

# Sony Mariner Antenna Data Sheet

Date : Apr 12, 2023 Prepared by : Larry Jiang



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# Outline

- Antenna Structure & Placement
- Test Infomation
- Test Configuration
- Test Setup & Procedure
- Test Equipment & Calibration
- Antenna Specification
- Return Loss & Isolation
- Radiation Pattern
- Peak Gain & Efficiency



# Antenna Structure & Placement

Ant No.	Operating Band	Туре	Material	Feeding	Dimension
Ant 1~4 WiFi 2G/5G	2400 MHz ~ 2500 MHz 5150 MHz ~ 5850 MHz	Dipole	РСВ	Cable	34(L) x 14(W) x 0.6(T) mm <sup>3</sup>
Ant 5 BLE	2400 MHz ~ 2500 MHz	Dipole	РСВ	Cable	22(L) x 18(W) x 0.4(T) mm <sup>3</sup>



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# **Test Infomation**

Iteam	Description
Brand Name	Sony
Equipment	Wi-Fi
Test Location	8F, No. 3-1, YuanQu St. Taipei, Taiwan 115 R.O.C.
Test Condition	Radiation
Test Engineer	Larry Jiang
Test Environment	ETS-8500 Antenna Measurement Chamber
Test Date	Mar. 1, 2023 ~ Mar. 10, 2023

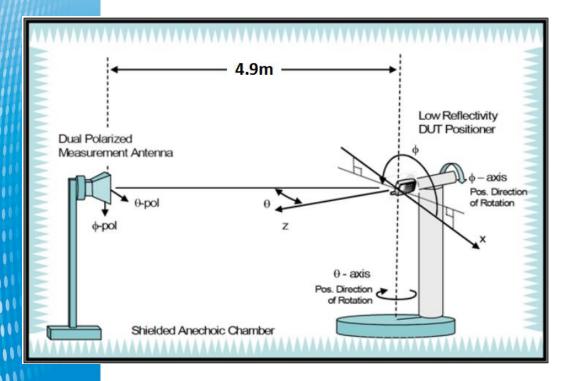


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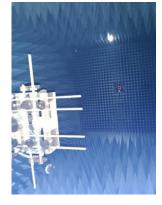
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# **Test Configuration**

ETS AMS-8500 antenna measurement system with a size of  $7.32(L) \times 3.66(W) \times 3.66(H) m^3$  is used for antenna performance test, which is based on the great-circle test method defined by CTIA. The multi-axis positioning system (MAPS) rotates the DUT around two orthogonal axes for full spherical coverage.









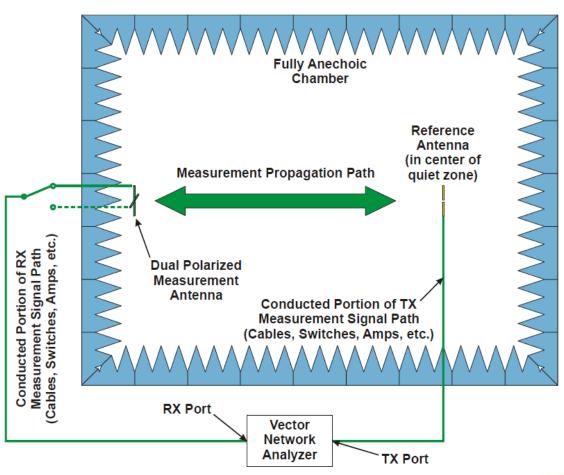
# Test Setup & Procedure

- 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 3D test and then get far-field data (radiation pattern, gain, efficiency)



# **Equipment Used Information (With Calibration)**

Network analyzer and reference antennas (Precision Sleeve Dipole) are used for calibration. Path loss for each band can be checked and calculated.





