



HL Global Measurement Report for Kayi Enerji Pendant

HLG Antenna Solution

Prepared by: Charles Hong

Date: 2024-06-25

- Brief Project Description
 - Project Name: Kayi Enerji Pendant
- Antenna Configuration
 - 1x 915MHz antenna
- Antenna Technology
 - Trace fed
 - On board
 - Blade type
 - PCB antenna
- This report shows passive measurement results of HLG blade type antenna (factory sample) in free space.



HL Global, Inc.

No.9 liuzhou Road, Changshu High-tech Industrial Park, Jiangsu, China (P.R.C)

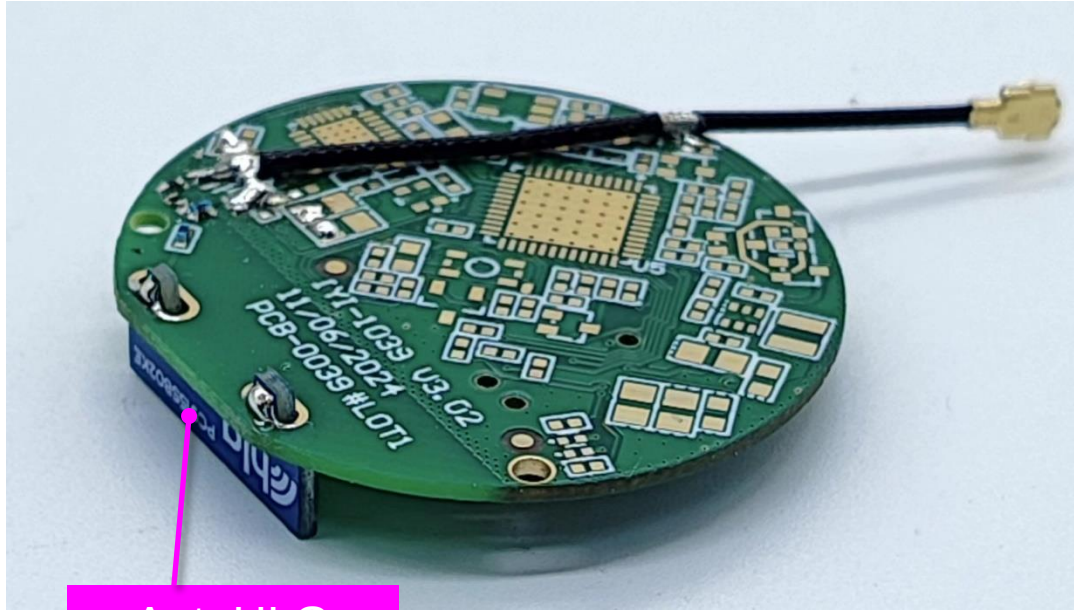
Post Code: 215500

Att: Samuel Wang

Tel: +86 15950975107

E-mail: samuelwang@hlglobalcorp.com

HL Global Antenna

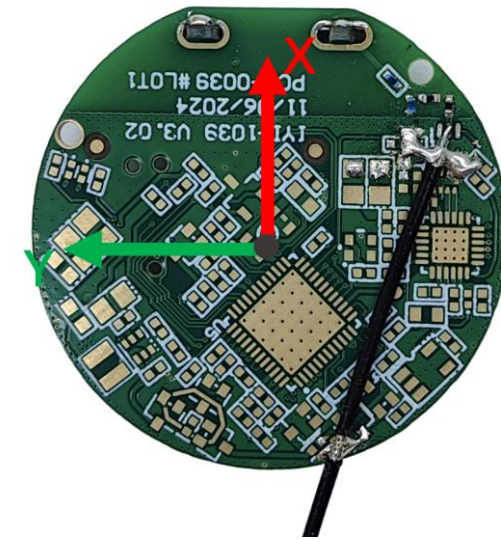


Ant_HLG

Note:

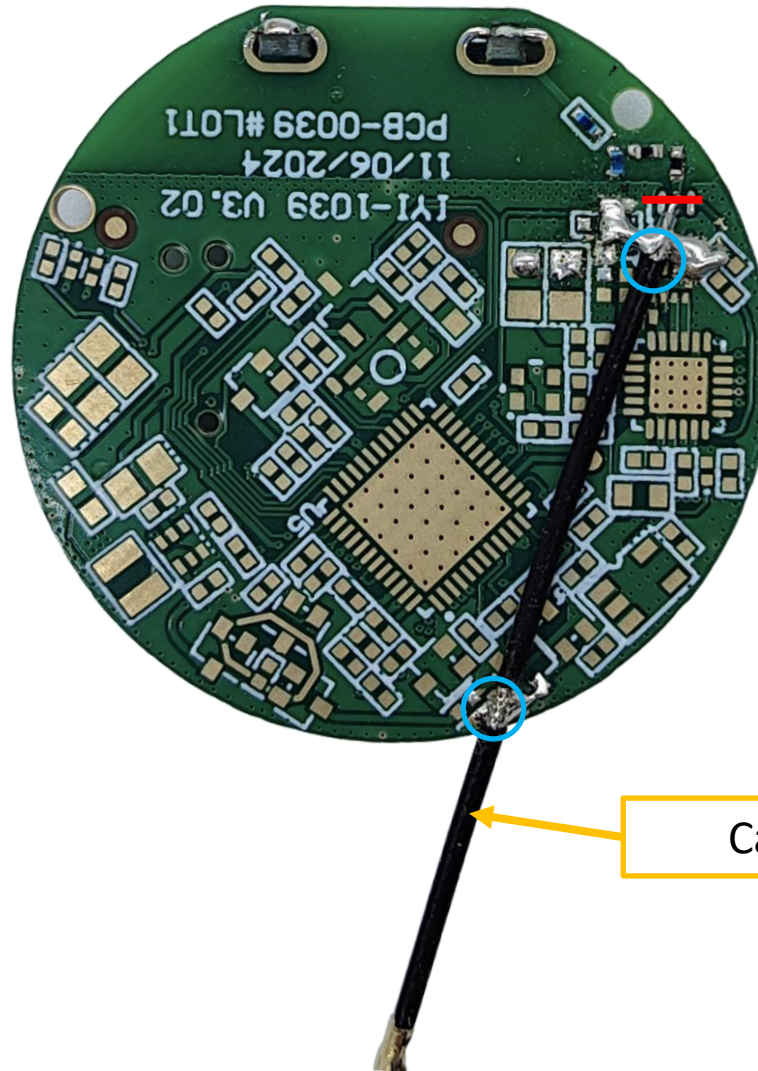
- We used latest bare PCB (receive date: 18th of June 2024) for measurement.
- There is no discernible difference in antenna performance between cases when measured on bare PCB and PCBA.

Antenna Designator	Antenna Part Number	Antenna Dimensions	Revision
Ant_HLG	PC915SB02KE-BZK	16mm x 6.8mm, T=1mm	01



orientation

Measurement Plane

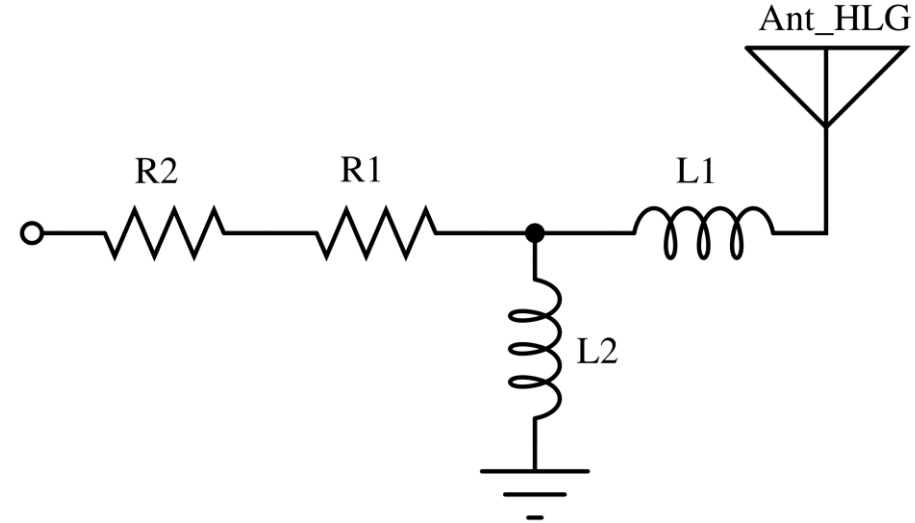


— Measurement plane

○ Cable grounded points

Cable for measurement

Matching Circuit



Antenna Designator	Element Designator	Size	Value	Tolerance	Element PN	Brand
Ant_HLG	L1	0402	20nH	±2%	LQW15AN20NG00D	muRata
	L2	0402	10nH	±2%	LQW15AN10NG00D	muRata
	R1	0402	0Ω	/	/	/
	R2	0402	0Ω	/	/	/

