

SolarGaurdX 100 Antenna Report

Device Model:	SolarGuardX 100
FCC ID:	2ASWYSOLARGUARDX100

Antenna Detail	Antenna Type	Bands & Frequency
Primary Antenna	Internal Steel Antenna	Cat-M1 / Cat-NB2: LTE-FDD B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/ B25/B26/B27/ B28/B66/B71/B85 EGPRS: GSM850/900/1800/1900 MHz Frequency: 617~960MHz / 1710~2180MHz
GPS Antenna	Internal Steel Antenna	GPS: 1574.4~1576.44 MHz GLONASS: 1598~1606 MHz BeiDou: 1559~1563 MHz
Bluetooth Antenna	PCB Printed Antenna	2402~2480MHz

Primary Antenna Performance — S11

617~698MHz



698~803MHz



791~894MHz



880~960MHz
1710~2180MHz



Primary Antenna Performance — Efficiency and Gain

Freq.(MHz)	Efficiency (%)	Efficiency (dB)	Gain(dBi)
610	20.8%	-6.83	-2.26
620	22.2%	-6.54	-1.93
630	24.2%	-6.17	-1.35
640	27.0%	-5.69	-1.03
650	28.9%	-5.39	-0.84
660	32.6%	-4.87	-0.65
670	34.2%	-4.66	-0.48
680	38.2%	-4.18	-0.21
690	39.8%	-4.00	0.34
700	41.6%	-3.81	0.51
710	41.8%	-3.79	0.65
720	42.2%	-3.74	0.50
730	42.5%	-3.71	0.58
740	42.5%	-3.71	0.80
750	42.5%	-3.71	0.80
760	42.3%	-3.74	0.80
770	41.3%	-3.84	0.48
780	40.7%	-3.90	0.47
790	39.6%	-4.02	0.08
800	40.7%	-3.90	0.27
810	42.1%	-3.76	0.44
820	46.2%	-3.35	0.57
830	48.4%	-3.15	0.55
840	50.1%	-3.00	0.59
850	50.5%	-2.97	0.73
860	50.9%	-2.93	0.80
870	51.0%	-2.93	1.00
880	50.7%	-2.95	0.86
890	50.2%	-2.99	0.90
900	51.5%	-2.88	0.98
910	54.1%	-2.67	1.19
920	54.1%	-2.67	1.16
930	54.5%	-2.64	1.15
940	53.0%	-2.75	1.06
950	51.5%	-2.88	0.71
960	49.8%	-3.03	0.90

Freq.(MHz)	Efficiency (%)	Efficiency (dB)	Gain (dBi)
1710	43.1%	-3.65	1.54
1730	45.7%	-3.40	1.64
1750	47.3%	-3.25	1.70
1770	47.3%	-3.25	1.58
1790	47.5%	-3.23	1.42
1810	48.0%	-3.19	1.46
1830	49.0%	-3.10	1.52
1850	48.9%	-3.11	1.45
1870	46.9%	-3.28	1.48
1890	47.8%	-3.20	1.39
1910	48.3%	-3.16	1.42
1930	50.2%	-3.00	1.50
1950	49.1%	-3.09	1.40
1970	48.0%	-3.19	1.42
1990	47.4%	-3.24	1.42
2010	50.2%	-3.00	1.49
2030	49.9%	-3.02	1.50
2050	47.7%	-3.21	1.59
2070	48.9%	-3.11	1.64
2090	48.4%	-3.15	1.59
2110	50.0%	-3.01	1.67
2130	51.8%	-2.85	1.74
2150	52.0%	-2.84	1.80
2170	50.7%	-2.95	1.75
2190	48.0%	-3.19	1.73
2200	46.0%	-3.38	1.72

