

Wi-Fi 7 Antenna Performance Report

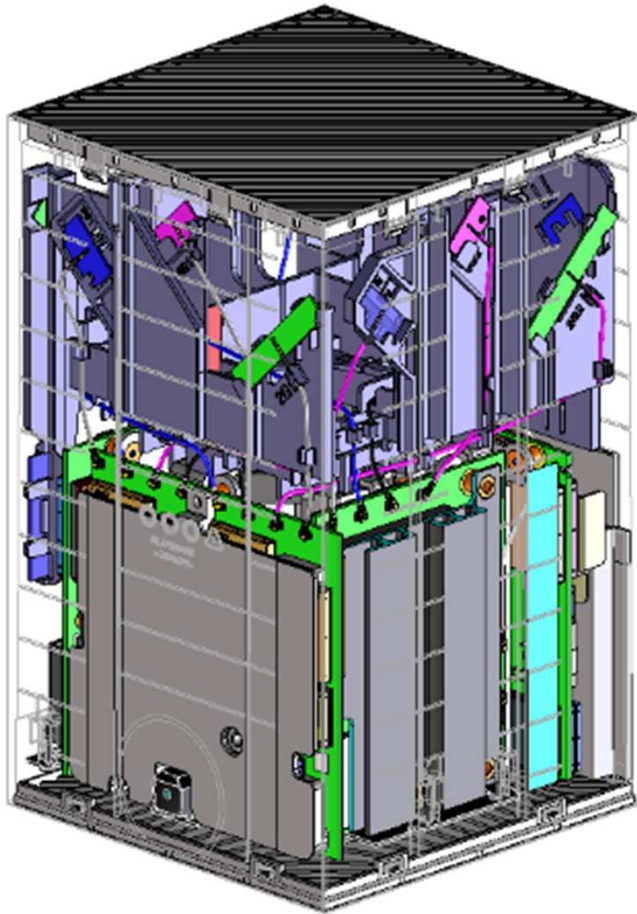
2024/11/21
WNC SAS

Summary

This report compares the WiFi antenna performance of EVT and pre-DVT device. We installed the BT and GPS antennas when we test the WiFi antennas.

The WiFi antenna performance are similar in both the EVT and pre-DVT device.

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Antenna Pattern

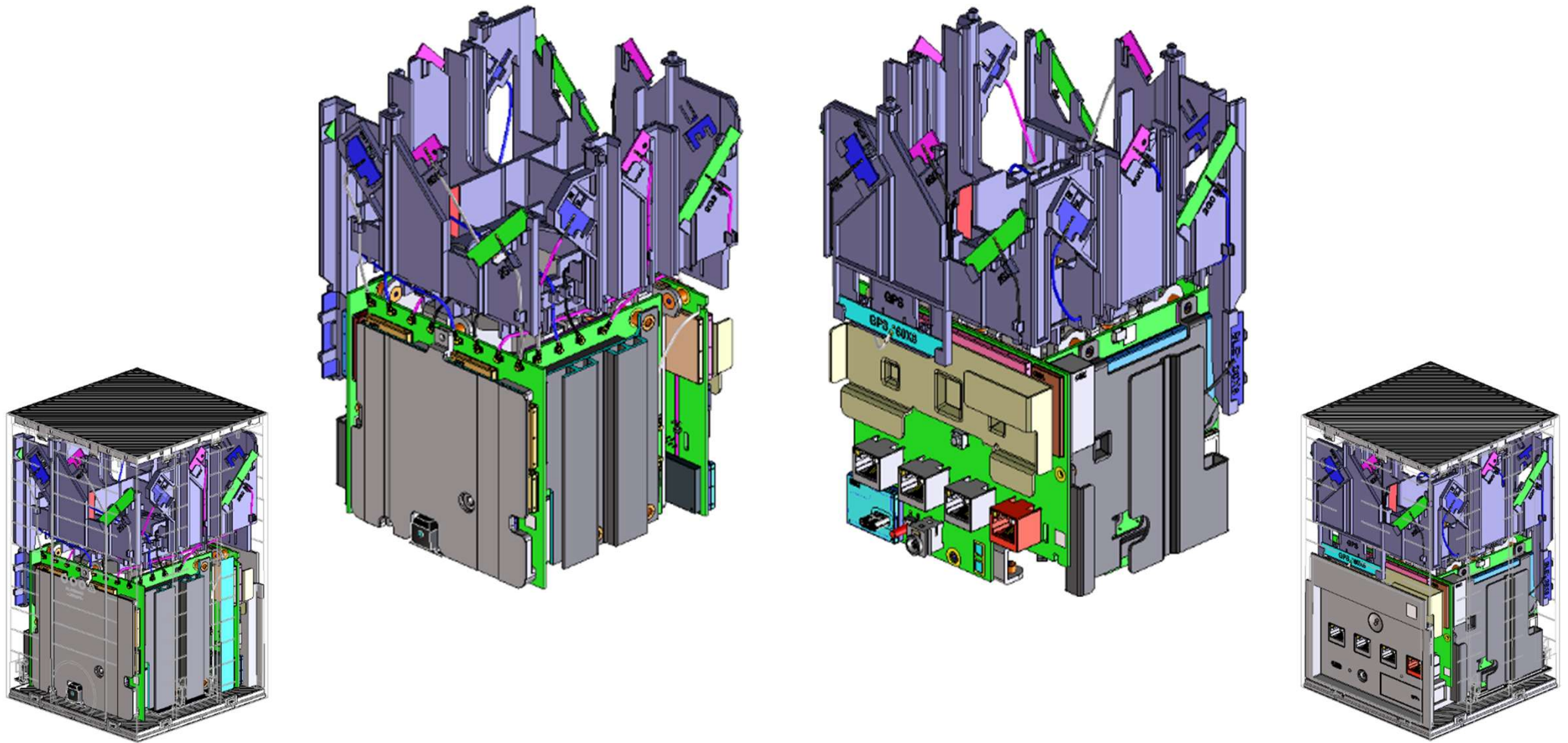
5

WiFi Efficiency and Peak Gain

6

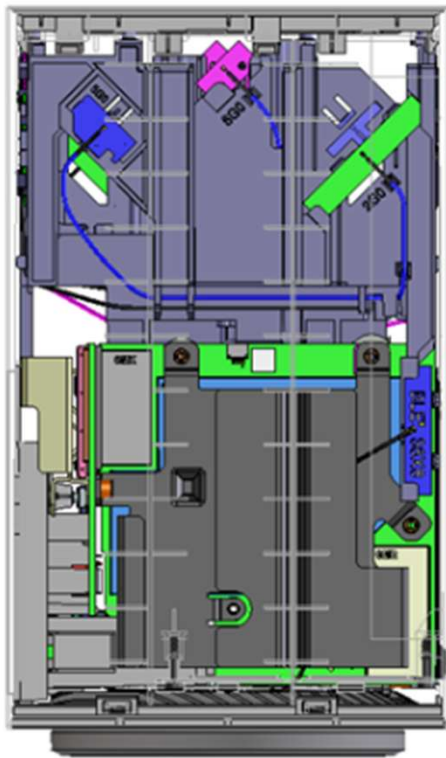
BT and GPS Antenna Pattern

WiFi 7 Outline

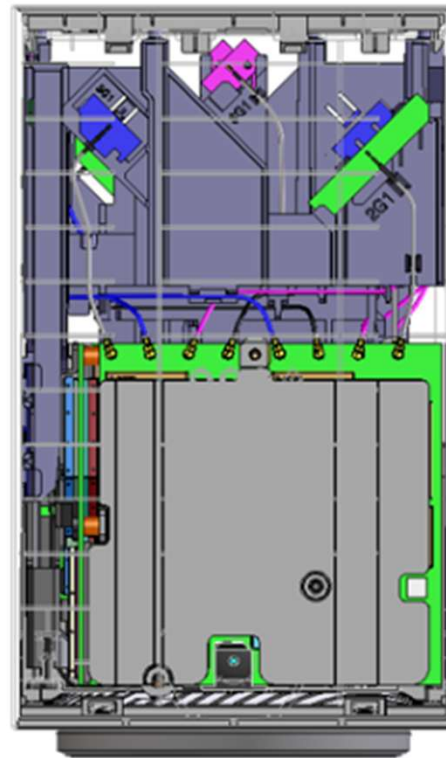


☐ Normal ☐ Internal Use ☐ Confidential ☐ Restricted Confidential

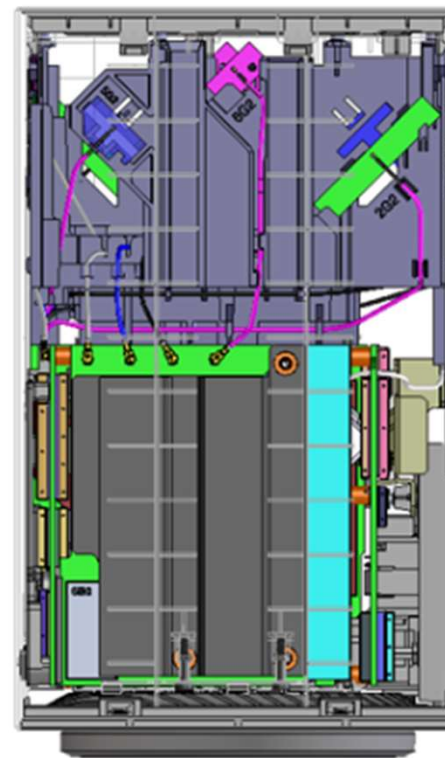
The Antenna Placement



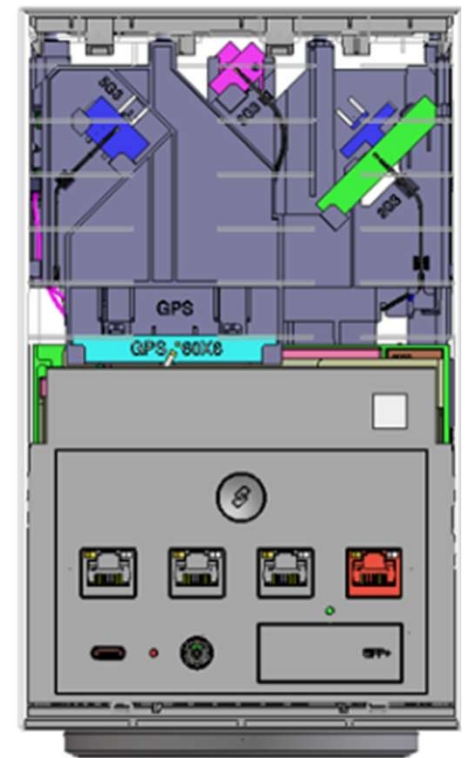
Left



Front



Right



Rear [IO side]

