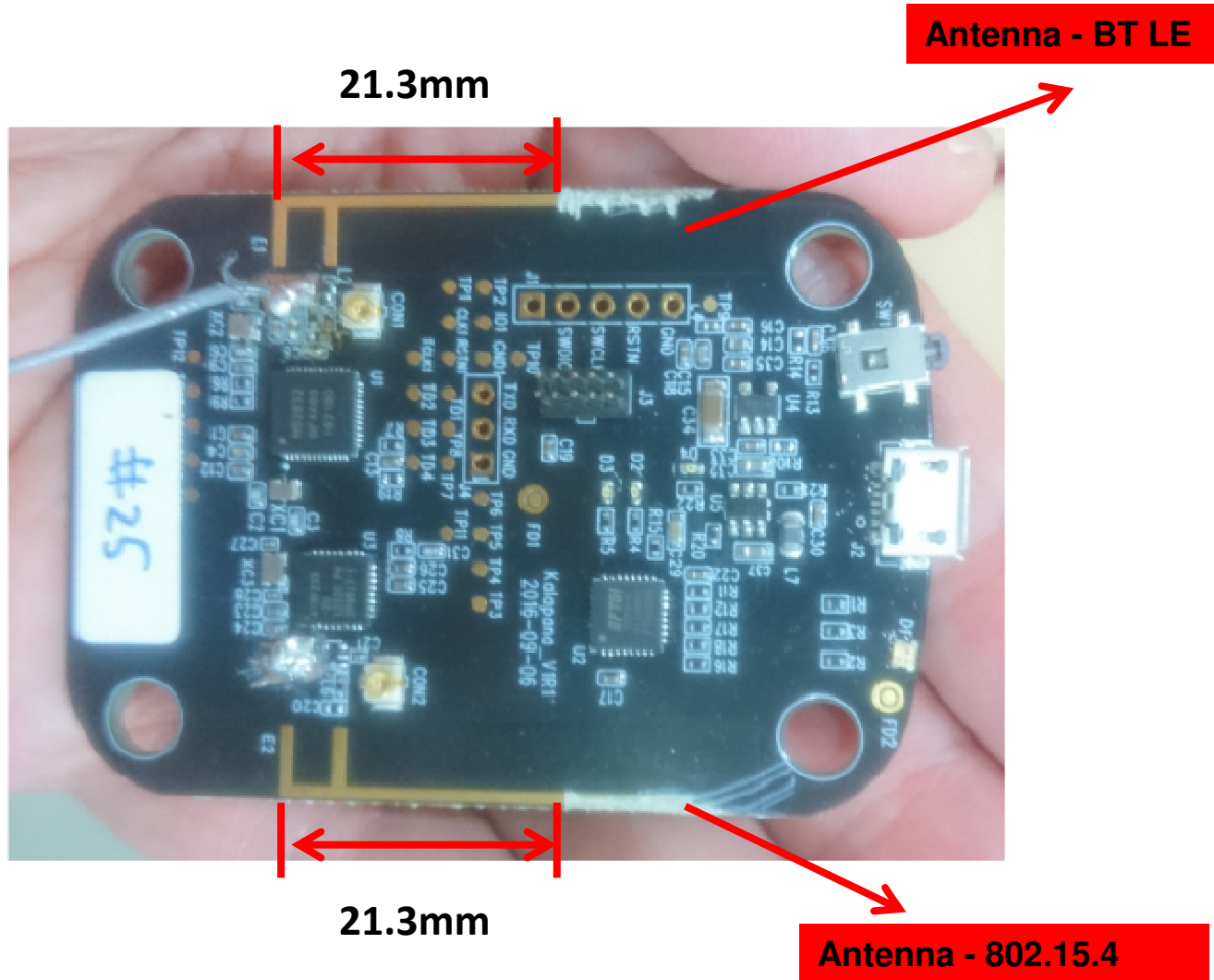
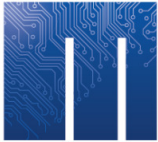


