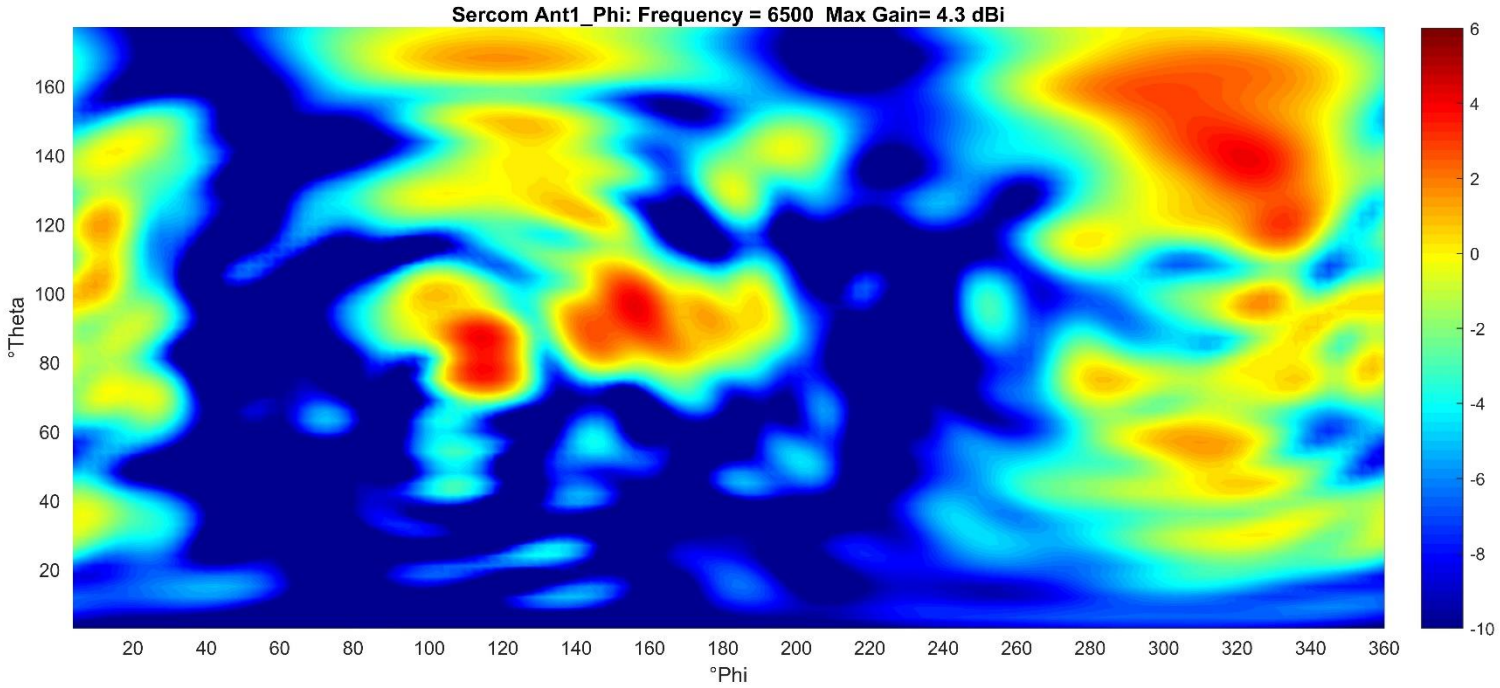
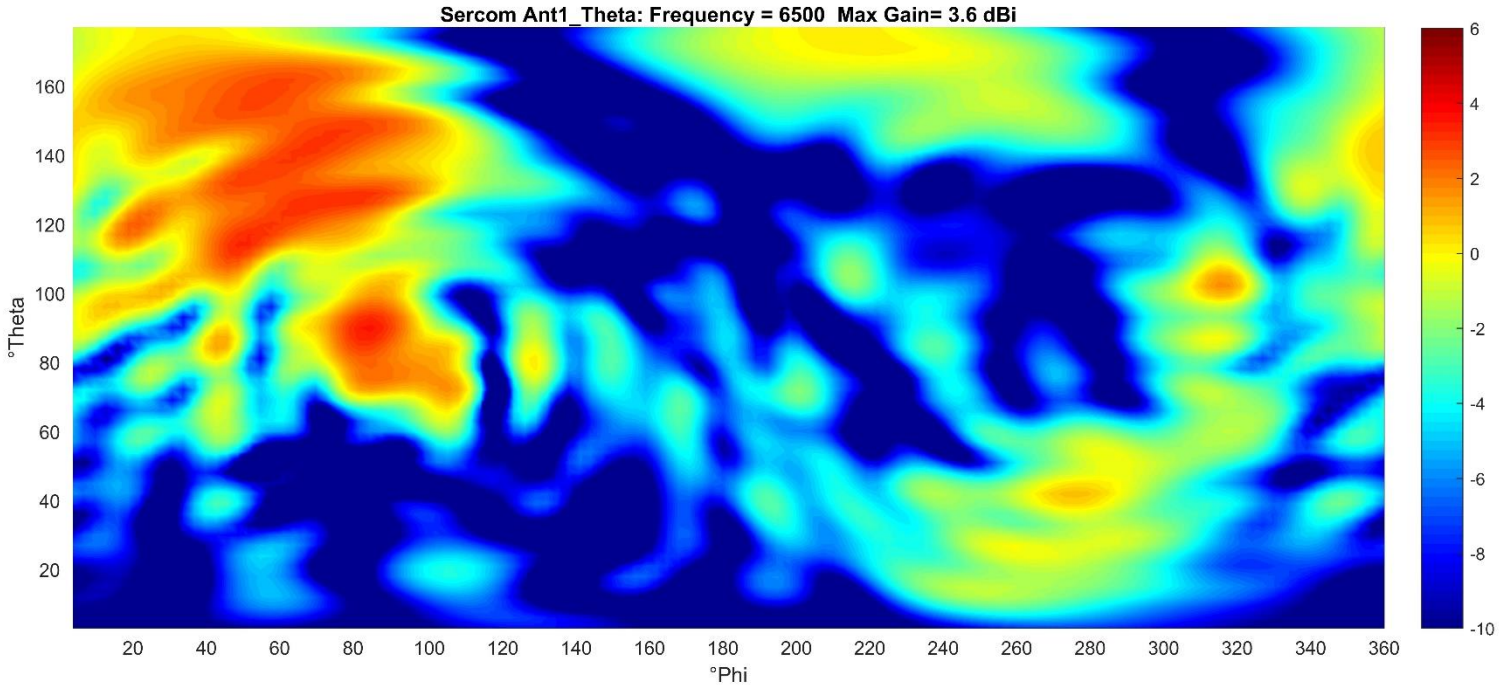
Individual Antenna Heat Map

