



AOS (Antenna Optimisation Service)

Customer: Buddi

Project: OBC Dock

Report: SZ23-037-R02_915

06 SEP 2023





Introduction

- Buddi supplied a OBC dock plus battery pack to find the optimal location and matching for DRACONIS for 928MHz ISM band.

Antenna Requirements	
Application	OBC Dock
Frequency Range (MHz)	902-928
Solution used	DRACONIS (SZK-C-2M10-050-01)
Cable length (mm)	50mm

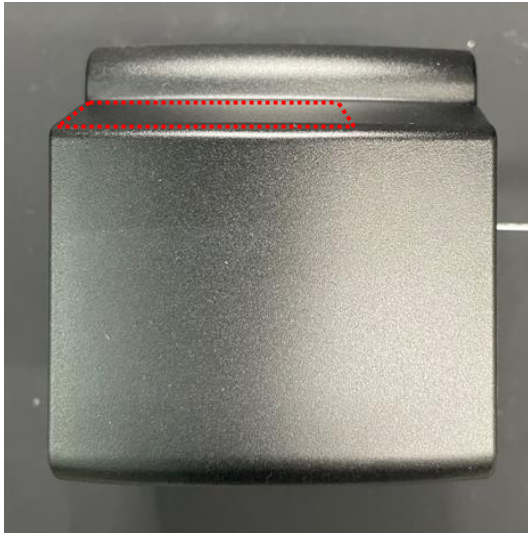




Test Setup

- The antenna was placed as shown below. This location was chosen to ensure the best clearance when battery pack is docked.
- A matching circuit was also used to optimise the impedance match for the undocked setup.

Antenna adhered to the inside of the top lid enclosure as shown below. This area was chosen to ensure maximum clearance.



Final assembled device.



- DRACONIS 915





Test Equipment

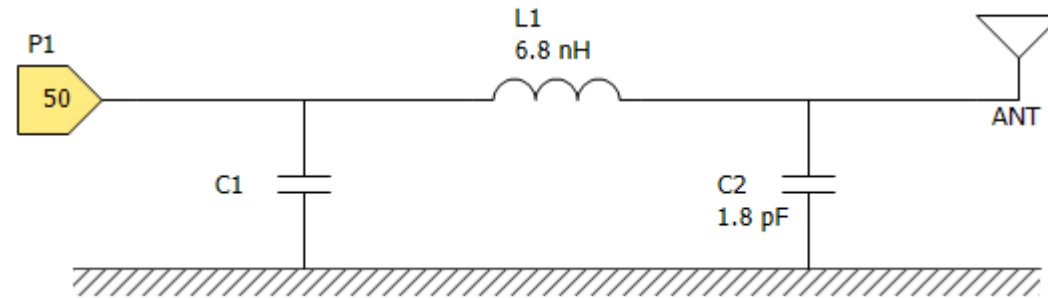
Equipment	Model/Type	Calibration due date
Network Analyser	Rhode&Schwarz ZNB-8	07/2024
Calibration Kit	Rhode&Schwarz ZV-Z132	07/2024
Chamber	AMS-8500	CTIA Approved IST



**DRACONIS 915**

Frequency Range (MHz)	902-928
Peak Efficiency (%)	52.1
Avg Efficiency (%)	49.0
Peak Gain (dBi)	0.85



