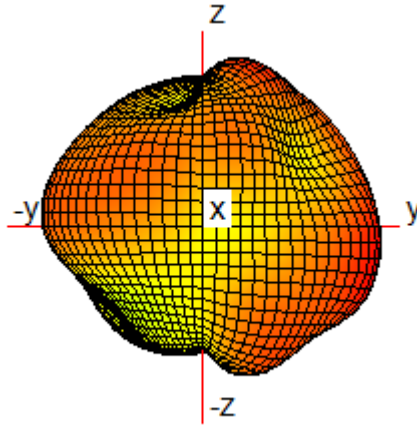
| 3700.00 MHz           |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -1.25 |
| Vertical Peak(dBi)    | 1.22  |



Radiation characteristic in 1710MHz ~ 1780MHz (FCC Part 27 LTE, Band 66, n66)

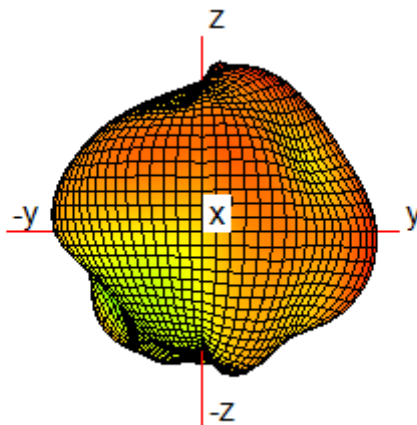
**Main antenna: 1710.00 MHz**

|                       |       |
|-----------------------|-------|
| 1710.00 MHz           |       |
| Horizontal Peak (dBi) | -4.25 |
| Vertical Peak(dBi)    | -5.38 |



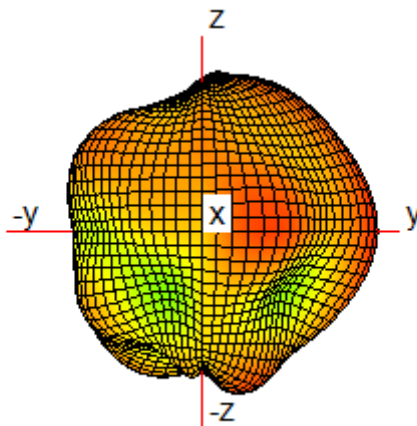
**Main antenna: 1745.00 MHz**

|                       |       |
|-----------------------|-------|
| 1745.00 MHz           |       |
| Horizontal Peak (dBi) | -2.05 |
| Vertical Peak(dBi)    | -1.25 |



**Main antenna: 1780.00 MHz**

|                       |       |
|-----------------------|-------|
| 1780.00 MHz           |       |
| Horizontal Peak (dBi) | -3.52 |
| Vertical Peak(dBi)    | -2.40 |

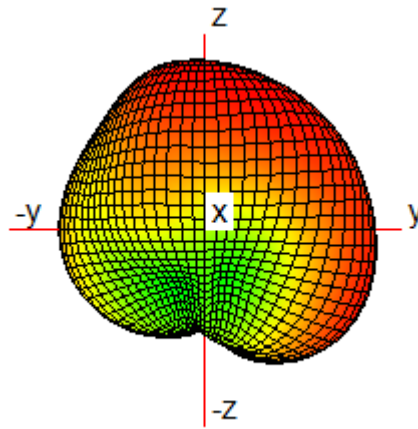




**Radiation characteristic in 663MHz ~ 698MHz (FCC Part 24, 27 LTE, Band 71, n71)**

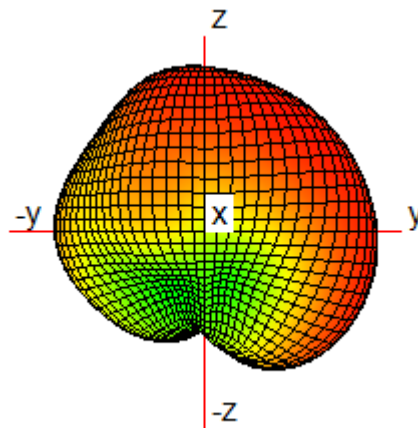
**Main antenna: 663.00 MHz**

| 663.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.79 |
| Vertical Peak(dBi)    | -2.87 |



**Main antenna: 680.50 MHz**

| 680.50 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -6.21 |
| Vertical Peak(dBi)    | -3.72 |



**Main antenna: 698.00 MHz**

| 698.00 MHz            |       |
|-----------------------|-------|
| Horizontal Peak (dBi) | -5.91 |
| Vertical Peak(dBi)    | -3.08 |