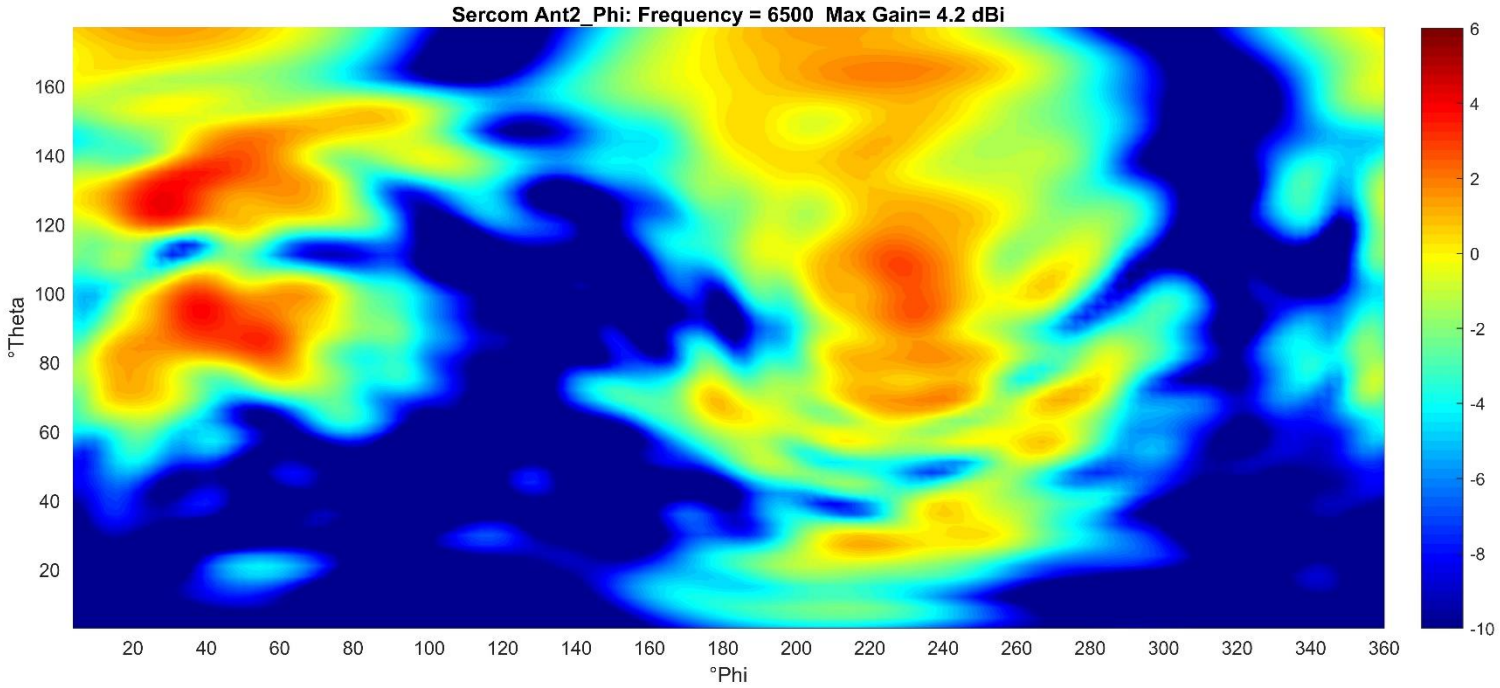
Ant1 6.5 GHz Heatmap Phi dBi



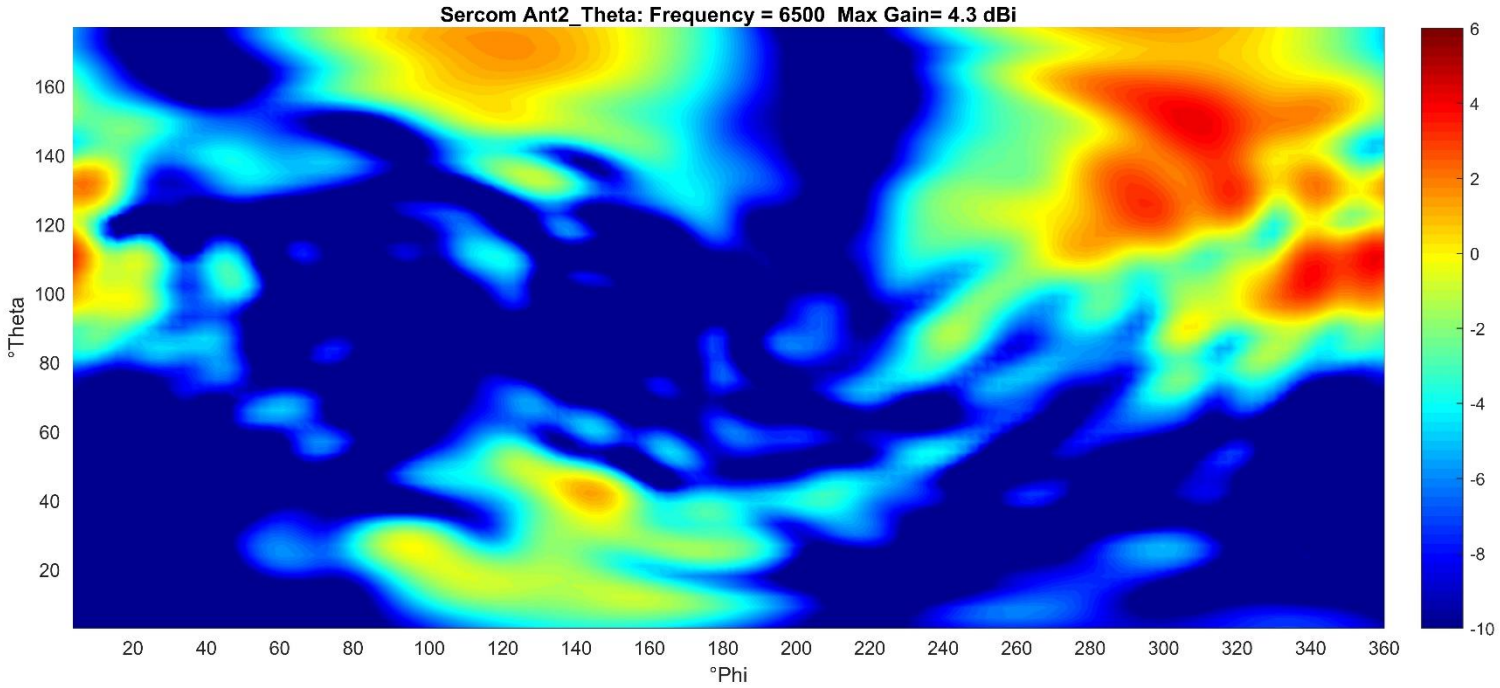
Ant1 6.5 GHz Heatmap Theta dBi



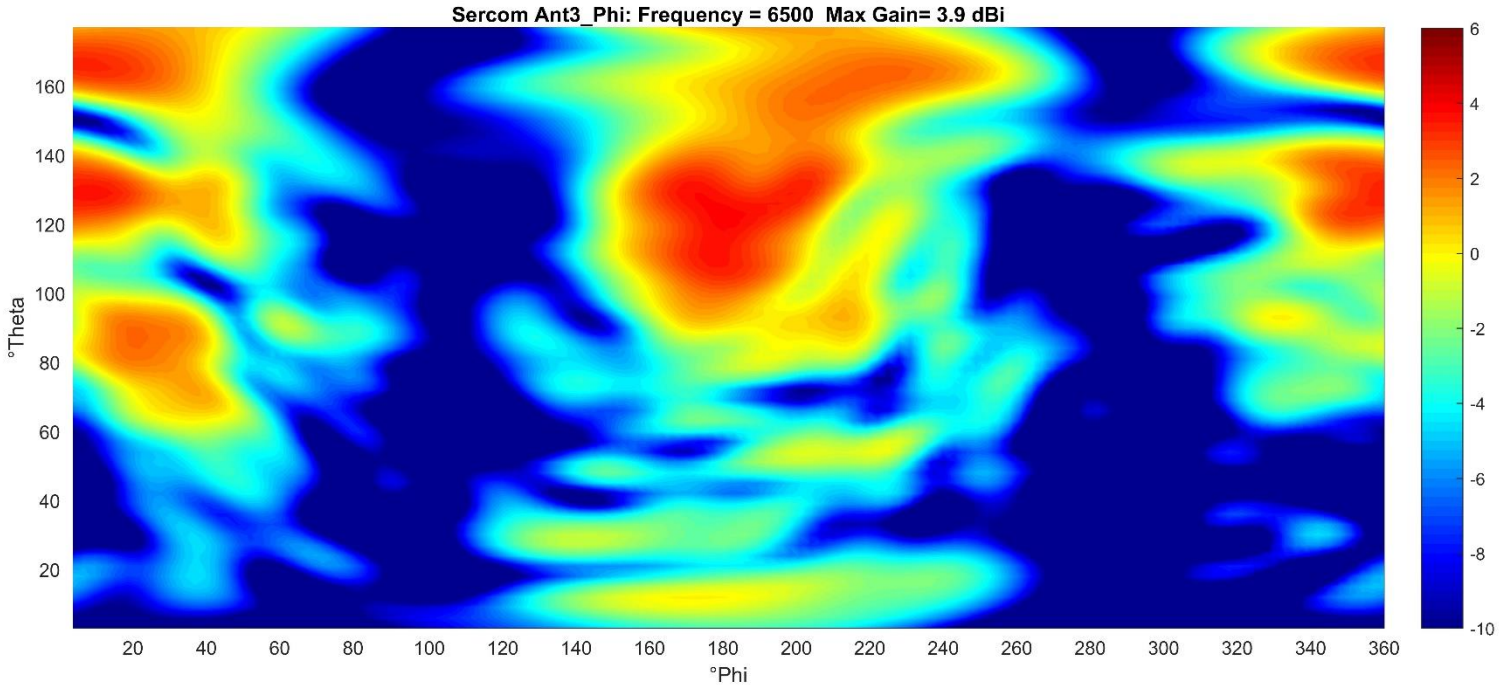
Ant2 6.5 GHz Heatmap Phi dBi



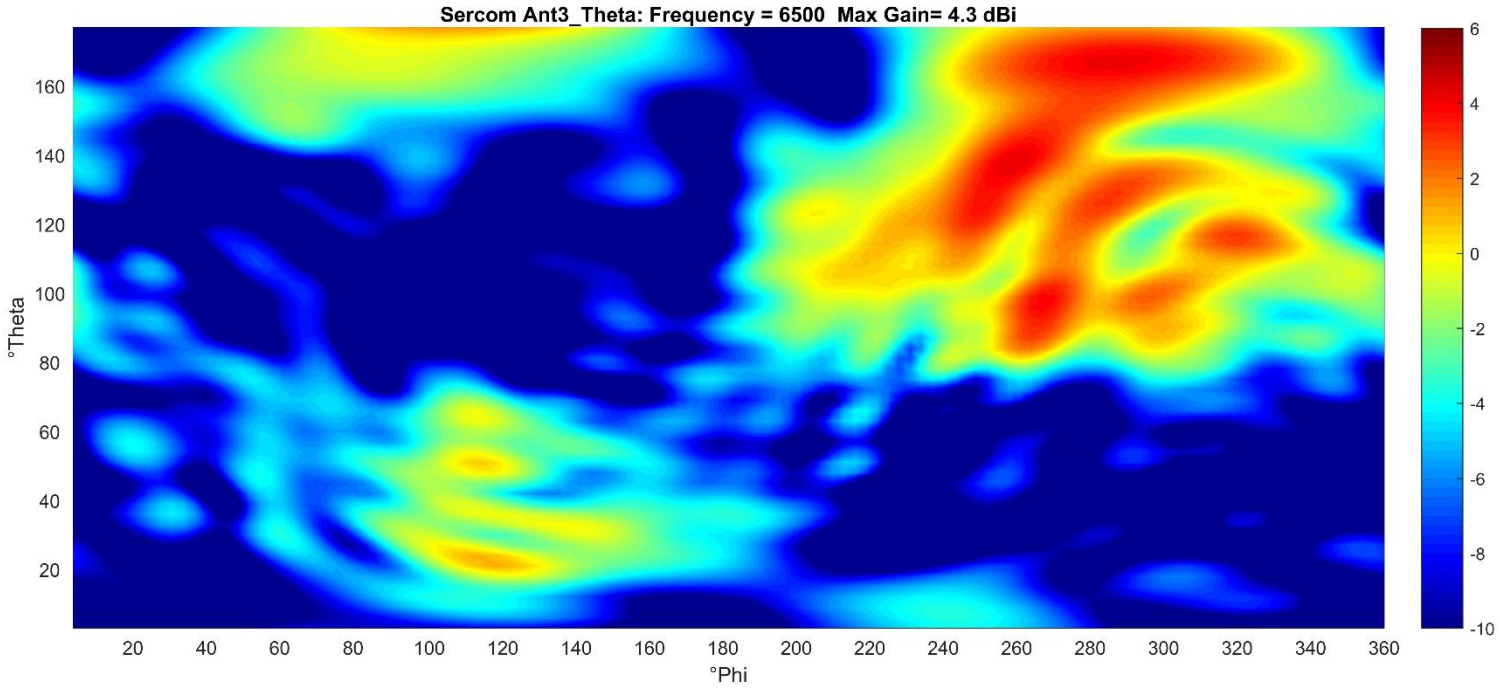
Ant2 6.5 GHz Heatmap Theta dBi



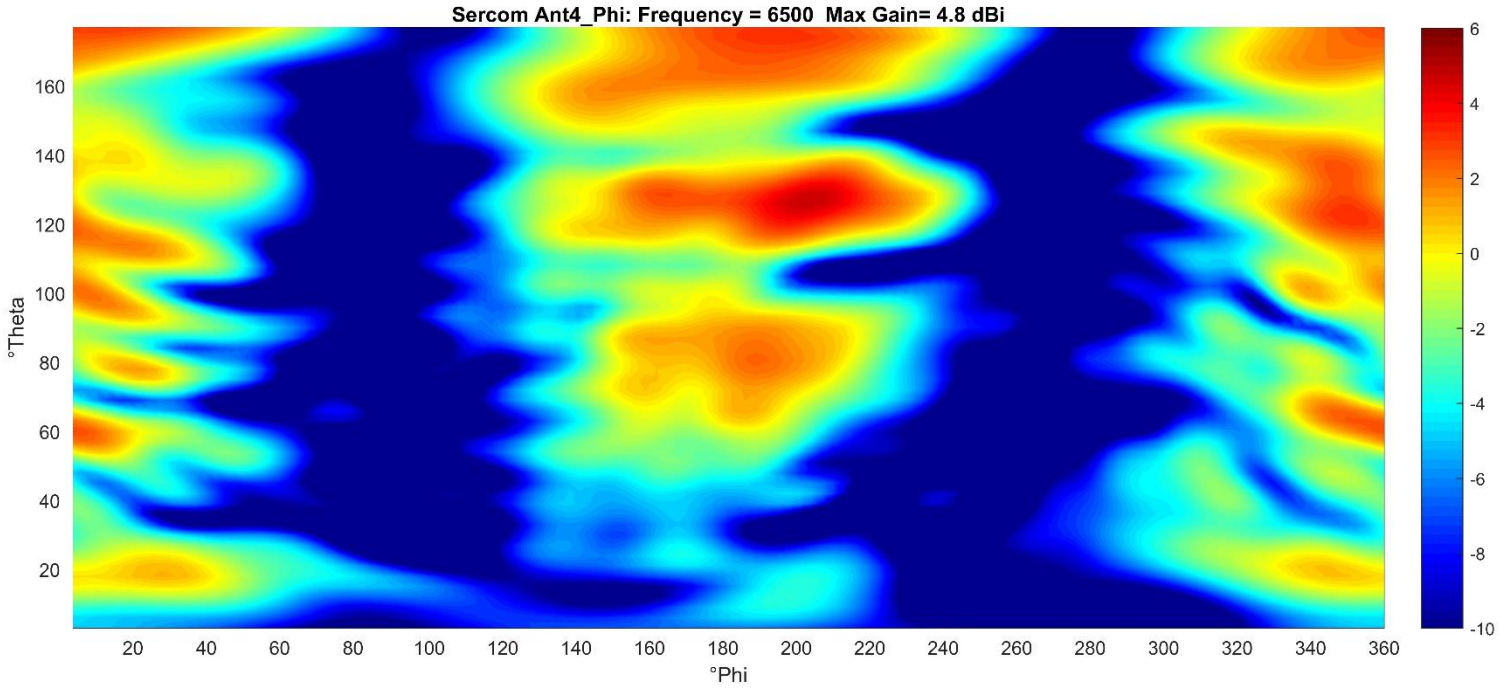
Ant3 6.5 GHz Heatmap Phi dBi



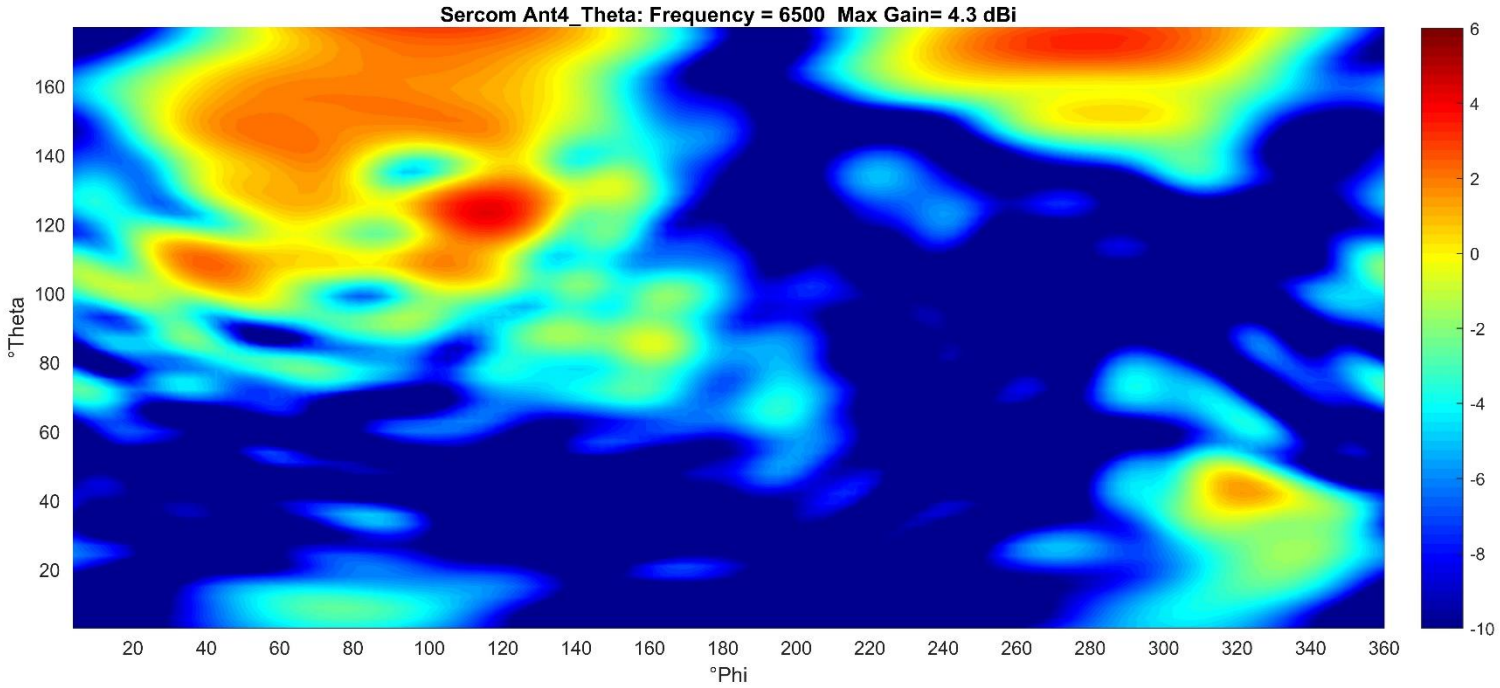
Ant3 6.5 GHz Heatmap Theta dBi



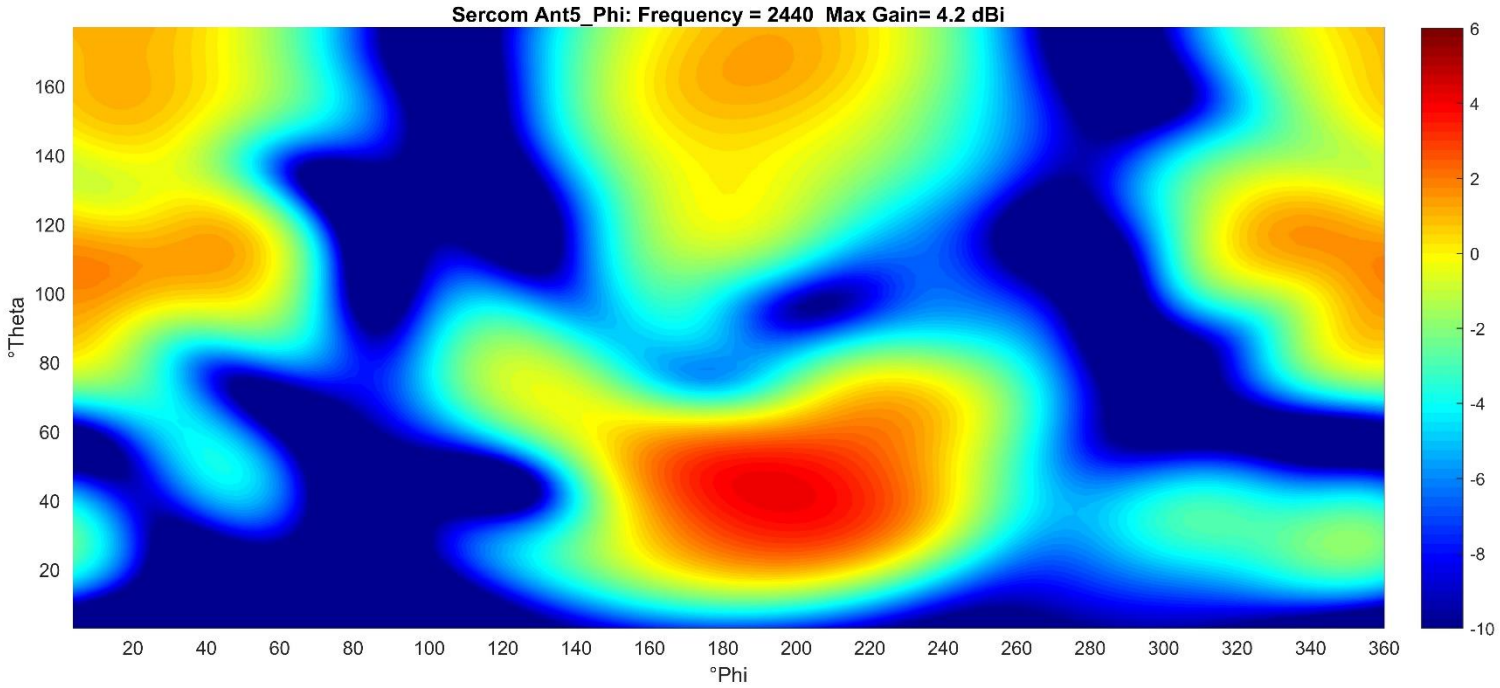
