

Draeger

CU5006-1 Rev 01

M300 and M540 Results

Author: Chis Tomlin

Date: 21/7/2015

- The tuning of the CU5006-1 antenna was to be finalised within the M300 and M540 units from Draeger.
- The tuning is optimised to be able to use one antenna design for both units.

Antenna placement

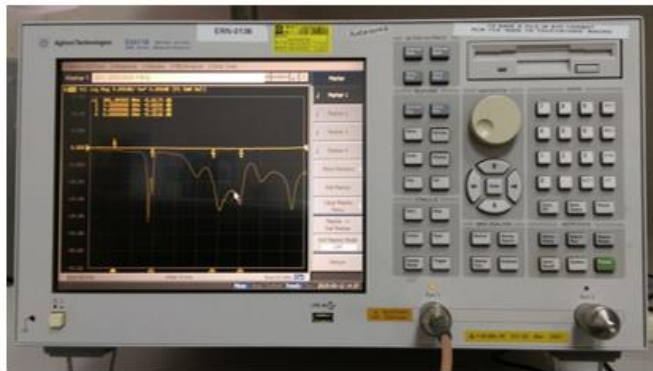
M300



M540

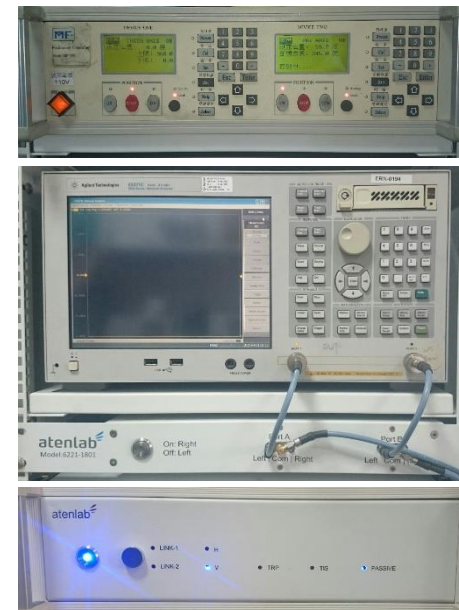


Return loss/Isolation



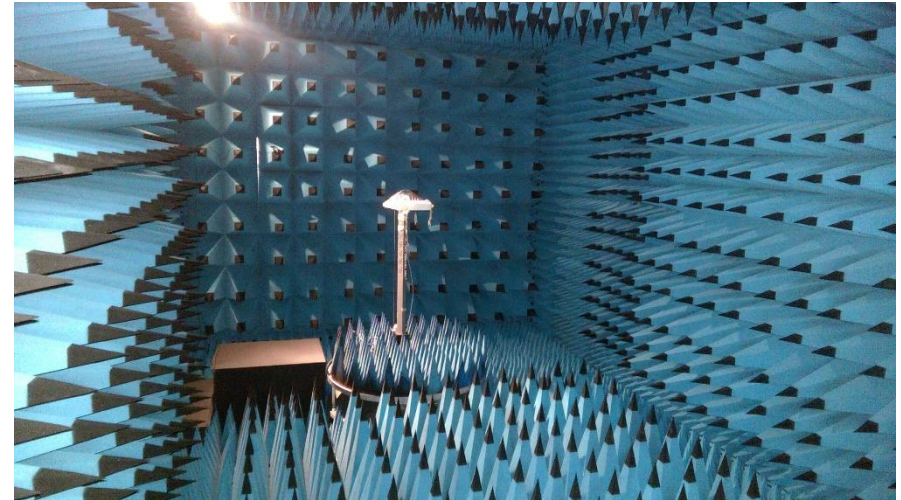
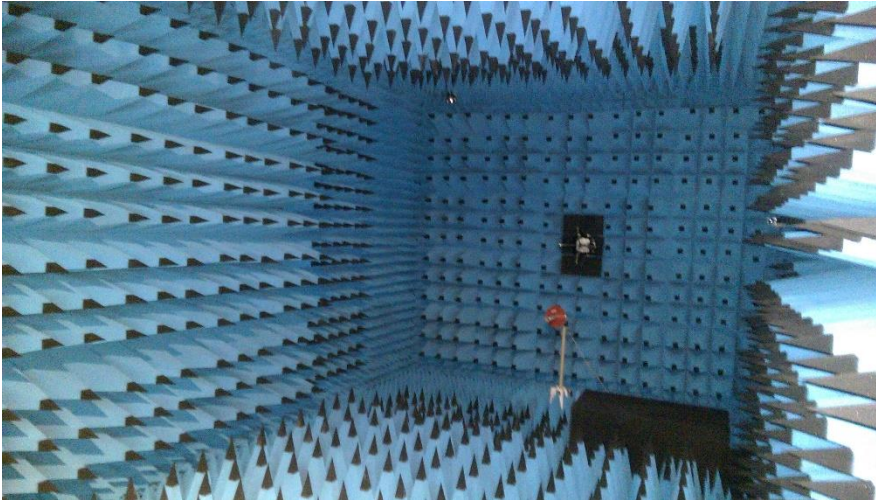
Agilent E5071B (300KHz-8.5GHz) ENA