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# **Equipment Used Information**

Instrument	Brand	Characteristics	Model No.	Serial No.	Calibration Due Date
Precision Sleeve Dipole	ETS-Lindgren	700 MHz ~ 900 MHz	3126-700	00169715	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	900 MHz ~ 1000 MHz	3126-900	00169592	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	1400 MHz ~ 1700 MHz	3126-1550	00164599	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	1700 MHz ~ 2000 MHz	3126-1850	00169588	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	2000 MHz ~ 2300 MHz	3126-2150	00169593	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	2300 MHz ~ 2700 MHz	3126-2500	00169597	Feb 13, 2023
Precision Sleeve Dipole	ETS-Lindgren	5000 MHz ~ 6000 MHz	3126-5500	00169728	Feb 13, 2023
Horn Antenna	SCHWARZBECK	1 GHz ~ 18 GHz	BBHA 9120D	BBHA 9120D- 1294	Feb 13, 2023
EMQuest Antenna Measurement Software	ETS-Lindgren	Control chamber system	EMQ-100	1437	Non-Calibration Required



# **Antenna Specification**

Antenna Specification	Comply	Note
Return Loss: > 10dB (WiFi & BLE)	Yes	
Isolation : > 15dB (WiFi & BLE)	Yes	
Efficiency : > 50% (WiFi & BLE)	Yes	



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# Return Loss – Ant 1 WiFi 2G/5G

	.og Mag 10.00dв/ Ref 0.000dв [F2]	
50.00	1 2.4000000 GHz -11.085 dB 2 2.4500000 GHz -16.003 dB	
	3 2.5000000 GHz -19.090 dB 4 5.1500000 GHz -18.954 dB	
40.00	5 5.5000000 GHZ -16.555 dB	
	>7 920.00000 MHz -1.0582 dB 8 926.00000 MHz -1.0701 dB	
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# Return Loss – Ant 2 WiFi 2G/5G

	Log Mag 10.00dB/ Ref 0.000dB [F2]
50.00	1 2.4000000 GHz -10.498 dB 2 2.4500000 GHz -12.117 dB 3 2.5000000 GHz -10.088 dB 4 5.1500000 GHz -11.627 dB
40.00	5 5.500000 GHZ -12.502 dB 6 5.8500000 GHZ -33.019 dB >7 920.00000 MHZ -1.2372 dB 8 926.00000 MHZ -1.2421 dB
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# Return Loss – Ant 3 WiFi 2G/5G

Tr1 S11	Log N	Mag 10	.00dB/	Ref 0	. 000de	3 [F2	]						
50.00	1 2 3 4	2.450	0000 GH 0000 GH 0000 GH 0000 GH	z -10 z -12	.825 0	IB IB							
40.00	5 6 >7 8	5.500	0000 GH 0000 GH 0000 MH 0000 MH	z -16	.736 0	IB IB							
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# Return Loss – Ant 4 WiFi 2G/5G

	Log Mag	10.00dB/ R	ef 0.000dB	[F2]				
50.00	2 2.4	000000 GHz 500000 GHz 500000 GHz	-12.362 dE -10.923 dE					
40.00	4 5.1	500000 GHZ 5000000 GHZ 500000 GHZ 0.00000 MHZ 5.00000 MHZ	-17.465 dE -19.106 dE -10.469 dE					
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#### Return Loss – Ant 5 BLE

	Log Mag 10.00dB/ Ref 0.000dB [F2]	
50.00	1 2.4000000 GHz -21.502 dB	
	2 2.4500000 GHz -17.762 dB 3 2.5000000 GHz -11.729 dB 4 5.1500000 GHz -10.487 dB	
40.00	5 5.5000000 GHz -16.572 dB	
	>7 920.00000 MHz -0.8065 dB	
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Tr2 521	Log	Mag 10	0.00dB	/ Ref	• 0.000	B [	[F2]					
50.00	1 2 3 4	2.450	00000	GHZ -	-39.750 -34.258 -34.650 -42.601	dB dB						
40.00	4 5 >7 8	5.500	00000	GHZ -	-36.286 -36.662 -43.189 -43.140	dB dB						
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Tr2 521	Log Mag 10.00dB/ Ref 0.000dB [F2]
50.00	1 2.4000000 GHz -17.410 dB 2 2.4500000 GHz -16.676 dB 3 2.5000000 GHz -17.226 dB 4 5.1500000 GHz -36.474 dB
40.00	5 5.500000 GHZ -28.767 dB 6 5.8500000 GHZ -27.491 dB >7 920.00000 MHZ -38.528 dB 8 926.00000 MHZ -38.916 dB
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-40.00	
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	Log Mag 10.00dB/ Ref 0.000dB [F2]
50.00	1 2.4000000 GHz -31.169 dB 2 2.4500000 GHz -33.287 dB 3 2.5000000 GHz -35.047 dB
40.00	3 2.5000000 GHz -35.047 dB 4 5.1500000 GHz -28.534 dB 5 5.5000000 GHz -30.255 dB
	6 5.8500000 GHz -38.444 dB >7 920.00000 MHz -44.902 dB
30.00	8 926.00000 MHz -44.060 dB
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▶ Tr2 521 L	.og Mag 10.00dB/ Ref 0.000dB [	[F2]	
40.00	1 2.4000000 GHZ -22.988 dB 2 2.4500000 GHZ -23.492 dB 3 2.5000000 GHZ -25.748 dB 4 5.1500000 GHZ -37.444 dB 5 5.5000000 GHZ -39.625 dB >6 5.8500000 GHZ -30.957 dB 7 920.00000 MHZ -53.103 dB 8 926.00000 MHZ -52.035 dB		
30.00	8 926.00000 MHz -52.035 dB		
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			5/7/2020 4:43 PM
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-50.00			