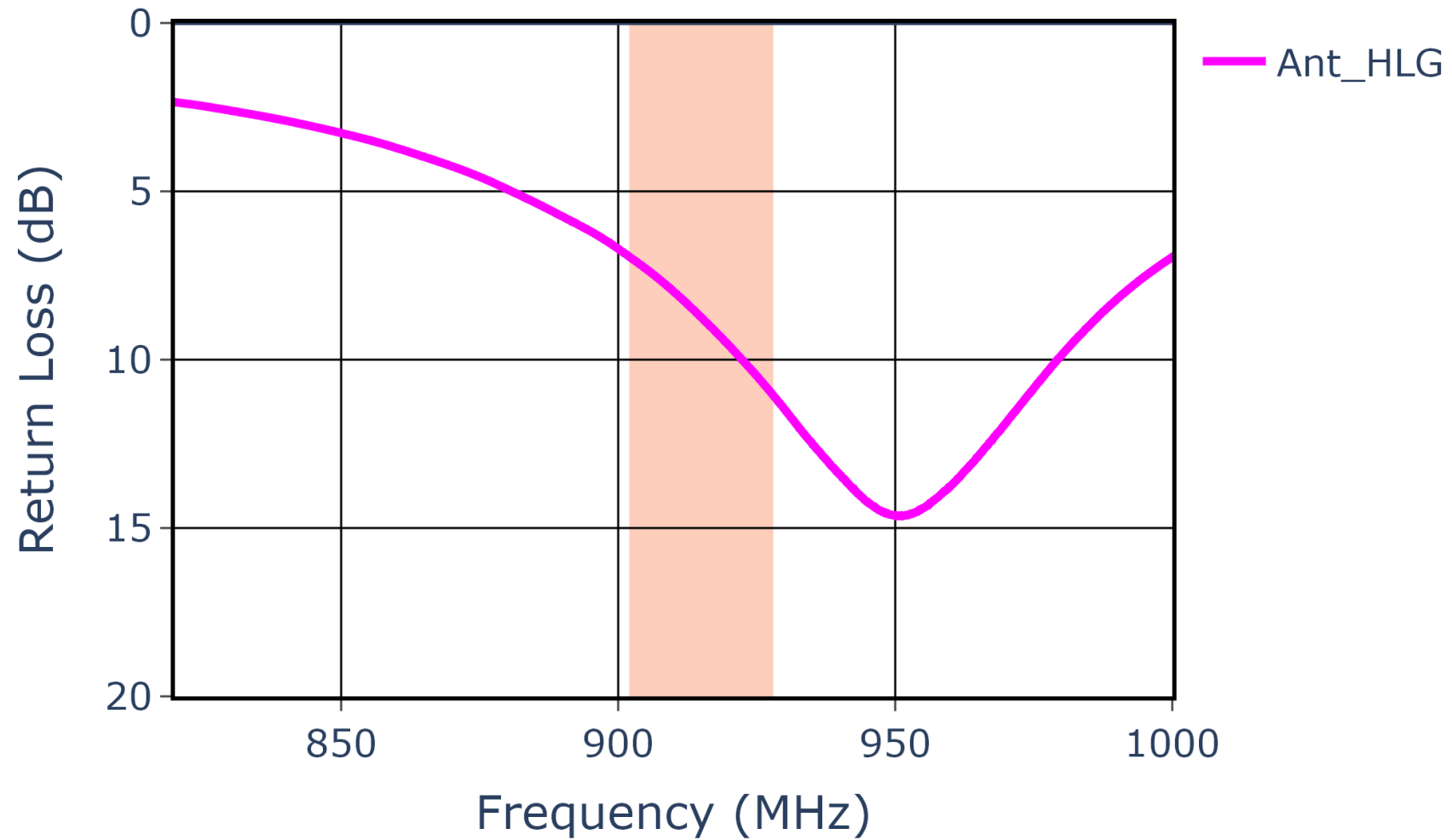
Note: Inductor should be murata LQW series with high Q and high accuracy.