Passive Efficiency



Chamber equipment Rig

Anechoic chamber 700MHz – 6000MHz



RF Choke



All tests using this arrangement were performed in free space. The return loss at the input of the matching circuit was measured using an Agilent ENA E5071C RF Network Analyser. For all measurements, the relevant sleeve choke was used to reduce the effect of the cable radiation.

Results Summary

M540



Antenna

<i>M540</i>	<i>2400-2500 MHz</i>	<i>4900-5900 MHz</i>
Return Loss	<-8dB	<-10dB
Efficiency (Min)	39.5%	50.1%
Efficiency (Avg)	50.0%	57.1%
Gain (Peak)	3.10dBi	3.78dBi

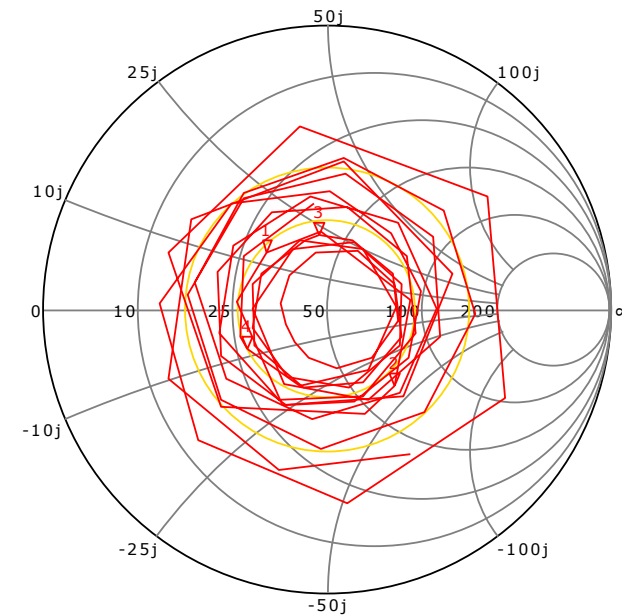
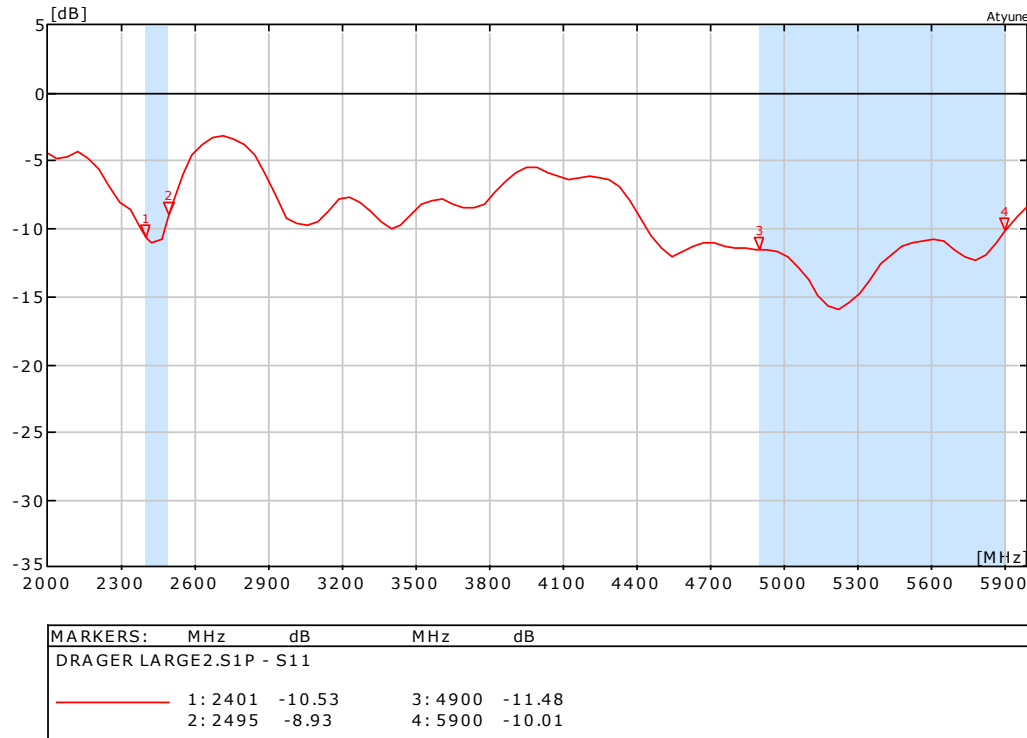
M300