Tr2 521	Log Mag 10.00dB/ Ref 0.000dB [F2]	
50.00	1 2.4000000 GHz -20.570 dB 2 2.4500000 GHz -17.308 dB 3 2.5000000 GHz -17.500 dB 4 5.1500000 GHz -35.626 dB	
40.00	5 5.5000000 GHz -28.446 dB 6 5.8500000 GHz -31.622 dB >7 920.00000 MHz -43.365 dB	
30.00	8 926.00000 MHz -44.118 dB	
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-50.00		



▶ <mark>Tr2</mark> 521	Log Ma	ig 10.00	dB/ Re	f 0.000dB	[F2]						
50.00	1 2 2 2	.400000	0 GHZ 0 GHZ	-18.067 d -18.430 d -20.007 d	B						
40.00	4 5	500000	0 GHZ	-23.591 d	B						
	6 >7 8	.850000 20.0000	0 GHZ 0 MHZ	-25.423 d -41.018 d -41.118 d	B						
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Tr2 521	Log	Mag 10	).00dB/	Ref (	).000dB	[F2]						
50.00	2	2.450	00000 GH 00000 GH 00000 GH 00000 GH	z -42	2.658 d	B						
40.00	5 >6 7	5.500 5.850 920.0	00000 GH 00000 GH 00000 MH 00000 MH	z -37 z -39 z -61	7.791 d 9.395 d L.996 d	B B B						
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	Log Mag 10.00dB/ Ref 0.000dB [F2]
50.00	1 2.4000000 GHz -22.037 dB 2 2.4500000 GHz -22.422 dB 3 2.5000000 GHz -26.010 dB 4 5.1500000 GHz -31.252 dB
40.00	4 5.1500000 GHZ -31.252 dB 5 5.500000 GHZ -30.627 dB 6 5.8500000 GHZ -30.650 dB >7 920.00000 MHZ -48.341 dB 8 926.00000 MHZ -48.393 dB
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-40.00	



Tr2 521	Log	Mag 1(	0.00dB	/ Rei	f 0.000	dB [	[F2]						
50.00 40.00	2 3 4 5	2.45 2.50 5.15 5.50	00000 00000 00000	GHZ GHZ GHZ	-35.591 -34.251 -38.433 -43.278 -42.384 -42.384 -43.957	dB dB dB dB							
30.00	78	920. 926.	00000	MHZ MHZ	-43.957 -62.759 -61.044	i d₿ dB							
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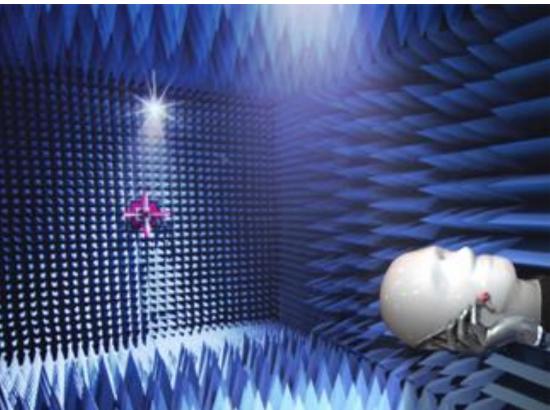