Ant4 6.5 GHz Heatmap Phi dBi



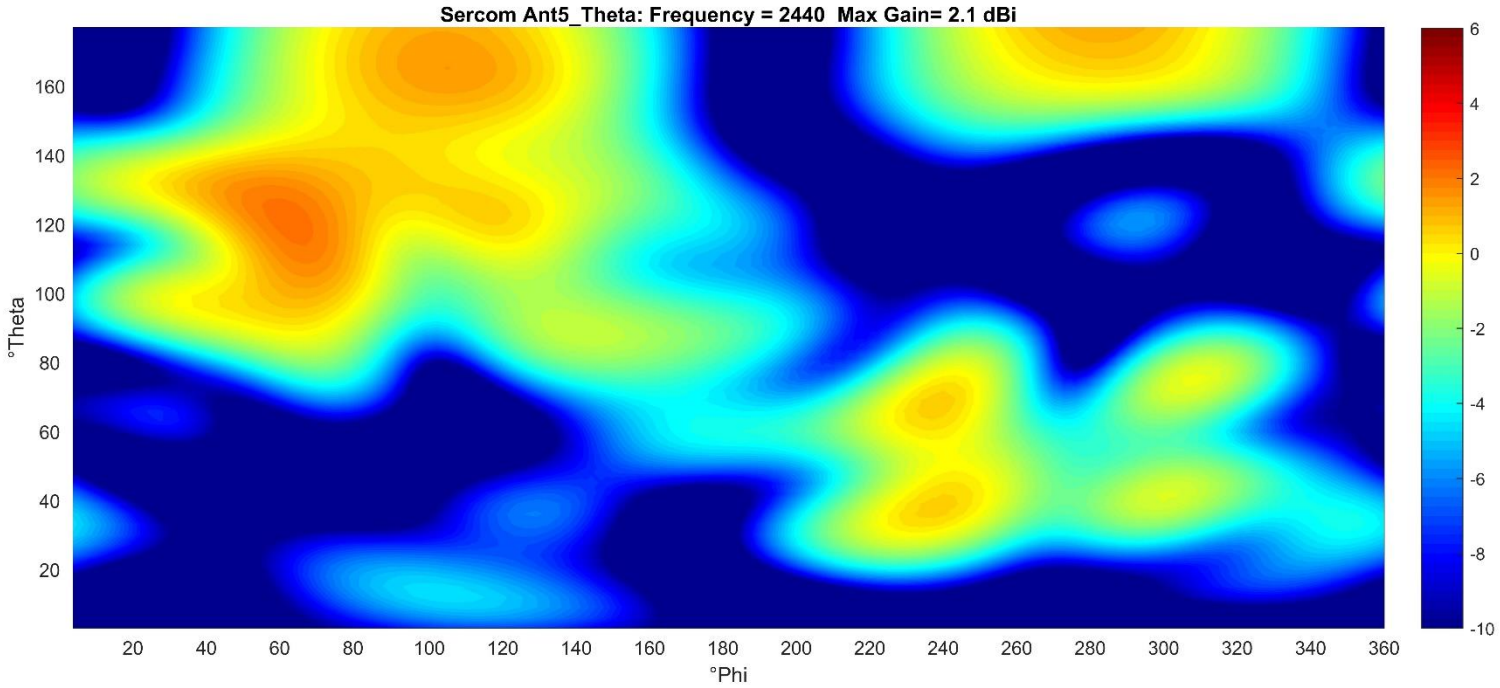
Ant4 6.5 GHz Heatmap Theta dBi



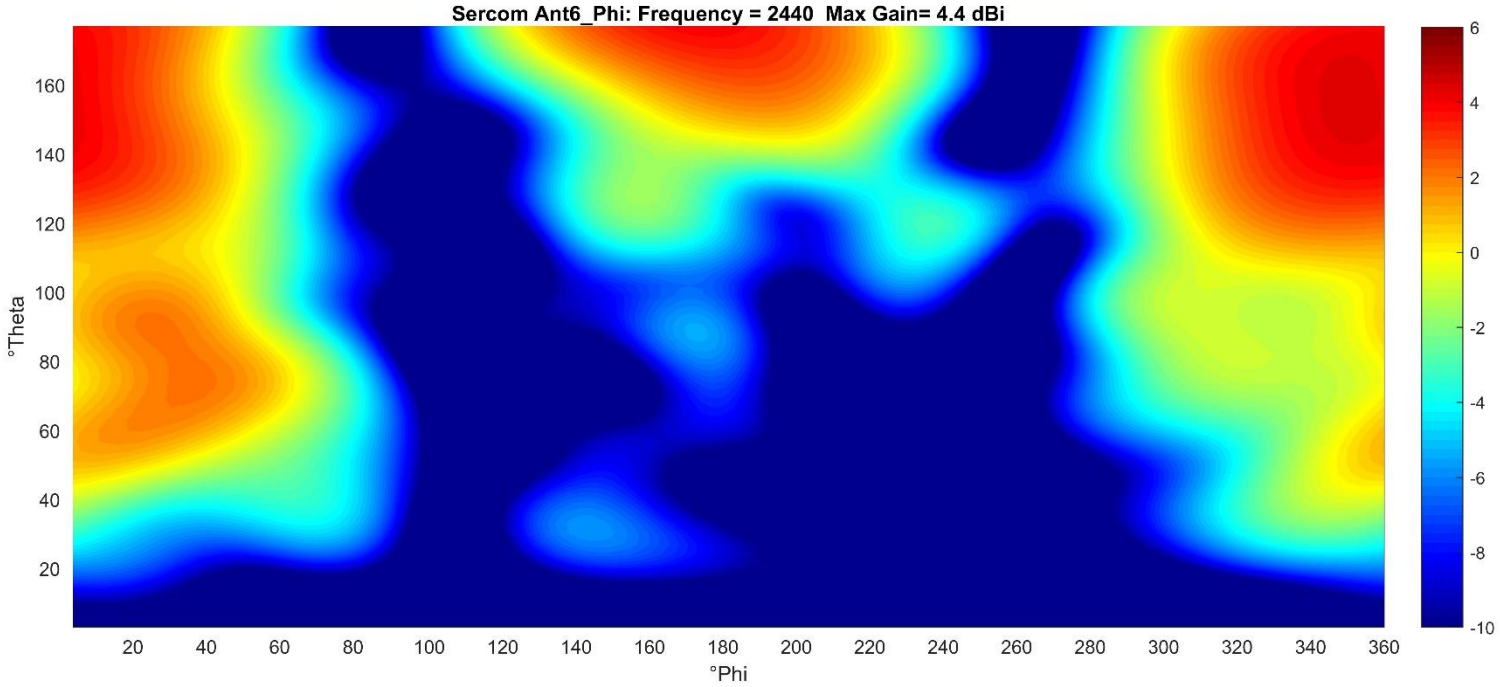
Ant5 2.44 GHz Heatmap Phi dBi



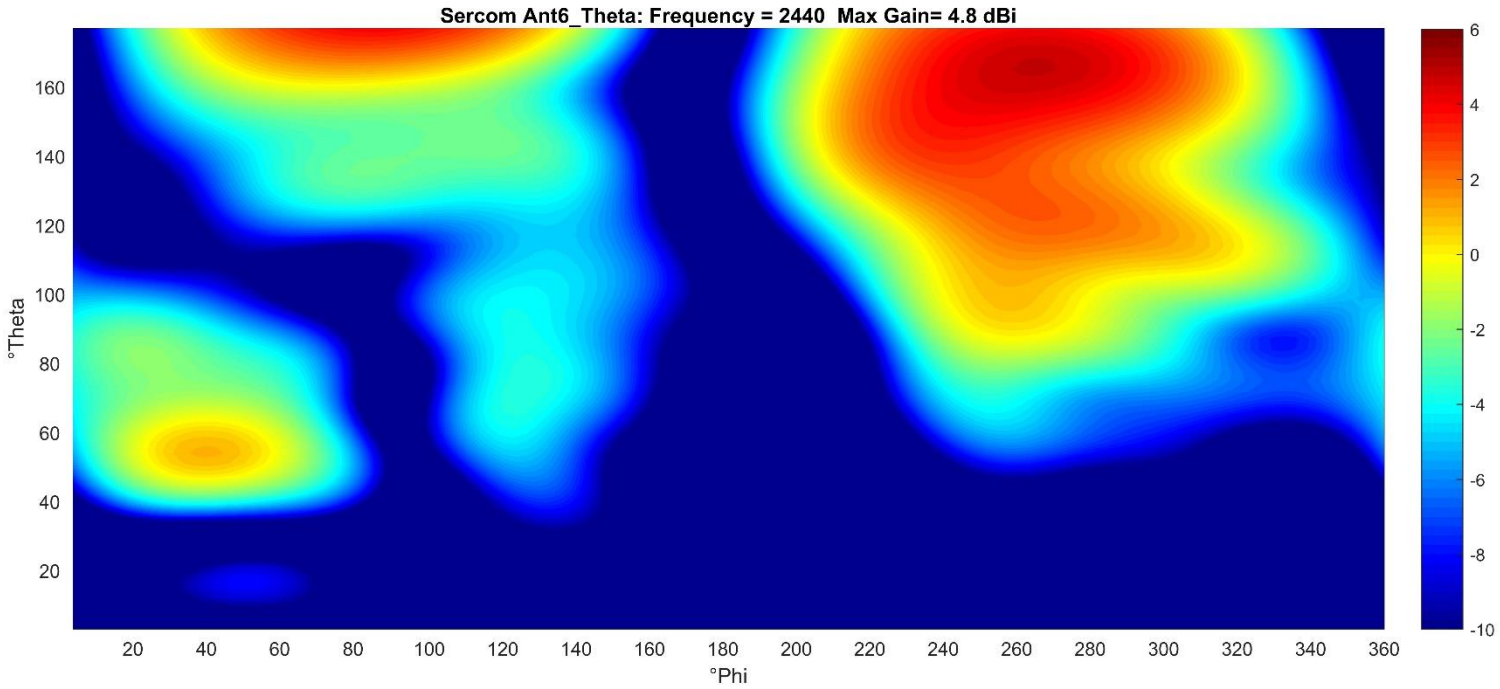
Ant5 2.44 GHz Heatmap Theta dBi



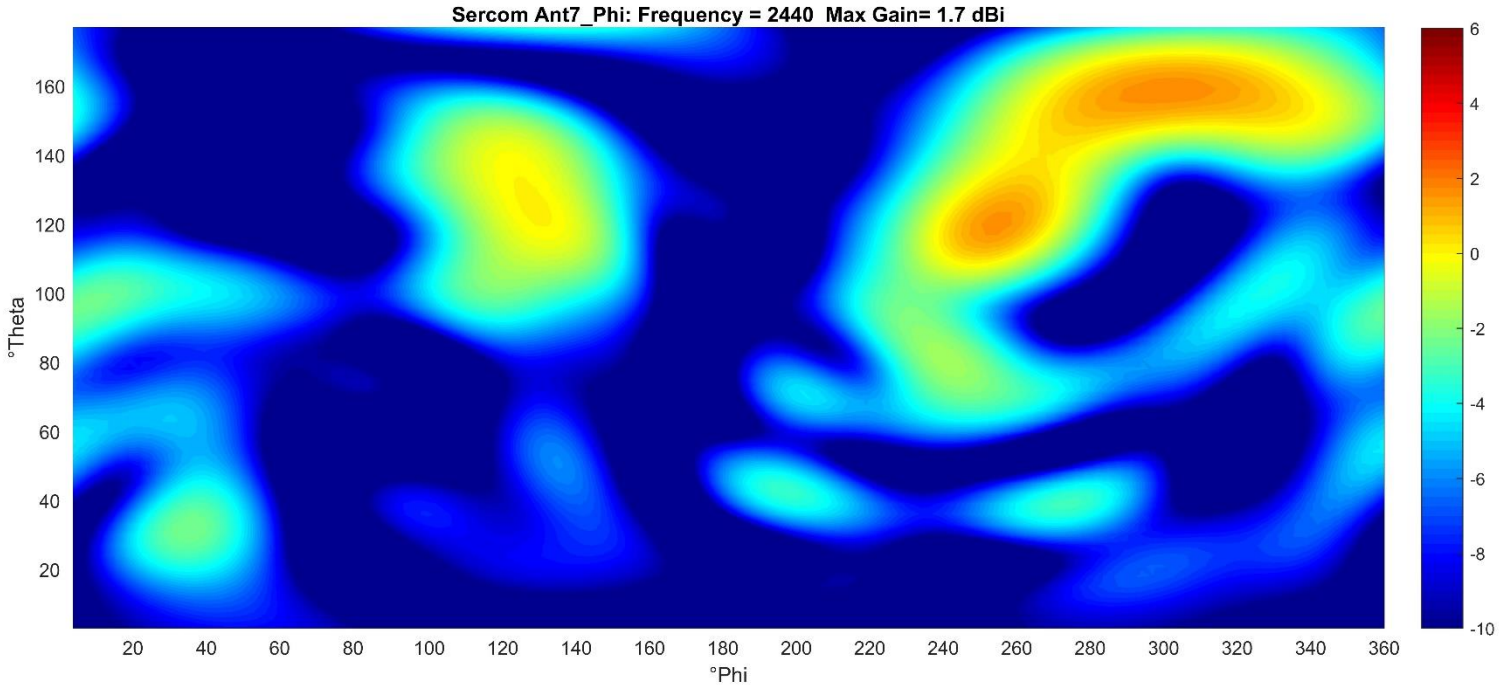
Ant6 2.44 GHz Heatmap Phi dBi



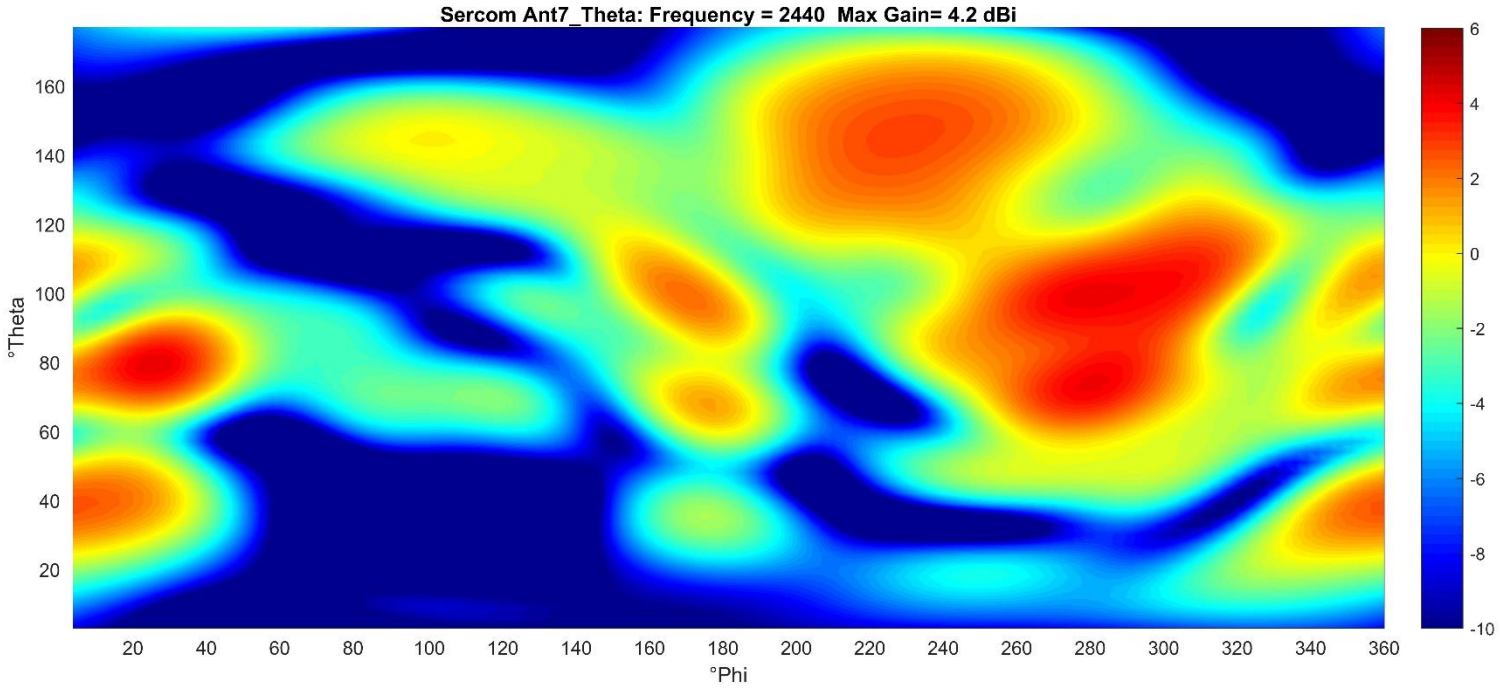
Ant6 2.44 GHz Heatmap Theta dBi



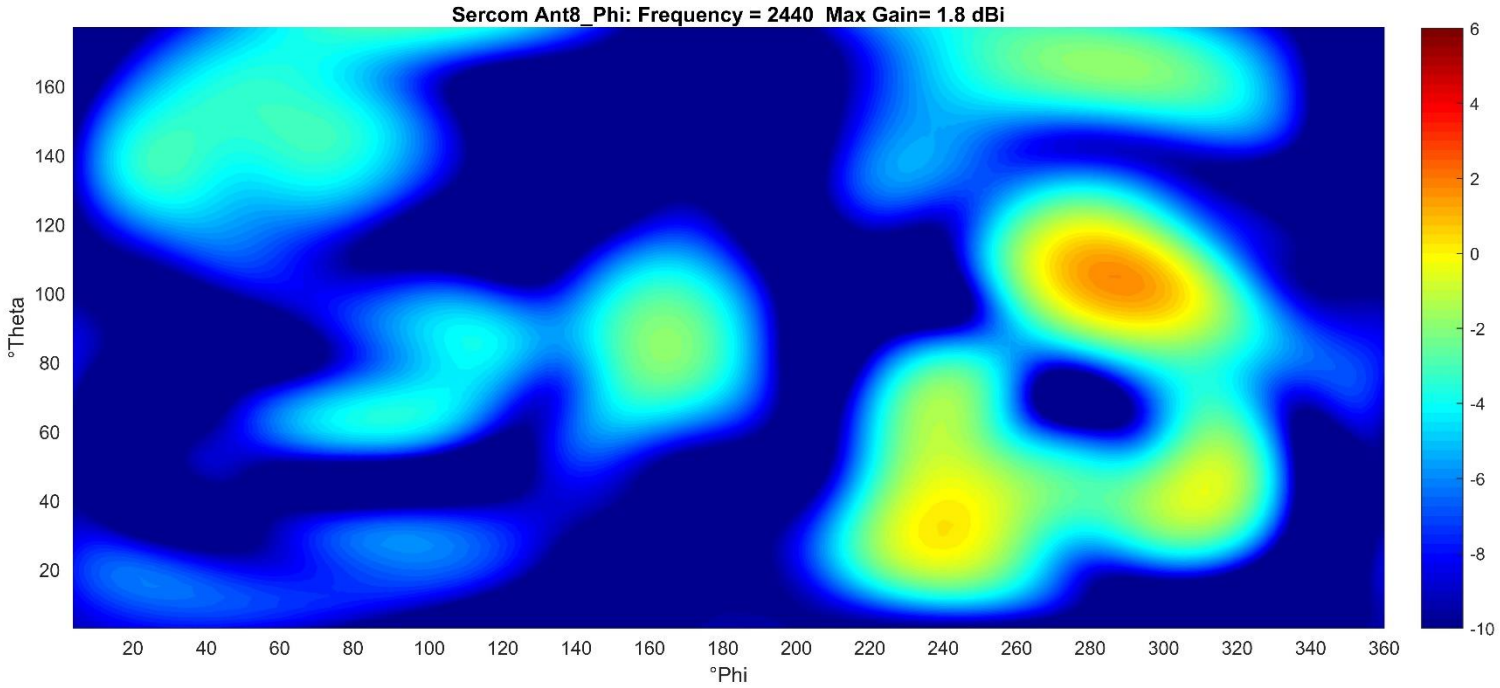