Antenna

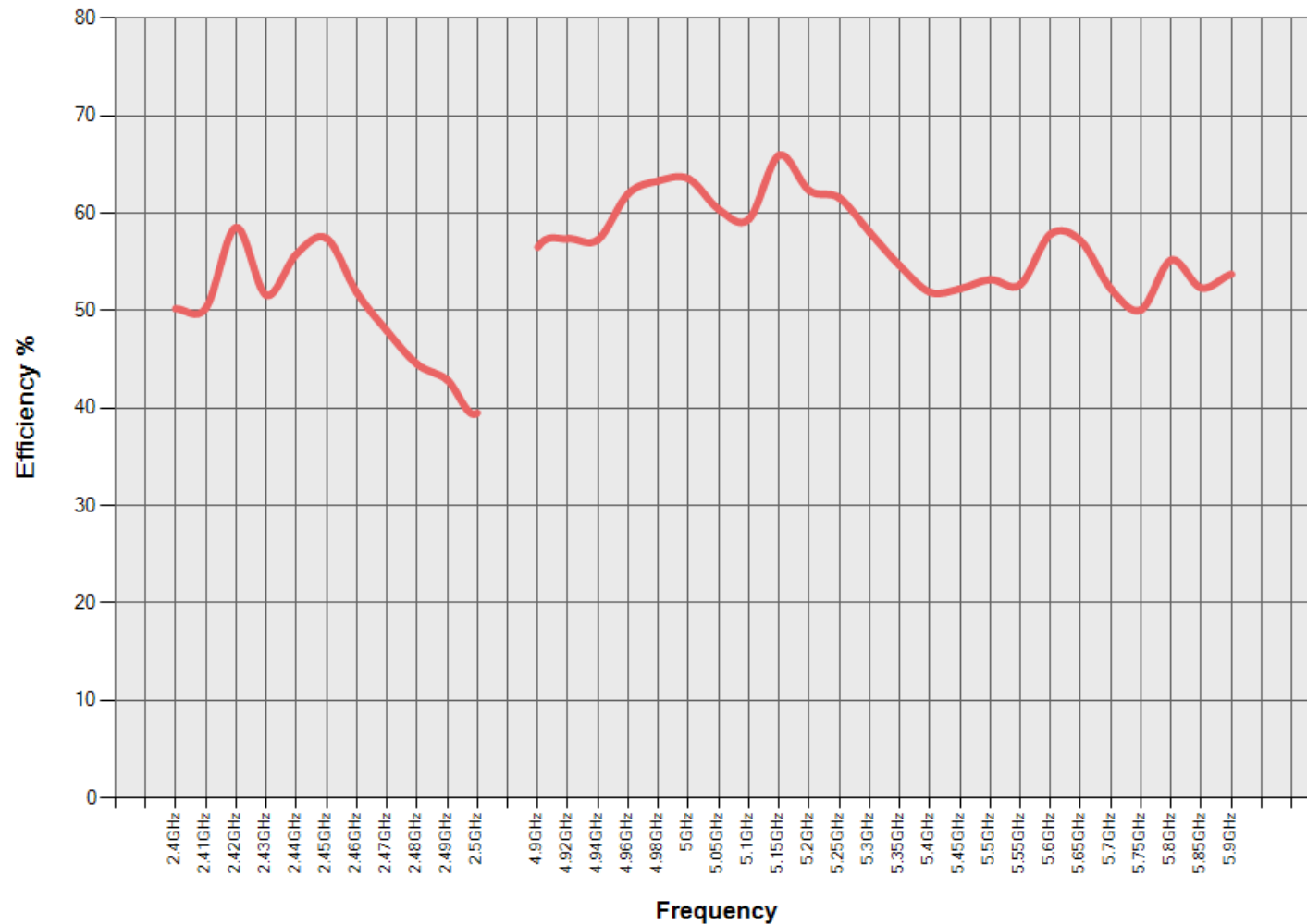
<i>M300</i>	<i>2400-2500 MHz</i>	<i>4900-5900 MHz</i>
Return Loss	<-8dB	<-5dB
Efficiency (Min)	25.7%	28.1%
Efficiency (Avg)	29.3%	33.8%
Gain (Peak)	-0.66dBi	0.0dBi