Tr2 521	Log Mag 10.00dB/ Ref 0.000dB [F2]	
	1 2.4000000 GHZ -29.205 dB 2 2.4500000 GHZ -29.042 dB 3 2.5000000 GHZ -31.444 dB 4 5.1500000 GHZ -43.714 dB	
40.00	5 5.500000 GHZ -36.759 dB 6 5.8500000 GHZ -35.771 dB 7 920.00000 MHZ -57.460 dB >8 926.00000 MHZ -54.988 dB	
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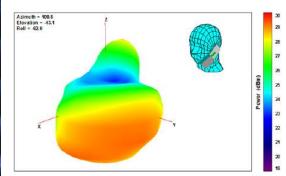


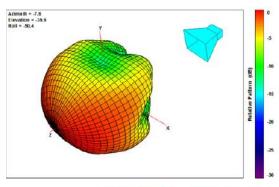
# Antenna Measurement Chamber

- ETS AMS-8500 antenna measurement system
- Interior dimensions : 7.32(L)×3.66(W)×3.66(H)m<sup>3</sup>
- Operating band : 700 MHz 10 GHz
- Support passive test & active test
- Provide graphic data display



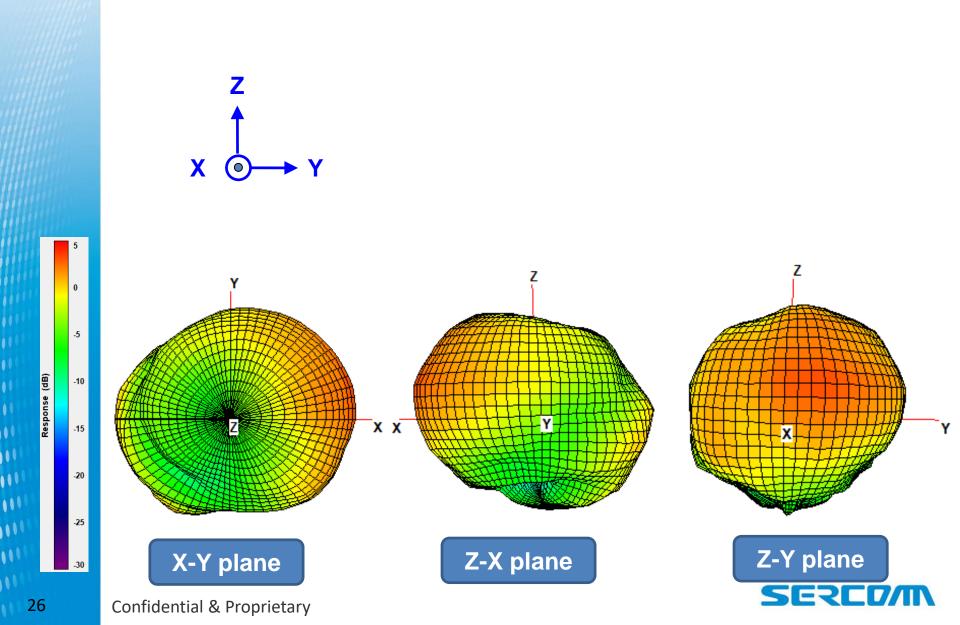




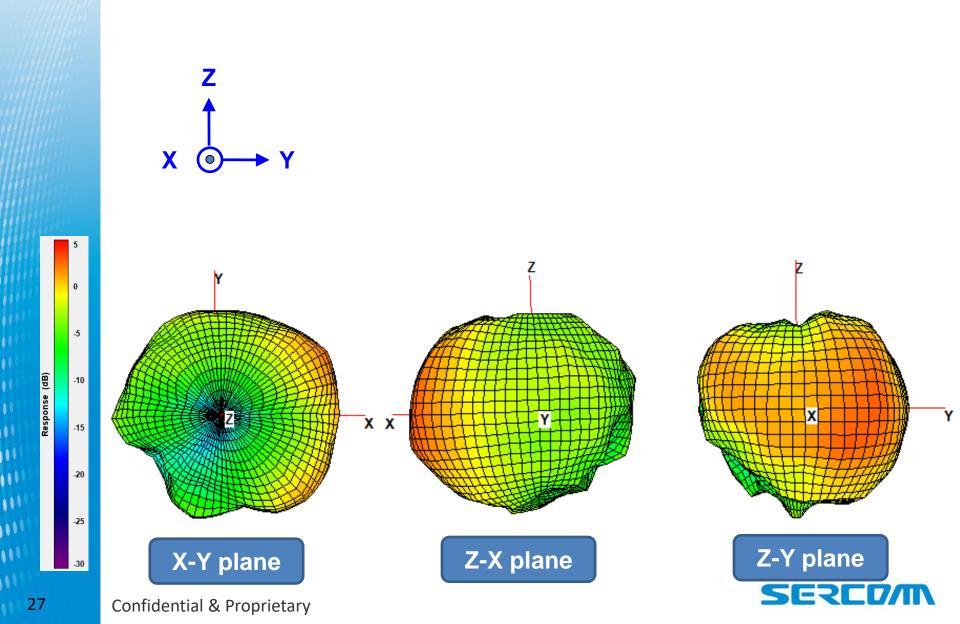




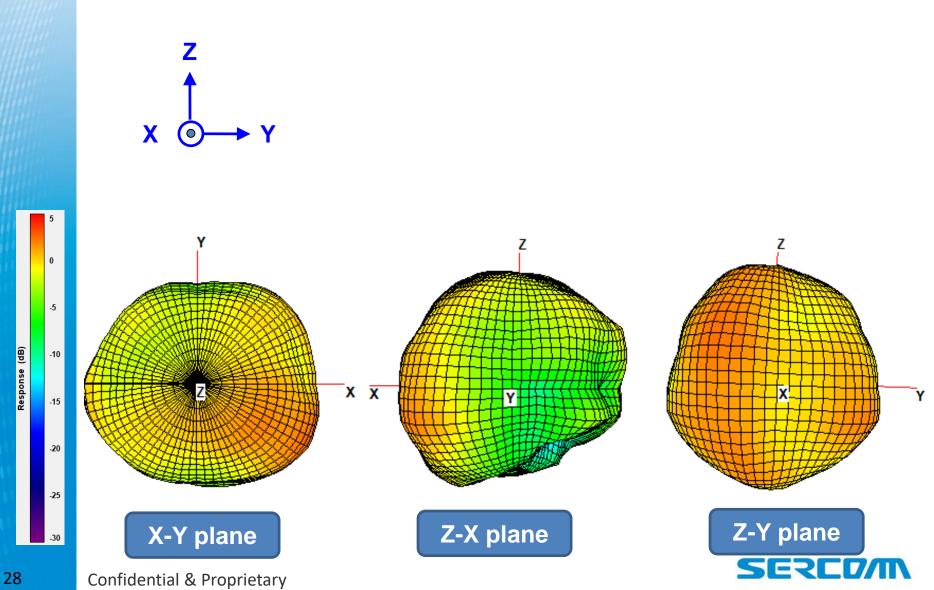
#### Radiation Pattern – Ant 1 @ 2450MHz