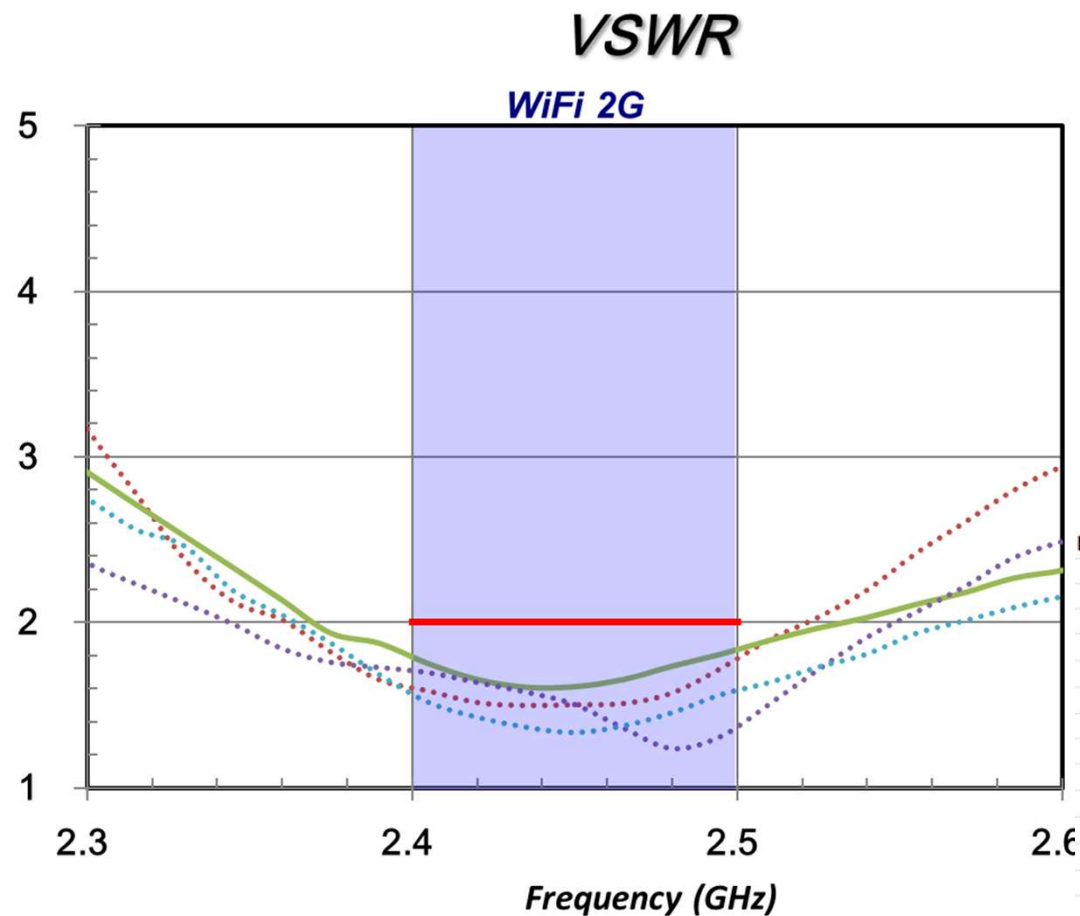
 2G

 5G

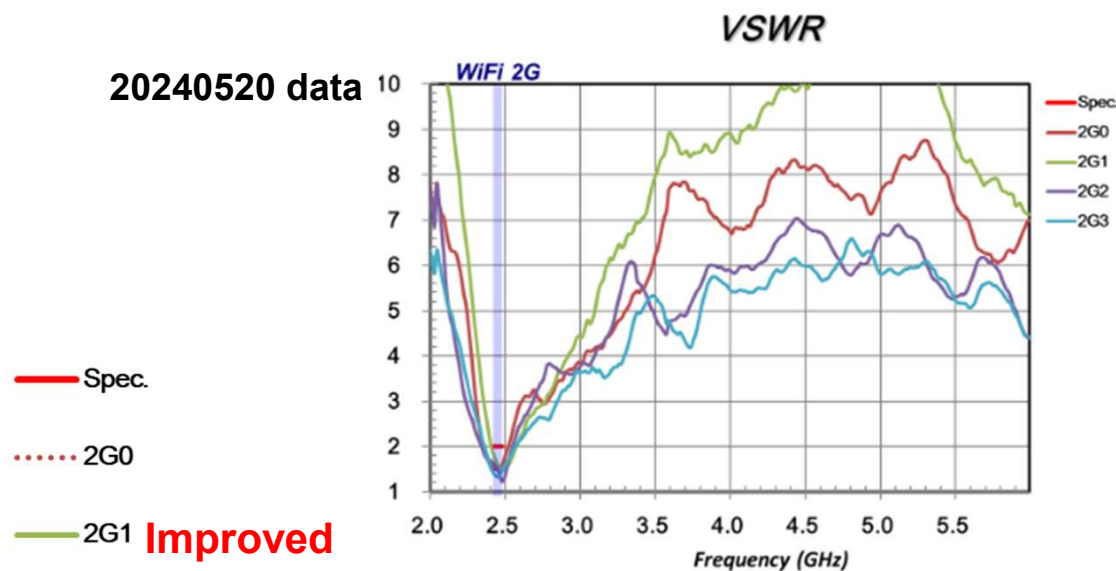
 6G

☐ Normal ☐ Internal Use ☒ Confidential ☐ Restricted Confidential

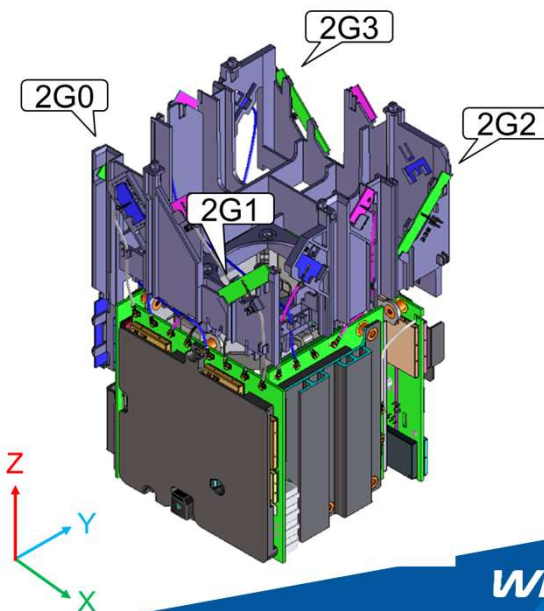
VSWR_2G



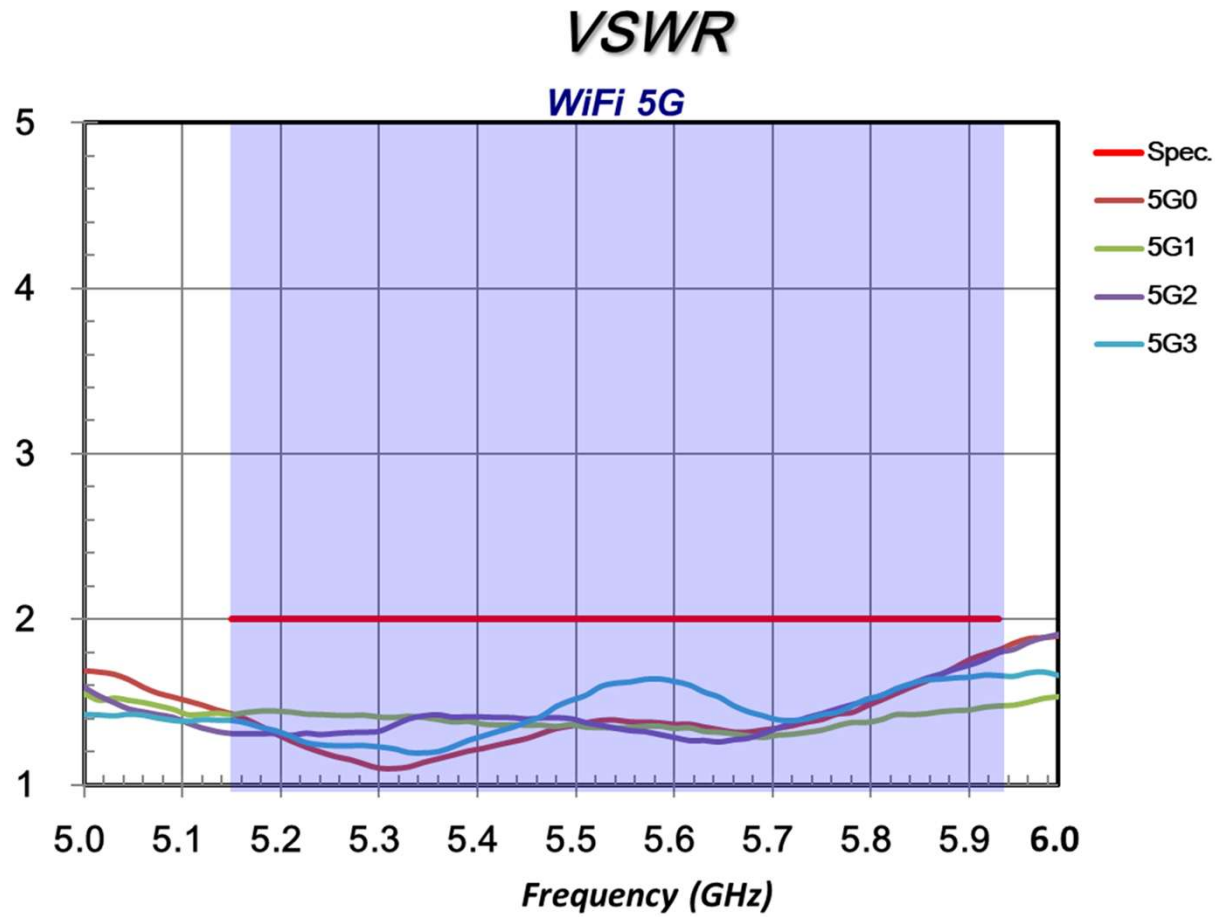
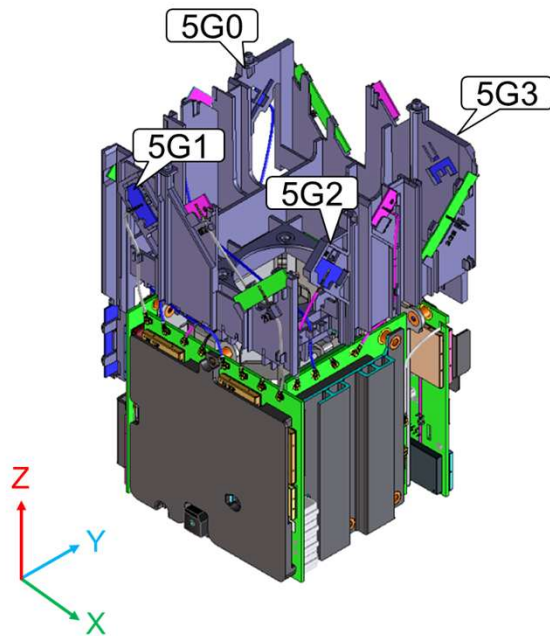
20240520 data