Ant7 2.44 GHz Heatmap Phi dBi



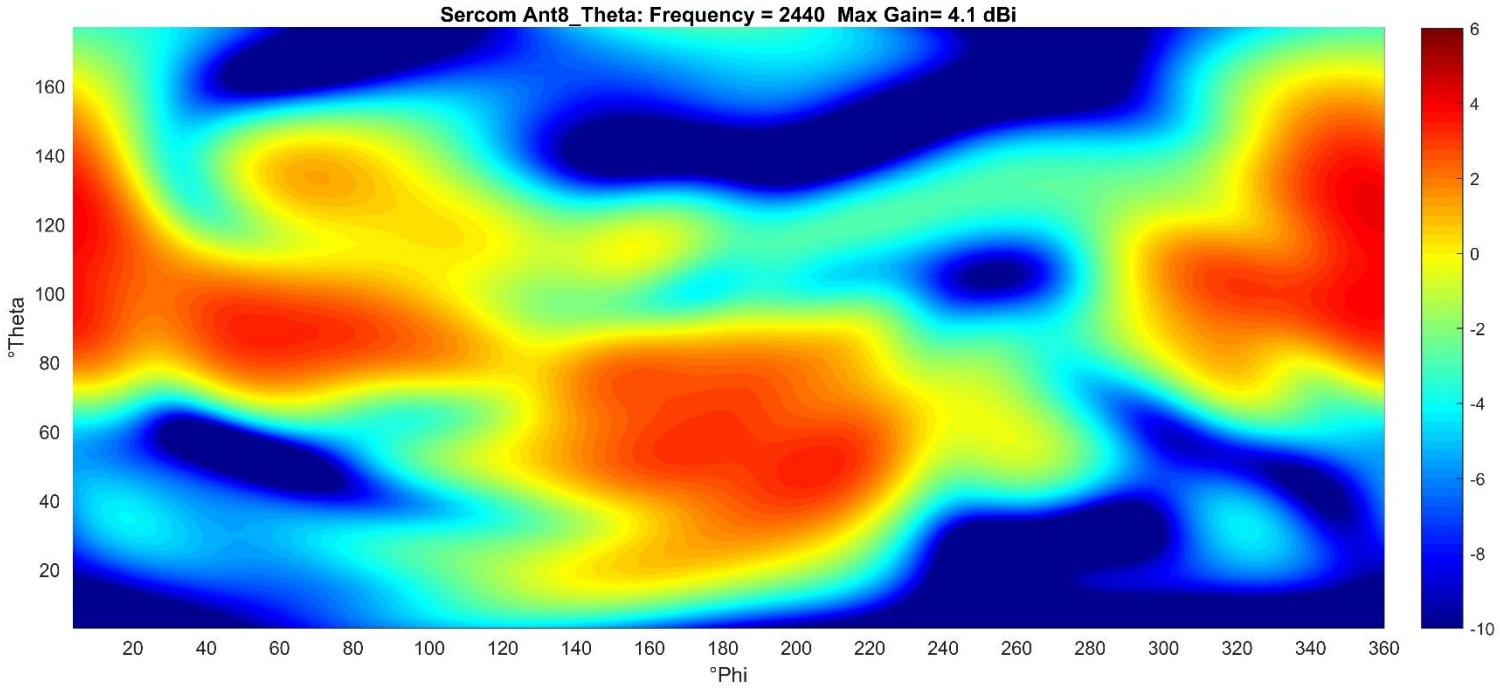
Ant7 2.44 GHz Heatmap Theta dBi



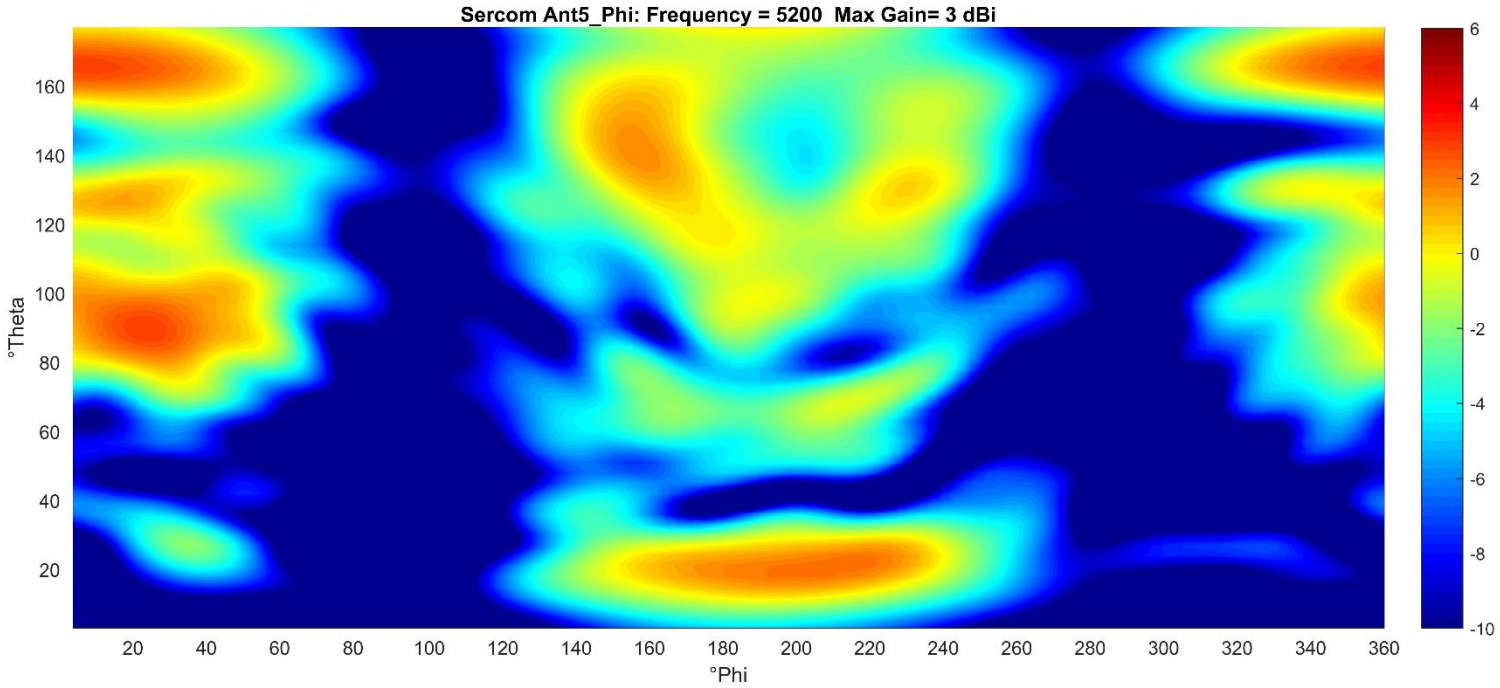
Ant8 2.44 GHz Heatmap Phi dBi



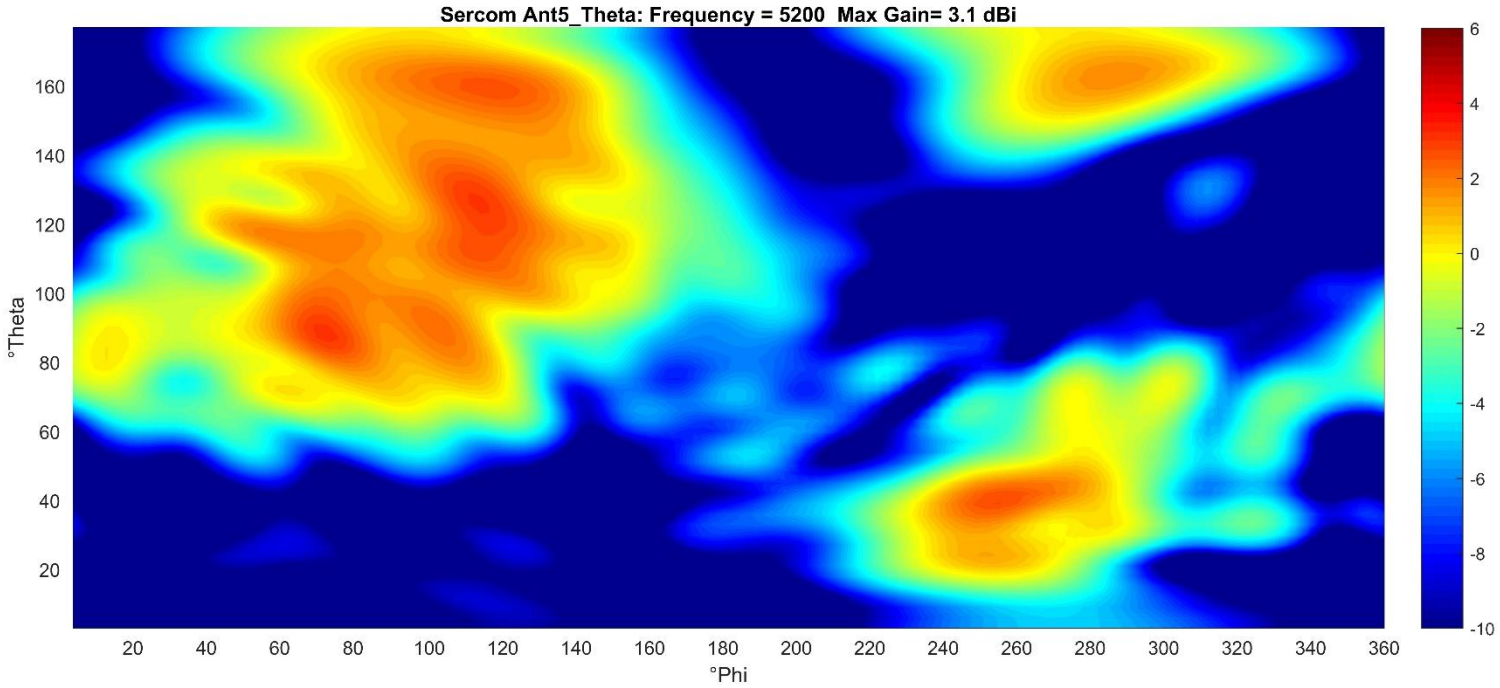
Ant8 2.44 GHz Heatmap Theta dBi



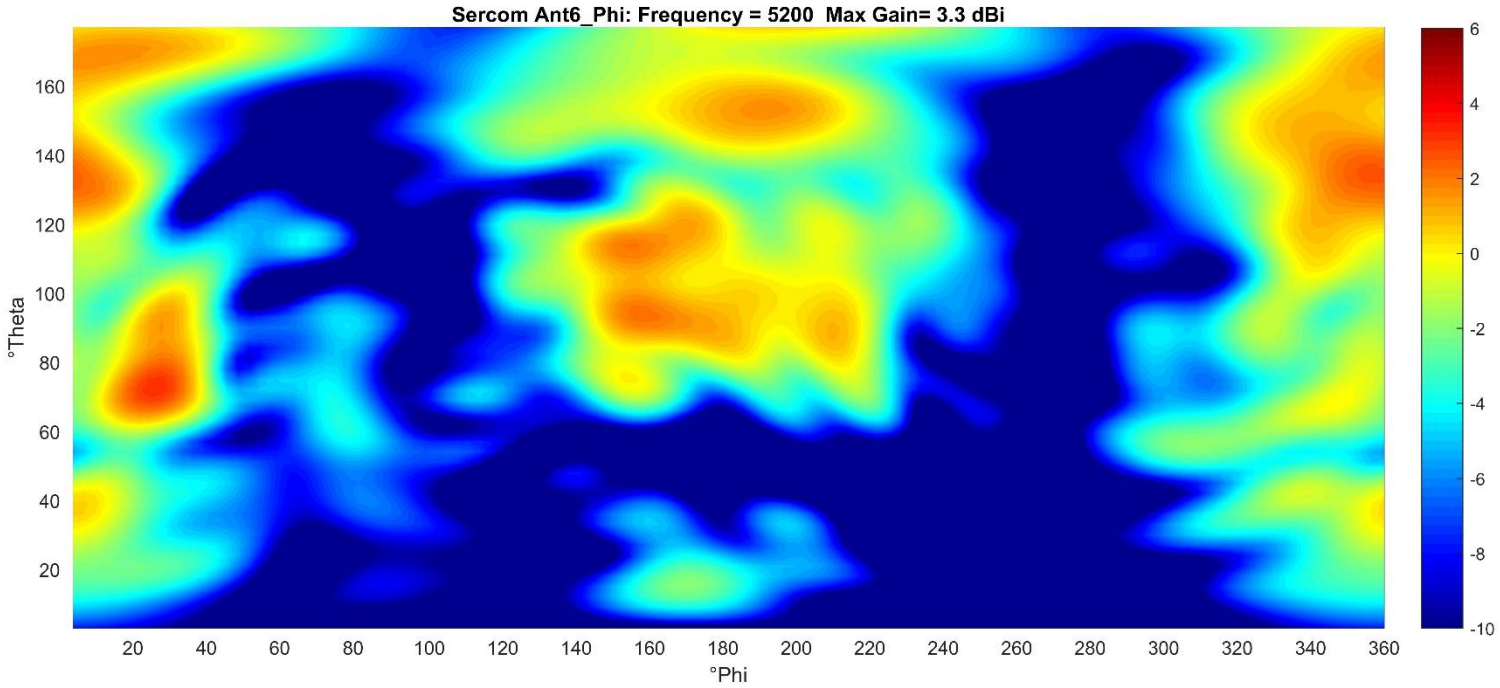
Ant5 5.2 GHz Heatmap Phi dBi



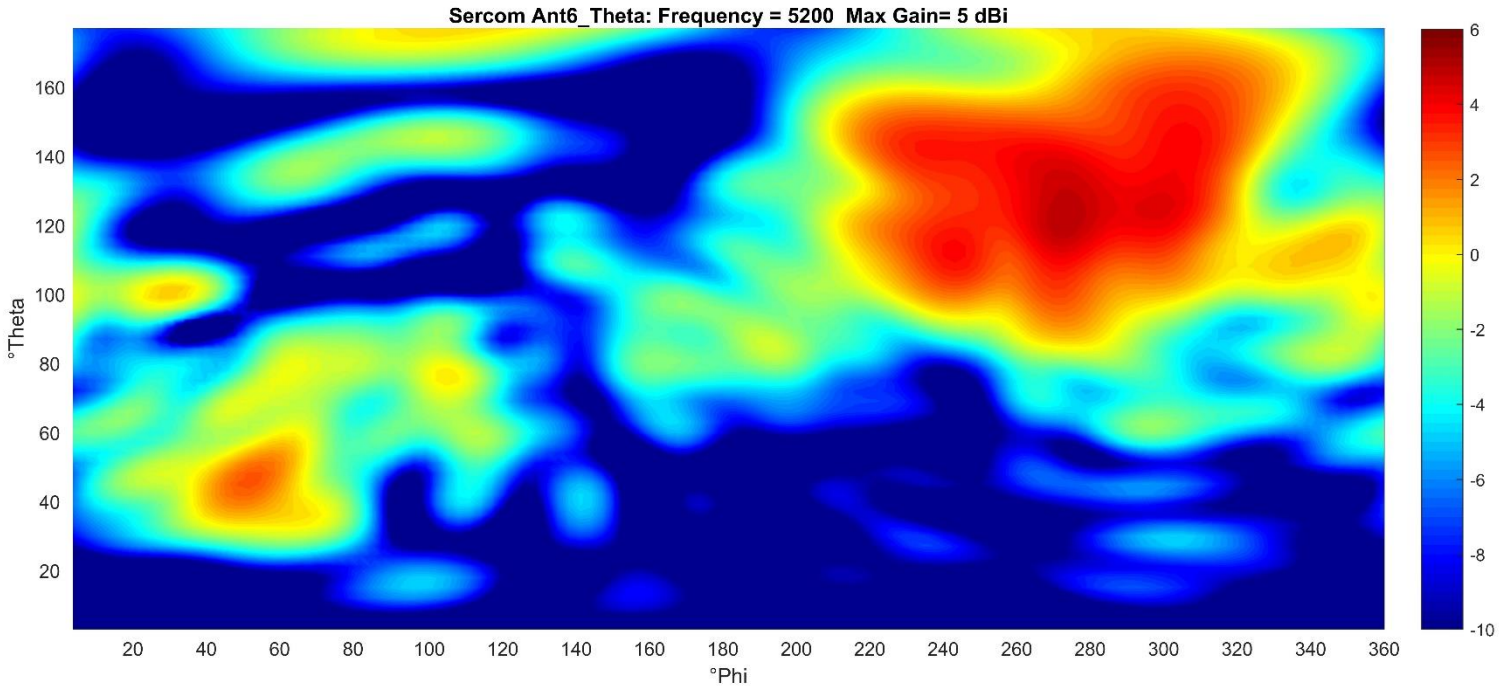
Ant5 5.2 GHz Heatmap Theta dBi



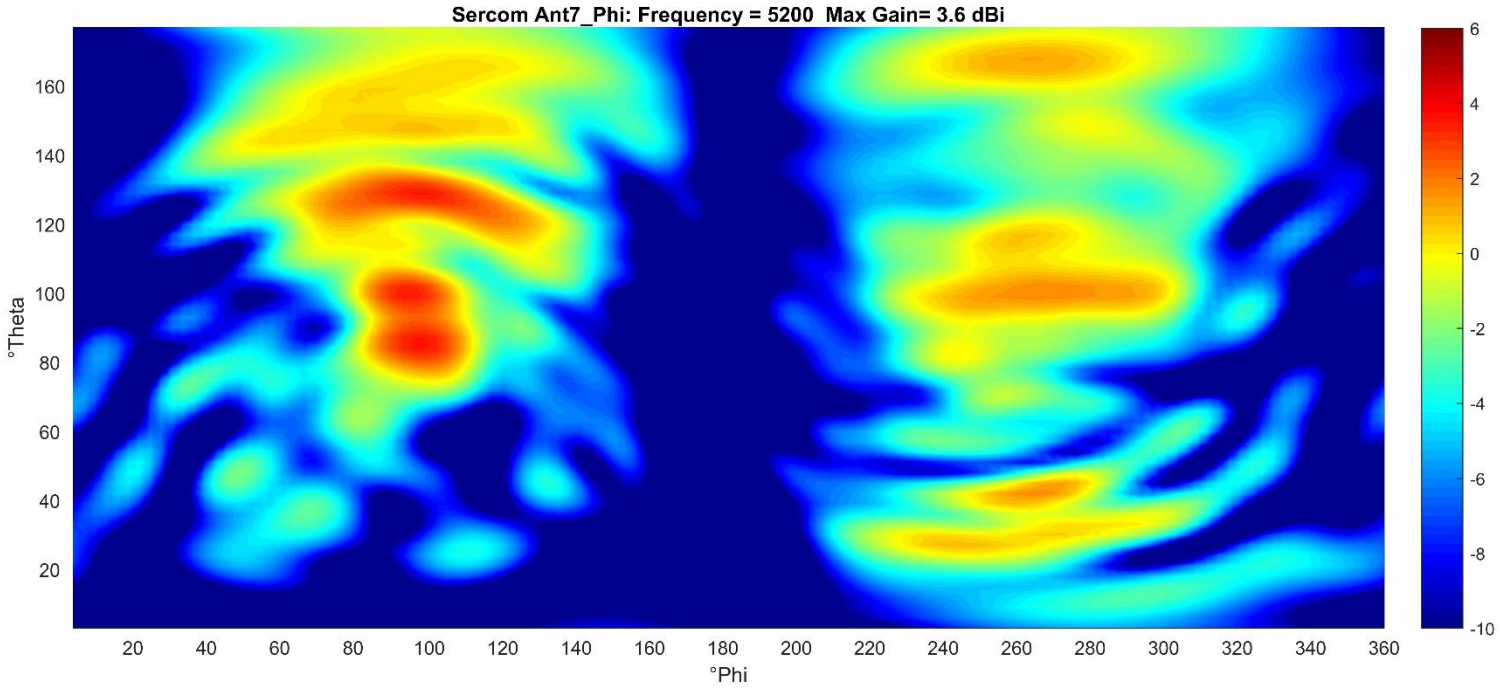
Ant6 5.2 GHz Heatmap Phi dBi