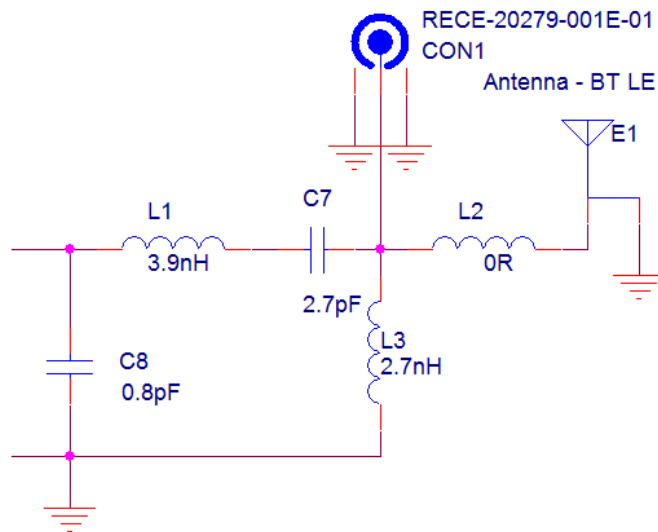


# Antenna Photo-kalapana



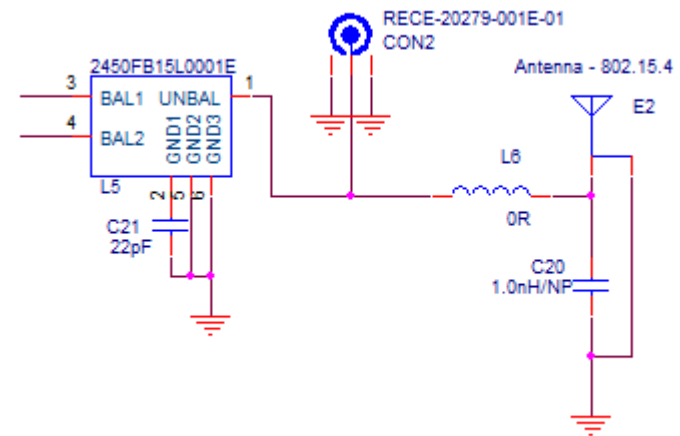


# Match Circuit for Antenna - 802.15.4 & BT LE



Antenna - BT LE

Change L2 from 1.8nH to 0R

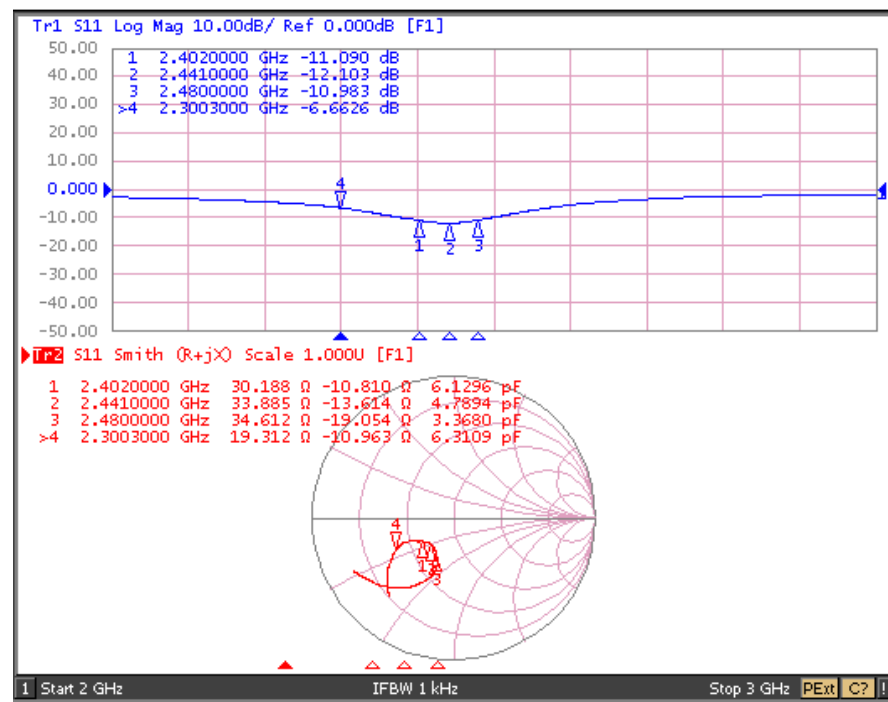
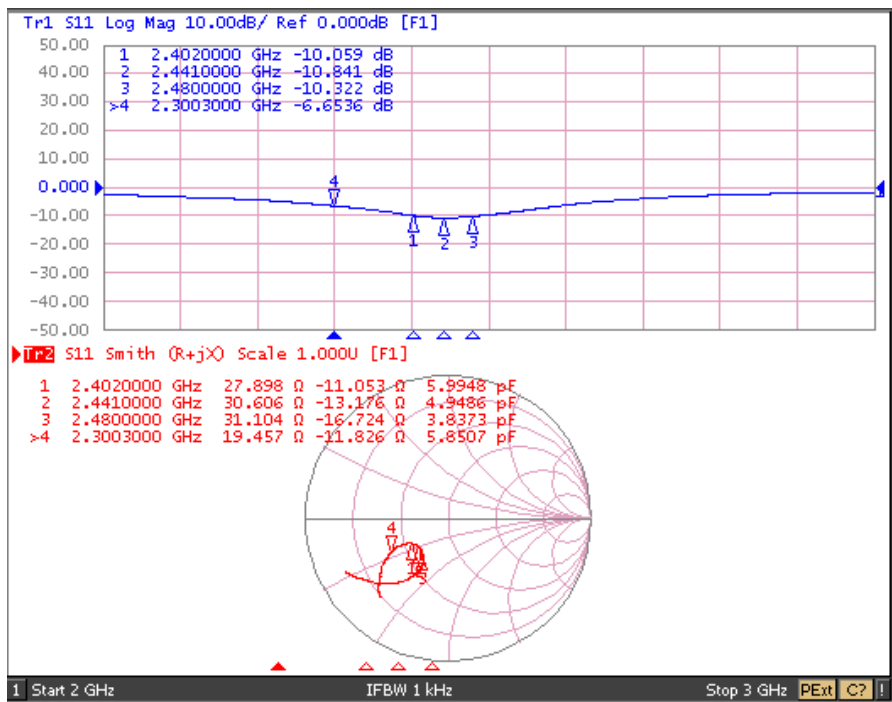


