PEGATRON 和碩聯合科技

Internal Antenna measurement data for Aclara kV2c

2023-04-12

Antenna Vendor Info

- Antenna Vendor : Walsin Technology(INPAQ)
- Test Date:2023/03/16
- Test Engineer : INPAQ Max Lin

Contents

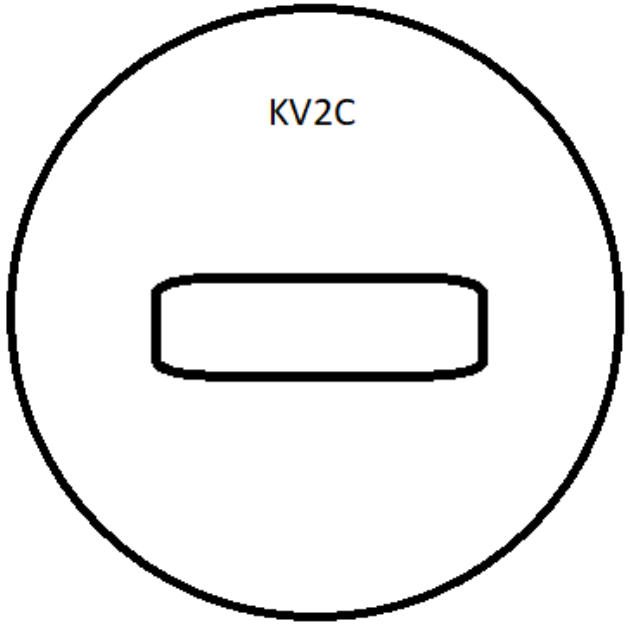
- Antenna in Single Socket
- Measurement data

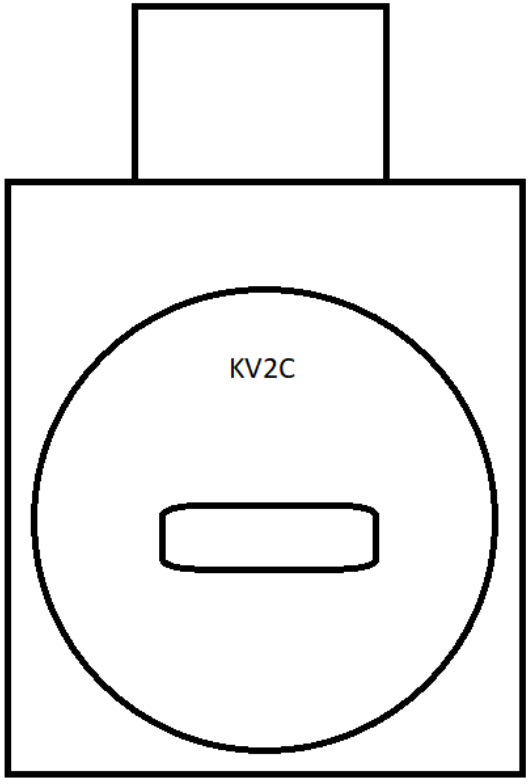
Contents

- Antenna in Single Socket
  - -Picture
  - -Return loss & Efficiency in Single Socket
- Measurement data