#### Radiation Pattern – Ant 1 @ 5500MHz

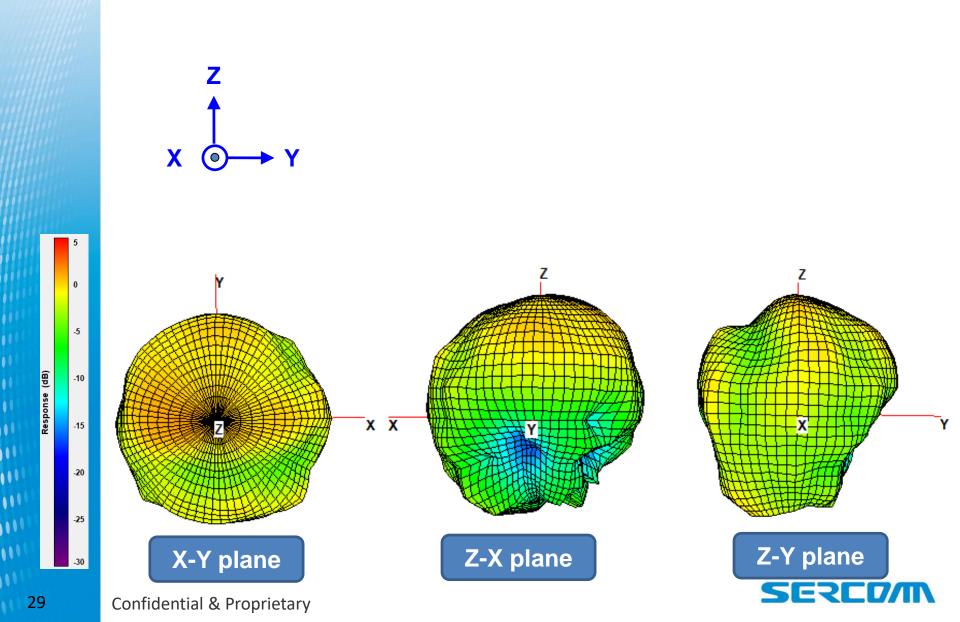


#### Radiation Pattern – Ant 2 @ 2450MHz

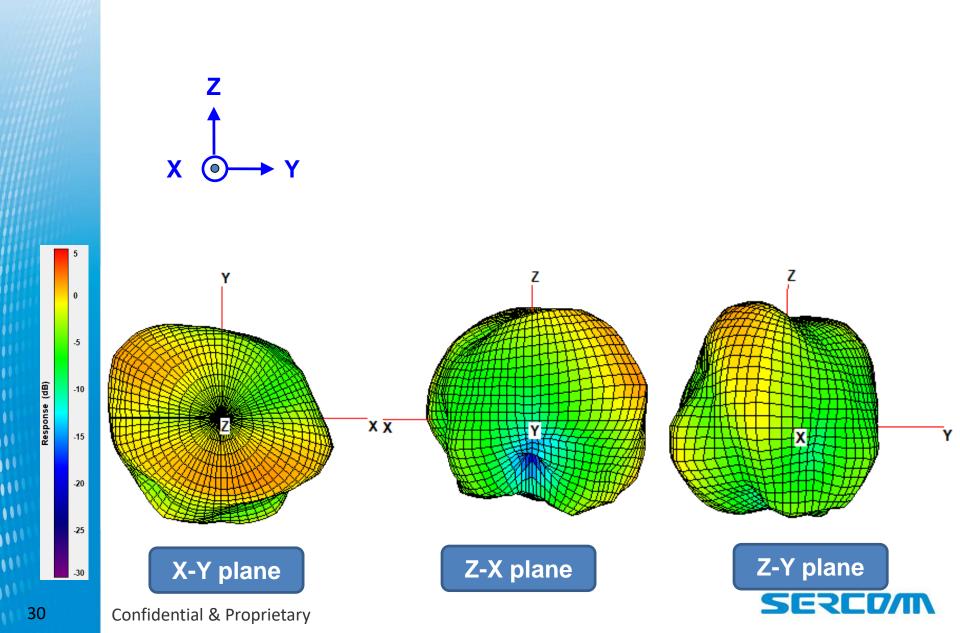


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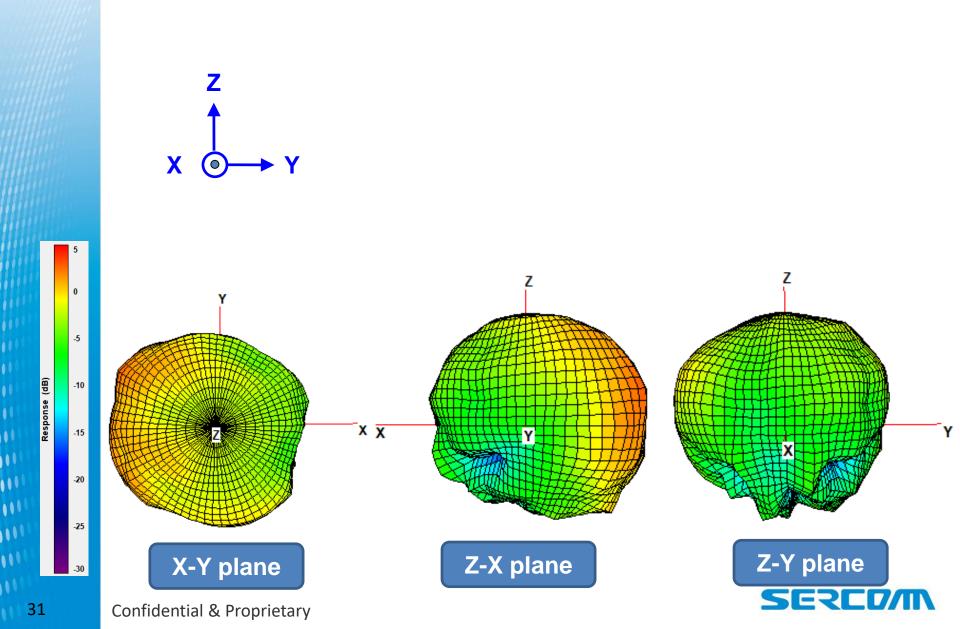
#### Radiation Pattern – Ant 2 @ 5500MHz