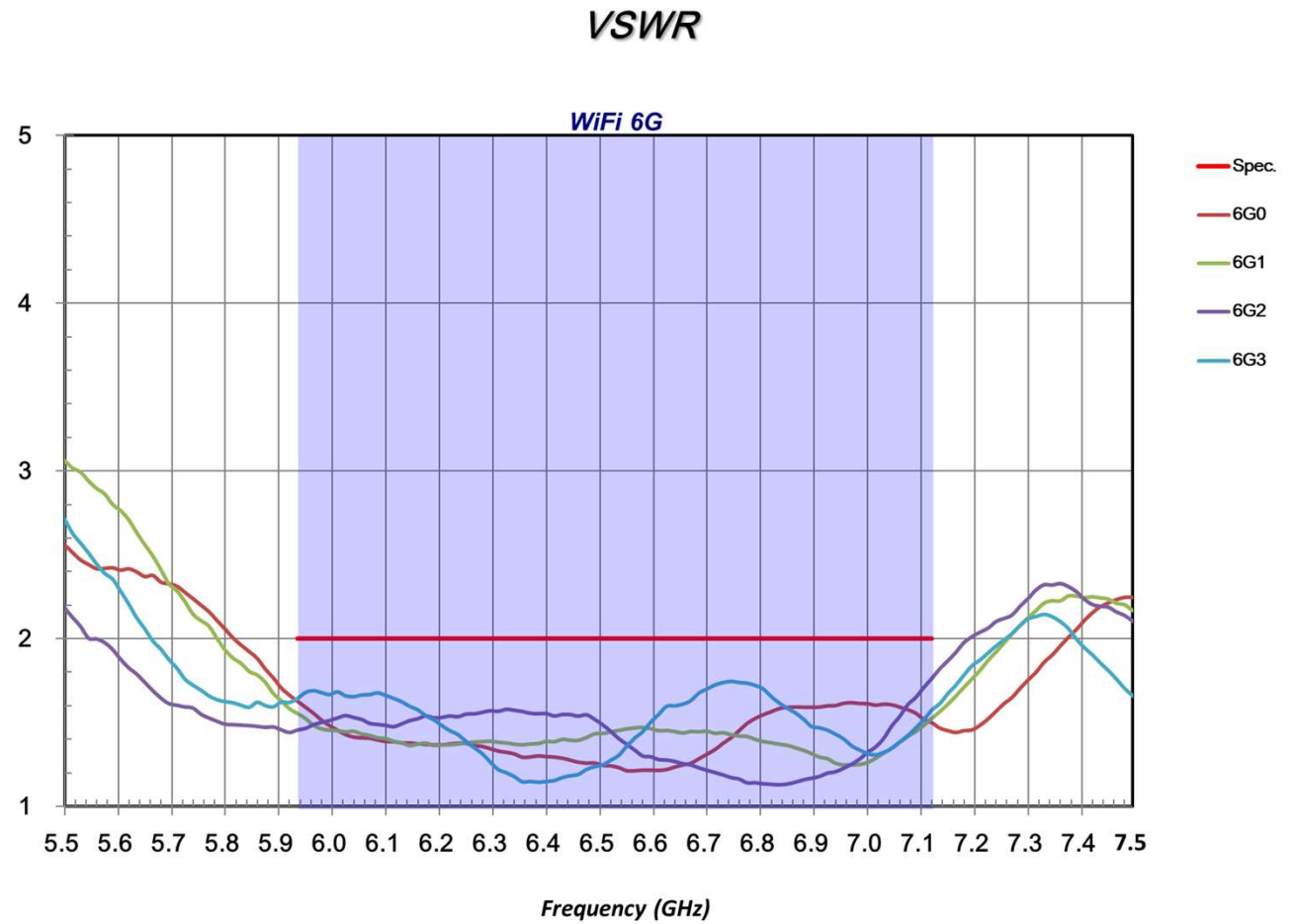
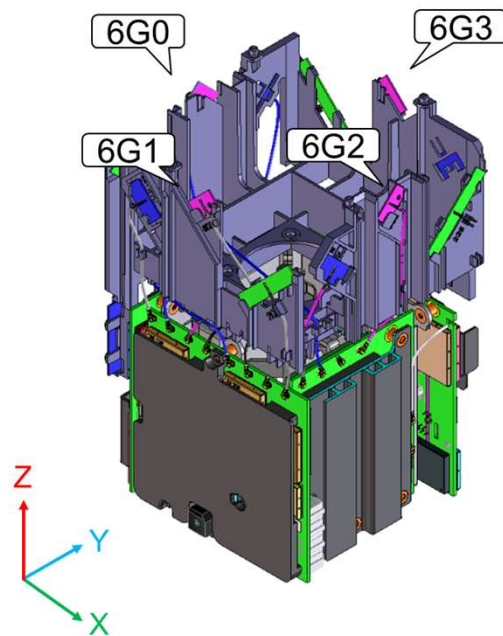
Freq.(GHz)	Spec.	2G0	2G1	2G2	2G3
2.36		2.01698	2.135557	1.839734	2.043754
2.375		1.821261	1.935448	1.757882	1.874204
2.39		1.652457	1.873888	1.725765	1.682945
2.405	2	1.586292	1.750786	1.694974	1.51611
2.42	2	1.516314	1.655539	1.635645	1.42583
2.435	2	1.498076	1.608504	1.577745	1.365972
2.45	2	1.502748	1.611201	1.502625	1.339036
2.465	2	1.510124	1.654617	1.360402	1.373707
2.48	2	1.572934	1.735724	1.235955	1.453065
2.495	2	1.721947	1.807946	1.308885	1.562426
2.51		1.896219	1.891714	1.504978	1.635794
2.525		2.031289	1.966013	1.713036	1.729618
2.54		2.195268	2.029601	1.908716	1.808115
2.555		2.416523	2.108903	2.060156	1.931407
2.57		2.603931	2.175864	2.215086	2.009099
2.585		2.796542	2.26704	2.388375	2.087848