Antenna in Single Socket

- schematic diagram for KV2C

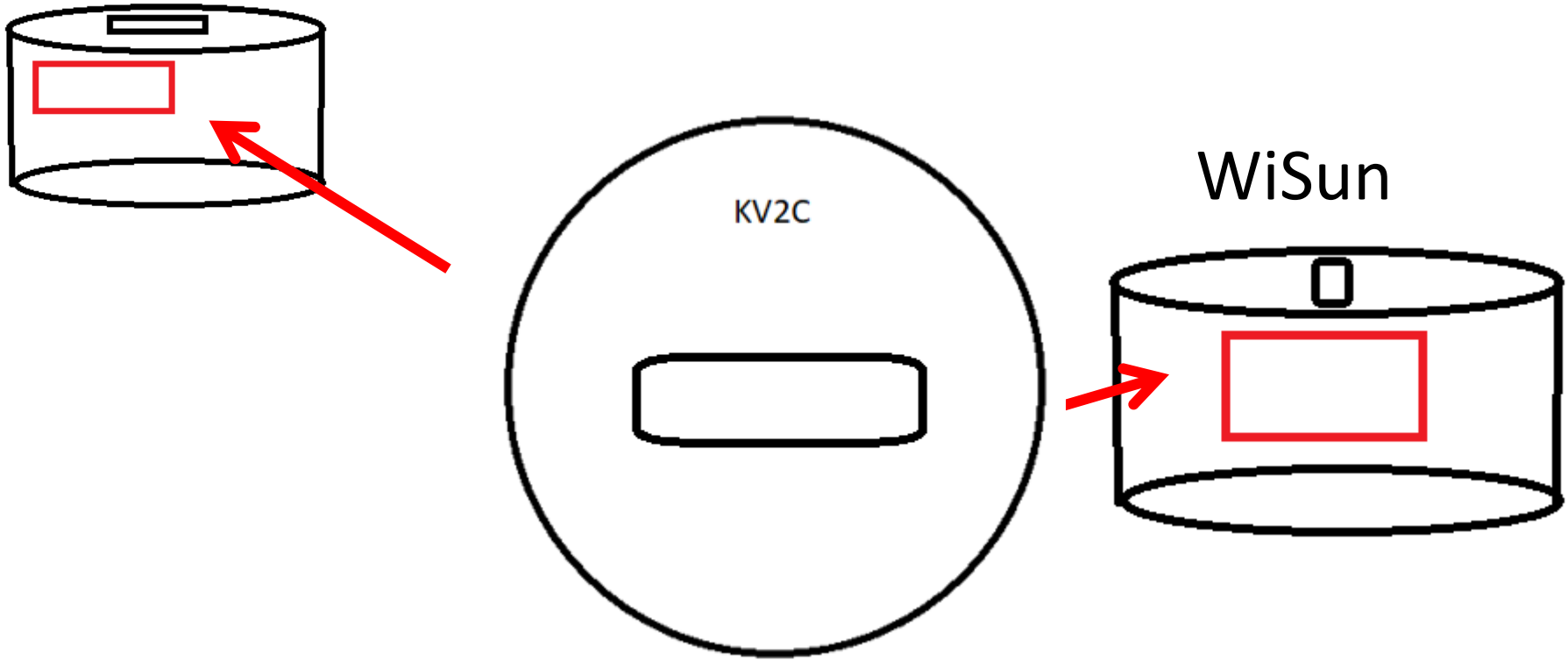




KV2C with Socket

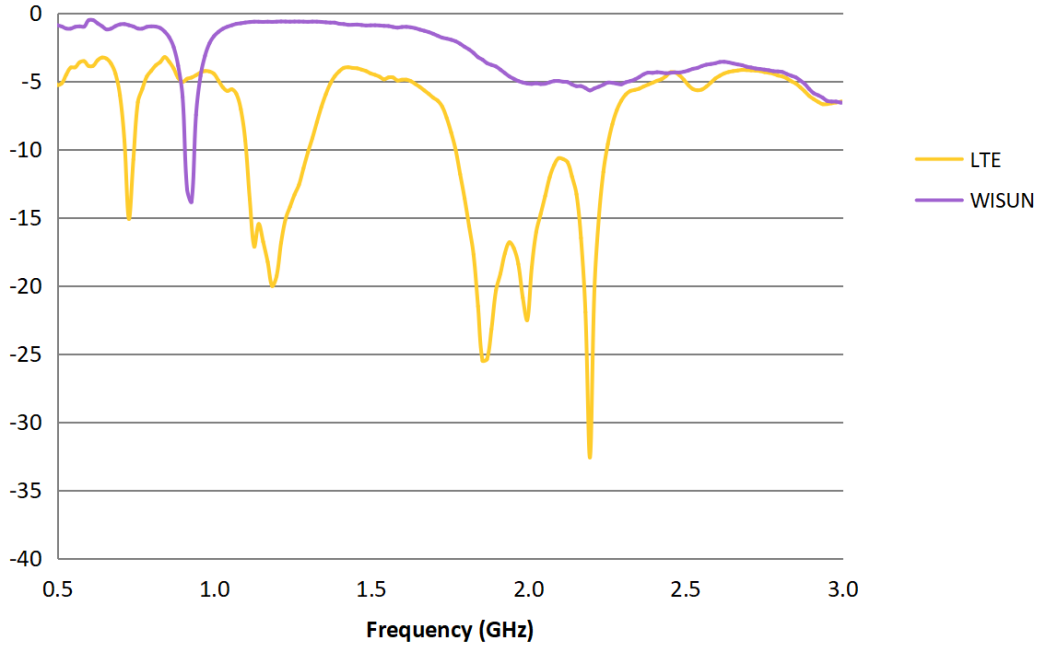
Antenna placement and antenna type

Wi-Fi 2.4G



Antenna in Single Socket

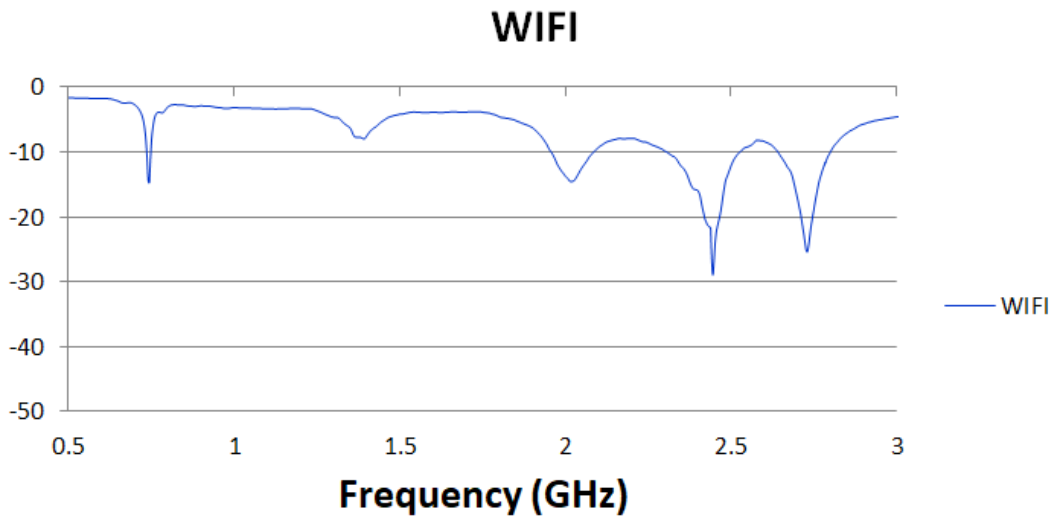
❖ Return loss & Efficiency in Single Socket condition



	Return loss(dB)	
Frequency (MHz)	LTE Main	WiSUN
699	-6.04	
715	-9.36	
746	-10.74	
756	-6.55	
777	-5.97	
787	-5.31	
915		-12.71
922		-13.12
928		-13.85
1710	-10.01	