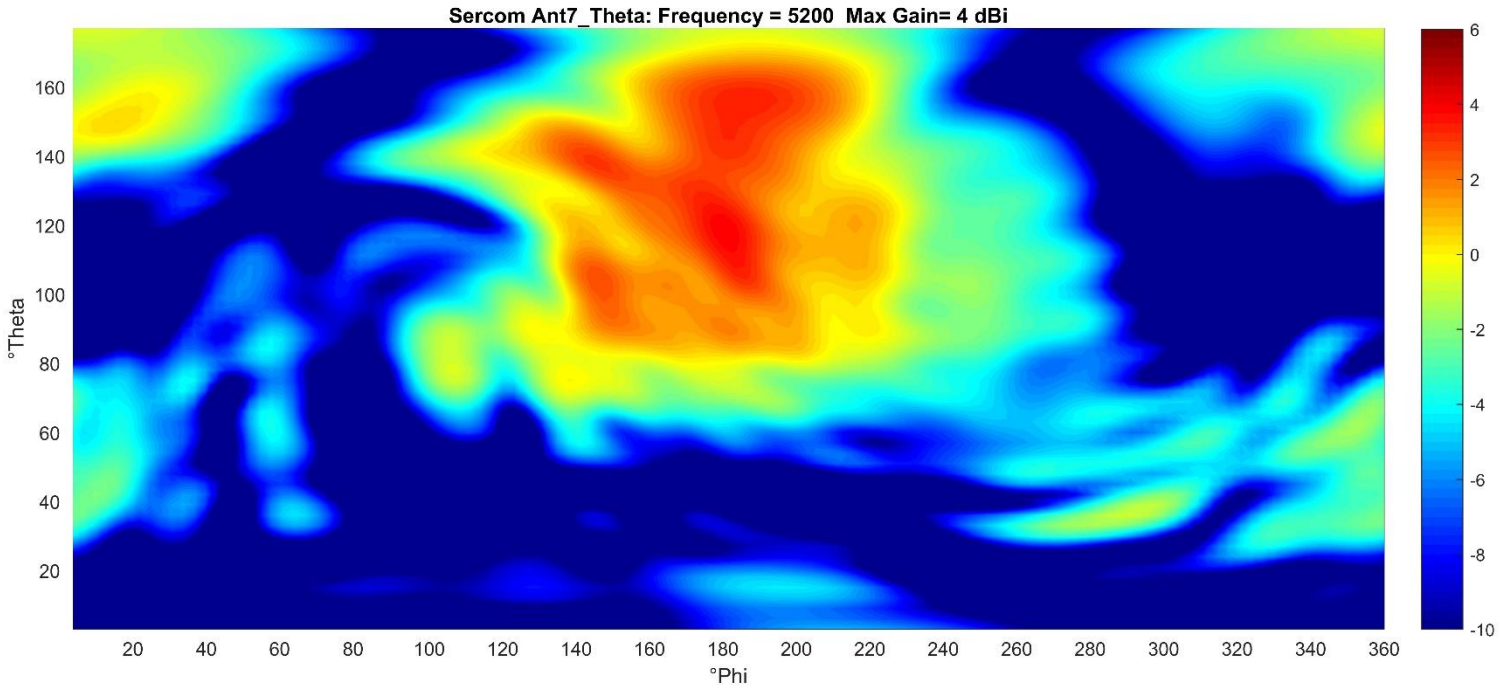
Ant6 5.2 GHz Heatmap Theta dBi



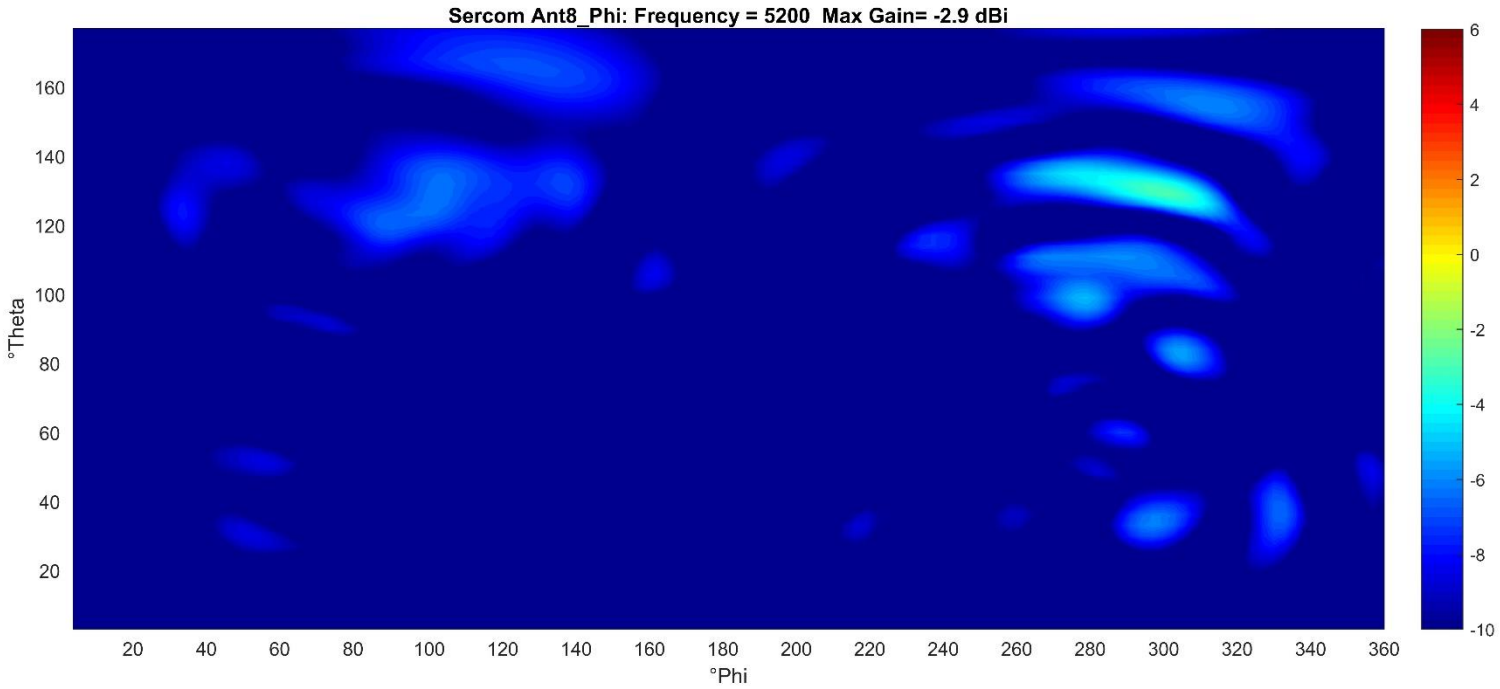
Ant7 5.2 GHz Heatmap Phi dBi



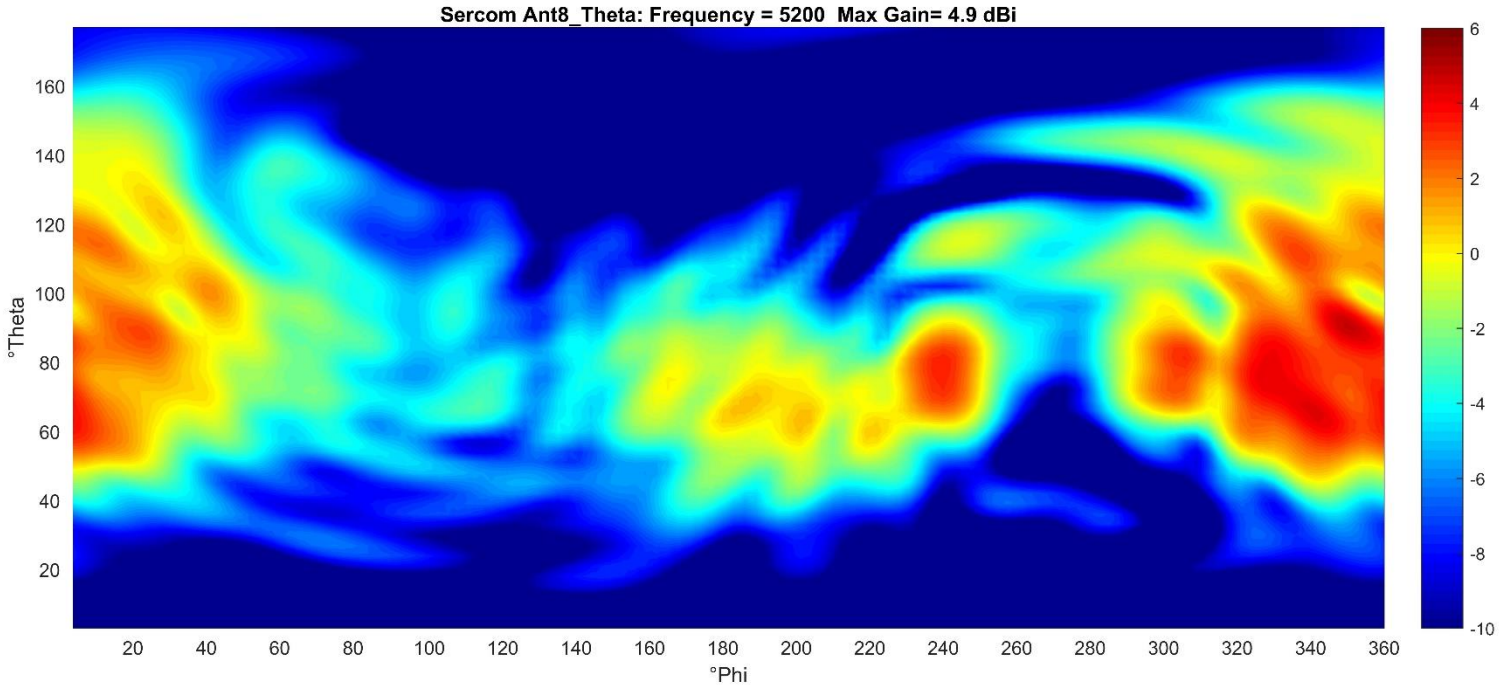
Ant7 5.2 GHz Heatmap Theta dBi



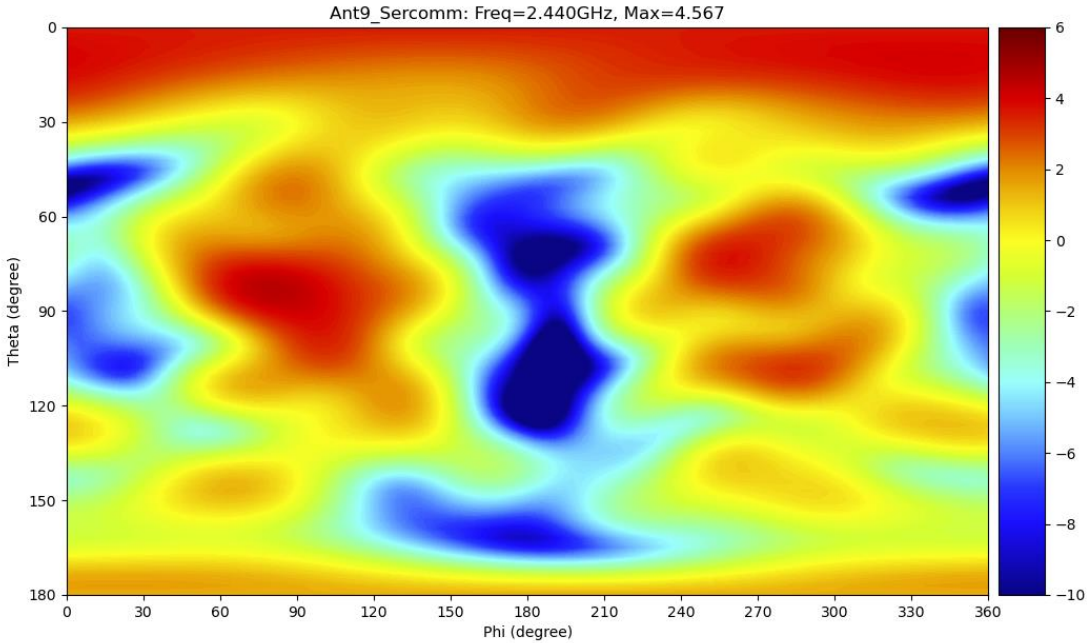
Ant8 5.2 GHz Heatmap Phi dBi



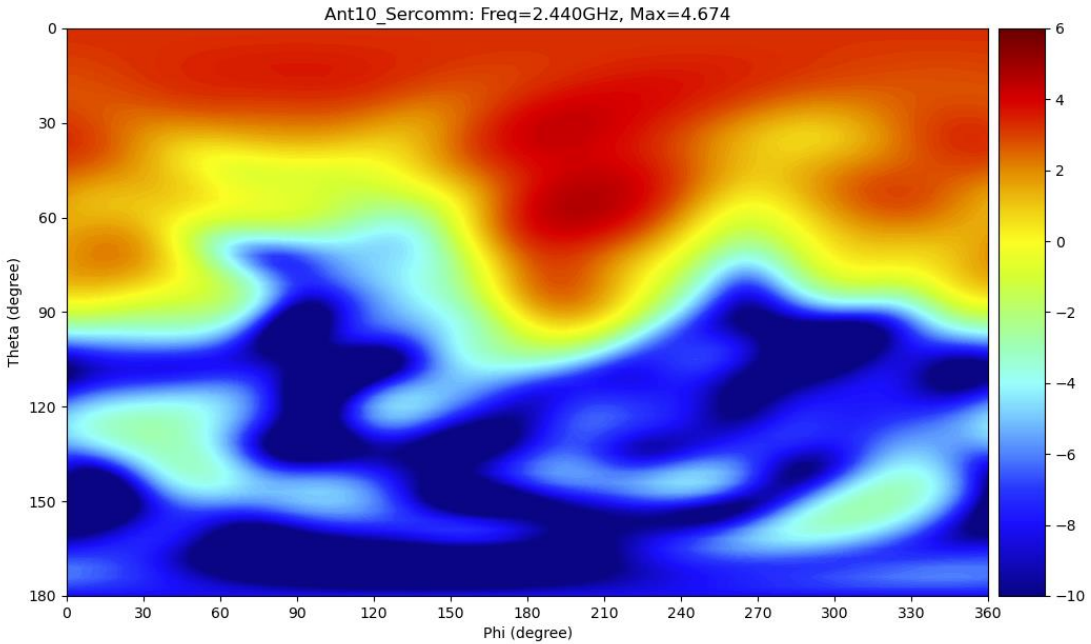
Ant8 5.2 GHz Heatmap Theta dBi



Zigbee (Ant9) Heatmap 2.45GHz Total dBi



Zigbee (Ant10) Heatmap 2.45GHz Total dBi



Summary

Summary

- All Wi-Fi antennas have a Return loss of -15dB or Better across all the bands of operation
- Isolation for Antennas in the band of the operation is -21.5dB or better in the 2.5GHz band of operation and -27dB or better in the 5GHz band of operation
- Isolation for Antennas in the band of operation for 6GHz antennas is -30 dB or better
- Cross Isolation between dual band antennas and 6GHz antennas is -26dB or better
- All Antennas have an average efficiency of 68% or better including cable loss
- The Antenna Peak gains are within 1dB of range for each antenna along the frequency sweep
- The Antenna System Composite plots are optimized for great coverage along the horizon and good top coverage
- The Antenna patterns are well-balanced along all three major cuts
- The Antenna system has a good theta and Phi polarization distribution
- The Zigbee Antenna system has great coverage over the horizon and top of the device