GPS Antenna Performance — S11

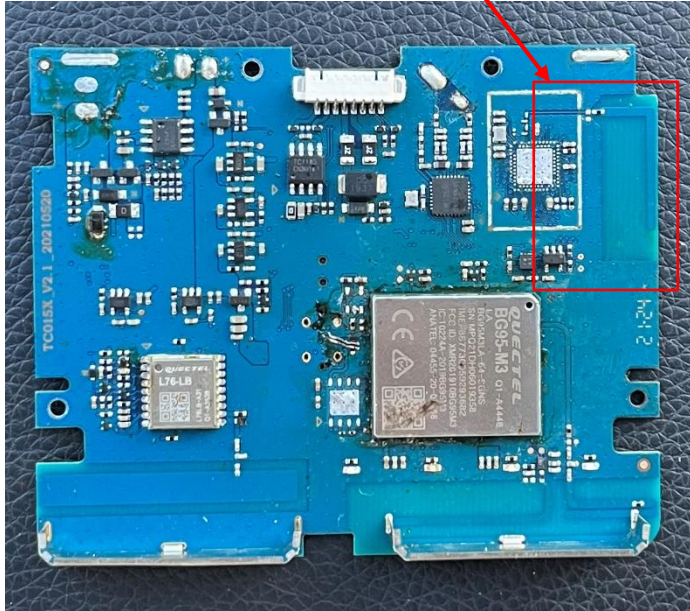


GPS Antenna Performance — Efficiency and Gain

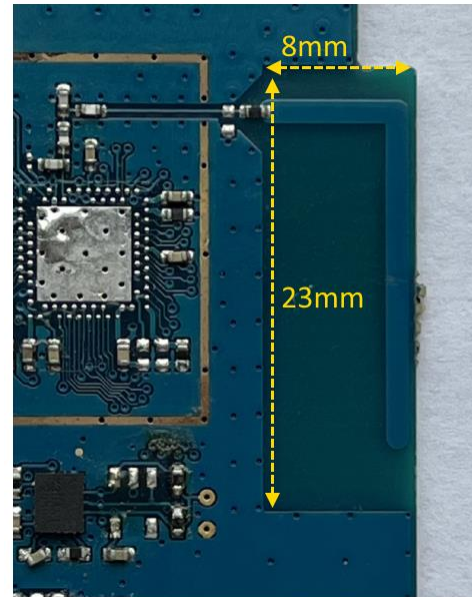
Freq.(MHz)	Efficiency (%)	Efficiency (dB)	Gain(dBi)
1550	54.6%	-2.62	1.48
1554	54.5%	-2.63	1.47
1558	54.5%	-2.63	1.46
1562	55.6%	-2.55	1.46
1566	55.6%	-2.55	1.45
1570	55.4%	-2.56	1.44
1574	55.3%	-2.57	1.41
1578	55.2%	-2.58	1.40
1582	55.2%	-2.58	1.39
1586	55.2%	-2.58	1.37
1590	55.1%	-2.58	1.47
1594	54.9%	-2.60	1.48
1598	54.9%	-2.60	1.48
1602	54.9%	-2.60	1.49
1606	54.8%	-2.61	1.50
1610	54.7%	-2.62	1.50
Max	55.55%	-2.55	1.50