- The Return Loss at the input of the matching circuit was measured using an Agilent E5071B RF Network Analyser.

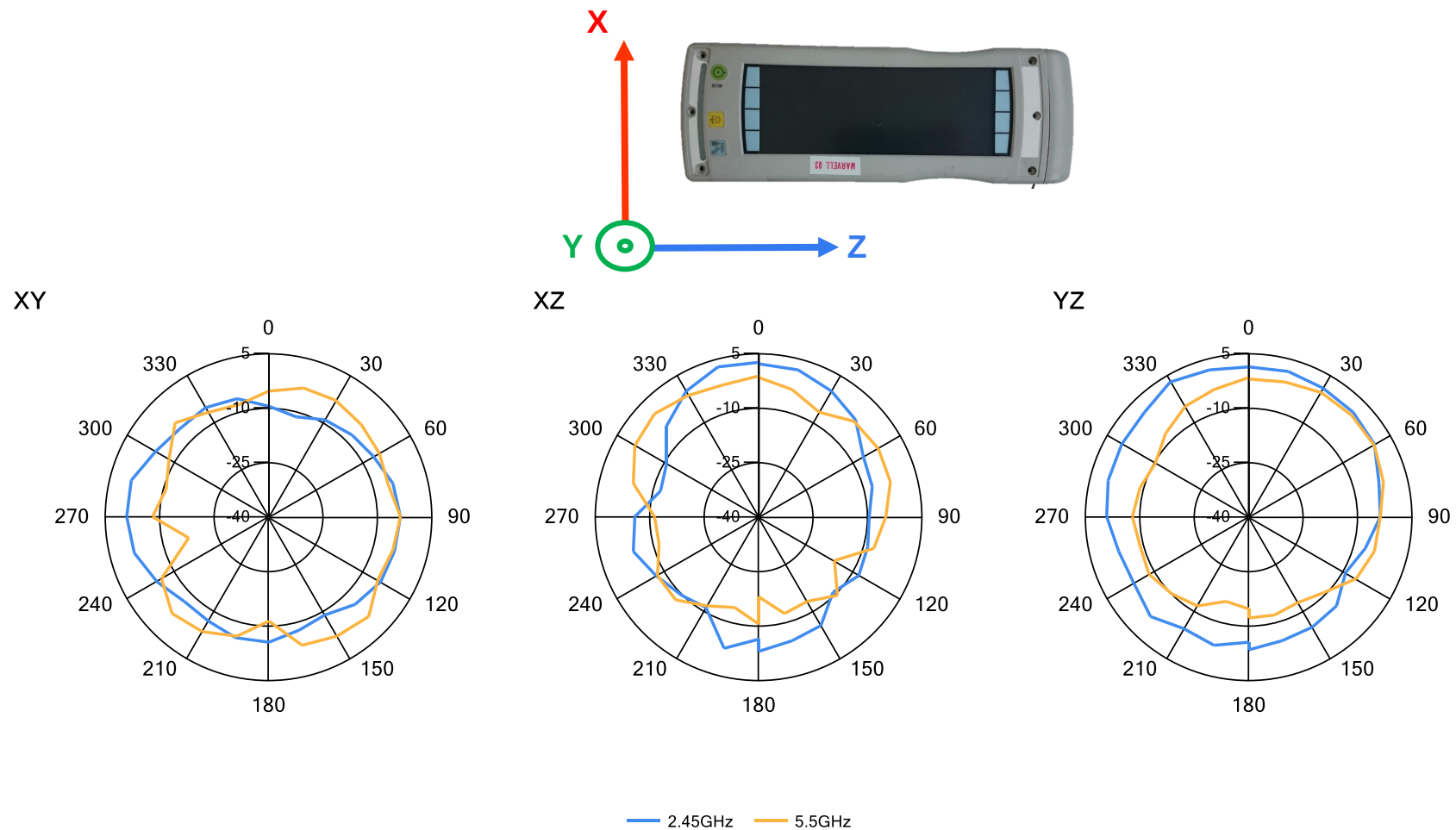


Passive Efficiency – M540

- Antenna efficiency measured in anechoic chamber.