Antenna - 802.15.4

L6 keep at 0R



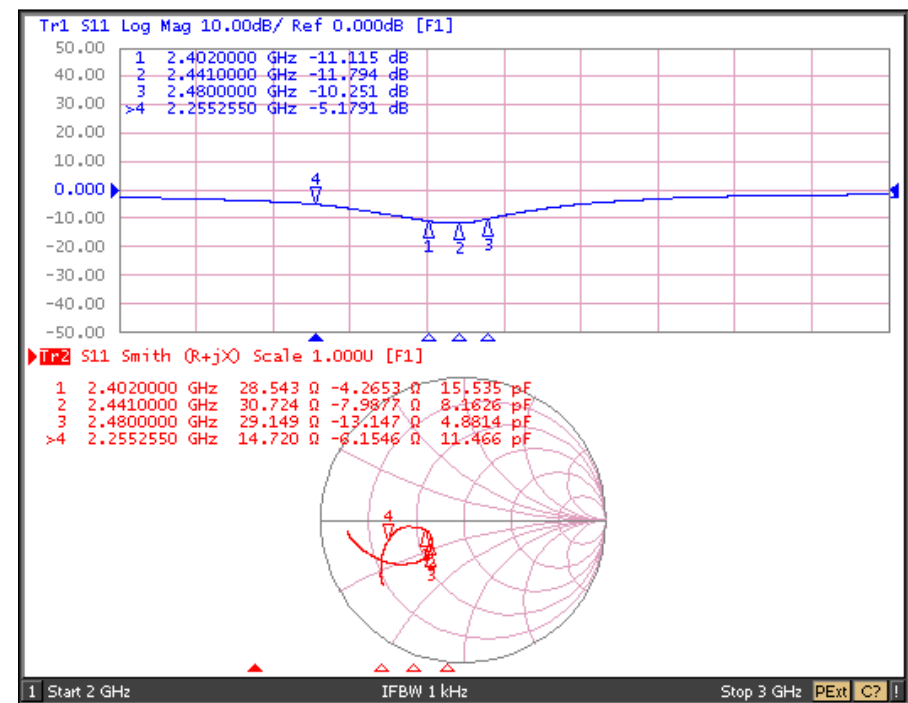
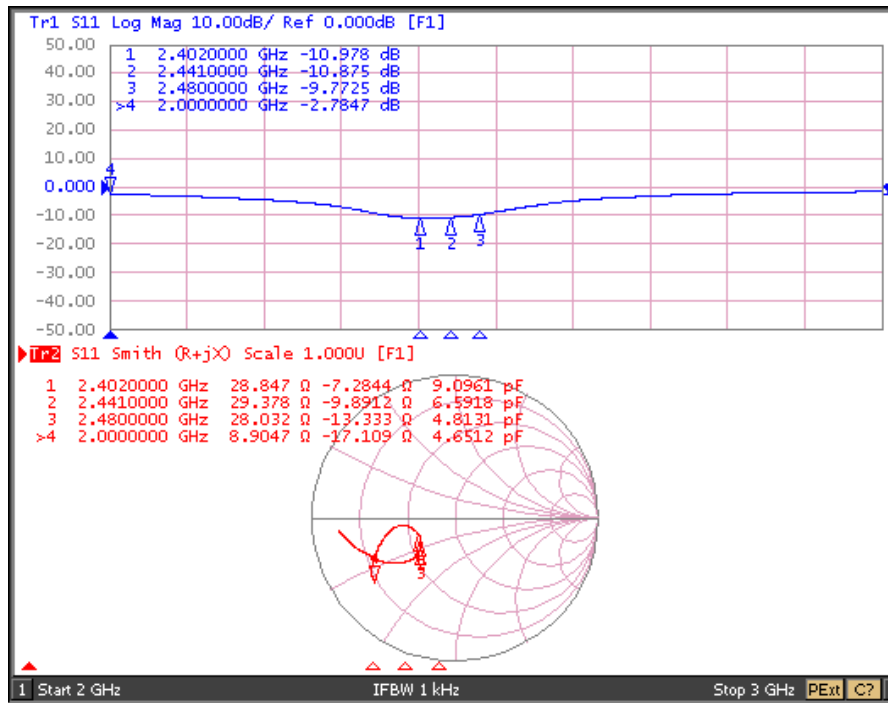
# Return Loss for Antenna - BT LE(E1)



|                 | 2402 MHz (dB) | 2441 MHz (dB) | 2480 MHz (dB) |
|-----------------|---------------|---------------|---------------|
| <b>Sample#1</b> | <b>-10.05</b> | <b>-10.84</b> | <b>-10.33</b> |
| <b>Sample#2</b> | <b>-11.09</b> | <b>-12.10</b> | <b>-10.98</b> |