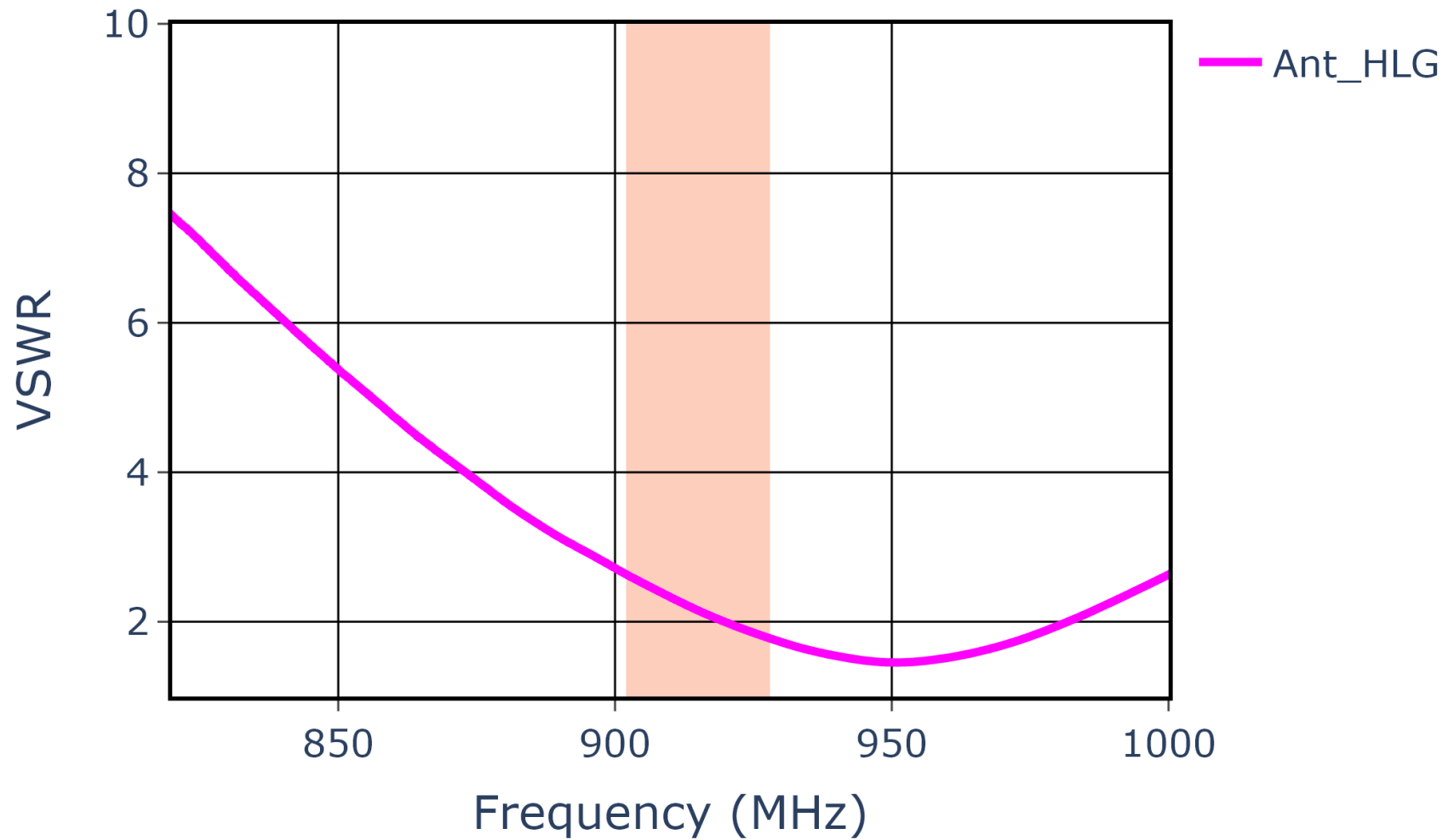
S-parameters

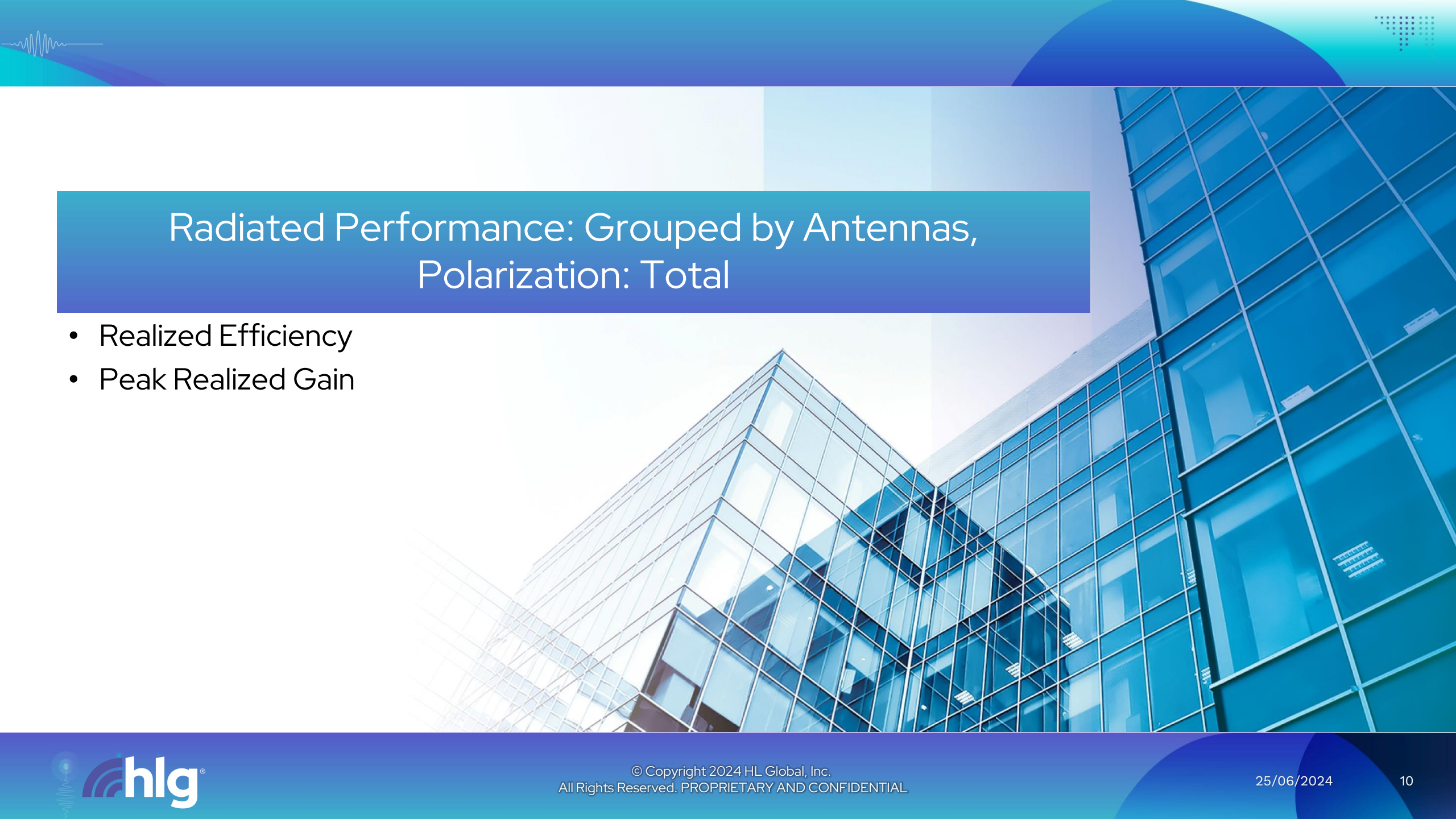
- Return Loss
- VSWR

Return Loss of HLG Antenna



VSWR of HLG Antenna



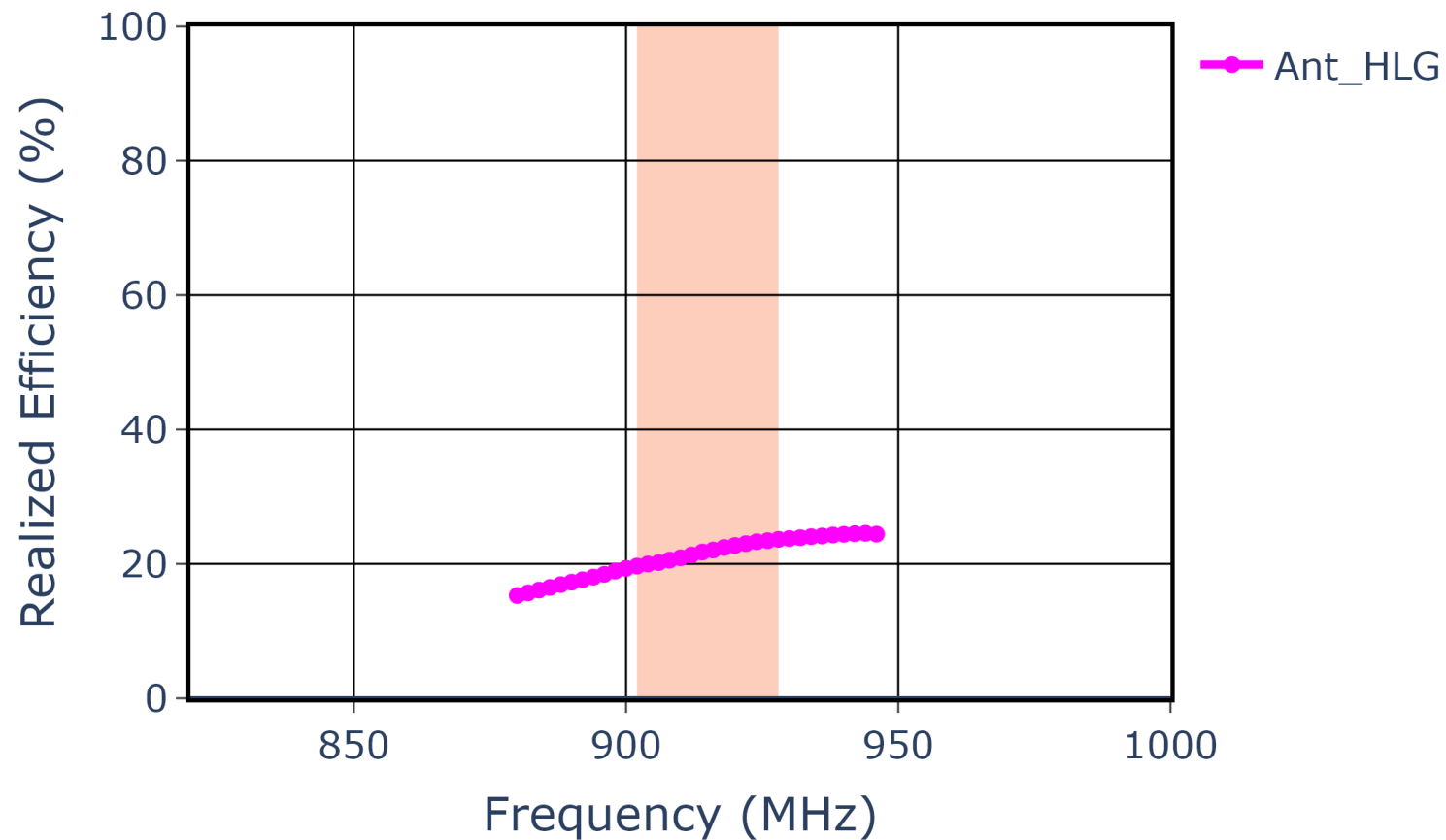


Radiated Performance: Grouped by Antennas, Polarization: Total