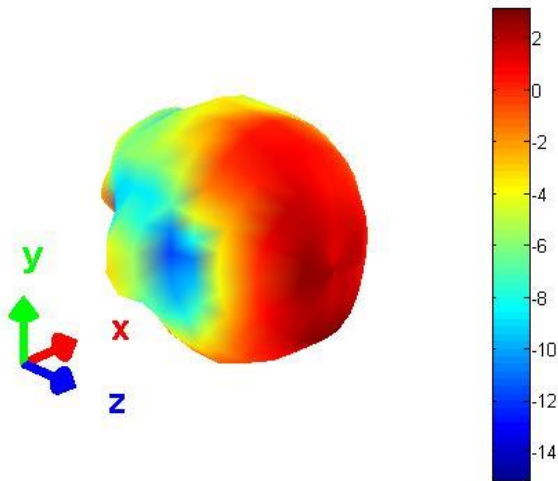
Polar Plot - M540



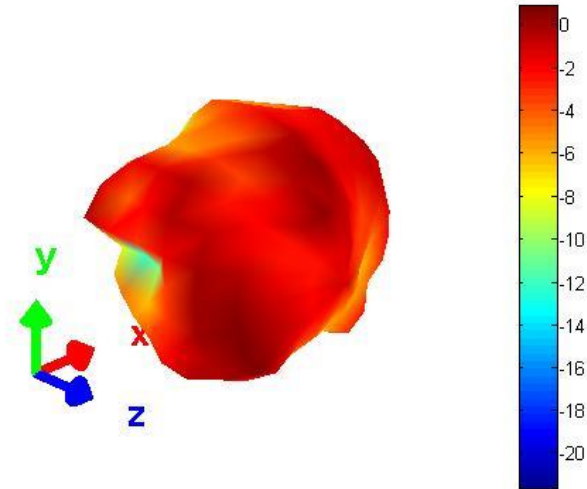
3D Radiation pattern - M540



Drag to rotate the pattern by using Adobe Reader.