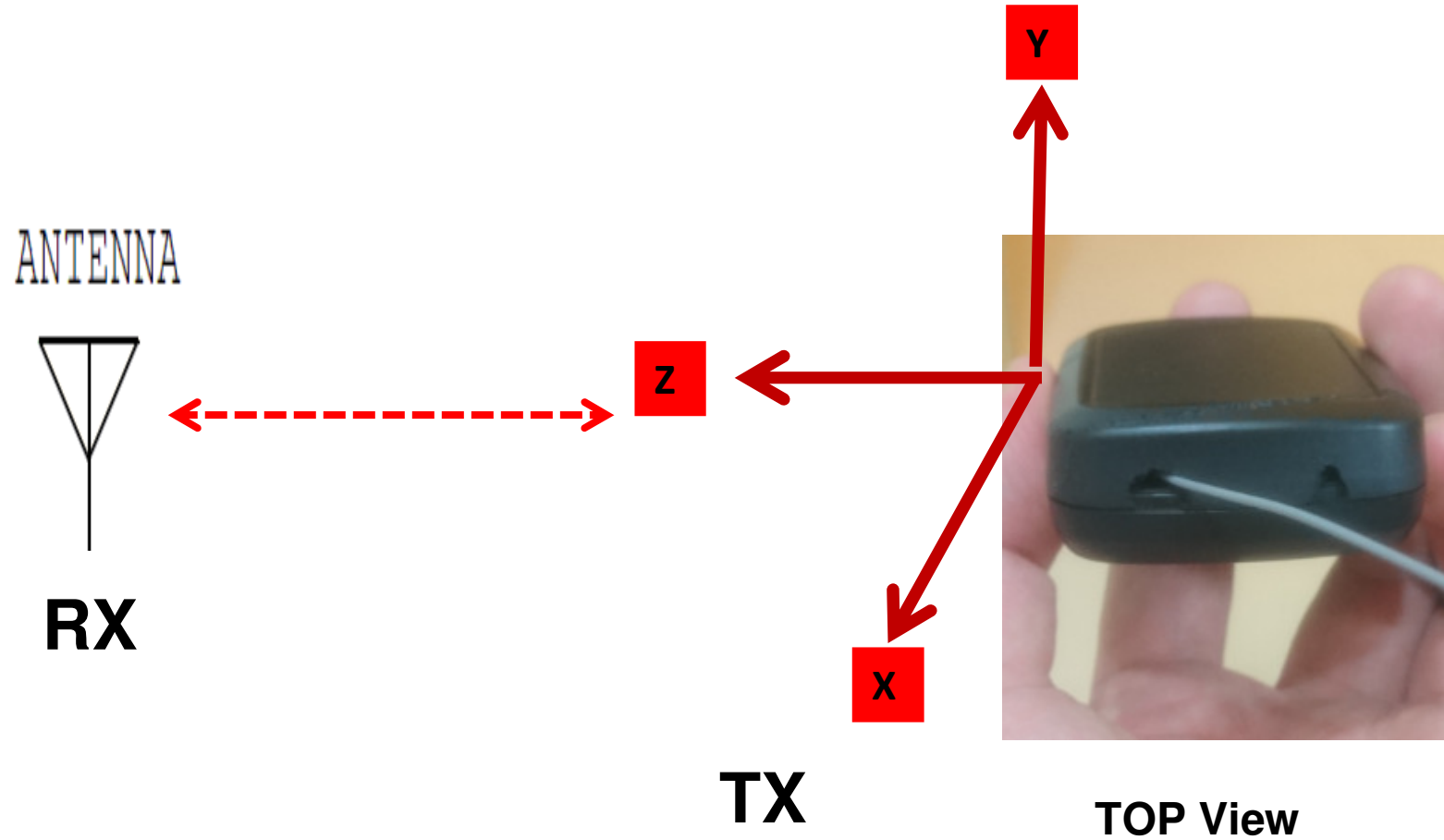
# Return Loss for Antenna – 802.15.4(E2)



|          | 2402 MHz (dB) | 2441 MHz (dB) | 2480 MHz (dB) |
|----------|---------------|---------------|---------------|
| Sample#1 | -10.97        | -10.87        | -9.77         |
| Sample#2 | -11.11        | -11.79        | -10.25        |