- Realized Efficiency
- Peak Realized Gain

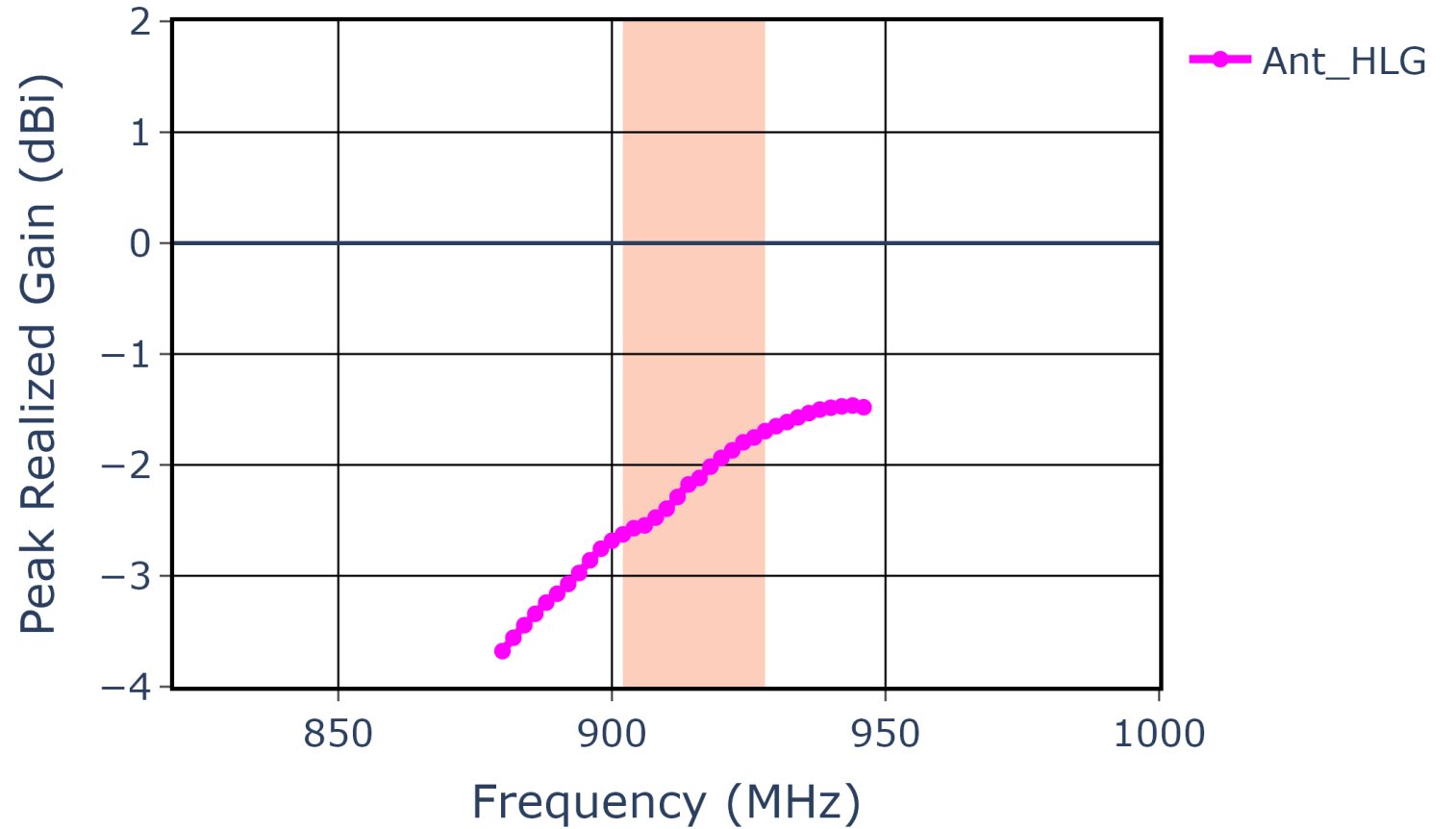
Realized Efficiency of Antennas in 915MHz Band

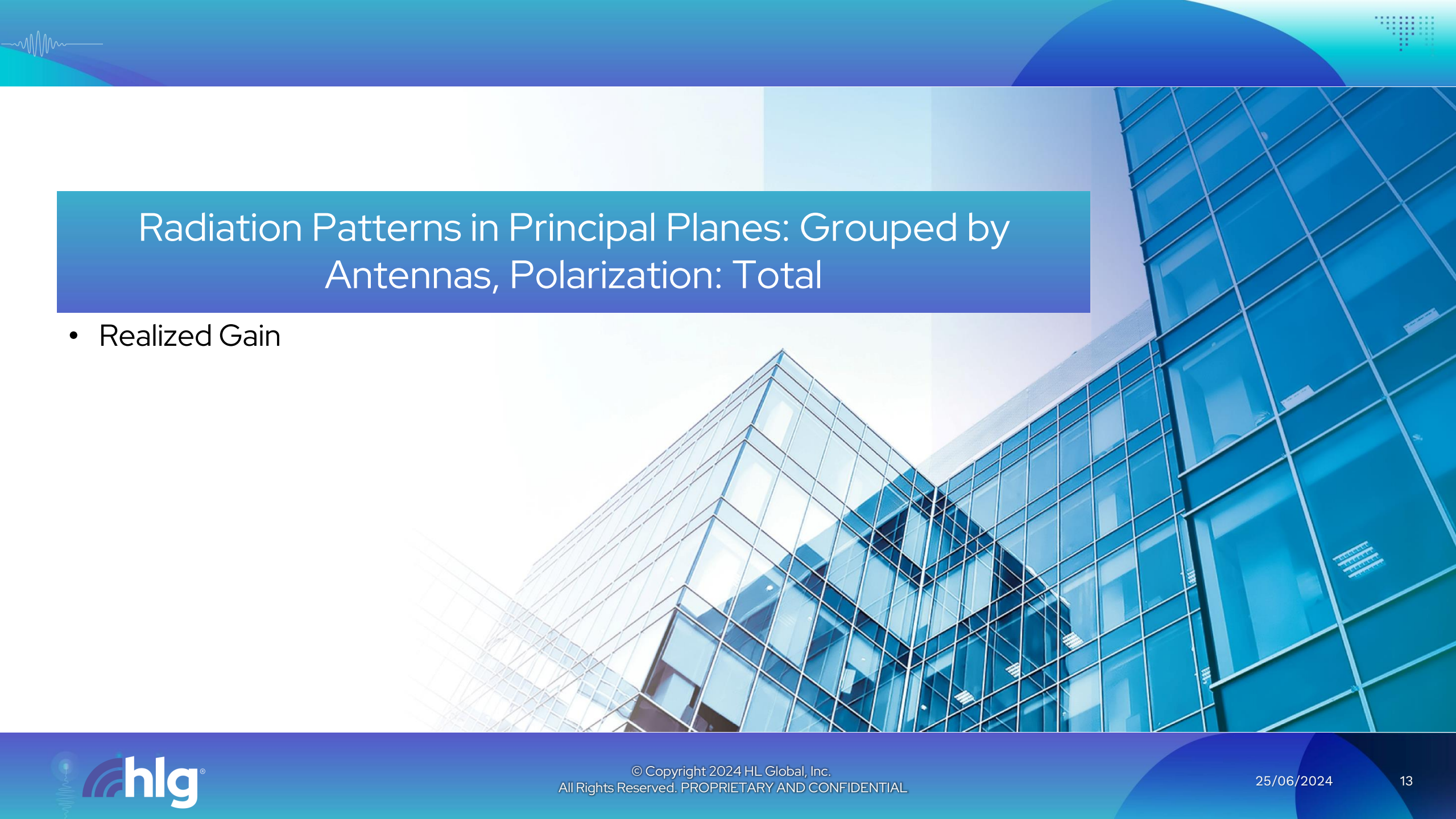
Frequency (MHz)	Ant_HLG (%)
902	20
905	20
908	21
910	21
913	22
915	22
918	22
921	23
923	23
926	23
928	24
Mean	22