VSWR_5G

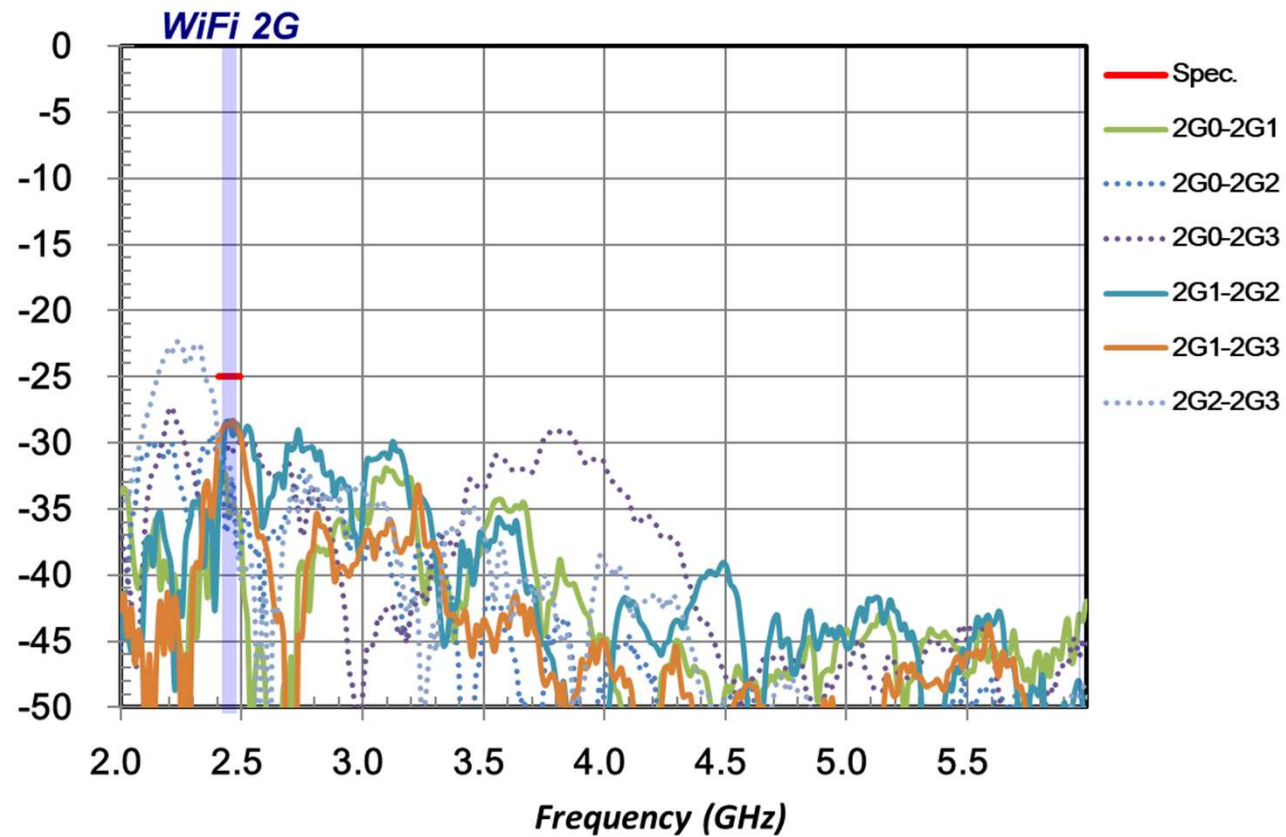


VSWR_6G



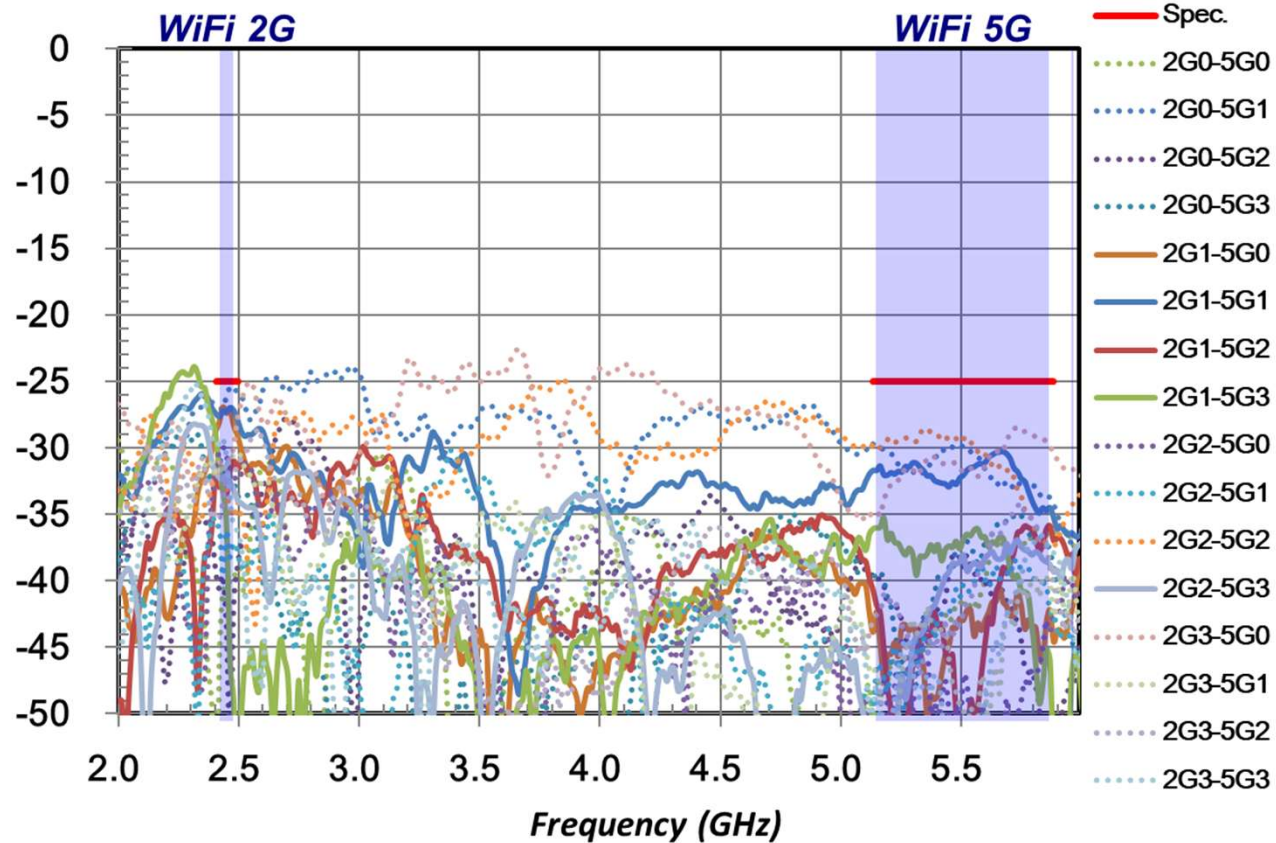
Isolation_2G to 2G

S21

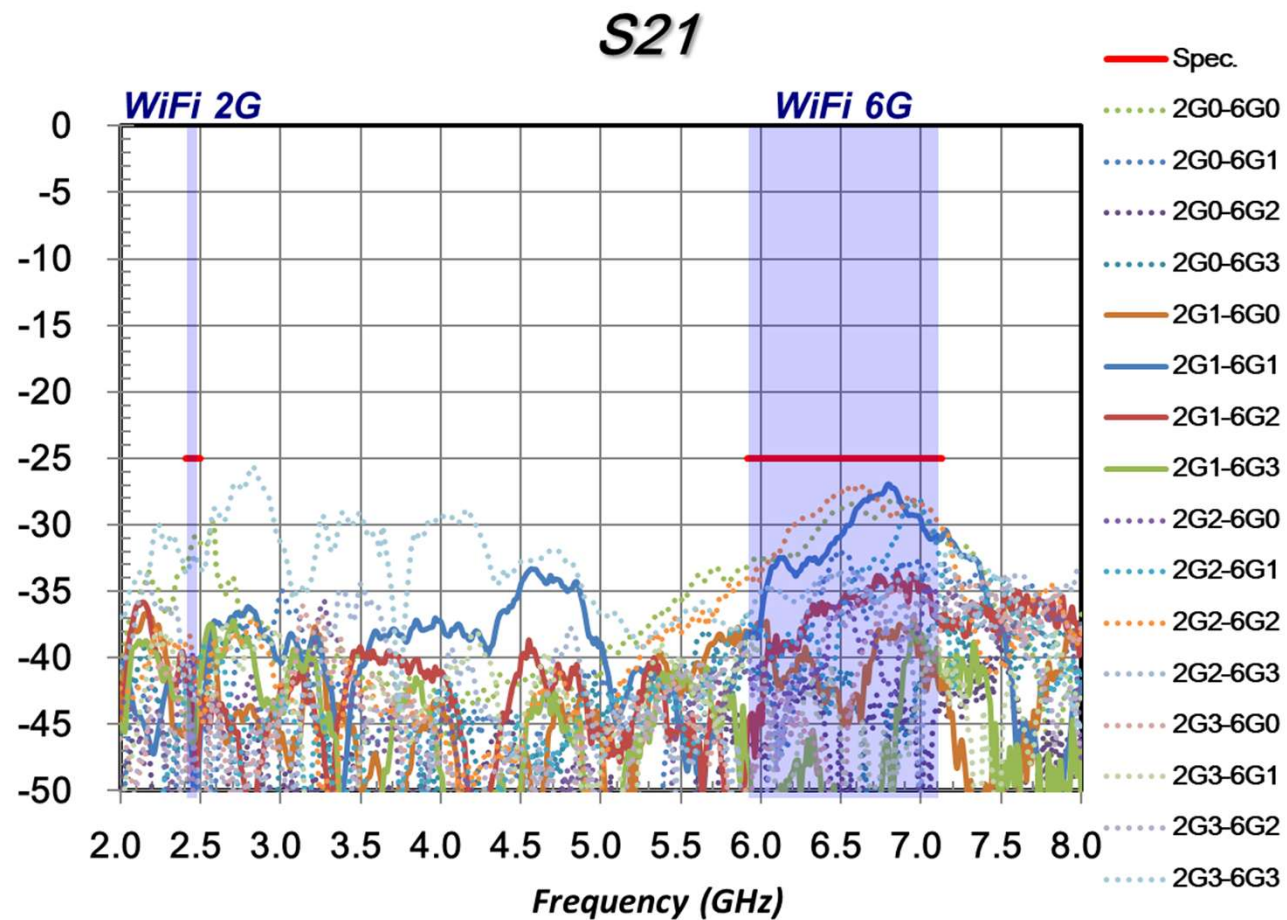


Isolation_2G to 5G

S21

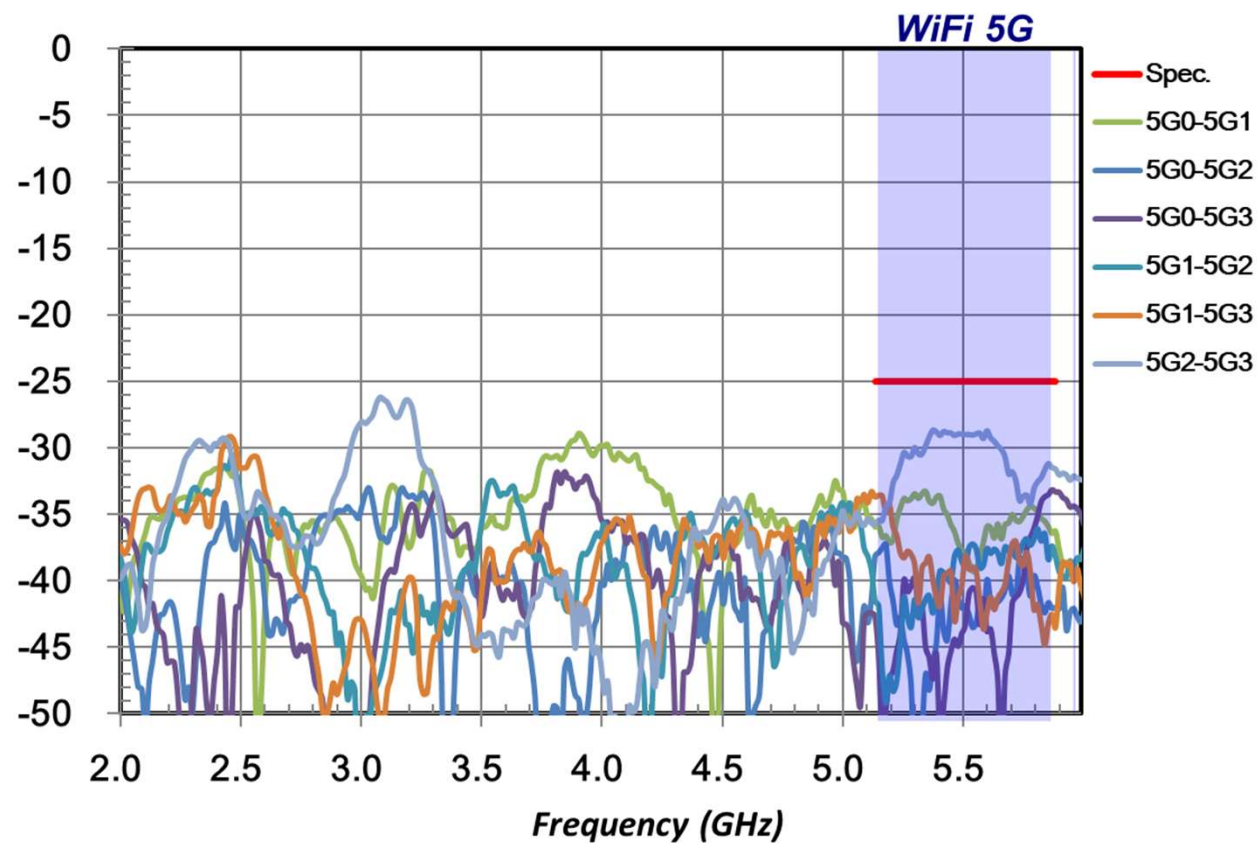


Isolation_2G to 6G

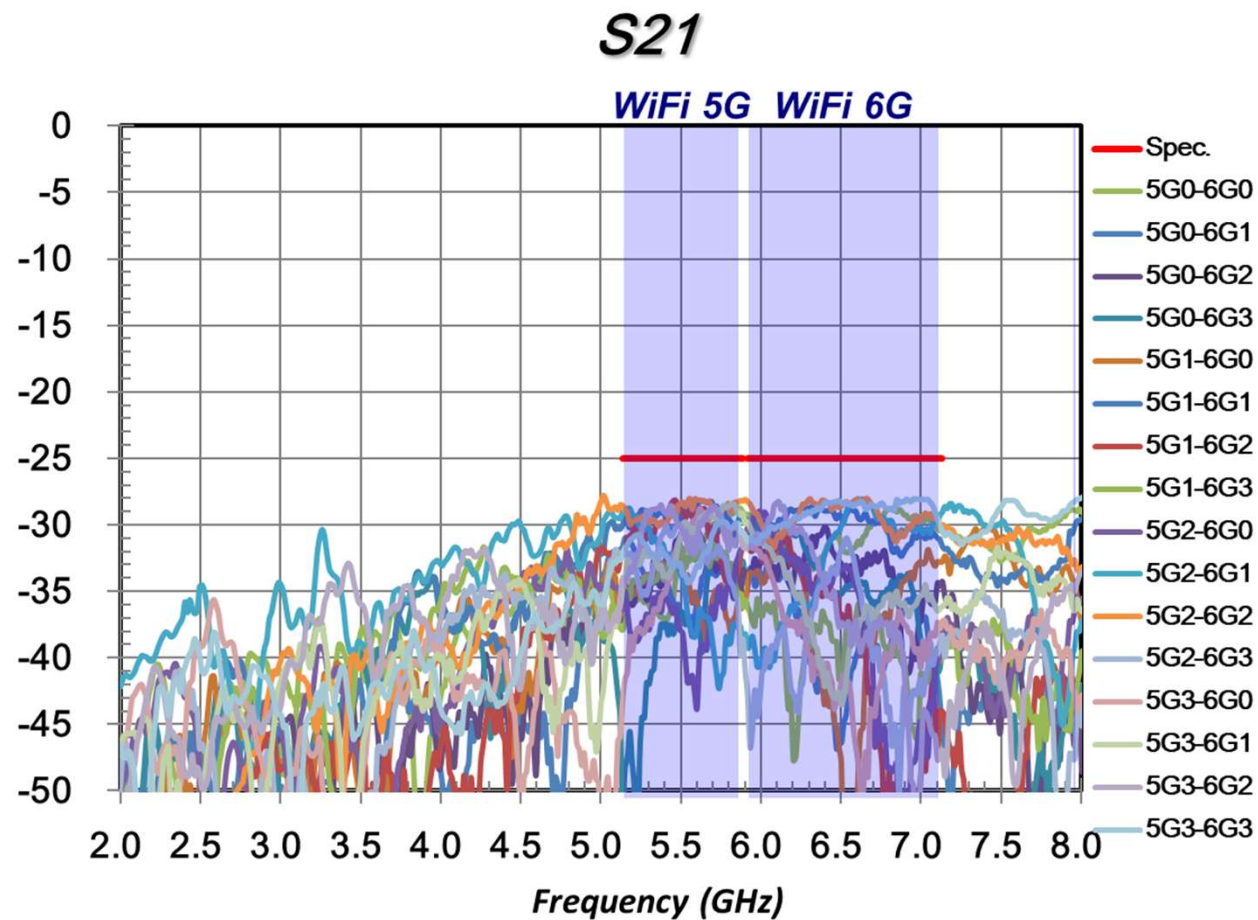


Isolation_5G to 5G

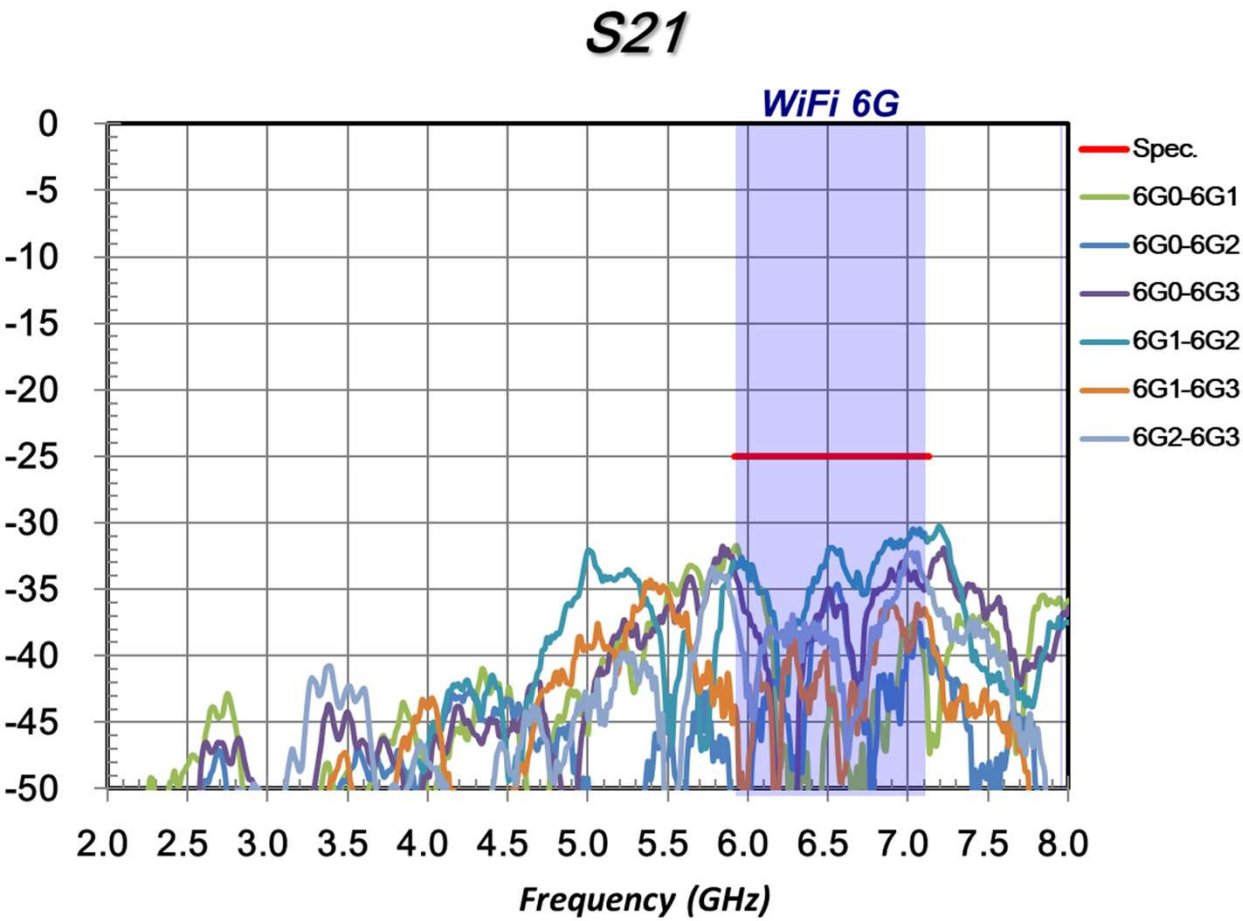
S21



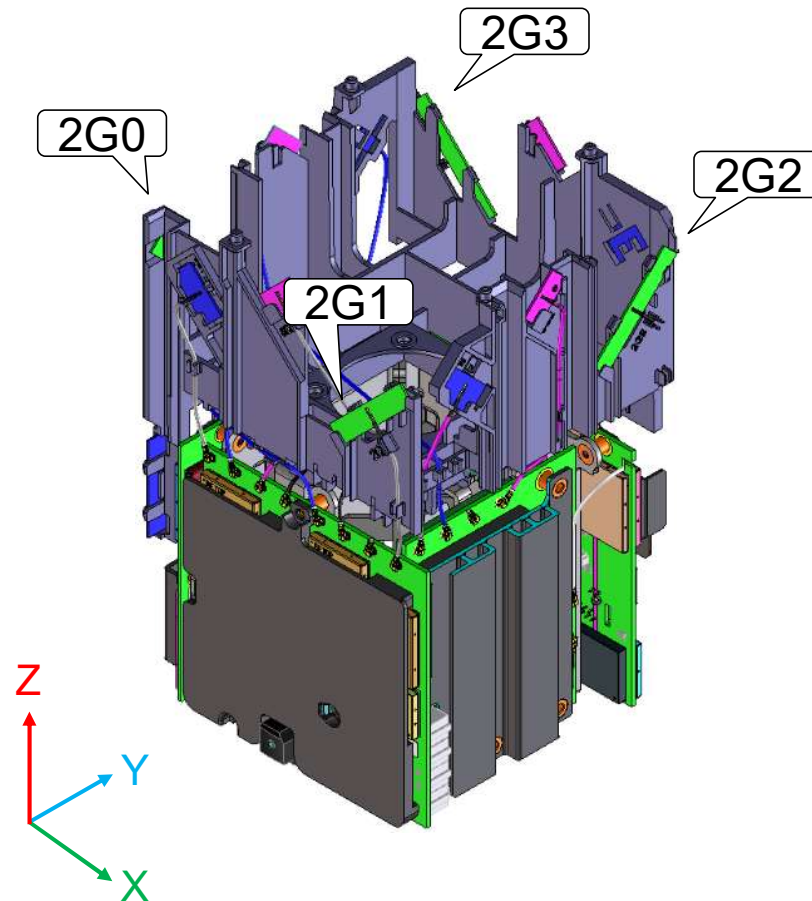
Isolation_5G to 6G



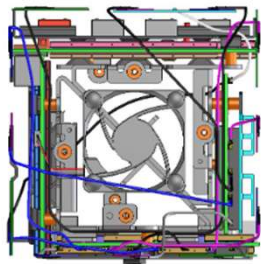
Isolation_6G to 6G