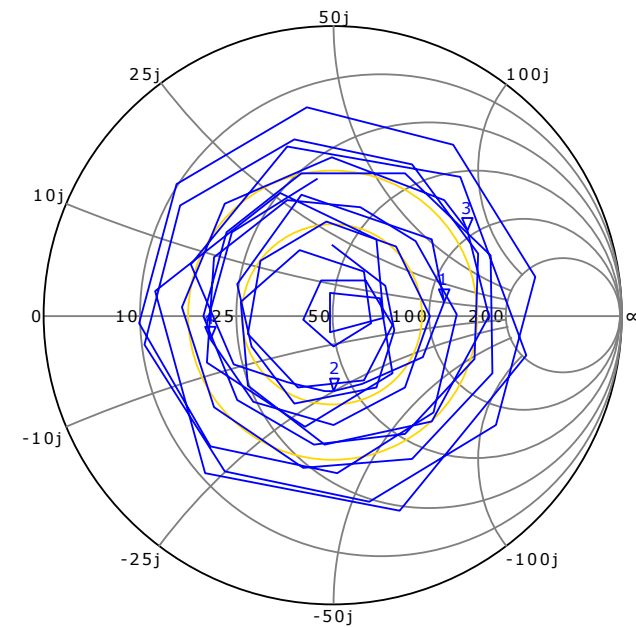
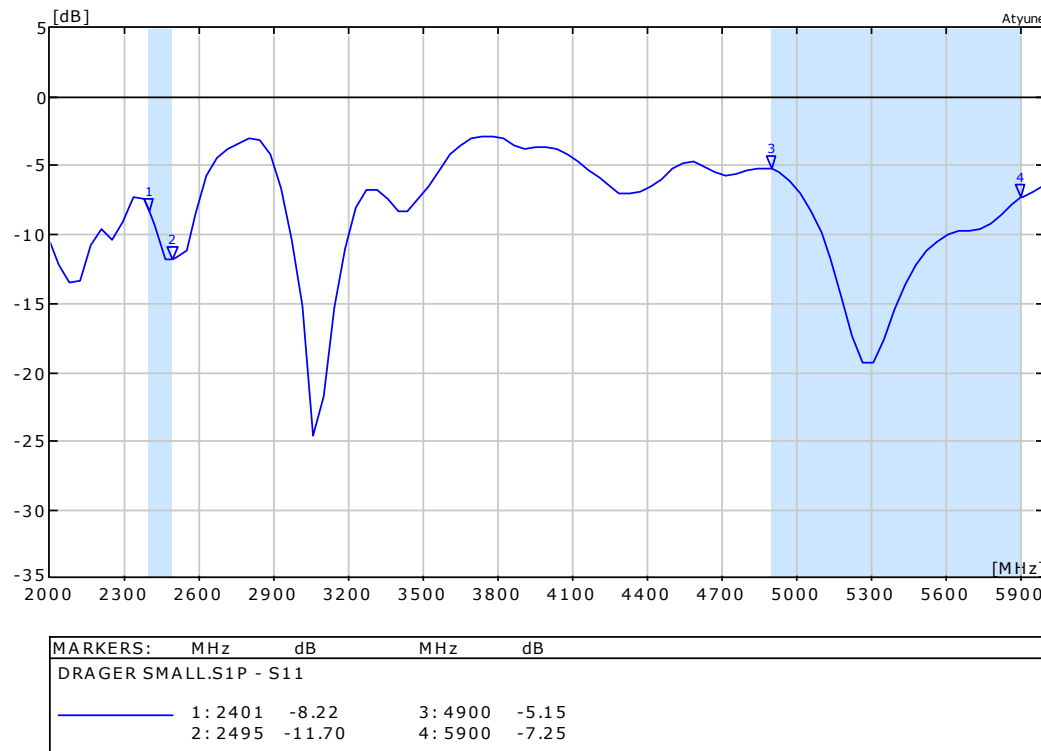