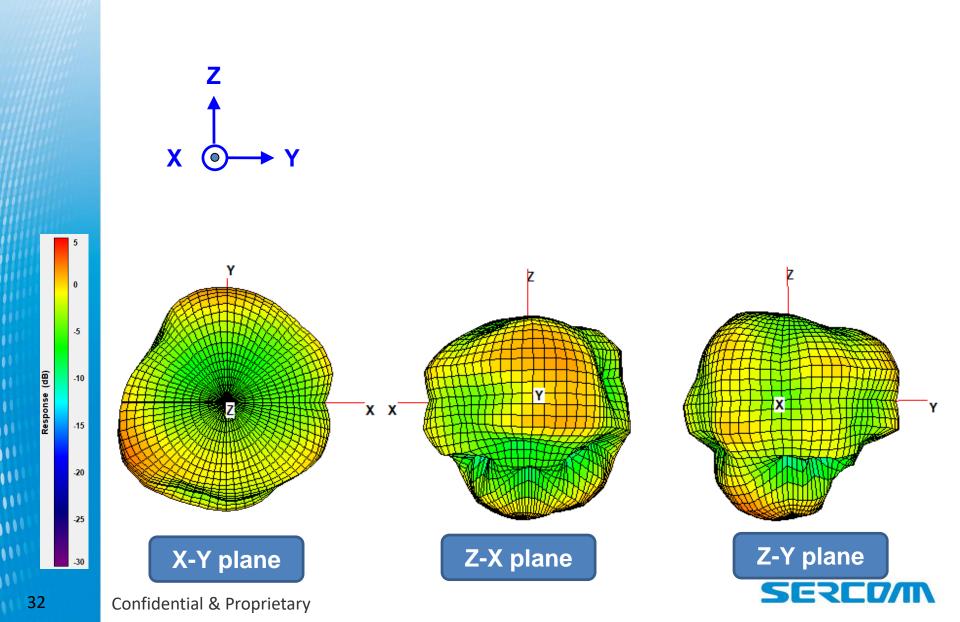
#### Radiation Pattern – Ant 3 @ 2450MHz



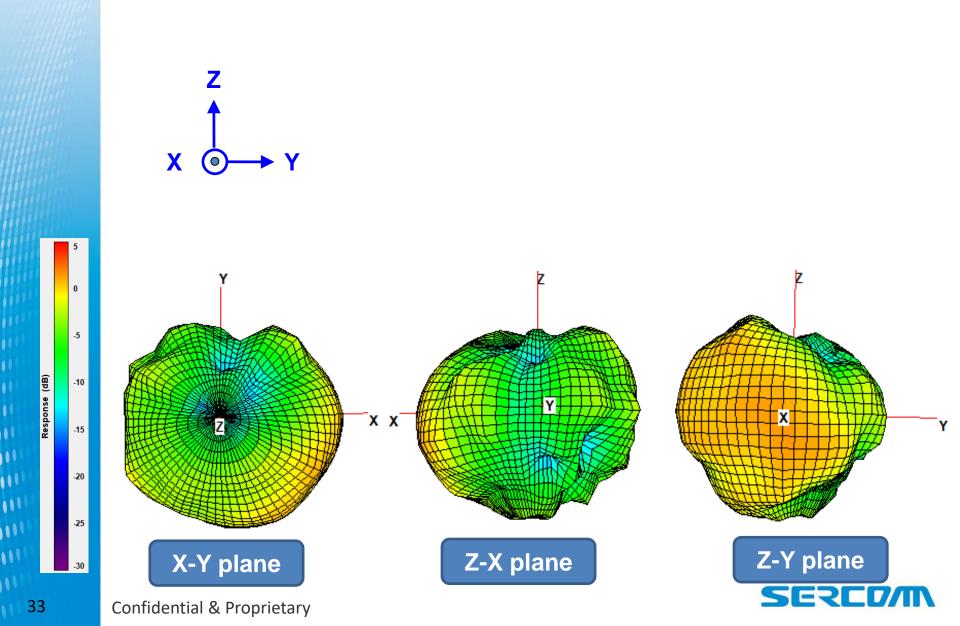
#### Radiation Pattern – Ant 3 @ 5500MHz