1732	-11.83	
1755	-13.61	
2110	-10.72	
2132	-10.95	
2155	-13.32	

Antenna in Single Socket

- Return loss & Efficiency in Single Socket condition
-



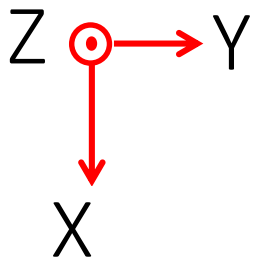
Return loss(dB)	
Frequency (MHz)	2.4G
2400	-15.96
2450	-20.31
2500	-12.13

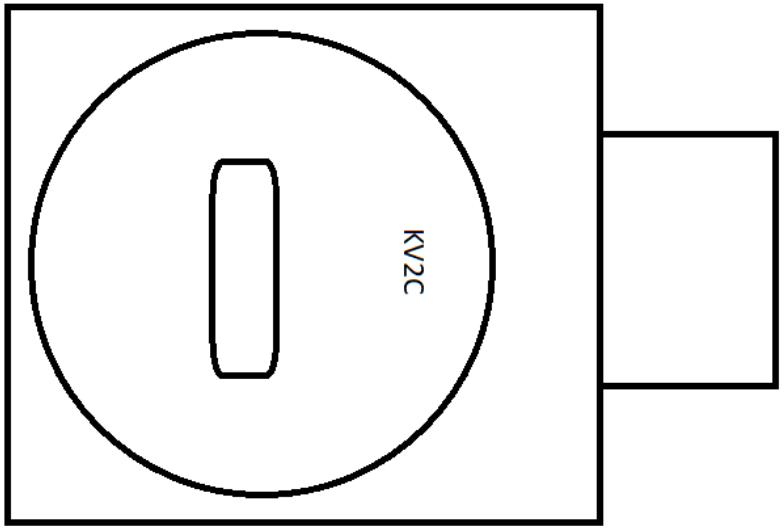
Efficiency(%)	
Frequency (MHz)	2.4G
2400	55.04
2450	58.02
2500	55.47

Contents

- Antenna in Single Socket
- Measurement data
  - -Return loss (WiSUN, Wi-Fi 2.4G)
  - -Gain Table
  - -Radiation pattern