2.45GHz



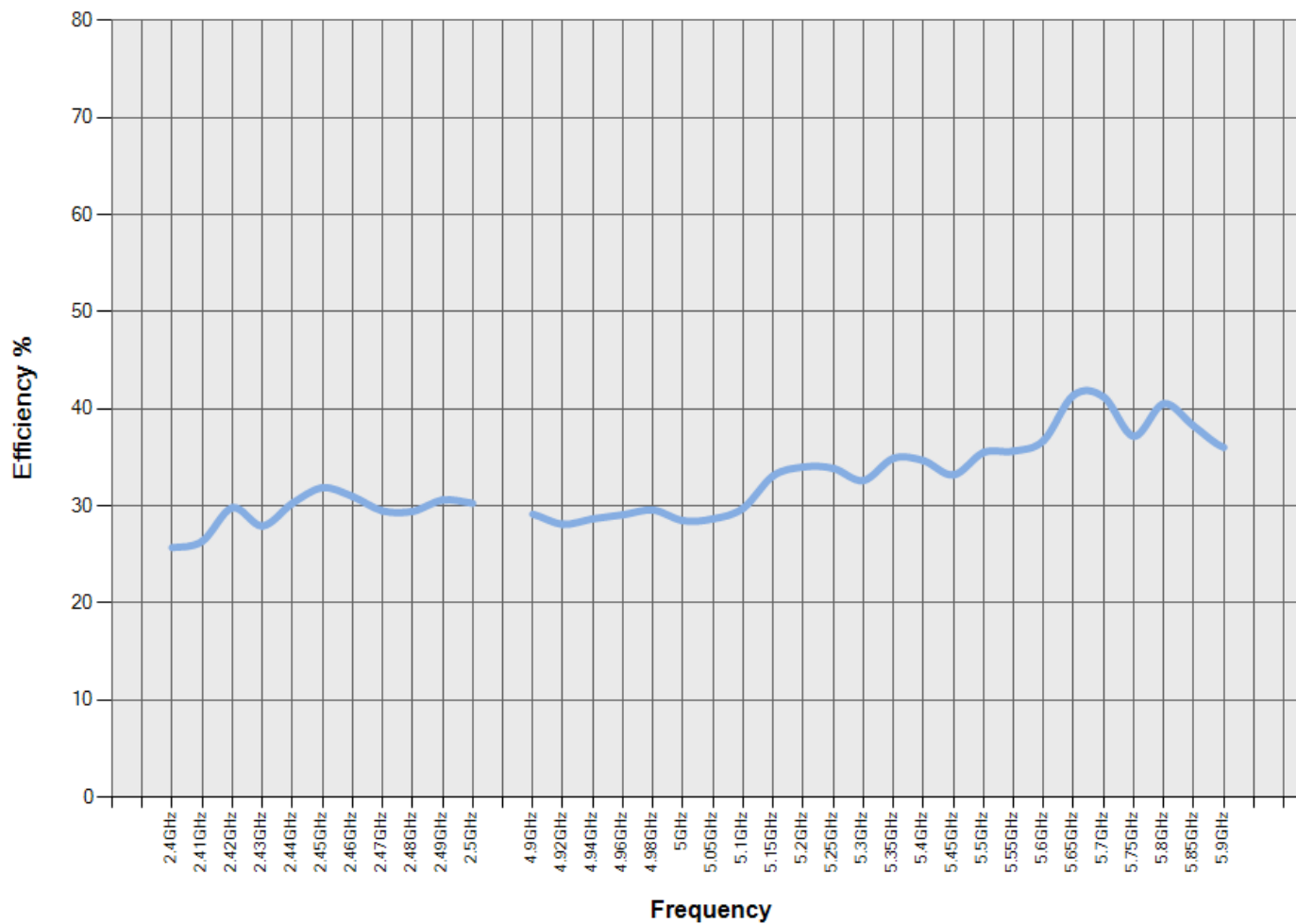
5.5GHz

- The Return Loss at the input of the matching circuit was measured using an Agilent E5071B RF Network Analyser.



Passive Efficiency – M300

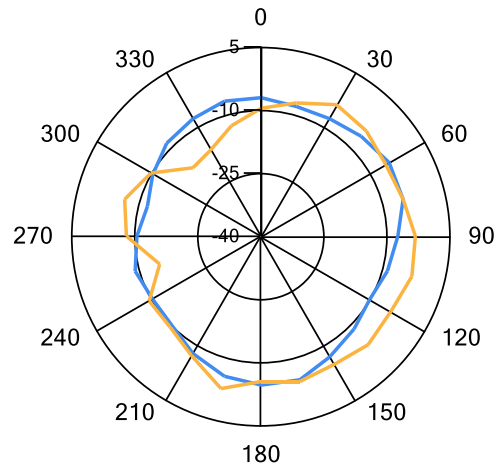
- Antenna efficiency measured in anechoic chamber.