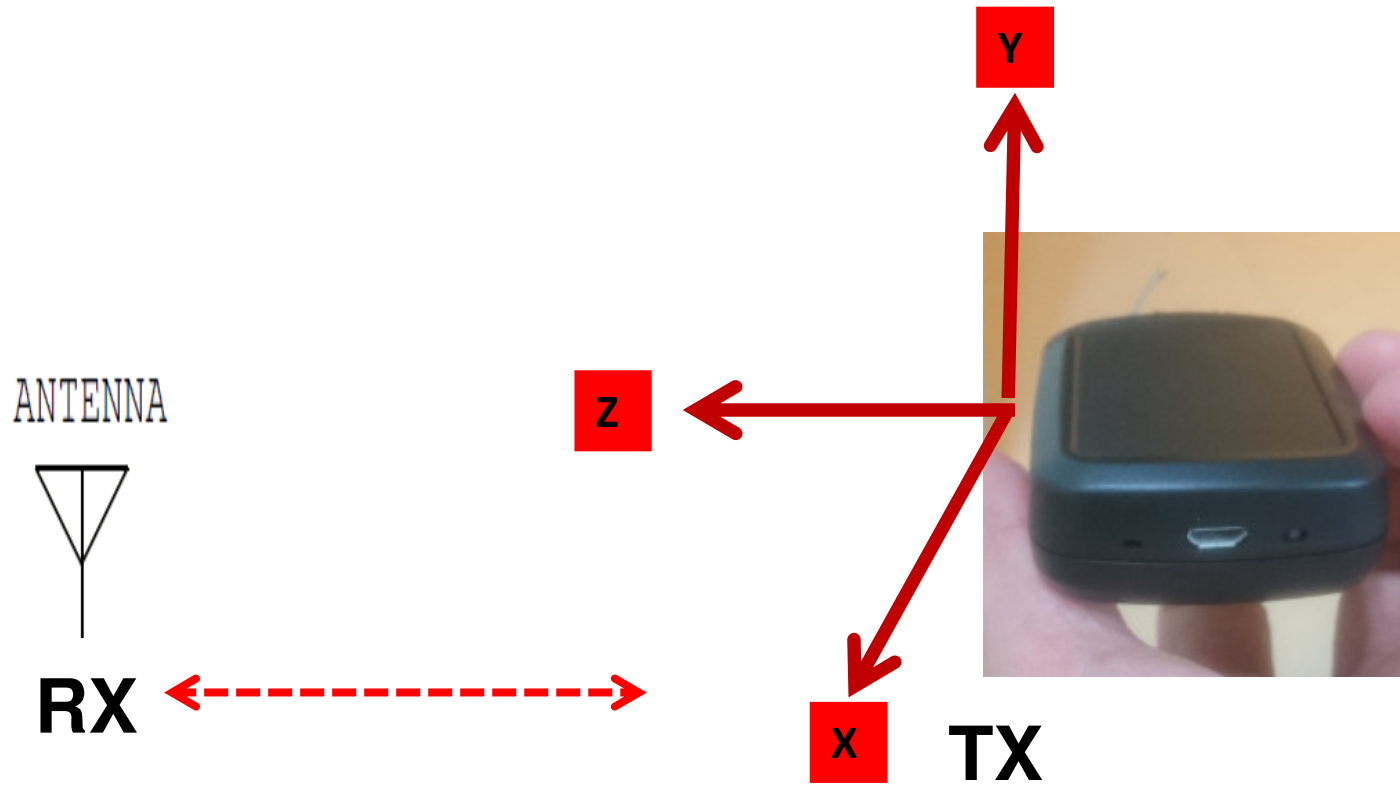


# Coordinate direction for Antenna - BT LE (E1)





# Coordinate direction for Antenna - 802.15.4 (E2)



TOP View



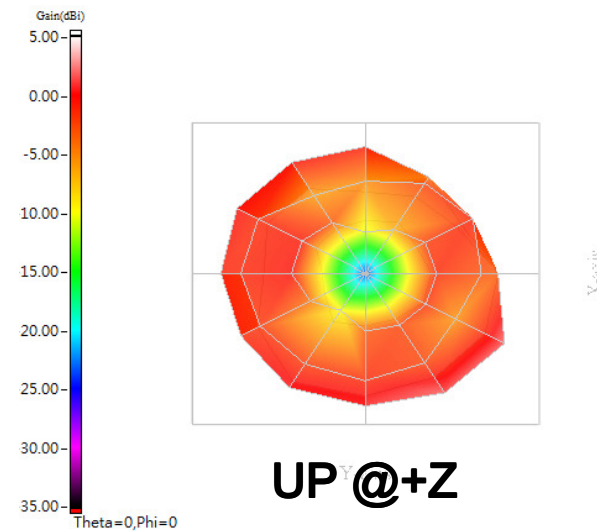
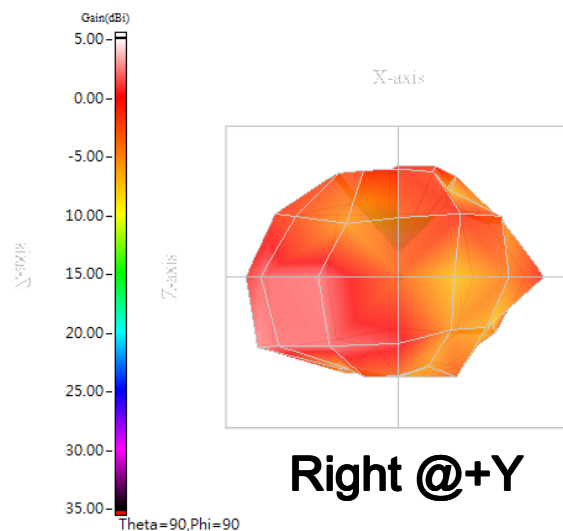
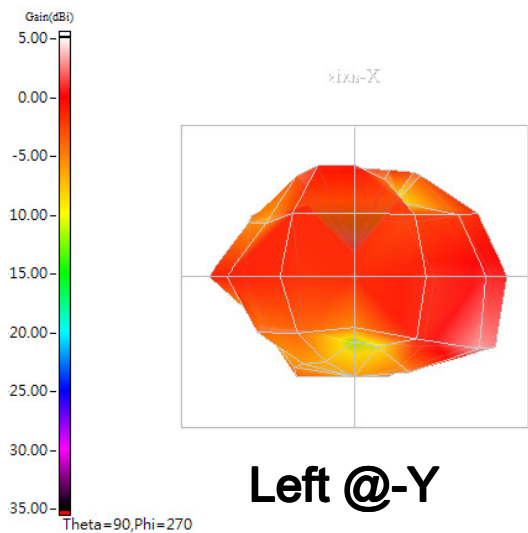
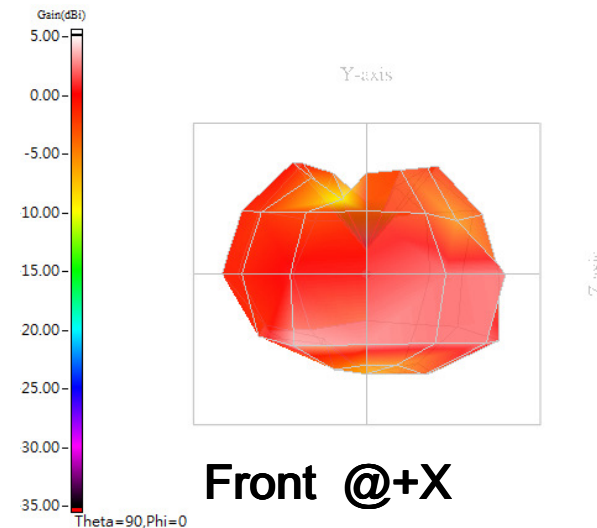
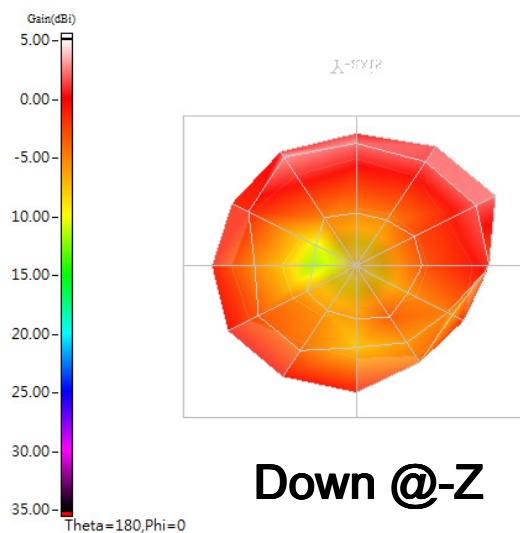
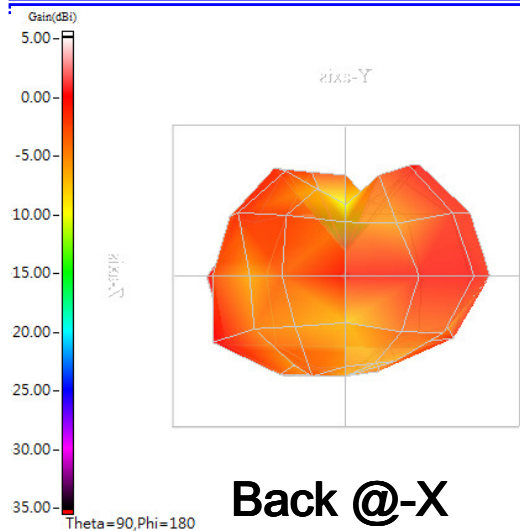
## Antenna Performance(Free Space) -Kalapana