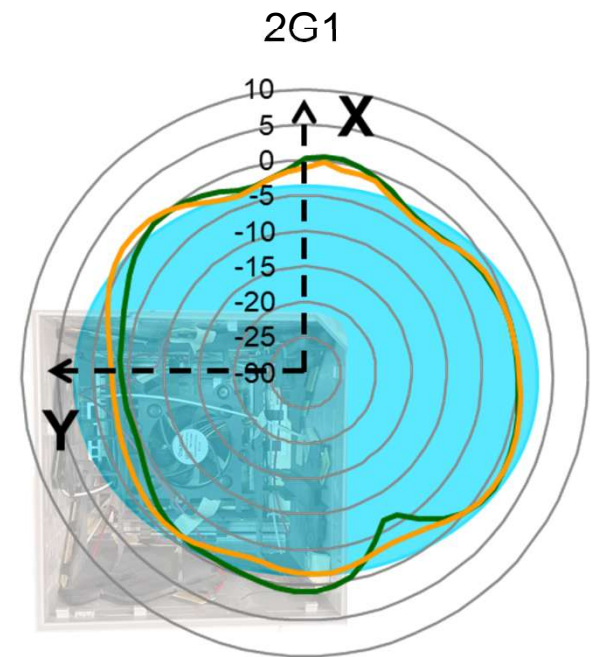
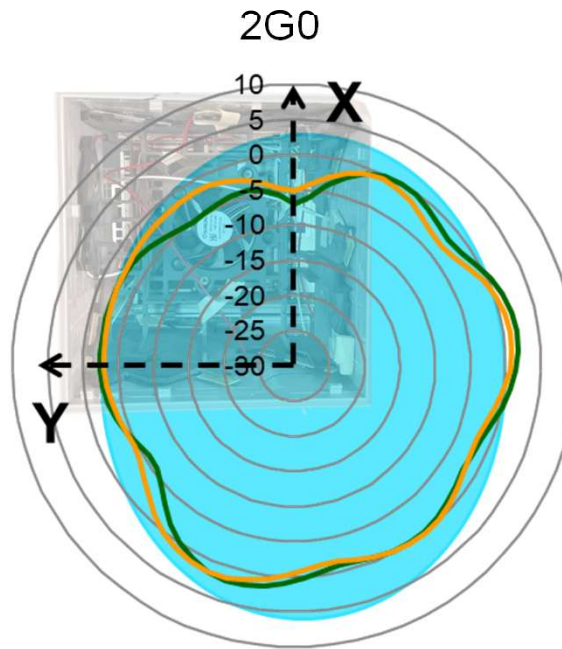
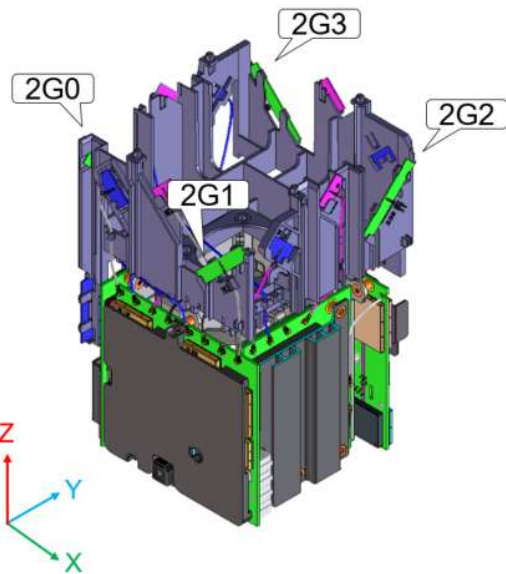
2G Antenna Placement



XY Plane – 2G0/1

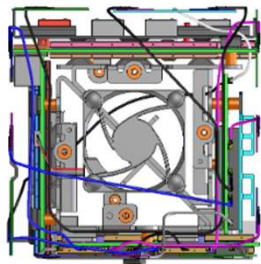


— 20240320 EVT
— 20240517 Pre-DVT

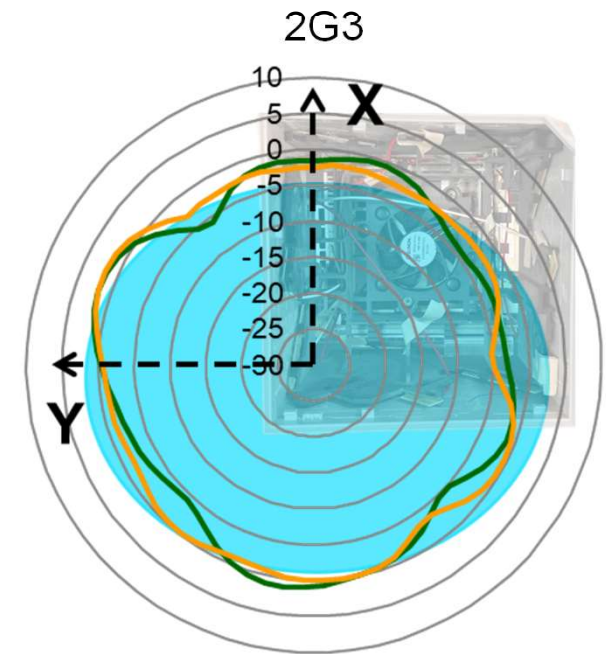
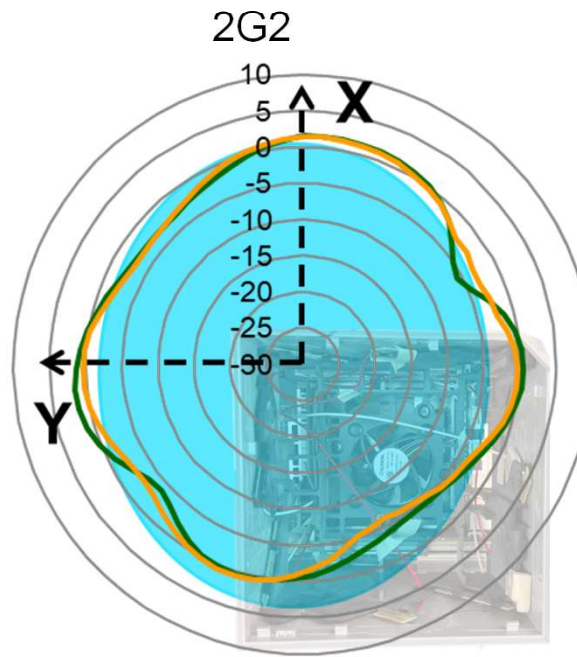
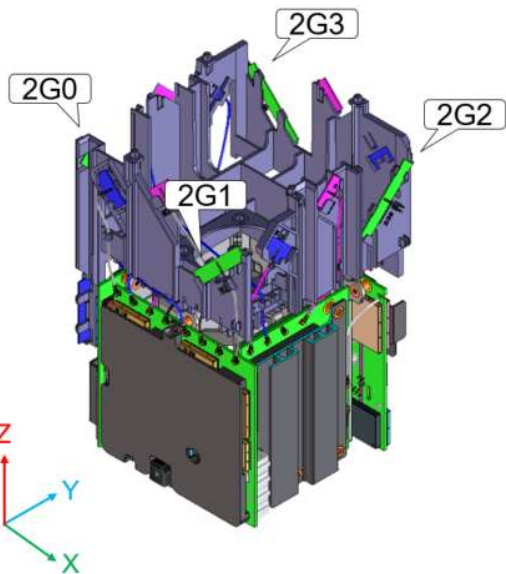


*The blue graphics are not according to the actual scale and are only for reference of the ideal radiation patterns in free-space.