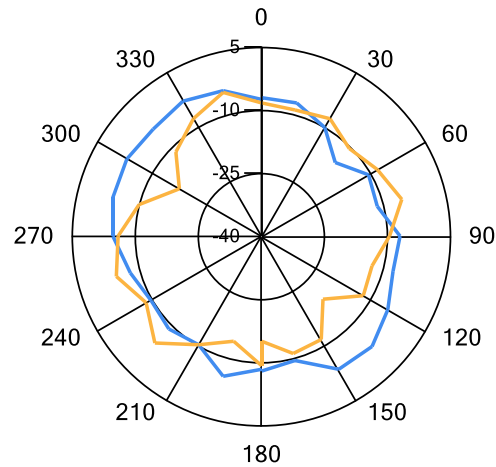
Polar Plot – M300



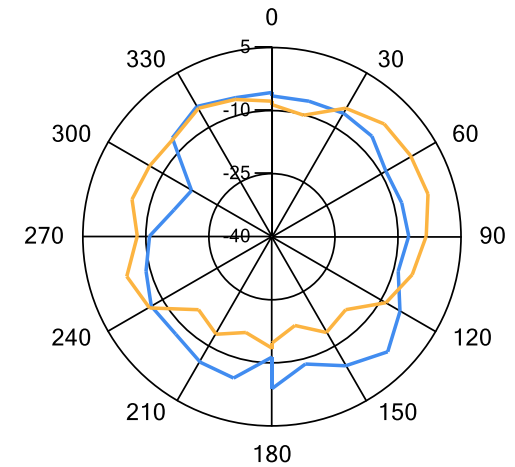
XY



XZ



YZ

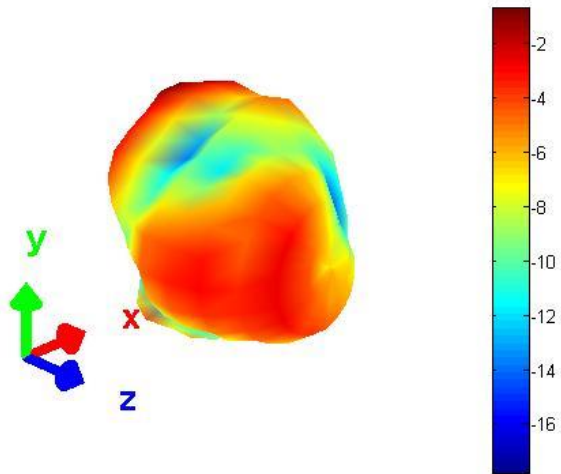


— 2.45GHz — 5.5GHz

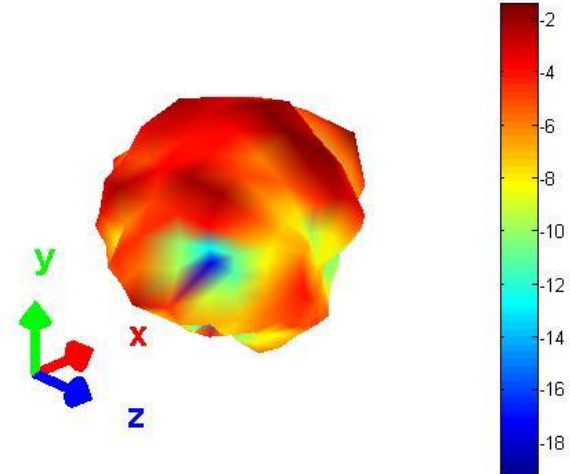
3D Radiation pattern – M300



Drag to rotate the pattern by using Adobe Reader.



2.45GHz



5.5GHz

Statement On Intellectual Property & Disclaimer



Statement on Intellectual Property

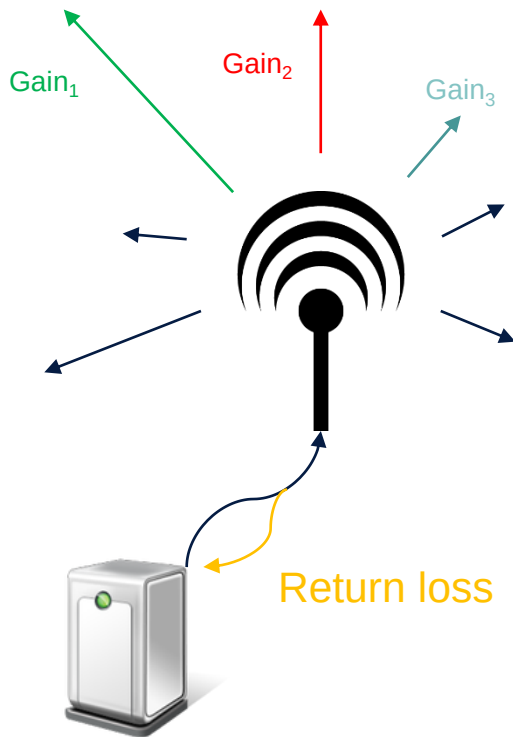
It is the policy of Antenova Ltd to file worldwide patents on all novel technology and exploitable ideas developed within the company. All information provided in this document is, and shall remain, the property of Antenova. Nothing herein shall be construed as granting or conferring any rights by license or otherwise in the Information except as expressly provided herein. A recipient acquires hereunder only a limited right to use the Information solely for the purpose of evaluation of the technology, subject to the terms and conditions set out in an associated Non Disclosure Agreement.

Disclaimer

Antenova accepts no responsibility for injury to the individual resulting from the use or misuse of this product.

End of Document

- **Return Loss:** It is the loss of signal power resulting from the reflection caused at a discontinuity in a transmission line.
- **Gain:** It is a figure which combines the antenna's directivity and electrical efficiency, and describes how well the antenna converts input power into radio wave headed in a specified direction and how well the antenna converts radio waves arriving from a specified direction into electrical power.
- **Efficiency:** The ratio of the total power radiated by an antenna to the net power accepted by the antenna from the connected transmitter.
- **Radiation Pattern:** A plot of the gain as a function of direction.



$$\frac{1}{\text{return loss}} \propto \text{Efficiency} \propto \frac{\text{Gain}_1 + \text{Gain}_2 + \text{Gain}_3 + \dots + \text{Gain}_N}{N}$$