Peak Realized Gain of Antennas in 915MHz Band

Frequency (MHz)	Ant_HLG (dBi)
902	-2.6
905	-2.6
908	-2.5
910	-2.4
913	-2.2
915	-2.1
918	-2.0
921	-1.9
923	-1.8
926	-1.8
928	-1.7
Mean	-2.1

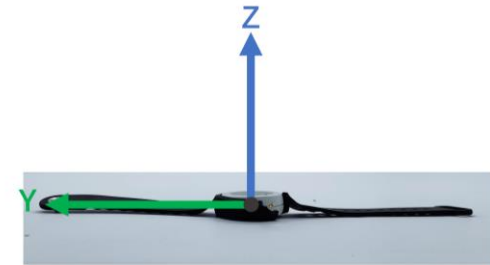
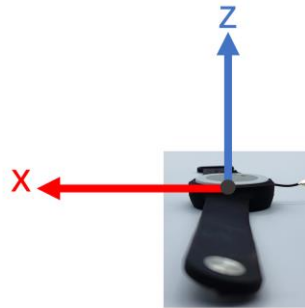
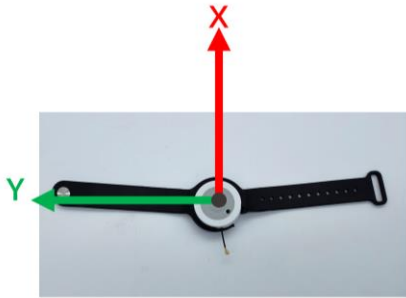




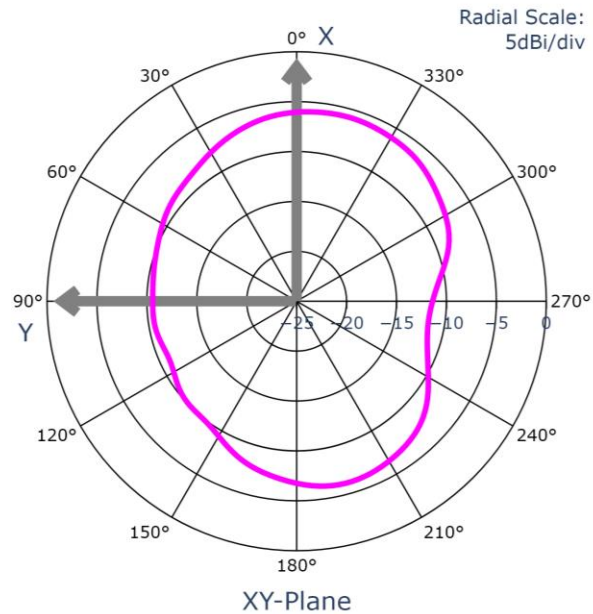
Radiation Patterns in Principal Planes: Grouped by Antennas, Polarization: Total

- Realized Gain

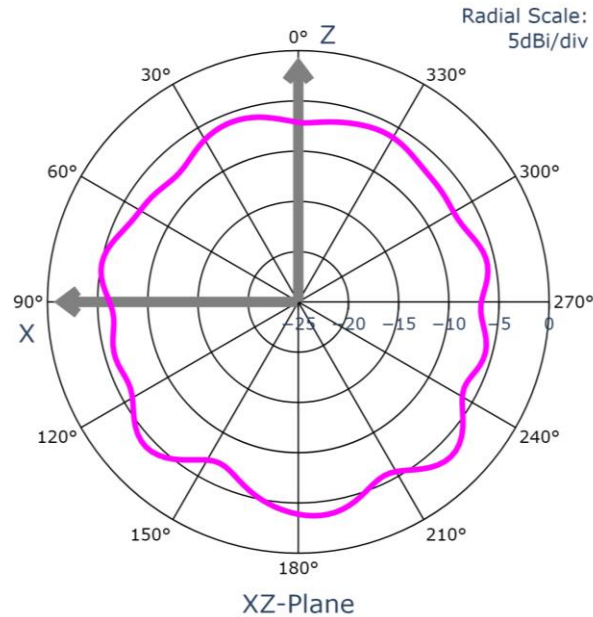
Realized Gain Radiation Patterns of Antennas in 915MHz Band at 902 MHz



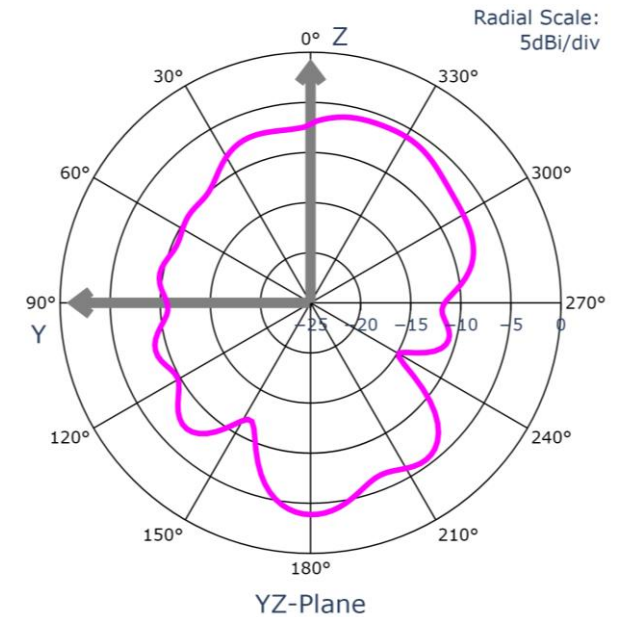
Ant_HLG



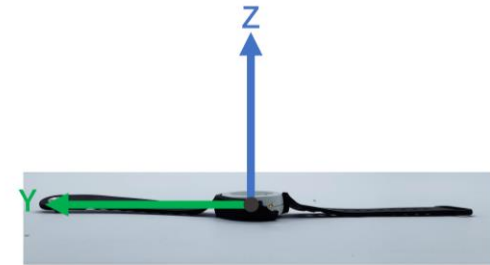
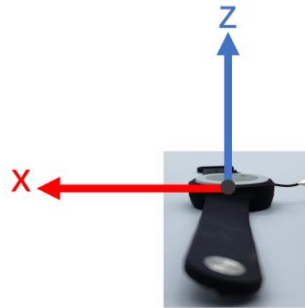
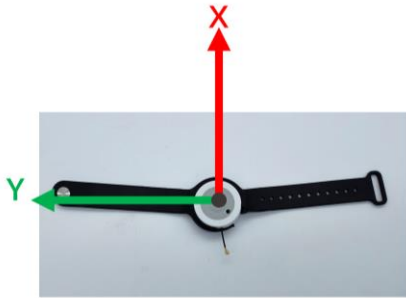
Ant_HLG