XY Plane – 2G2/3

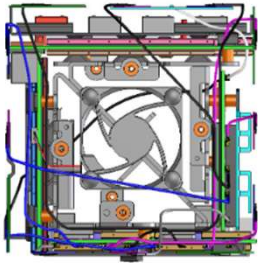


— 20240320 EVT
— 20240517 Pre-DVT

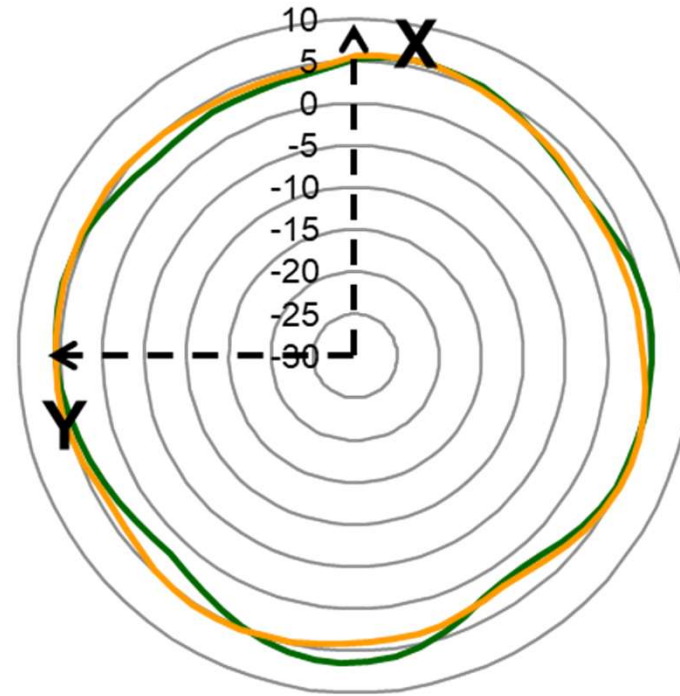
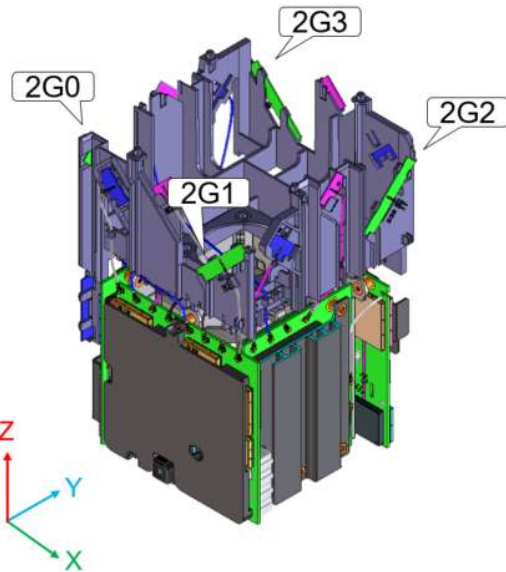


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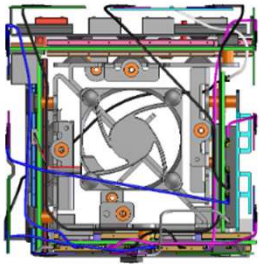
XY Plane – 2G Composite Gain



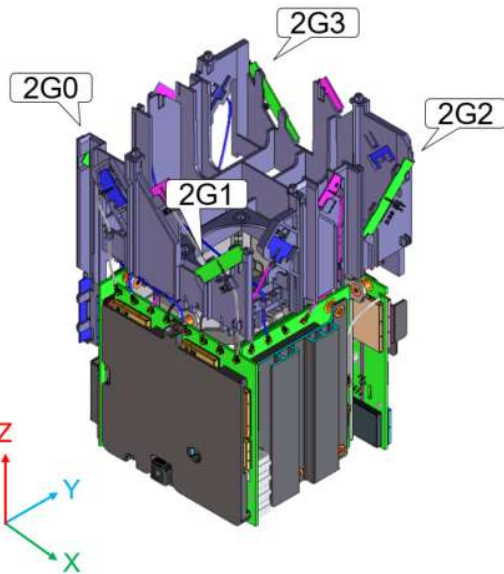
— 20240320 EVT
— 20240517 Pre-DVT



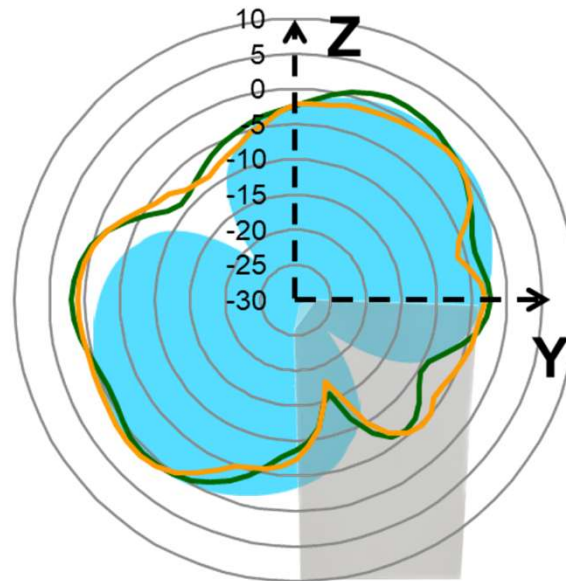
YZ Plane – 2G0/1



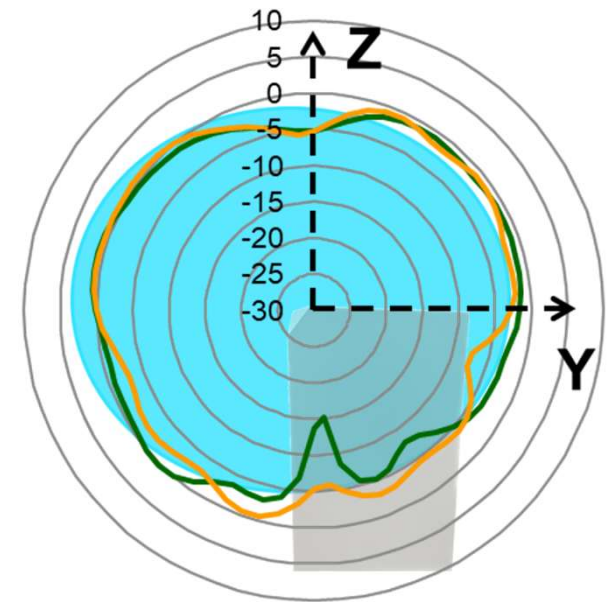
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 2G0

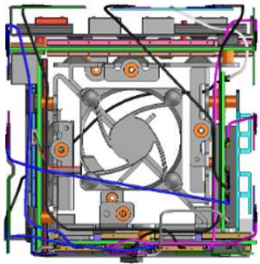


LVR5 2G1

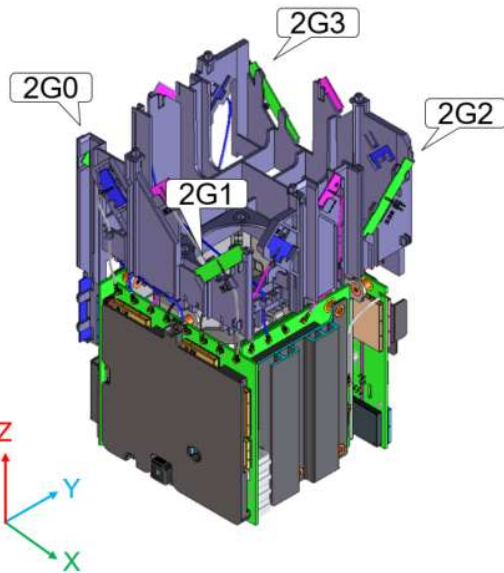


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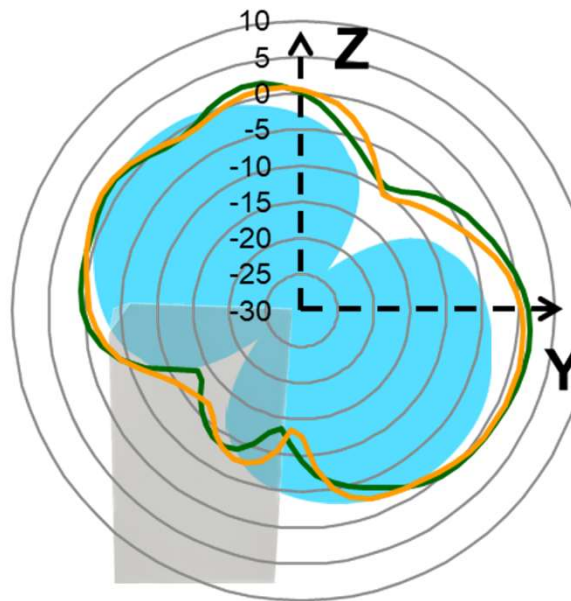
YZ Plane – 2G2/3



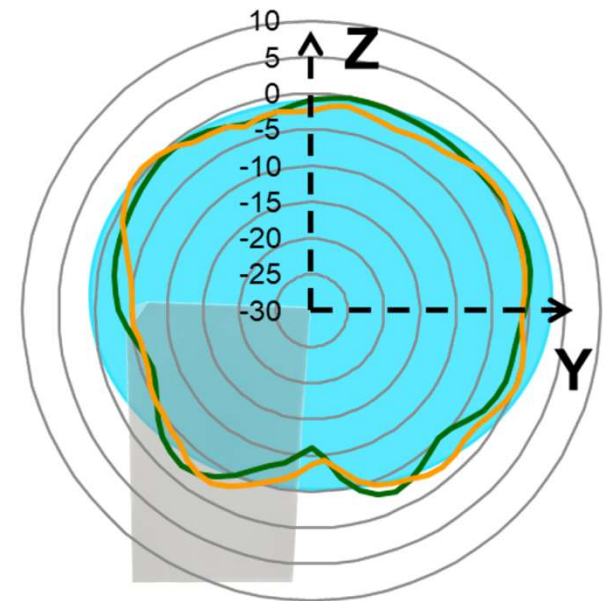
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 2G2

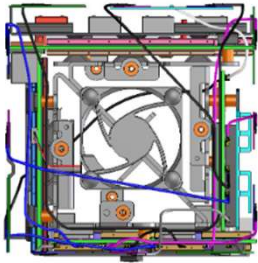


LVR5 2G3

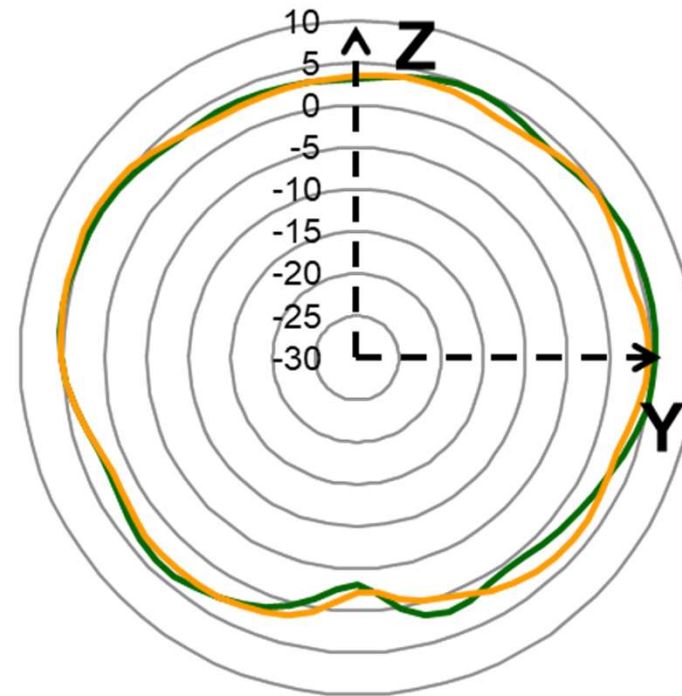
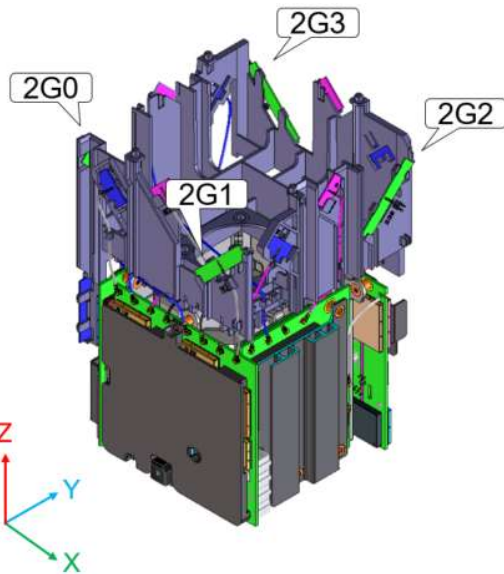


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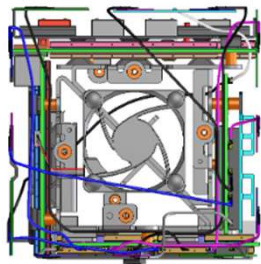
YZ Plane – 2G Composite Gain