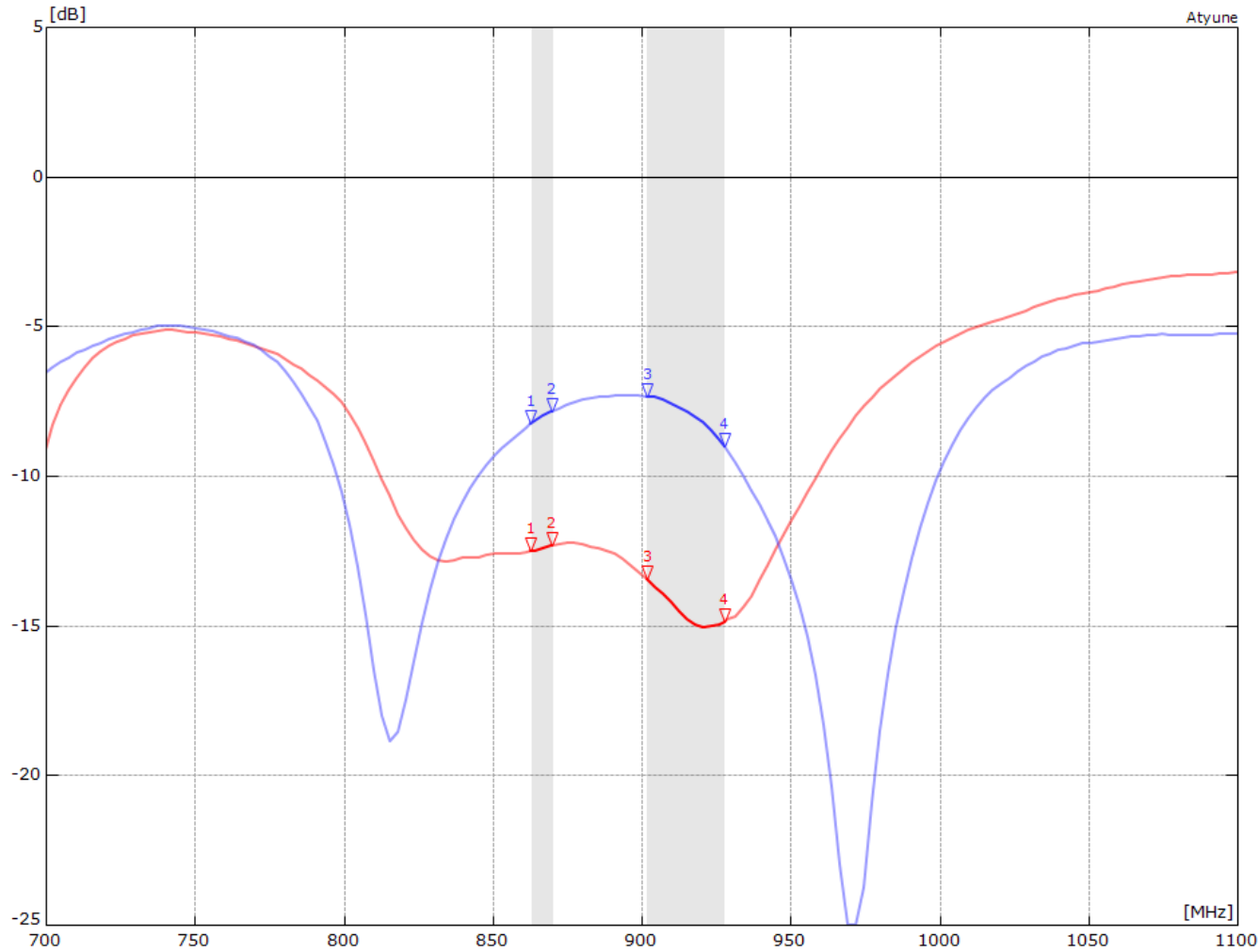


Designator	Type	Value	Package	MPN
C1	NA	DNP	0402	Not Fitted
L1	Ind	6.8nH	0402	LQG15HS6N8H02D
C2	Cap	1.8pF	0402	GJM1555C1H1R8WB01D





S-Parameters



MARKERS: MHz dB MHz dB			
915-SZK-C-2M10-050-01-6.8nHseri 1.8pFshun .s1p - S11			
1:	863	-12.50	3: 902 -13.42
2:	870	-12.29	4: 928 -14.84
915-SZK-C-2M10-050-01-6.8nHseri 1.8pFshun with battery .s1p - S11			
1:	863	-8.25	3: 902 -7.31
2:	870	-7.82	4: 928 -8.98