Bluetooth Antenna Details

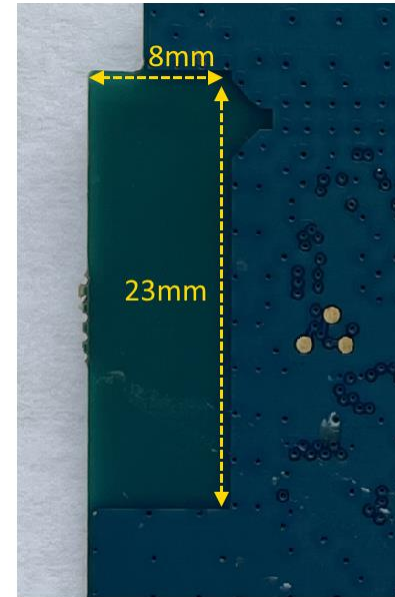
Bluetooth Antenna Location



Top View

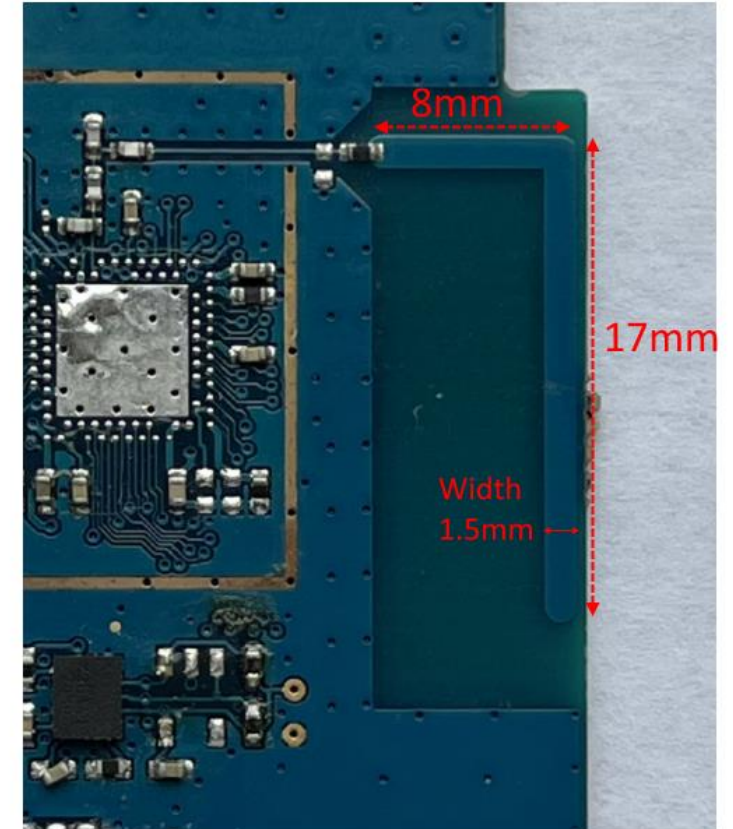


Bottom View

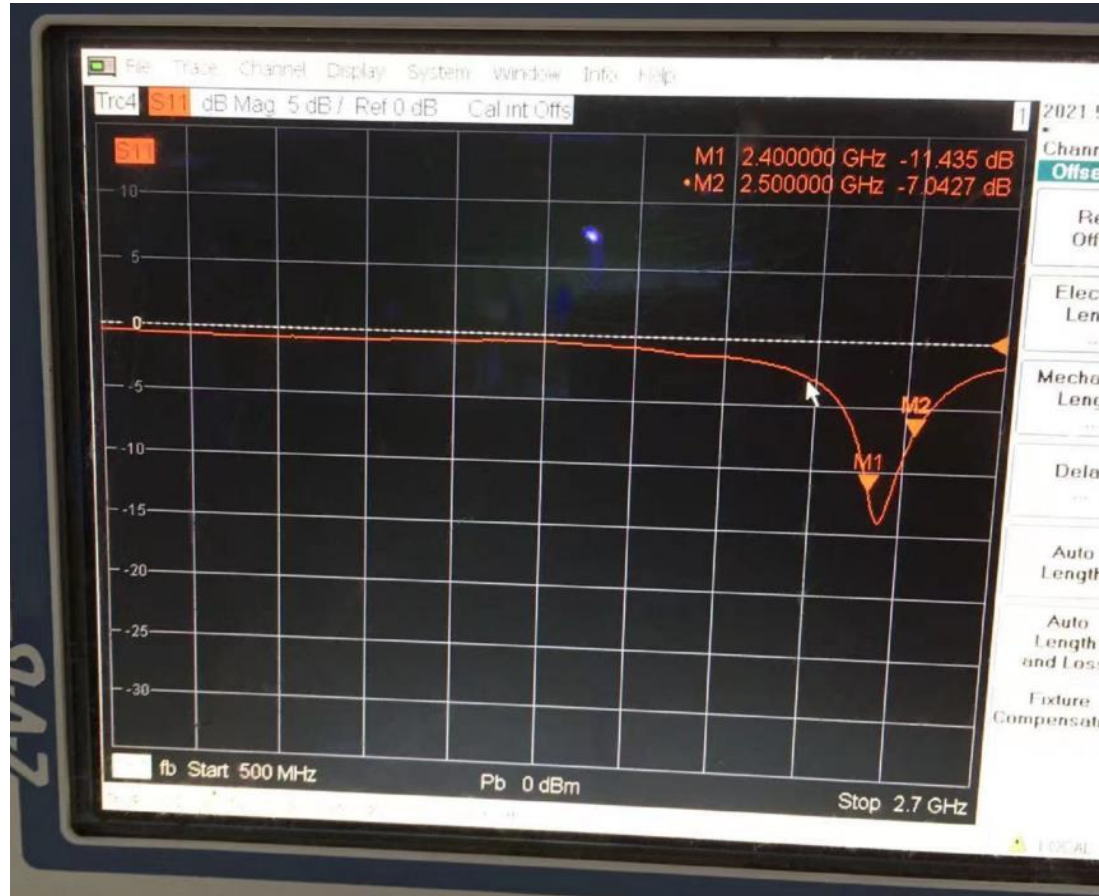


PCB Clearance Area for Antenna: 23mm*8mm

Antenna Dimensions:



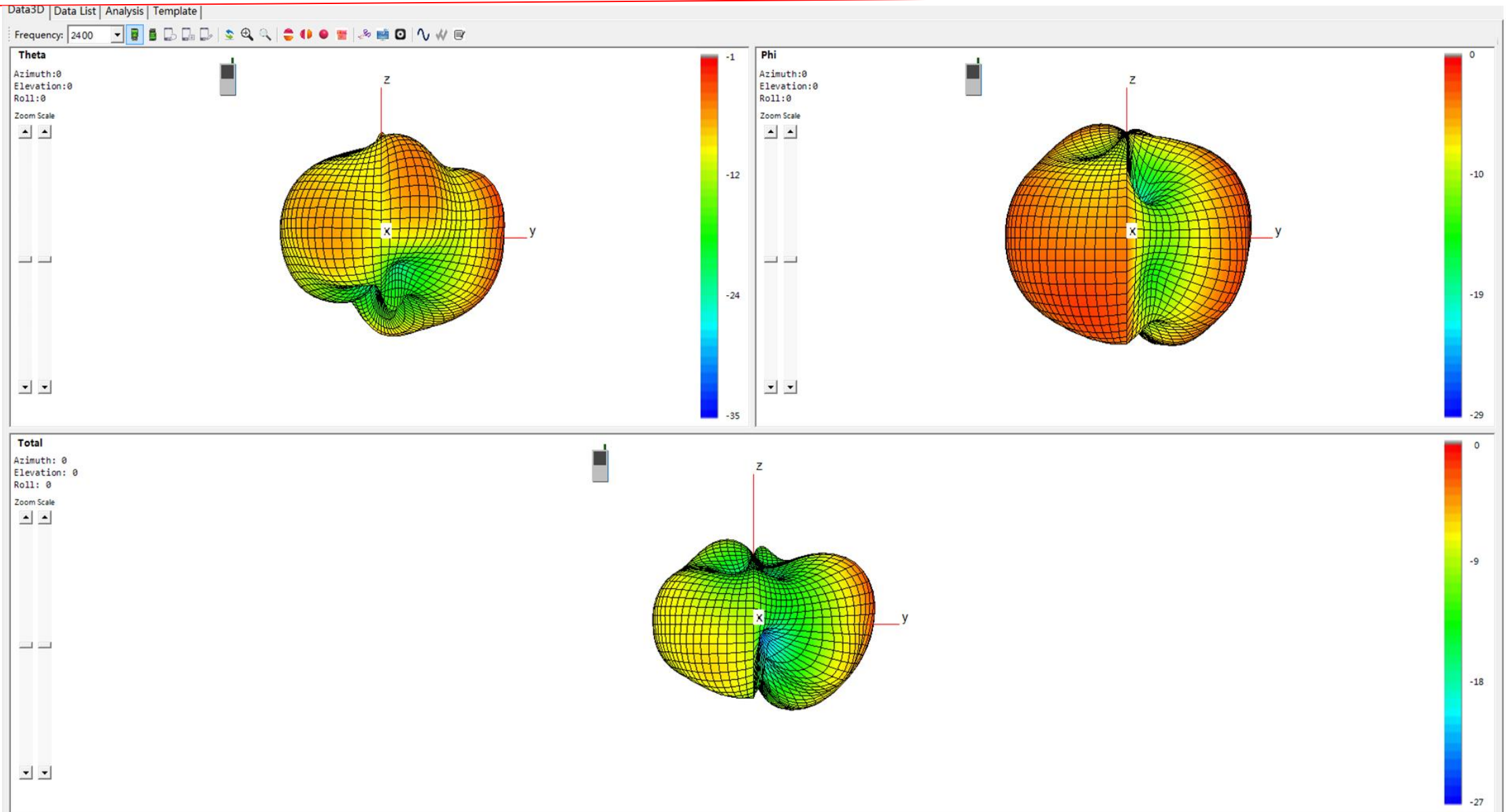
Bluetooth Antenna Performance — S11