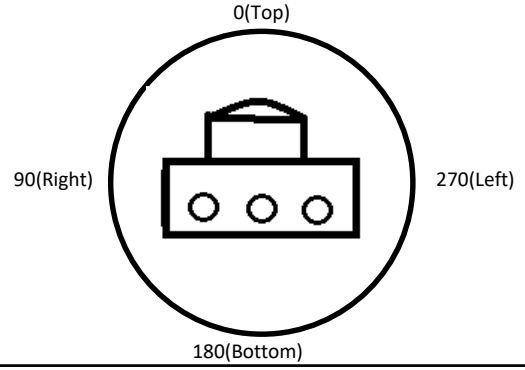
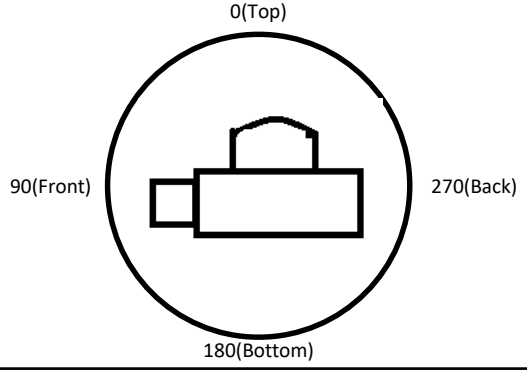
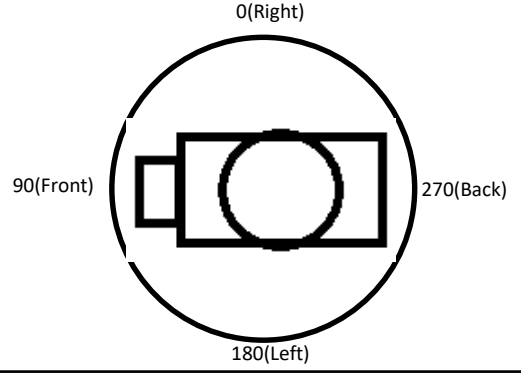
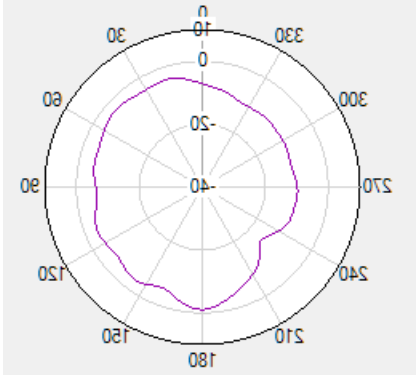
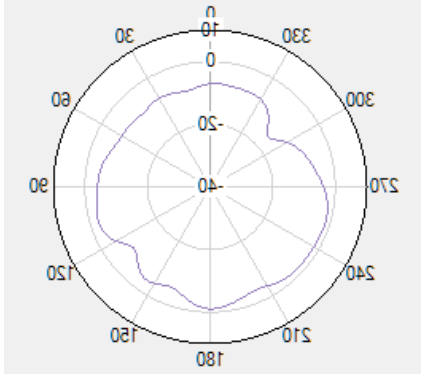
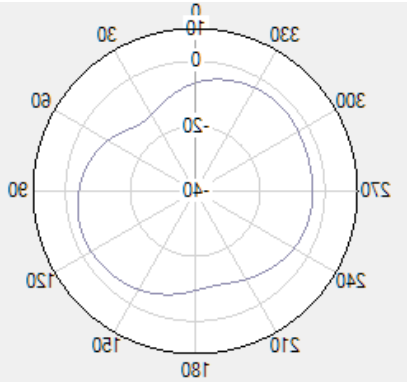
Measurement Method