|                              |                    | 2402 MHz | 2441 MHz | 2480 MHz |
|------------------------------|--------------------|----------|----------|----------|
| Sample#1<br>(BT_LE_E1)       | Peak Gain (dBi)    | 2.77     | 3.17     | 3.65     |
|                              | Average Gain (dBi) | -1.75    | -1.82    | -1.85    |
|                              | Efficiency (%)     | 66.79    | 65.70    | 65.29    |
| Sample#2<br>(BT_LE_E1)       | Peak Gain (dBi)    | 3.37     | 3.66     | 3.95     |
|                              | Average Gain (dBi) | -1.37    | -1.41    | -1.41    |
|                              | Efficiency (%)     | 72.93    | 72.27    | 72.27    |
| Sample#1<br>(BT_802.15.4_E2) | Peak Gain (dBi)    | 2.80     | 2.13     | 1.97     |
|                              | Average Gain (dBi) | -1.66    | -1.79    | -1.91    |
|                              | Efficiency (%)     | 68.18    | 66.16    | 64.42    |
| Sample#2<br>(BT_802.15.4_E2) | Peak Gain (dBi)    | 3.47     | 3.76     | 3.70     |
|                              | Average Gain (dBi) | -1.10    | -1.20    | -1.29    |
|                              | Efficiency (%)     | 77.65    | 75.93    | 74.23    |