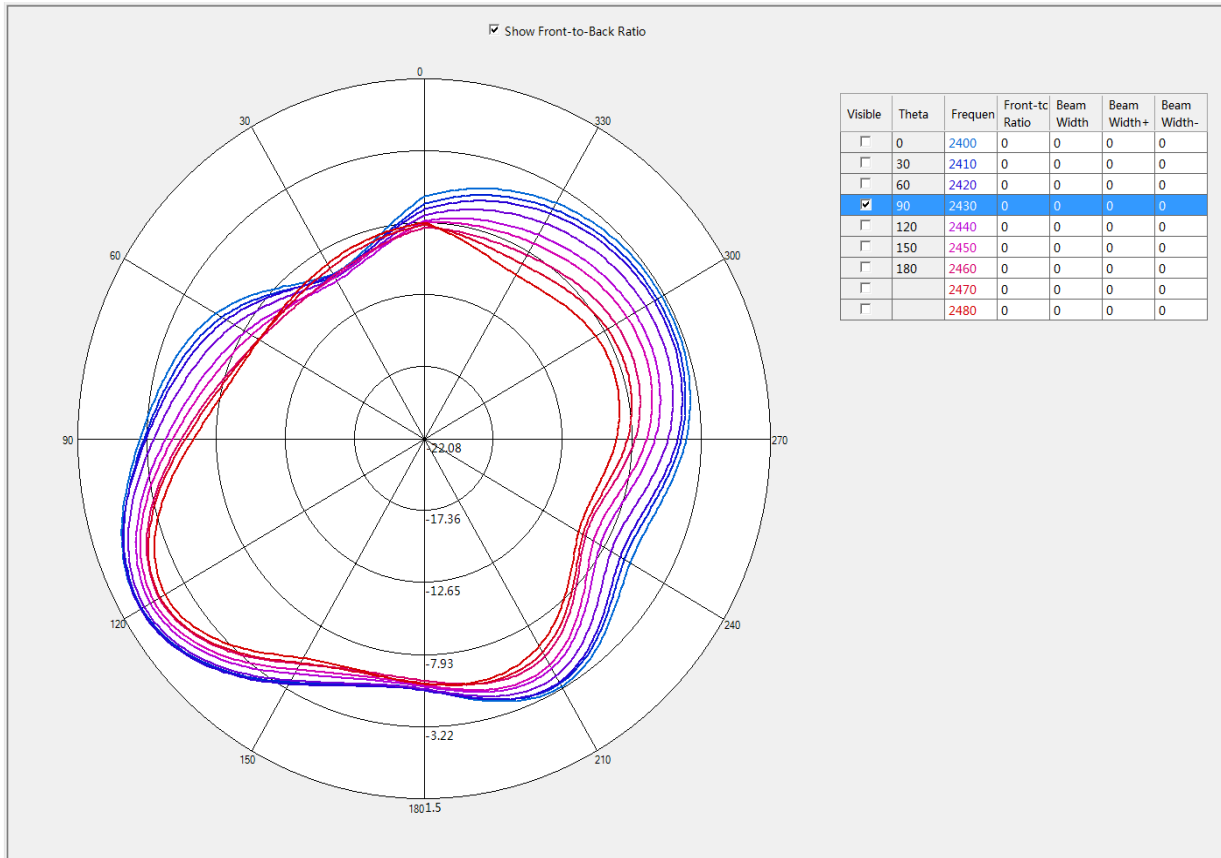
Bluetooth Antenna Performance — Efficiency and Gain