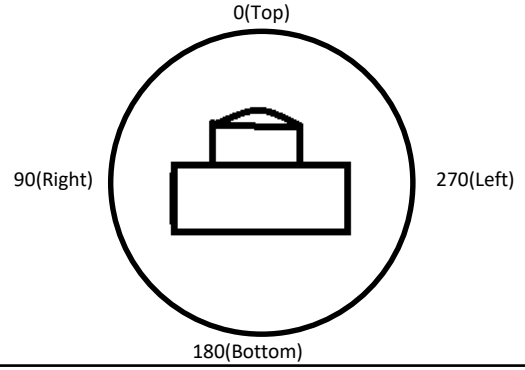
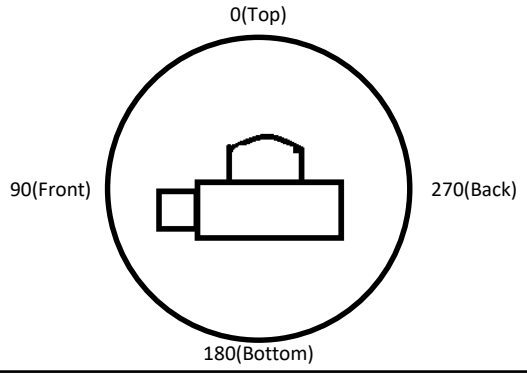
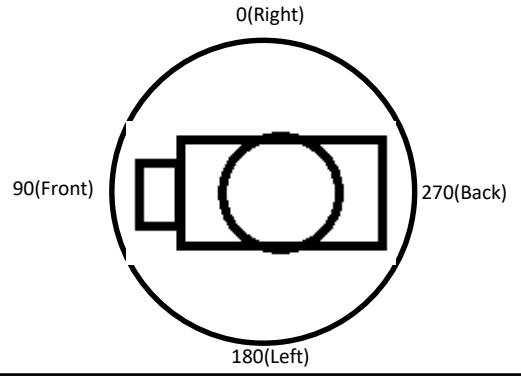
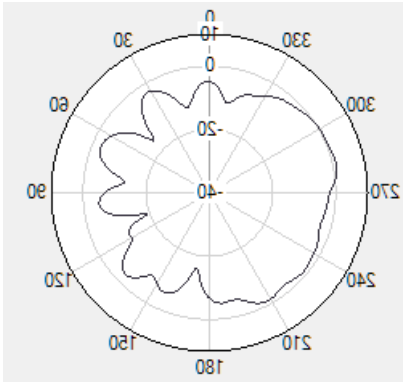
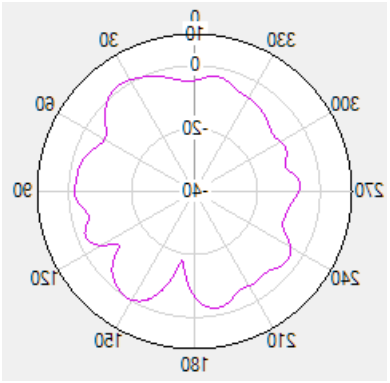
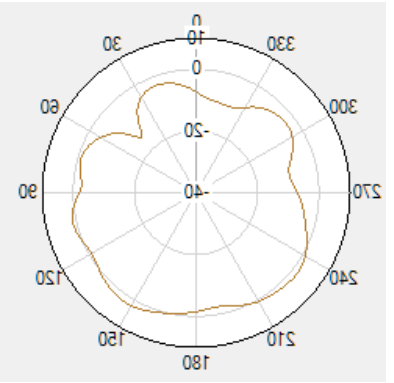
Measurement data

❖ Radiation pattern(WiSun-922MHz)

X-Z plane	Y-Z plane	X-Y plane
		
		

Measurement data

❖ Radiation pattern(Wifi-2450MHz)

X-Z plane	Y-Z plane	X-Y plane
		
		

Measurement data

❖ Gain table: WiSun

Frequency (MHz)	XZ plane		YZ plane		XY plane		E-total (dBi)	Efficiency (%)
	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)		
915	-0.57	-2.14	-0.53	-1.88	-1.58	-2.85	3.66	44.42
922	-0.47	-1.54	-1.06	-4.09	-1.88	-3.50	3.53	45.61
928	-0.50	-1.25	-0.57	-3.25	-1.18	-2.81	3.76	46.37

Measurement data

❖ Gain table: Wi-Fi 2.4G

Frequency (MHz)	XZ plane		YZ plane		XY plane		E-total (dBi)	Efficiency (%)
	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)		
2400	1.63	-0.46	-0.40	-1.32	-0.49	-2.05	2.94	55.04
2450	1.03	-2.70	1.28	-2.76	1.44	-3.58	3.26	58.02
2500	-0.76	-1.86	1.51	-2.91	0.89	-3.53	3.47	55.47