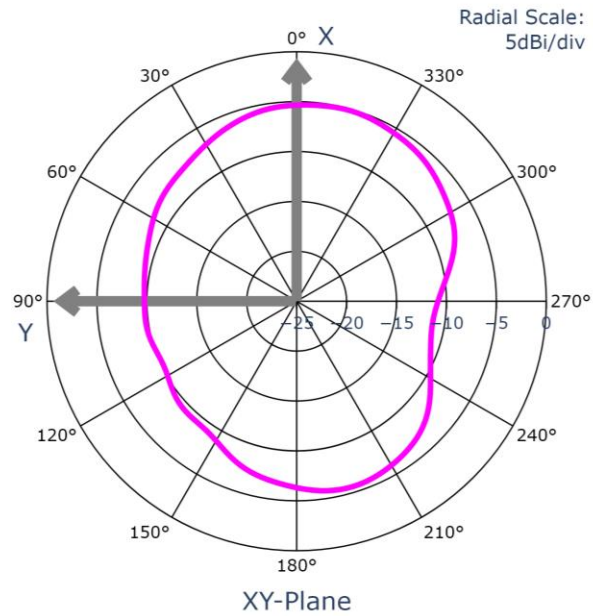
Ant_HLG



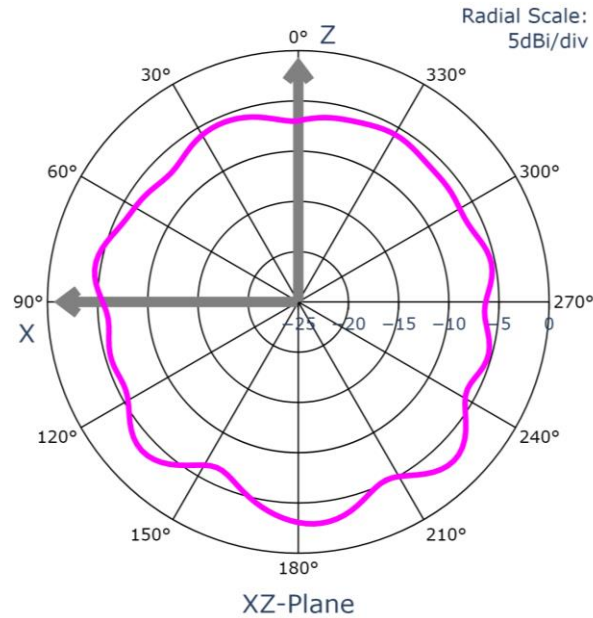
Realized Gain Radiation Patterns of Antennas in 915MHz Band at 916 MHz



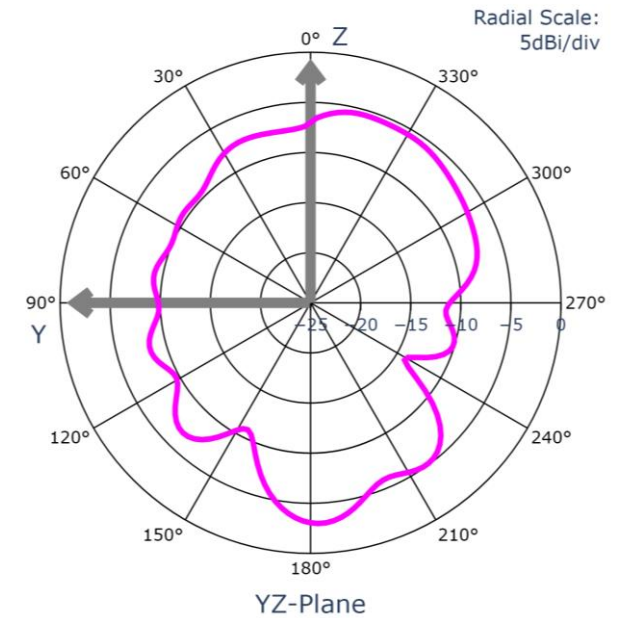
Ant_HLG



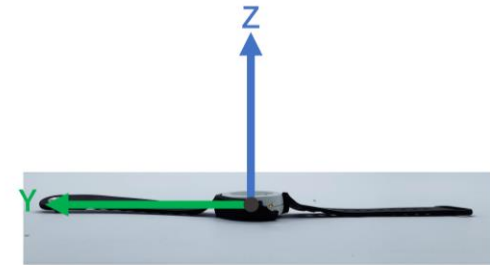
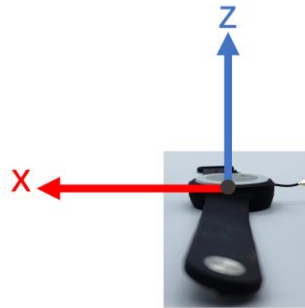
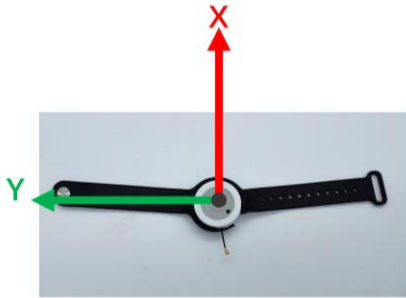
Ant_HLG



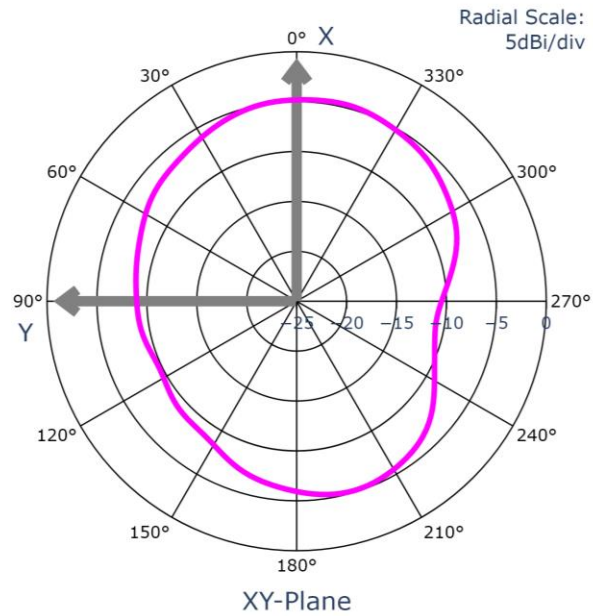
Ant_HLG



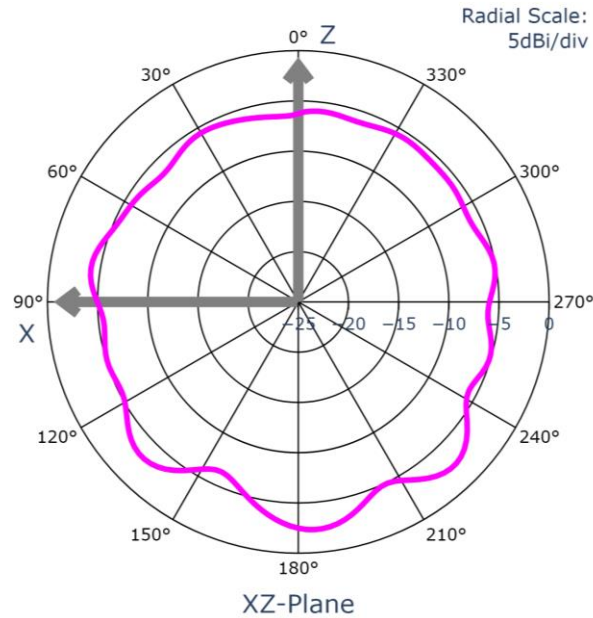
Realized Gain Radiation Patterns of Antennas in 915MHz Band at 930 MHz