Freq.(MHz)	Efficiency (%)	Efficiency (dB)	Gain(dBi)
2400	34.47%	-4.63	-0.23
2410	35.96%	-4.44	0.01
2420	37.48%	-4.26	0.23
2430	38.96%	-4.09	0.32
2440	40.42%	-3.93	0.42
2450	42.09%	-3.76	0.67
2460	45.53%	-3.42	1.03
2470	46.10%	-3.36	1.10
2480	45.70%	-3.40	1.05
Max	46.10%	-3.36	1.10

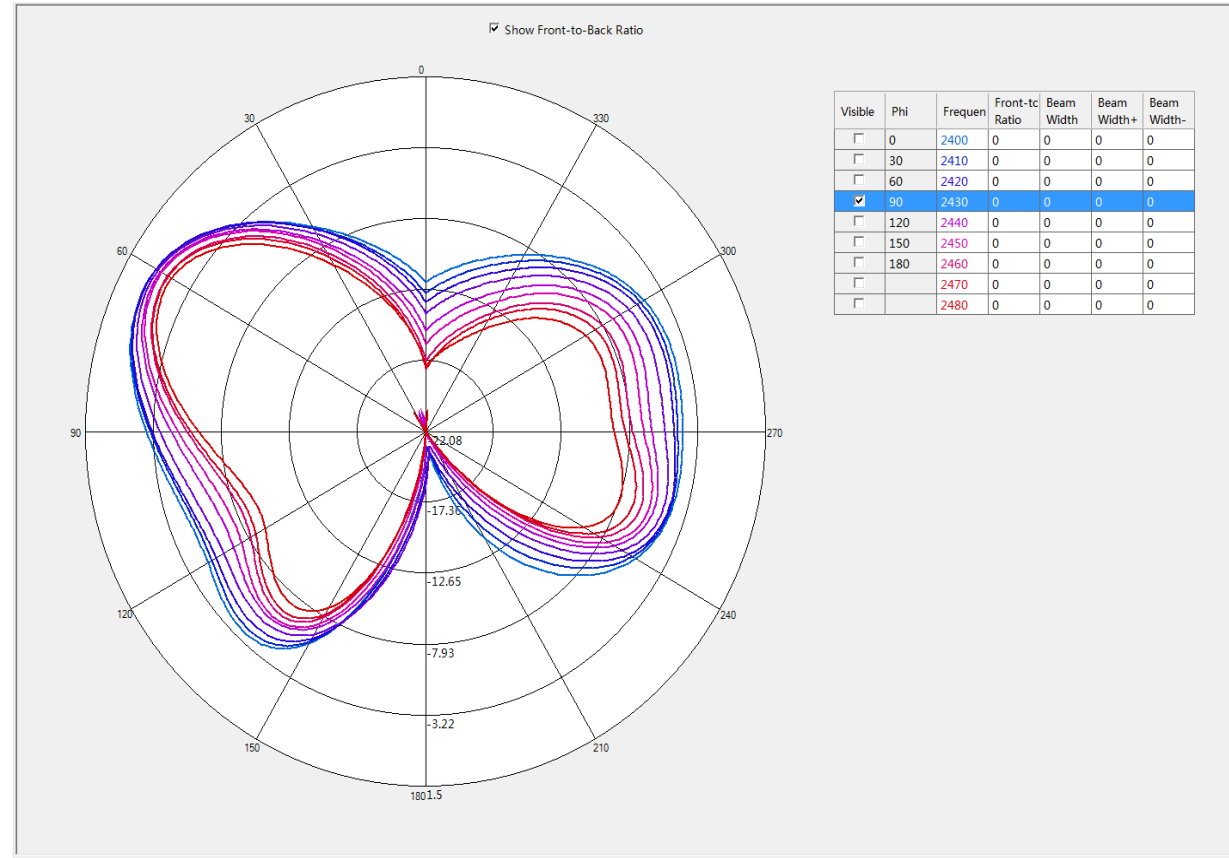
Bluetooth Antenna Performance — Antenna Pattern 1