- DRACONIS 915

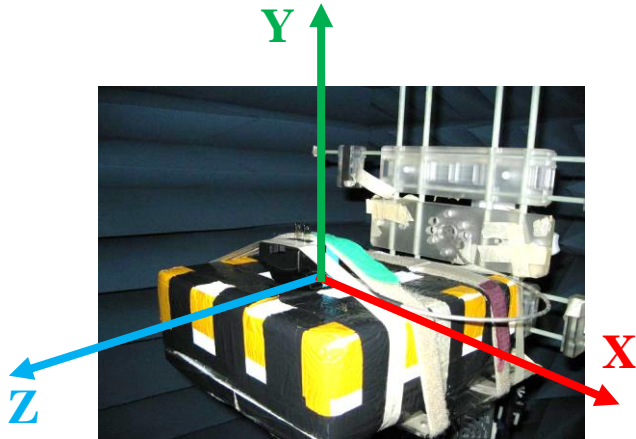




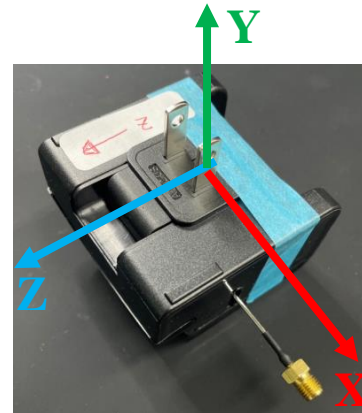
Chamber Test Setup

- The device was placed in the chamber as shown. The antenna under test used the required RF choke to prevent cable radiation which can give false high performance and incorrect radiation pattern data.