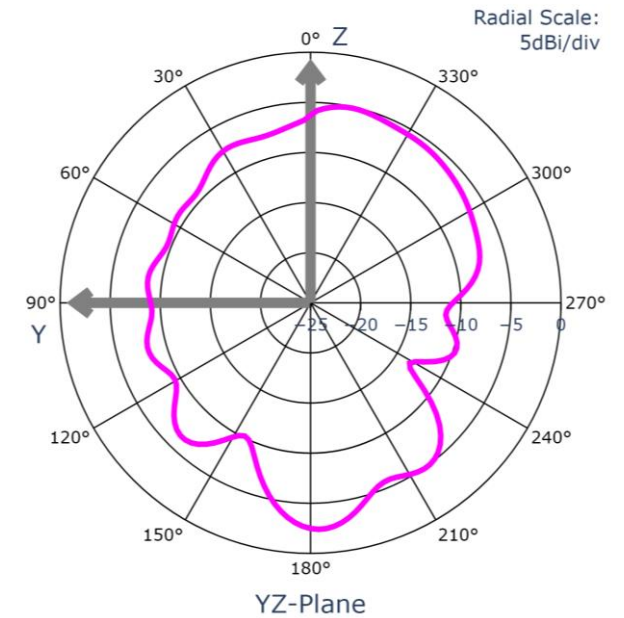
Ant_HLG

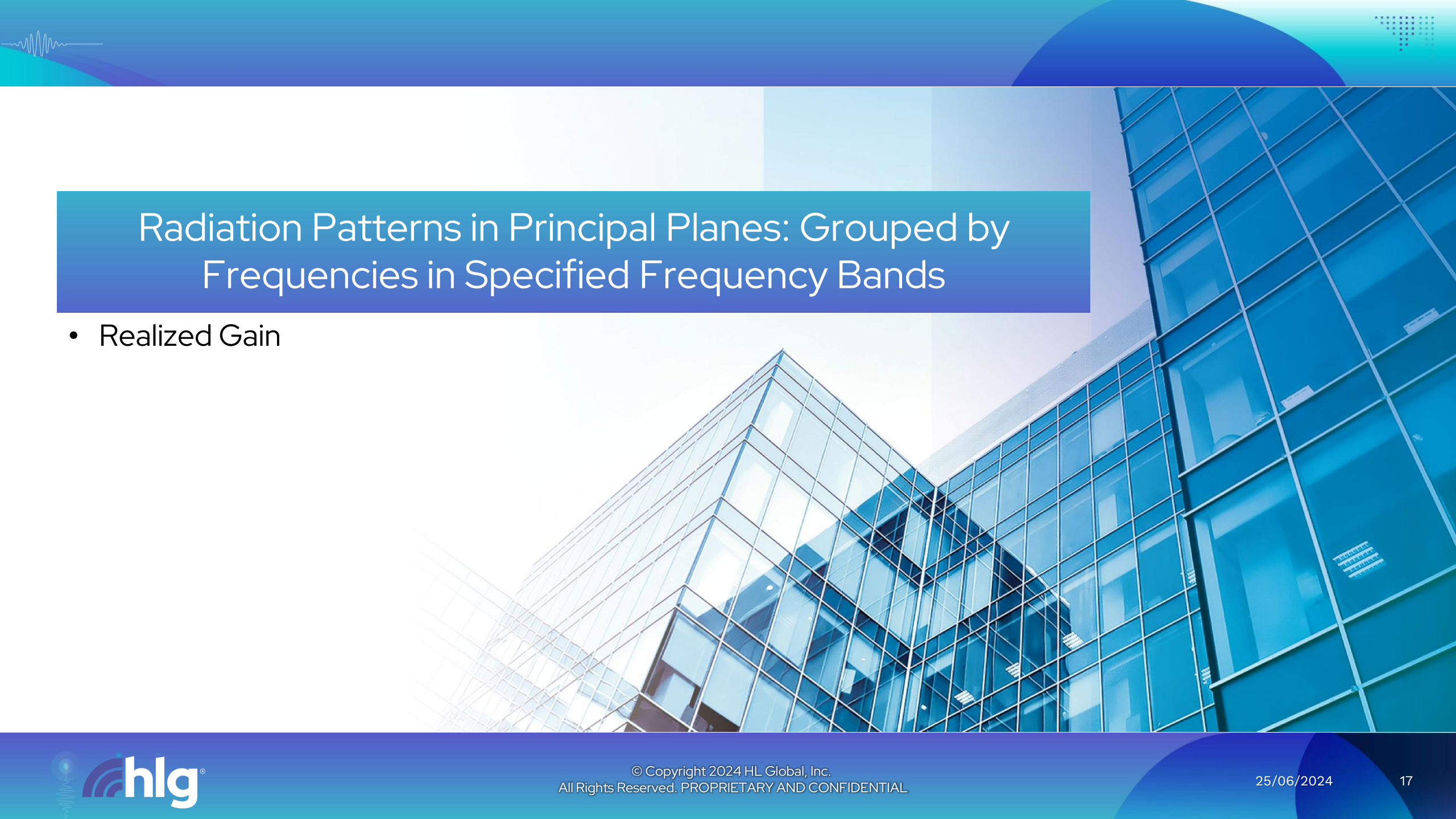


Ant_HLG



Ant_HLG

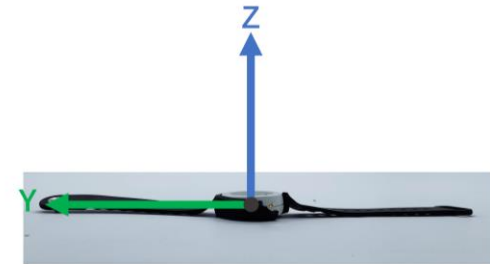
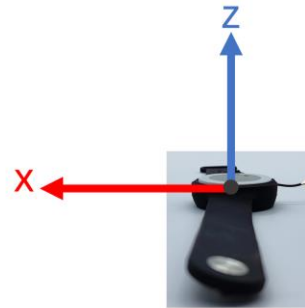
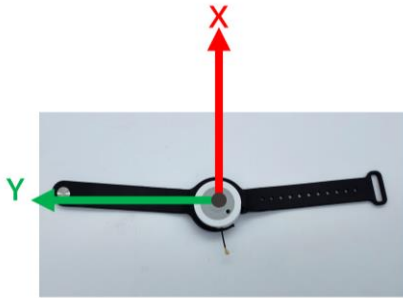




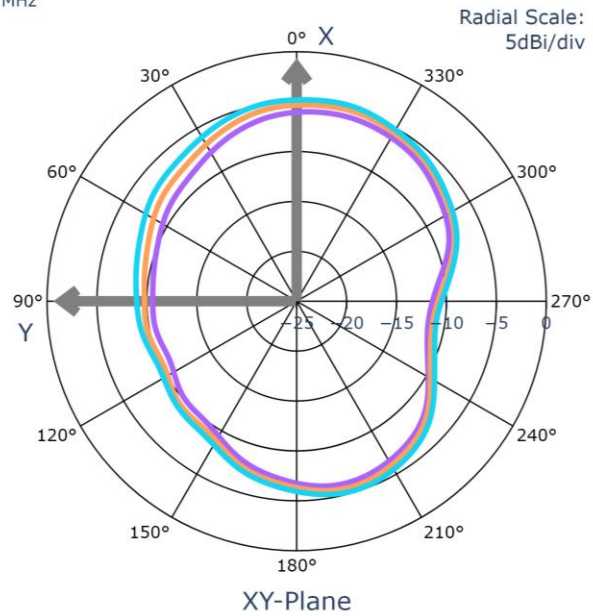
Radiation Patterns in Principal Planes: Grouped by Frequencies in Specified Frequency Bands

- Realized Gain

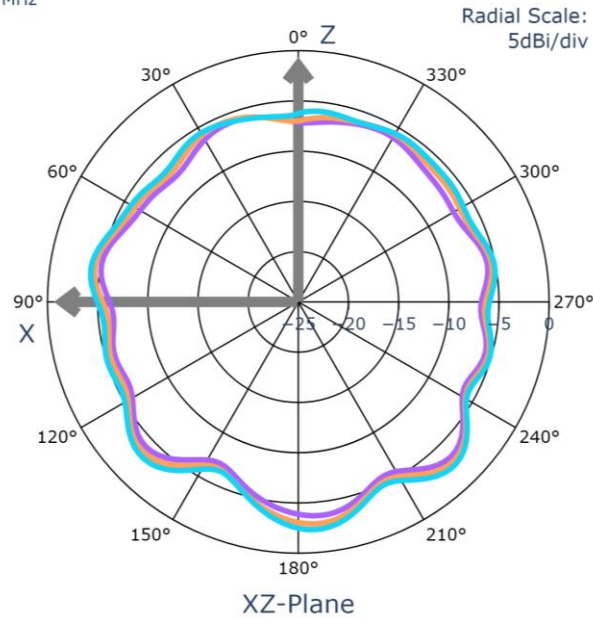
Realized Gain Radiation Patterns of Ant_HLG Antenna in 915MHz Band: Total Polarization