Applicable test methods

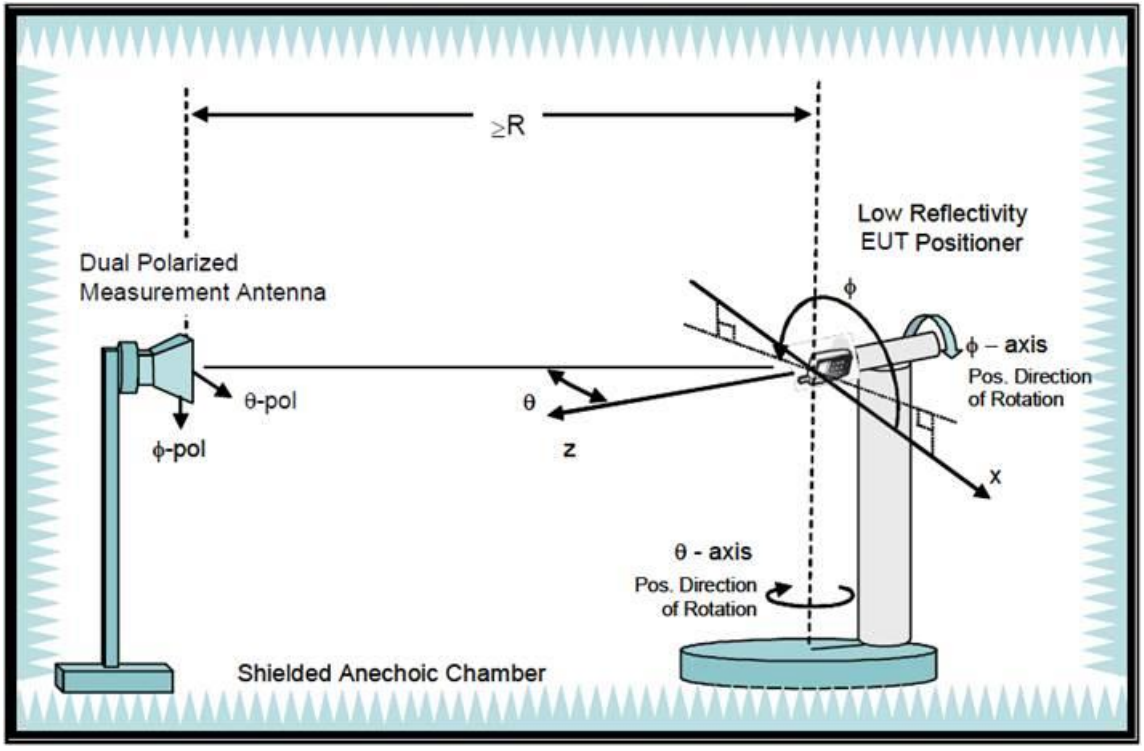
ETS-Lindgren AMS-8500 system is 3D fully anechoic chamber, it is applied to the “Conical Cut test method”, the detail description is described as below.

The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane (overhead) of the EUT for implementations using a single Measurement Antenna, Eleven conical cuts are required to capture data at every 15 degrees from the EUT, with the top (0 degrees) and bottom (180 degrees) cuts not being measured. Typically, the EUT will remain affixed to a turntable during the entire measurement process. The Measurement Antenna will be positioned at a starting theta angle. The EUT will then be rotated around the full 360 degrees of phi rotation. The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.

		θ-Axis	Φ-Axis
Passive	Step size	15º~165º step: 15º	0º~345º step: 15º
	N / M (Points)	12	24

Test & System Description

- Typical Setup for ETS-Lindgren AMS-8500:



Equipment list

Equipment Description	Manufacturer	Identification no.	Current calibration date	Next calibration date
Network analyzer	Agilent	E5071C	2023/01/06	2024/01/05
Measurement software	ETS-Lindgren	EMQuest	2023/03/03	2024/03/01
Multi axis positioning system(MAPSTM)	ETS-Lindgren	EMCO 2115	2023/03/03	2024/03/01
Multi axis positioning system(MAPSTM)	ETS-Lindgren	EMCO 2110	2023/03/03	2024/03/01
MAPSTM controller	ETS-Lindgren	EMCO 2090	2023/03/03	2024/03/01
Horn antenna	ETS-Lindgren	3164-10	2023/03/03	2024/03/01
Cable 40cm 18 GHz	Jmtt	201EH012010400	2023/04/07	2024/04/05
Cable 6m 18 GHz	Jmtt	201EH012016000	2023/04/07	2024/04/05
Cable 6m 18 GHz	Jmtt	201EH012016000	2023/04/07	2024/04/05
Cable 3.5m 18 GHz	Jmtt	201EH012013500	2023/04/07	2024/04/05
Cable 1.5m 18 GHz	Jmtt	201EH012011500	2023/04/07	2024/04/05