Project Name: XB10 Antenna Design Proposal

Jan 17 2024

Prepared by: Larry Jiang

Test Infomation

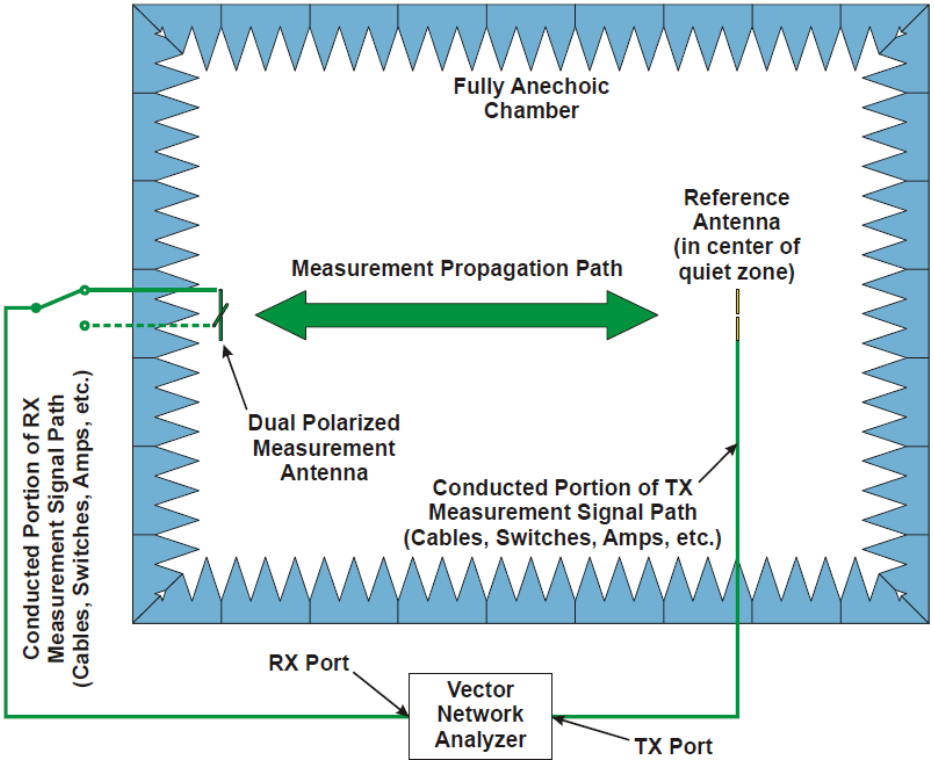
Iteam	Description
Brand Name	Comcast
Equipment	XB10
Test Location	8F, No. 3-1, YuanQu St. Taipei, Taiwan 115 R.O.C.
Test Condition	Radiation
Test Engineer	Larry Jing, Sercomm
Test Environment	ETS-Lindgren AMS-8500 Antenna Measurement Chamber
Test Date	Jan. 1, 2024 ~ jan. 17, 2024

Test Setup & Procedure

1. Fix the DUT on the dielectric support structure and connect the feeding cable to the antenna used for test
2. Set measurement parameters such as frequency range and sampling angle
3. Perform test and then get far-field data (radiation pattern, gain, efficiency)
4. Repeat test procedure for other antennas

Test Equipment & Calibration

Network analyzer and reference antennas are used for calibration. Path loss and cable loss for different frequency bands can be checked and calculated.



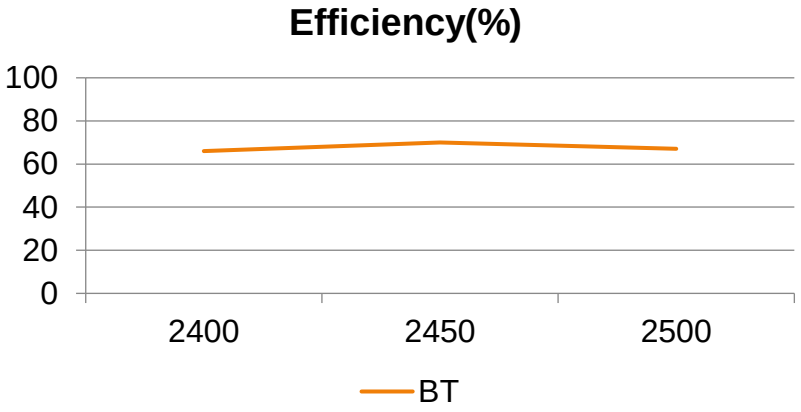
Test Equipment & Calibration

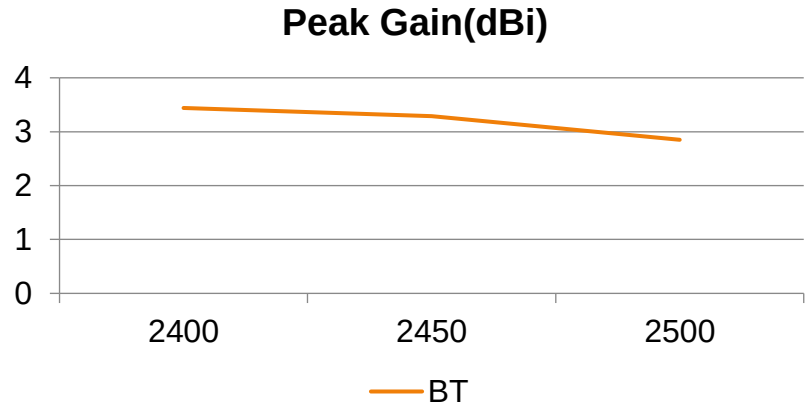
Instrument	Brand	Characteristics	Model No.	Serial No.	Calibration Due Date
Precision Sleeve Dipole	ETS-Lindgren	700 MHz ~ 900 MHz	3126-700	00169715	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	900 MHz ~ 1000 MHz	3126-900	00169592	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1400 MHz ~ 1700 MHz	3126-1550	00164599	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	1700 MHz ~ 2000 MHz	3126-1850	00169588	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2000 MHz ~ 2300 MHz	3126-2150	00169593	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	2300 MHz ~ 2700 MHz	3126-2500	00169597	May 21, 2025
Precision Sleeve Dipole	ETS-Lindgren	5000 MHz ~ 6000 MHz	3126-5500	00169728	May 21, 2025
Horn Antenna	SCHWARZBECK	1 GHz ~ 18 GHz	BBHA 9120D	BBHA 9120D-1294	Apr. 07, 2025
EMQuest Antenna Measurement Software	ETS-Lindgren	Control chamber system	EMQ-100	1437	Non-Calibration Required

Antenna Details

Ant No.	Operating Band	Type	Material	Feeding	Polarization
BT	2400MHz ~ 2500MHz	PIFA	Printed	Trace	Hybrid

Peak Gain & Efficiency

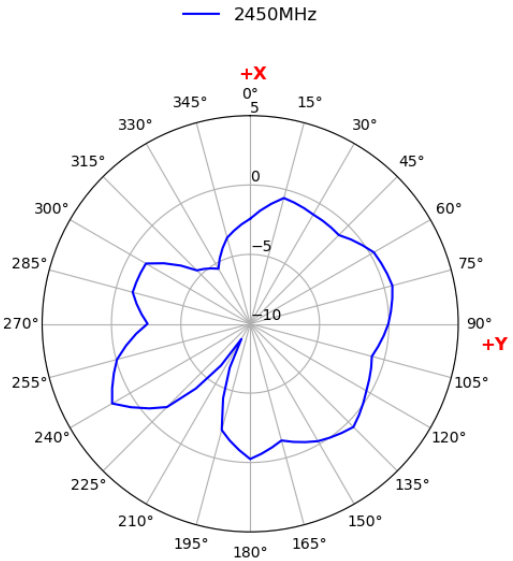




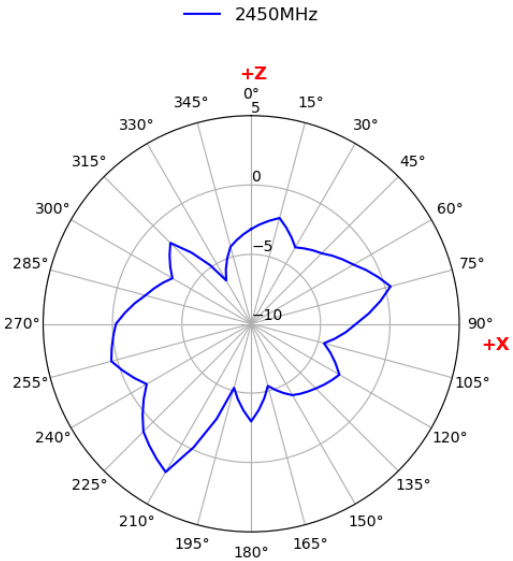
Printing		
Frequency (MHz)	BT	
	Efficiency (%)	Peak Gain (dBi)
2400	66	3.44
2450	70	3.29
2500	67	2.85

2D Radiation Pattern - BT @2G

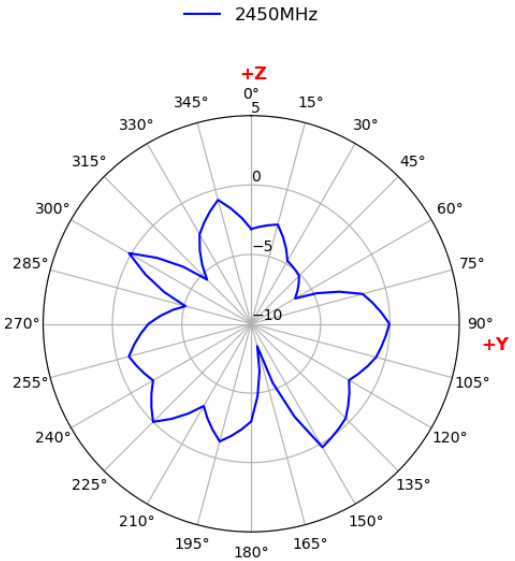
BT_XY plane - Azimuth



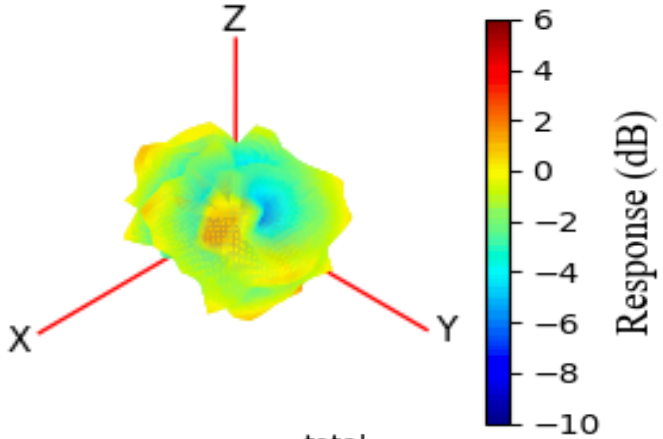
BT_XZ plane - Side to Side

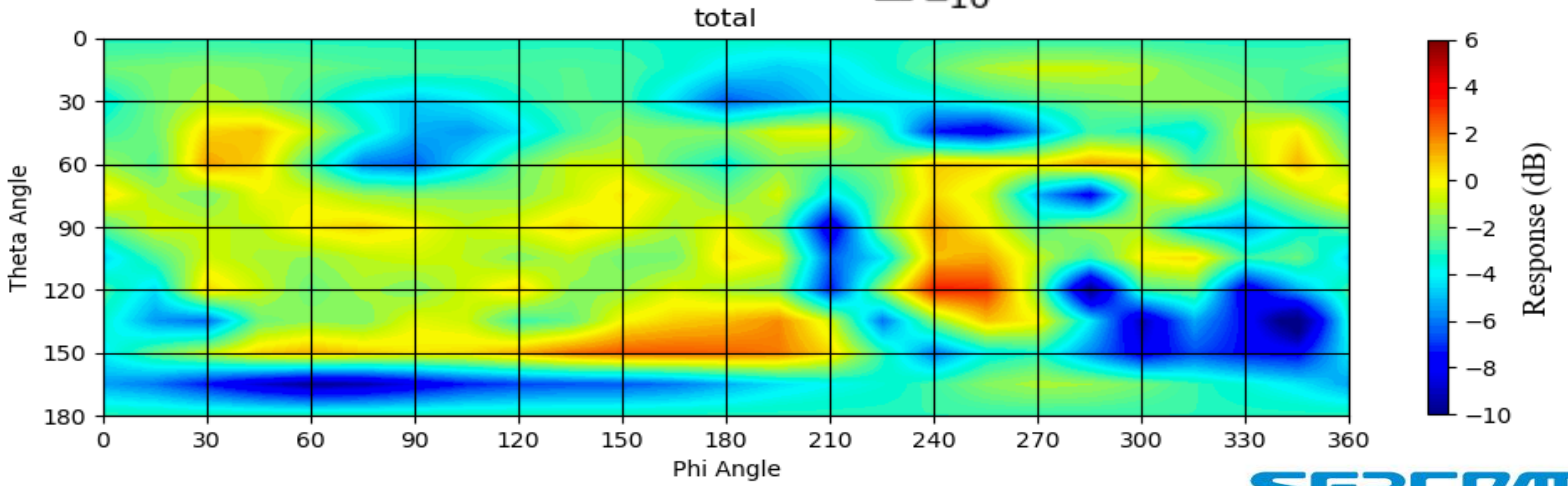


BT_YZ plane - Front to back



3D Radiation Pattern - BT Gain Total@2450MHz





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