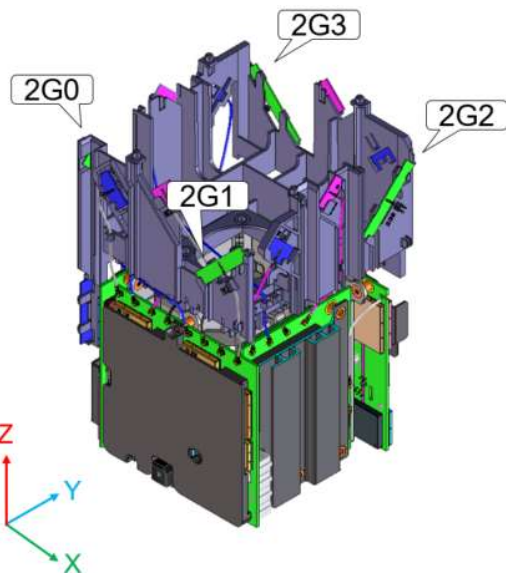
— 20240320 EVT
— 20240517 Pre-DVT



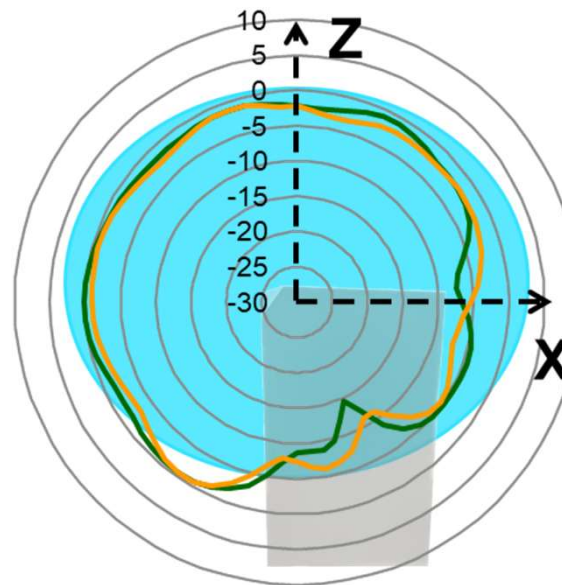
XZ Plane – 2G0/1



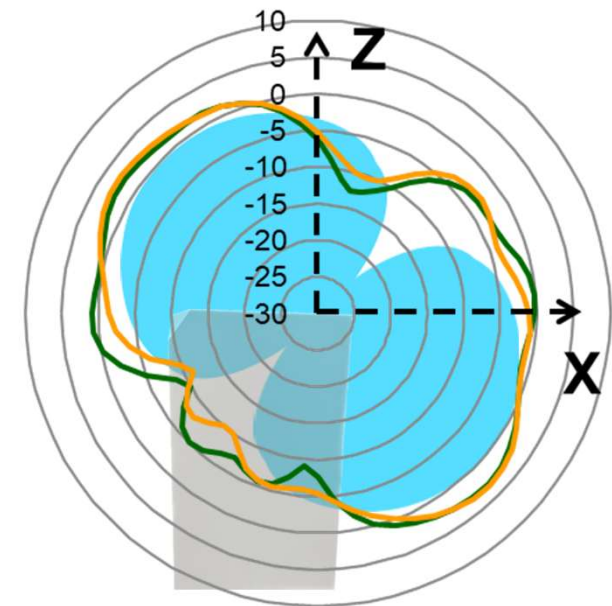
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 2G0

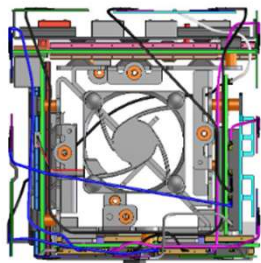


LVR5 2G1

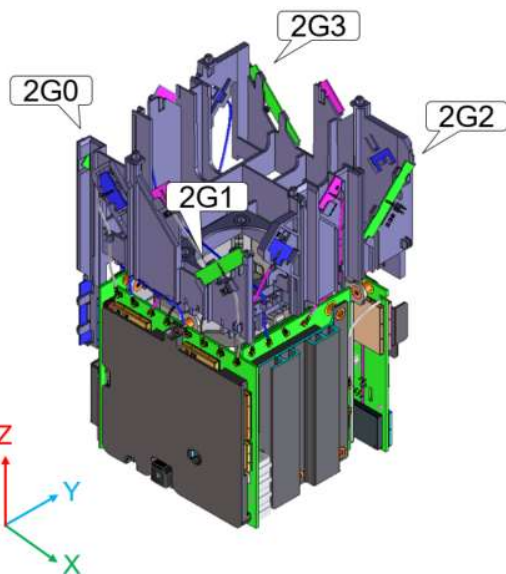


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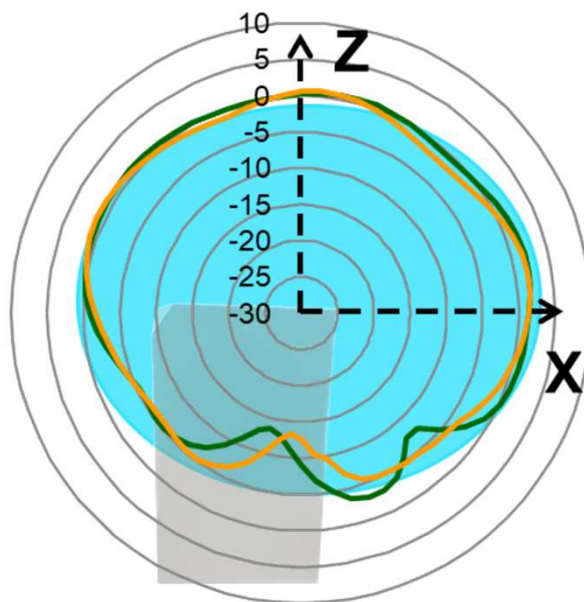
XZ Plane – 2G2/3



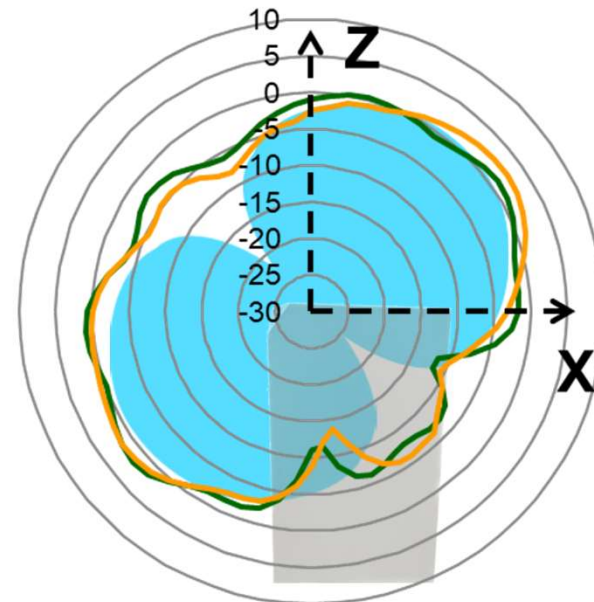
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 2G2

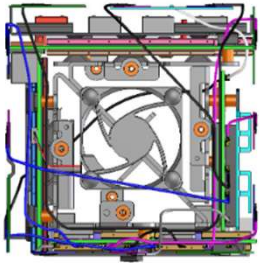


LVR5 2G3

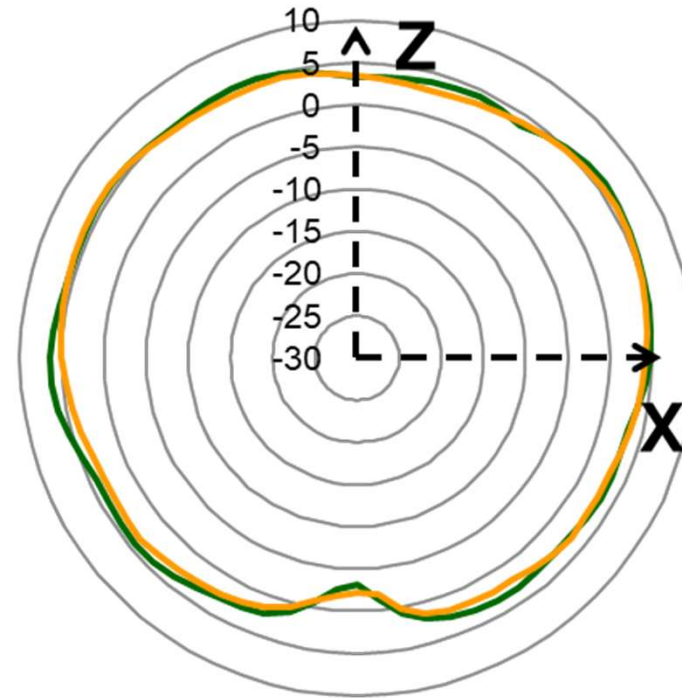
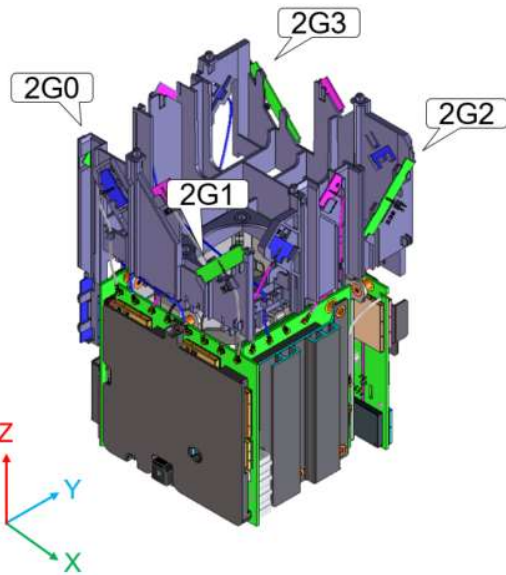


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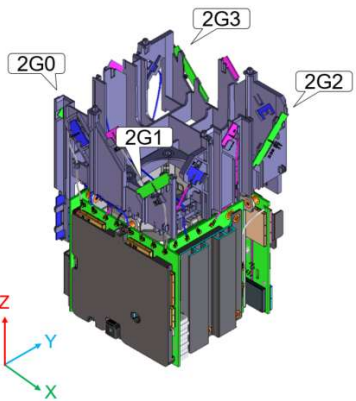
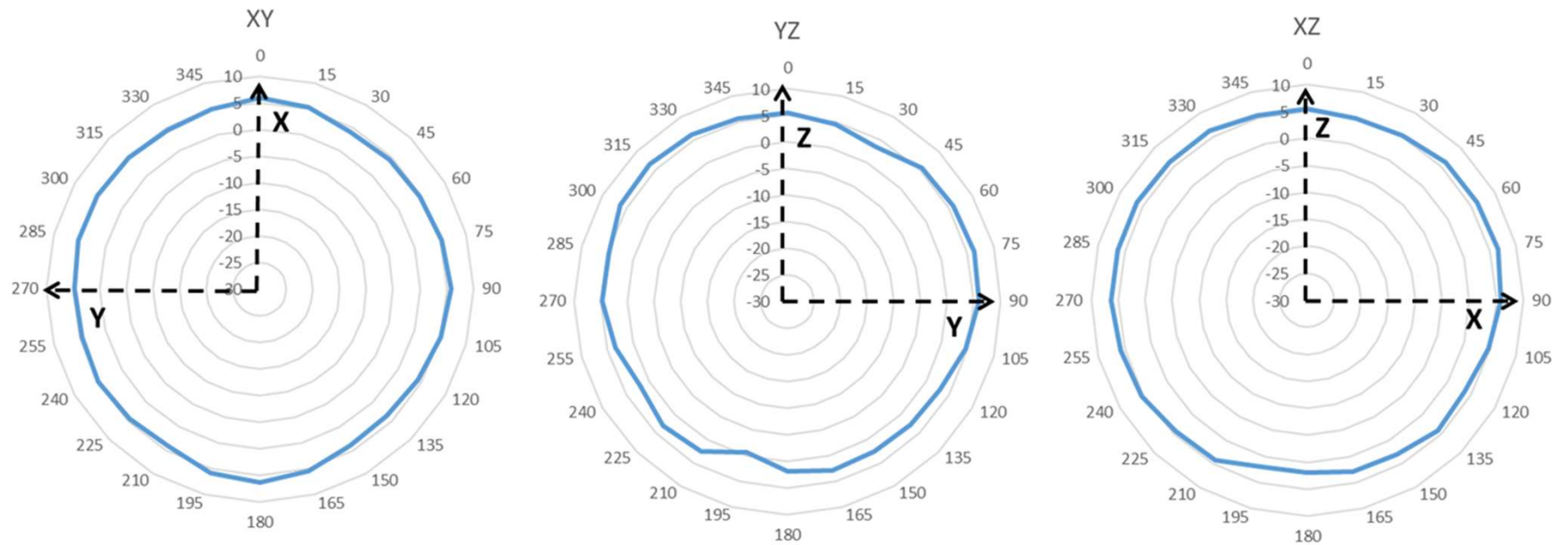
XZ Plane – 2G Composite Gain