Bluetooth Antenna Performance — Antenna Pattern 2

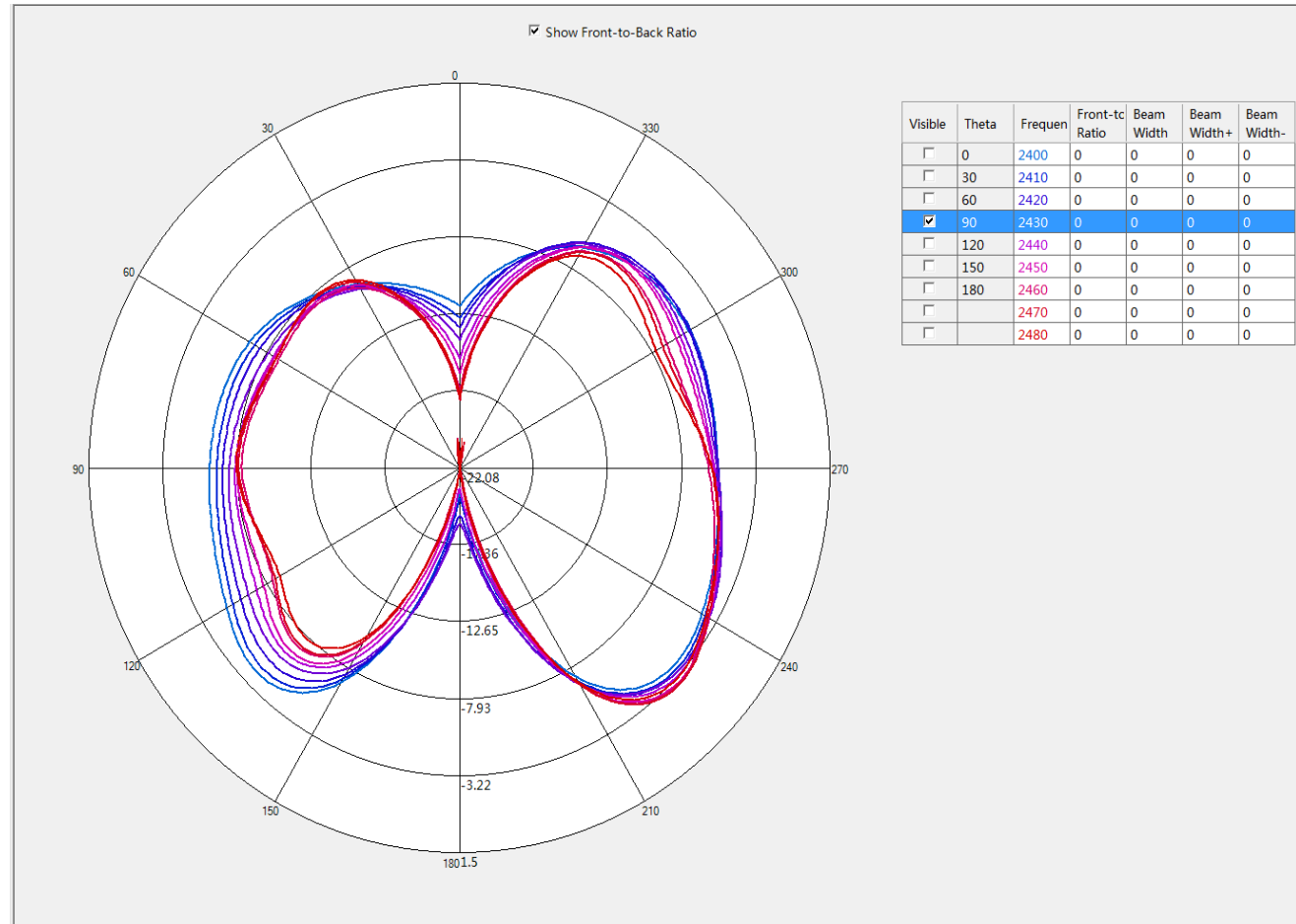


Theta=90°



Phi=90°

Bluetooth Antenna Performance — Antenna Pattern 3



Phi=0°

Thank you!



<https://www.linkedin.com/company/topflytech>



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