- DRACONIS 915

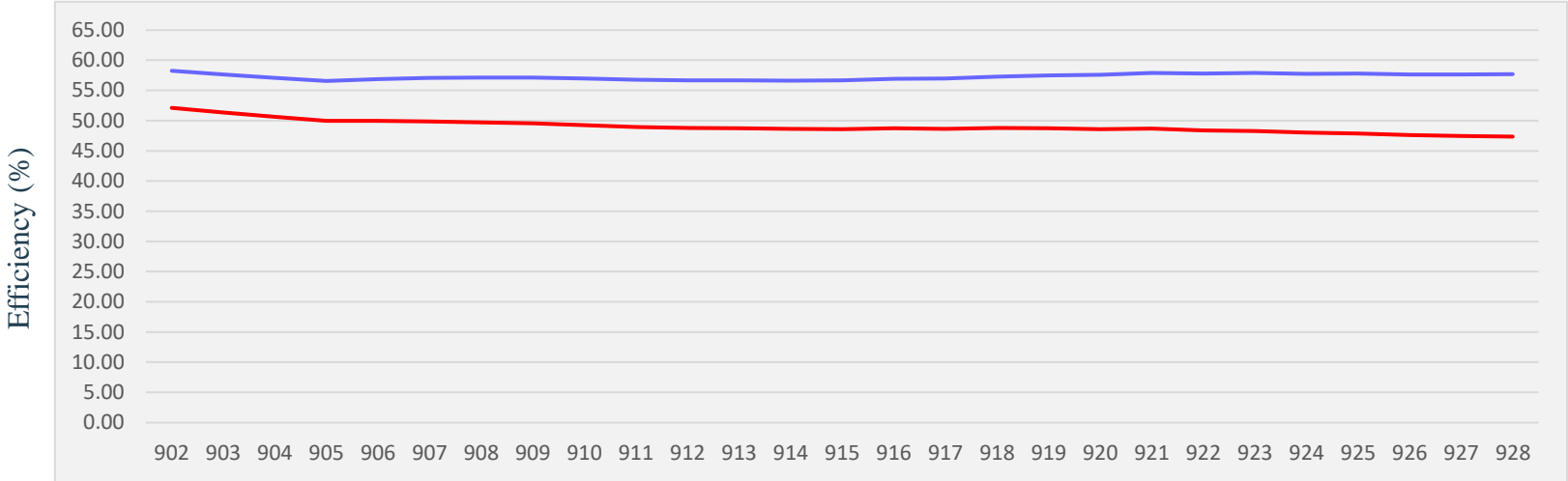


- DRACONIS 915

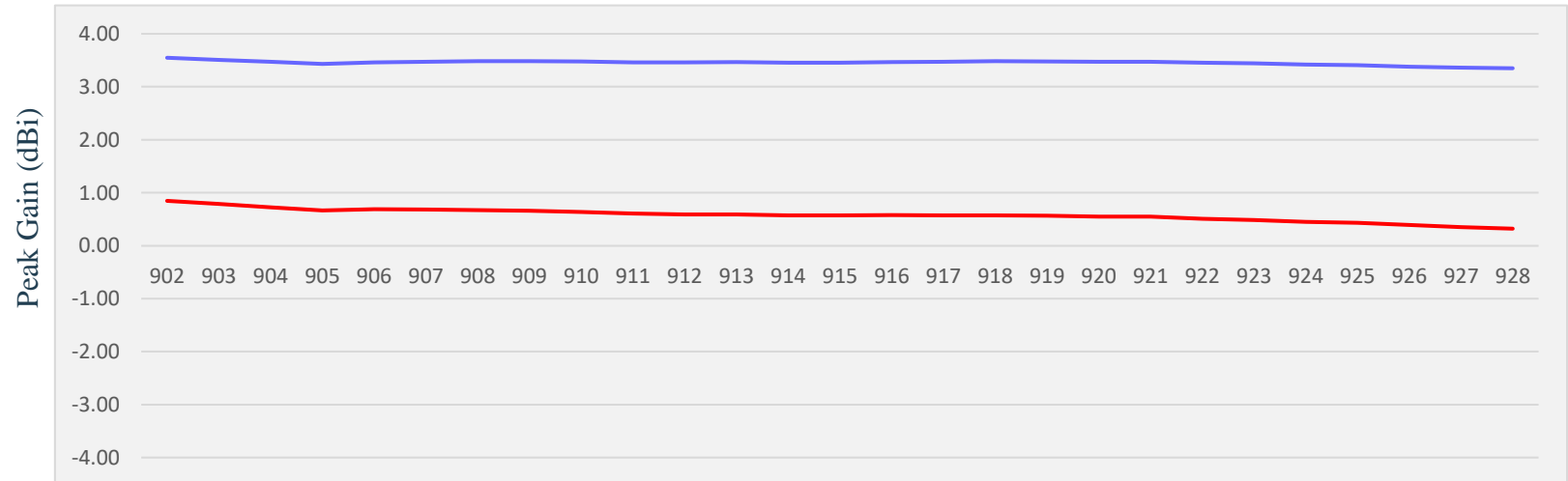




Antenna Efficiency / Peak Gain



- DRACONIS 915

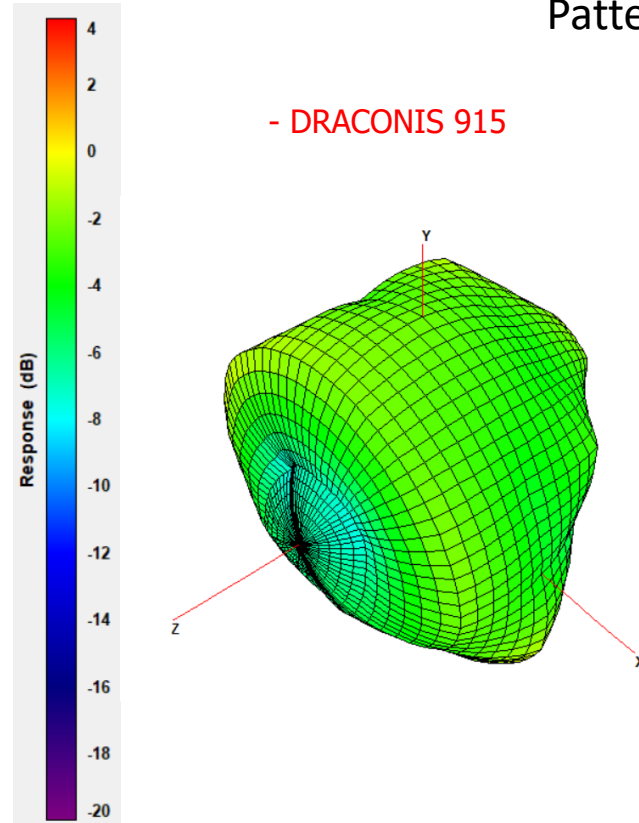




3D Radiation Pattern

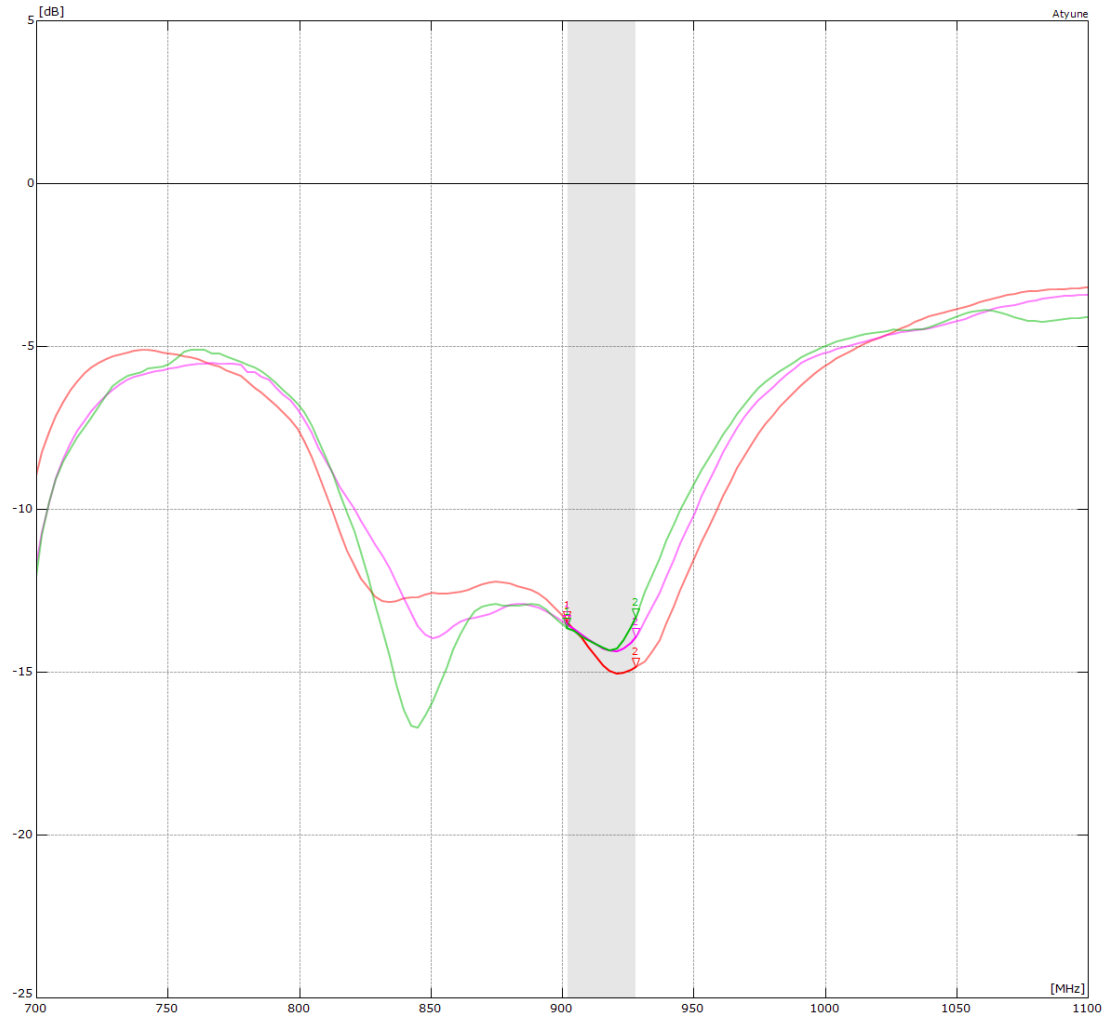
Patterns at 915MHz

- DRACONIS 915





S-Parameters – Device Plugged to outlet



MARKERS: MHz		dB	
915-SZK-C-2M10-050-01-6.8nHseri 1.8pFshun .s1p - S11			
1	902	-13.42	
2	928	-14.84	
915_wo_dock_in outlet_1.s1p - S11			
1	902	-13.53	
2	928	-13.94	
915_wo_dock_in outlet_2.s1p - S11			
1	902	-13.63	
2	928	-13.33	

- DRACONIS 915 undocked

- DRACONIS 915 undocked outlet 1



- DRACONIS 915 undocked outlet 2



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