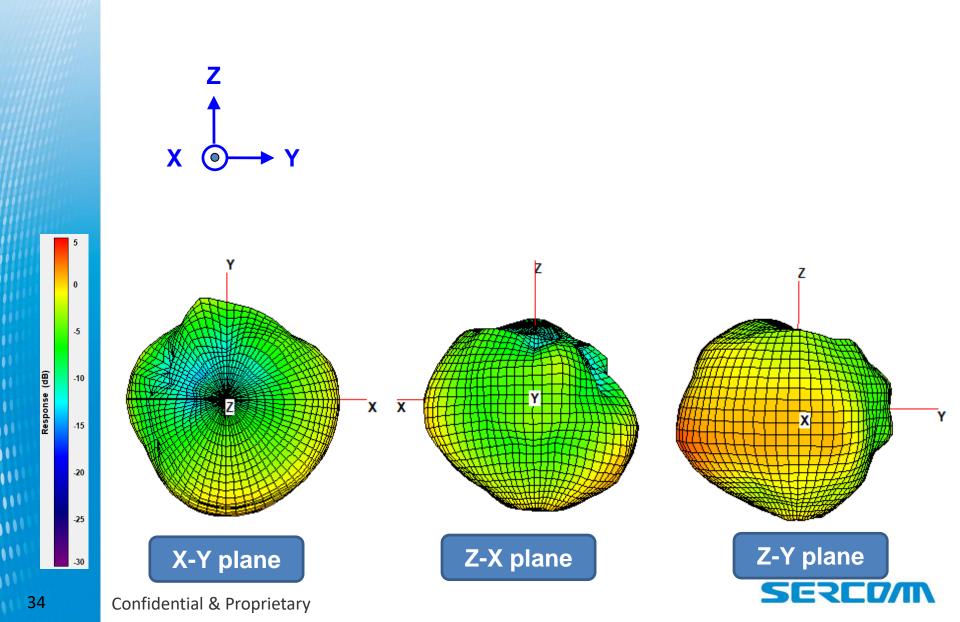
#### Radiation Pattern – Ant 4 @ 2450MHz



#### Radiation Pattern – Ant 4 @ 5500MHz



#### Radiation Pattern – Ant 5 @ 2450MHz



Ant 1 WiFi 2G/5G Performance							
Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)					
2400	55	3.1					
2450	55	3.3					
2500	54	3.3					
5150	57	2.9					
5500	59	3.0					
5850	56	3.1					



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Ant 2 WiFi 2G/5G Performance							
Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)					
2400	61	2.5					
2450	58	2.6					
2500	59	2.7					
5150	59	2.7					
5500	61	2.7					
5850	59	2.8					



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Ant 3 WiFi 2G/5G Performance							
Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)					
2400	60	2.6					
2450	63	2.9					
2500	60	2.8					
5150	59	3.3					
5500	62	3.5					
5850	62	3.4					



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Ant 4 WiFi 2G/5G Performance							
Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)					
2400	61	2.9					
2450	62	3.1					
2500	63	3.0					
5150	61	3.2					
5500	62	2.9					
5850	58	2.7					



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Ant 5 BLE Performance						
Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)				
2400	61	3.0				
2450	60	2.9				
2500	60	2.8				



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