**Test result is pretty good.**



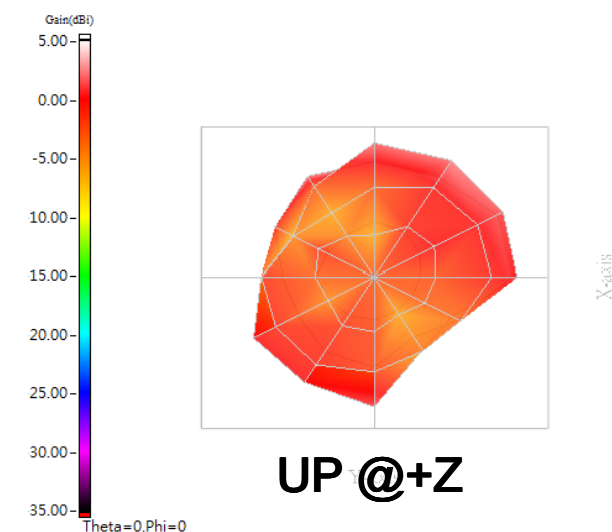
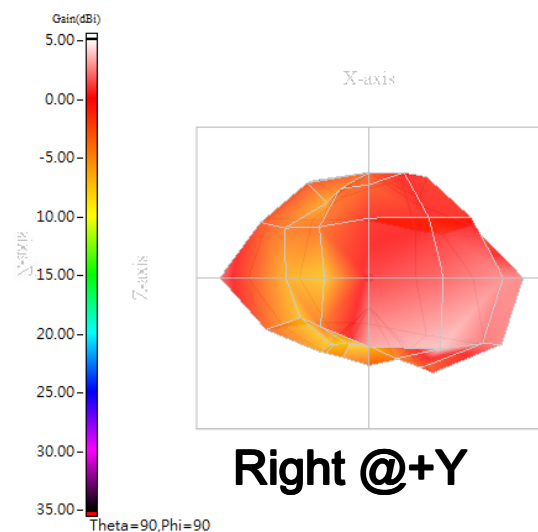
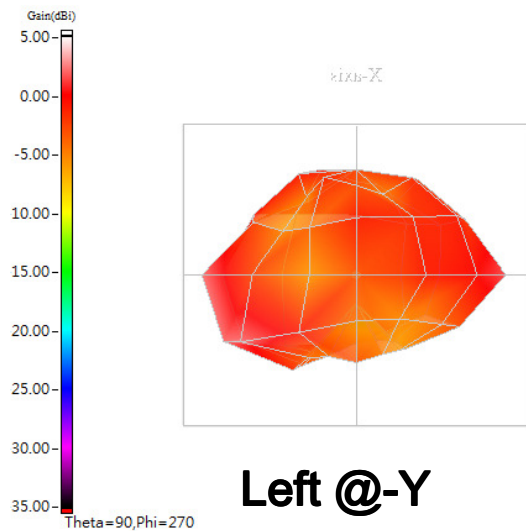
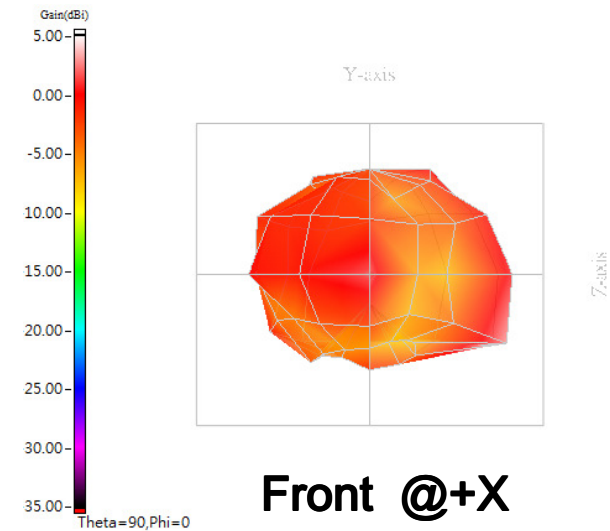
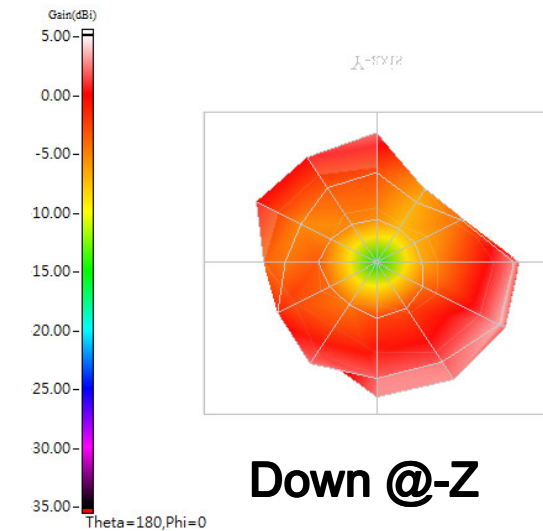
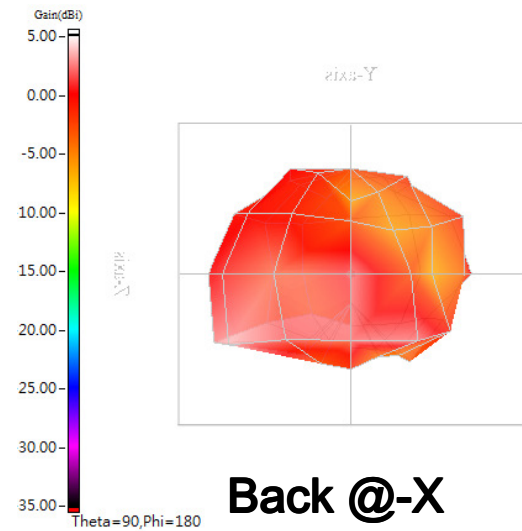
# Antenna Performance (free space) at 2441 MHz- BT LE (E1)-Sample1- Kalapana