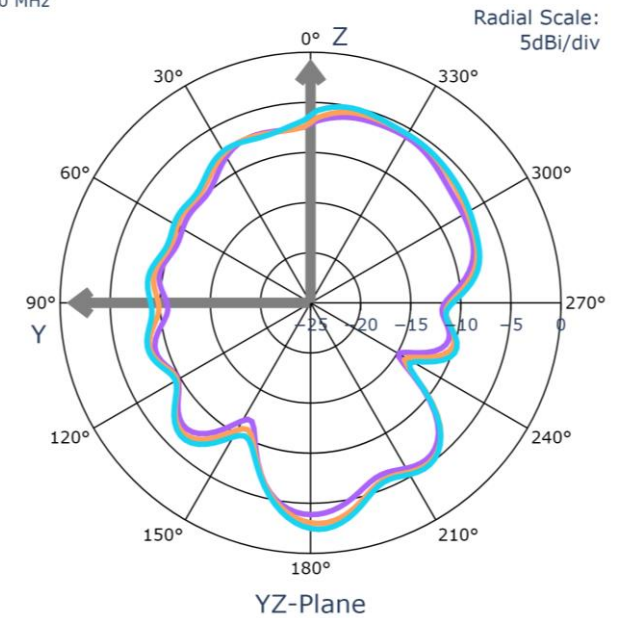
902 MHz
916 MHz
930 MHz

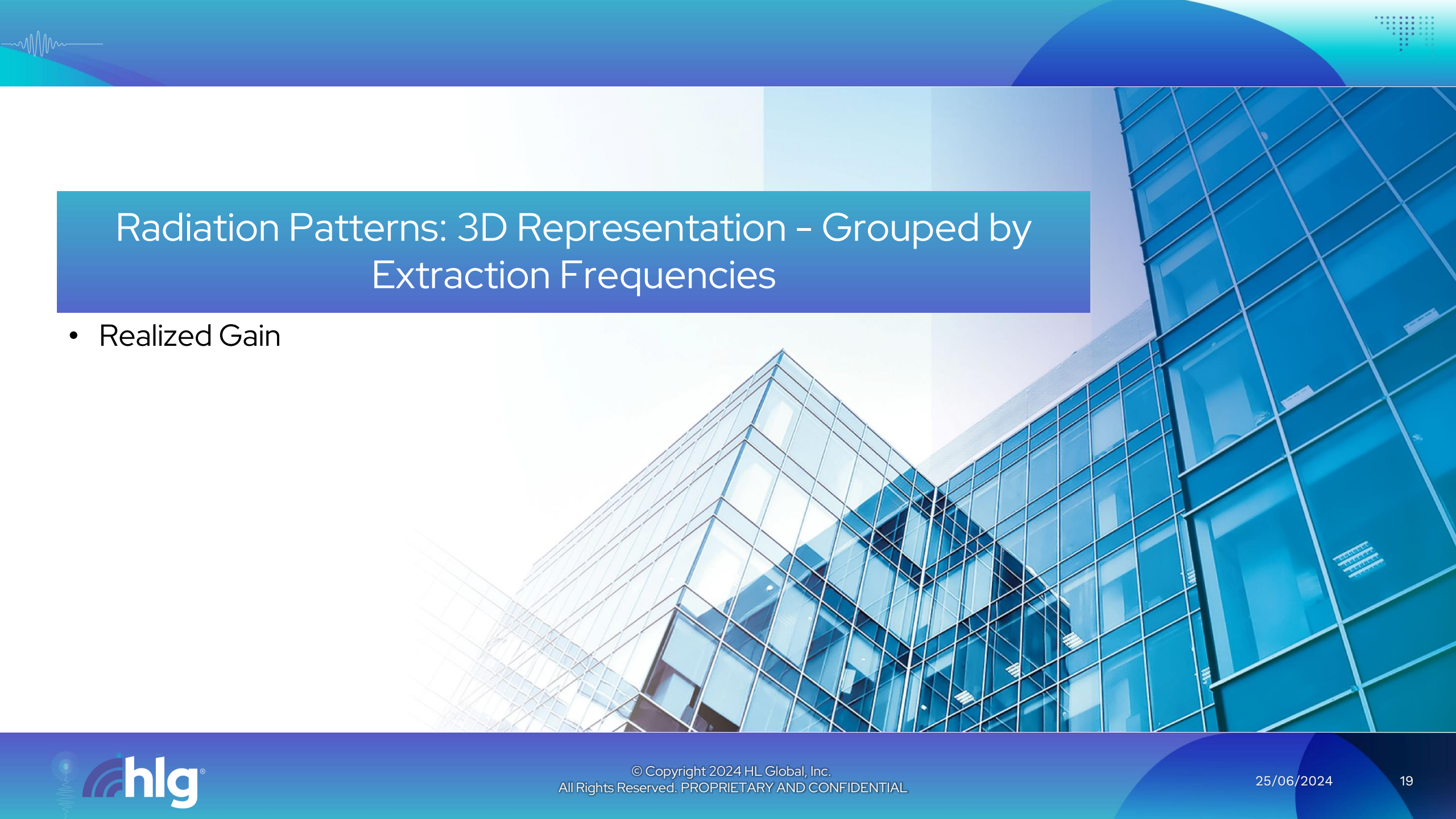


902 MHz
916 MHz
930 MHz



902 MHz
916 MHz
930 MHz





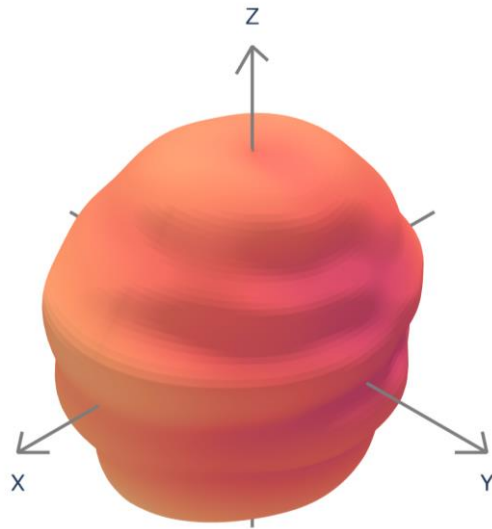
Radiation Patterns: 3D Representation – Grouped by Extraction Frequencies

- Realized Gain

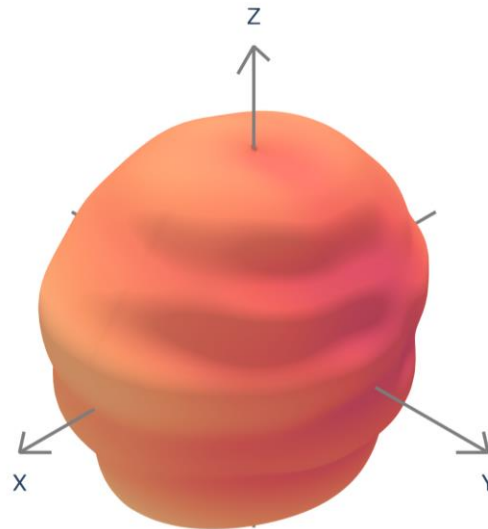
Realized Gain Radiation Patterns of Ant_HLG Antenna in 915MHz Band: Total Polarization



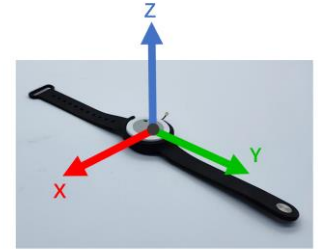
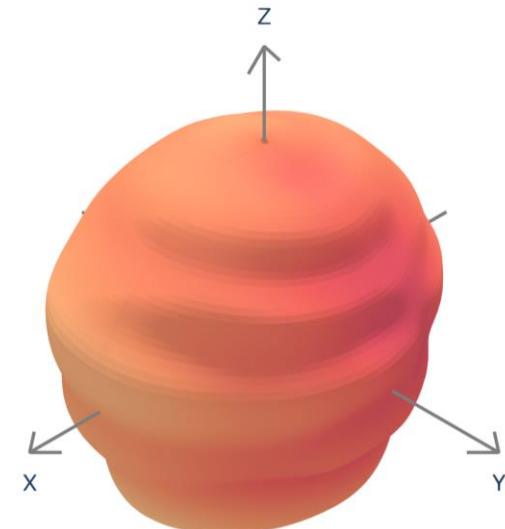
902 MHz



916 MHz



930 MHz



Conclusion

- Measurement results of HL Global antenna for Pendant (free space) were presented
- HL Global antenna exhibits
 - Return Loss (RL): $> 7\text{dB}$
 - Realized Efficiency: 22% (average value across the frequency band)



HL GLOBAL

www.hlglobalcorp.com