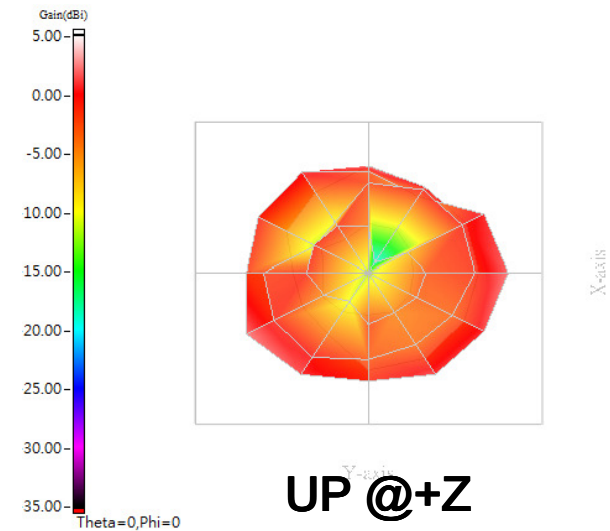
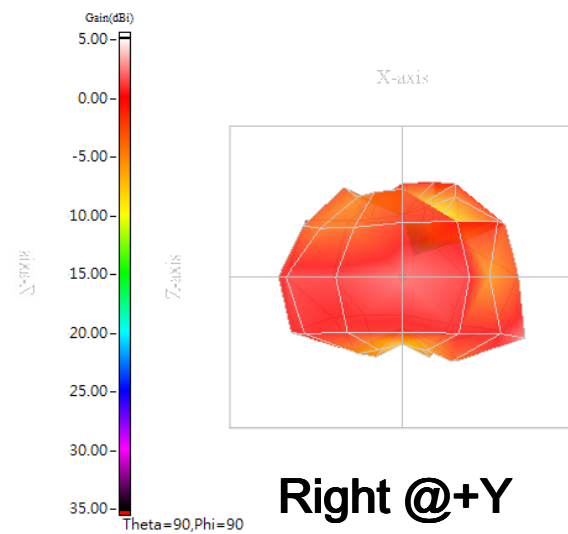
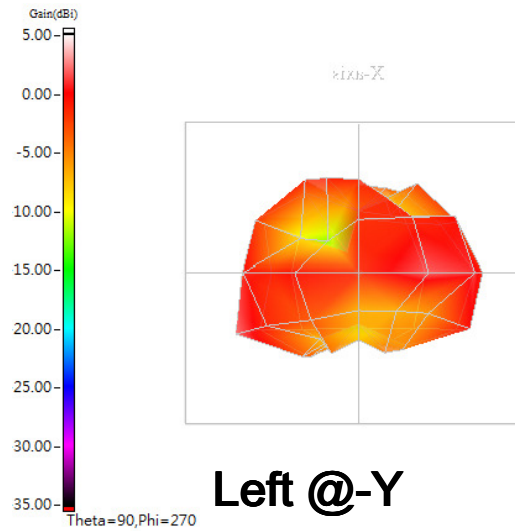
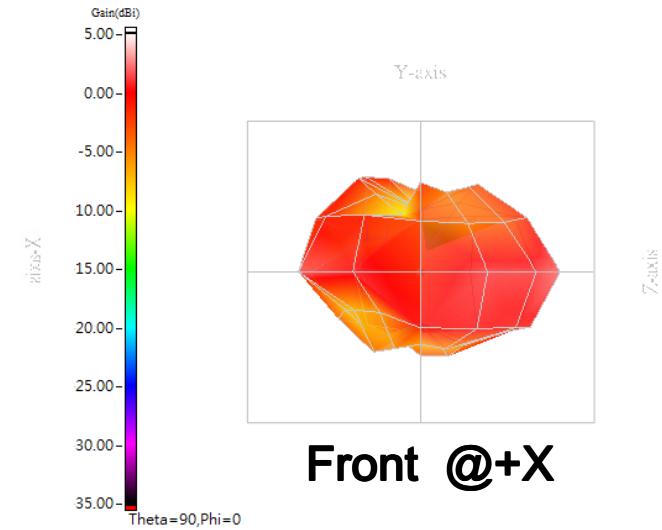
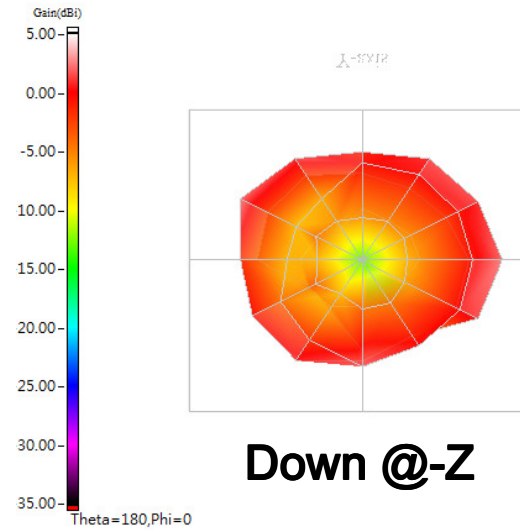
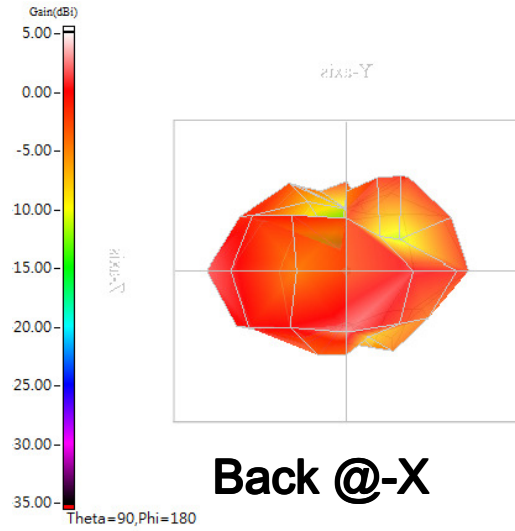


# Antenna Performance (free space) at 2441 MHz- BT LE (E1)-Sample2-Kalapana





# Antenna Performance (free space) at 2441MHz – 802.15.4 (E2) -Sample1-Kalapana





# Antenna Performance (free space) at 2441MHz – 802.15.4 (E2) –Sample2-Kalapana