— 20240320 EVT
— 20240517 Pre-DVT

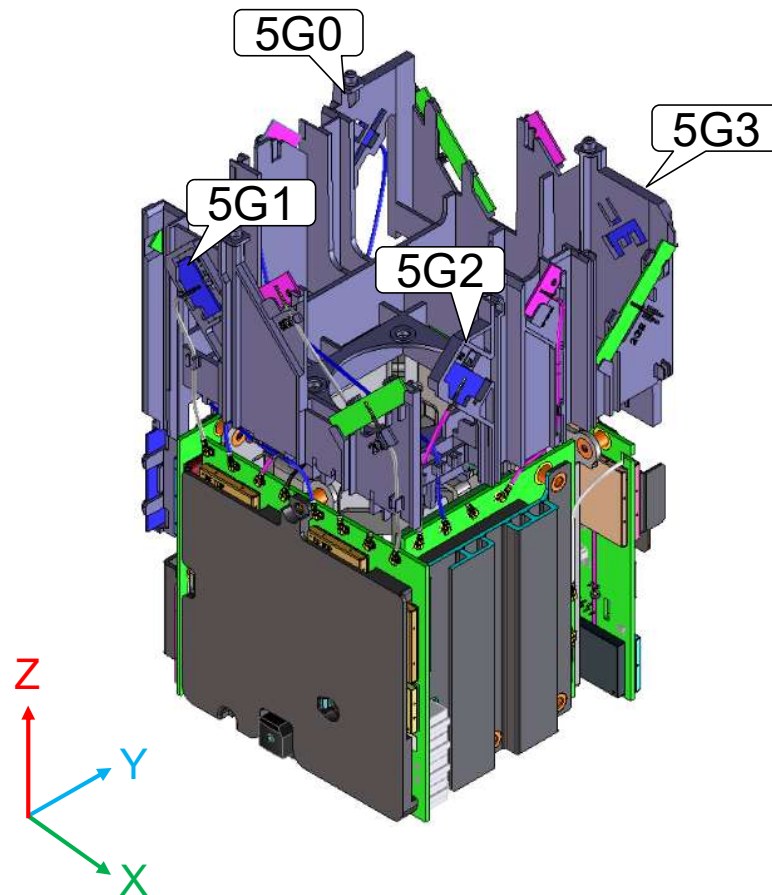


2G Composite Gain_Active

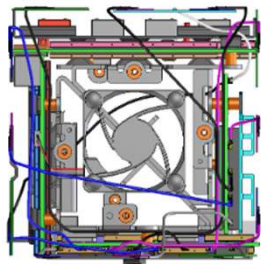


☐ Normal
 ☐ Internal Use
 ☒ Confidential
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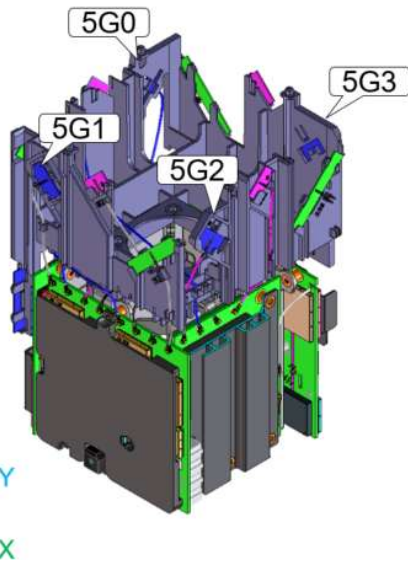
5G Antenna Placement



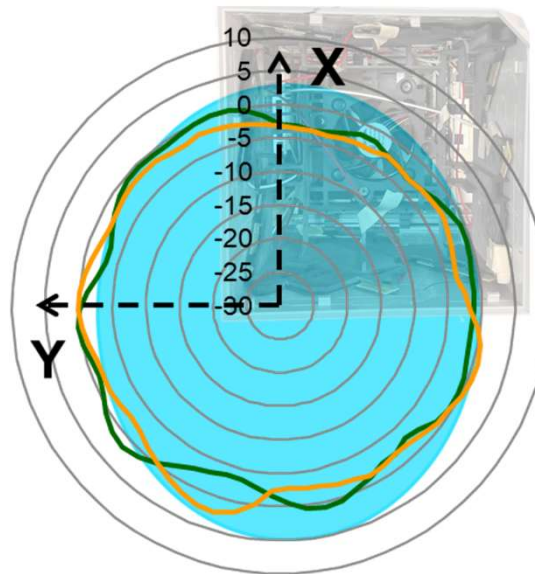
XY Plane – 5G0/1



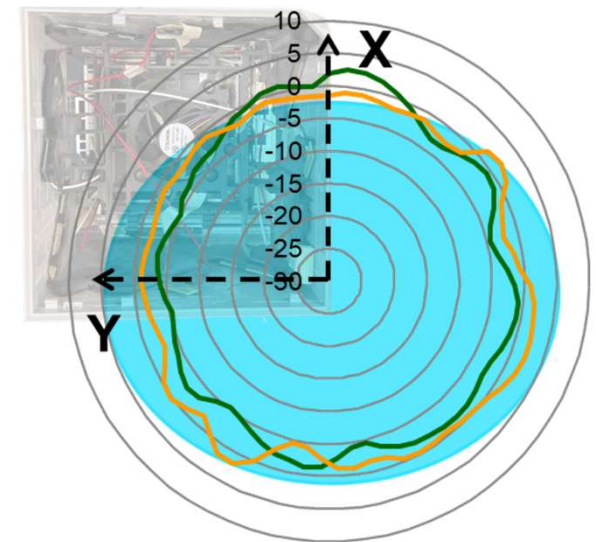
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G0

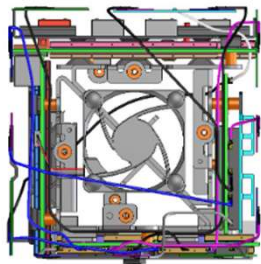


LVR5 5G1

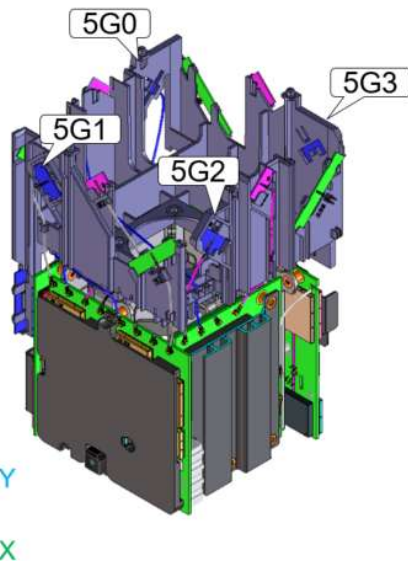


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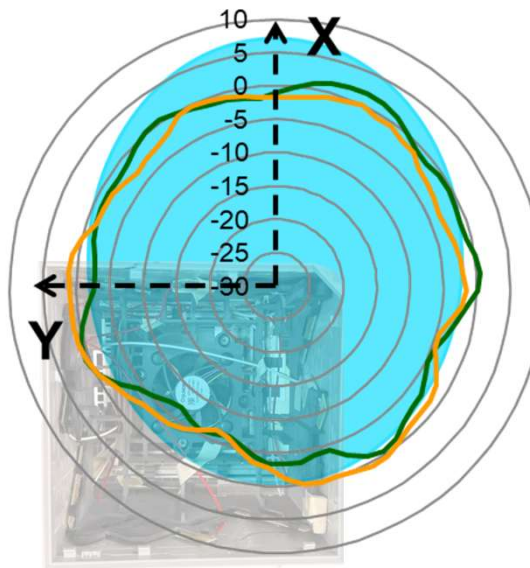
XY Plane – 5G2/3



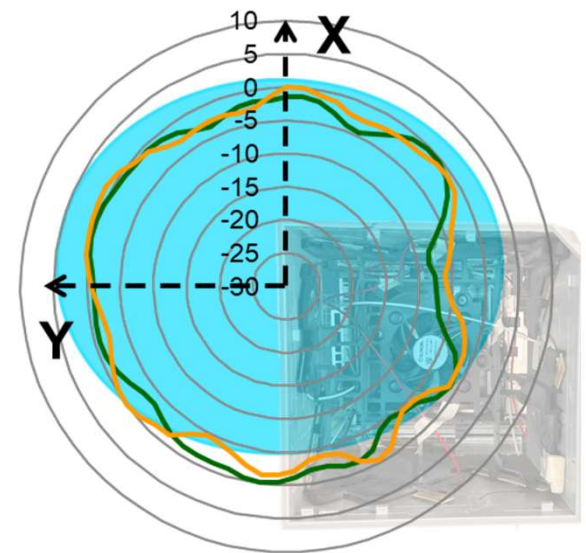
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G2

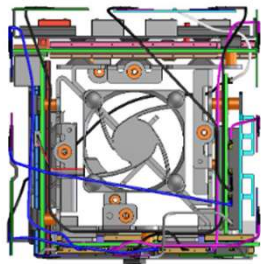


LVR5 5G3

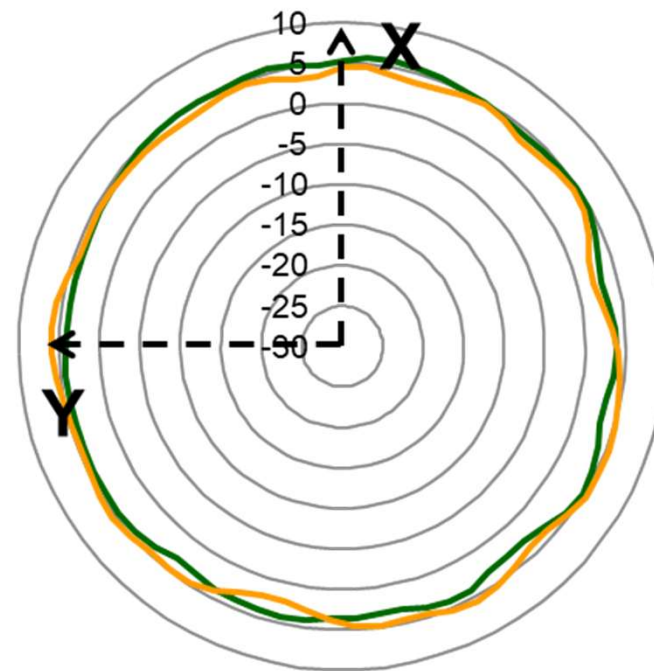
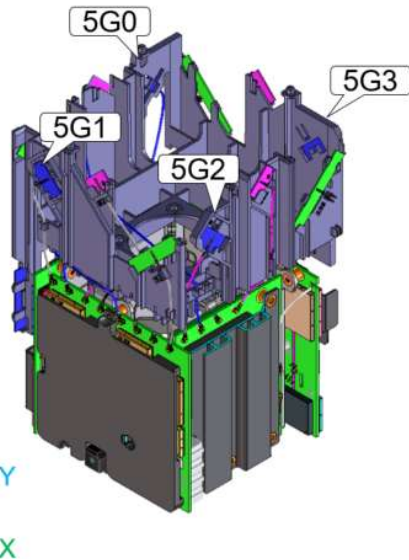


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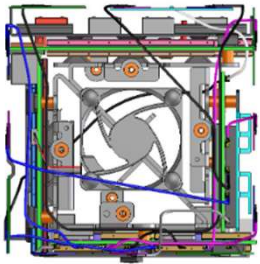
XY Plane – 5G Composite Gain



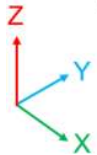
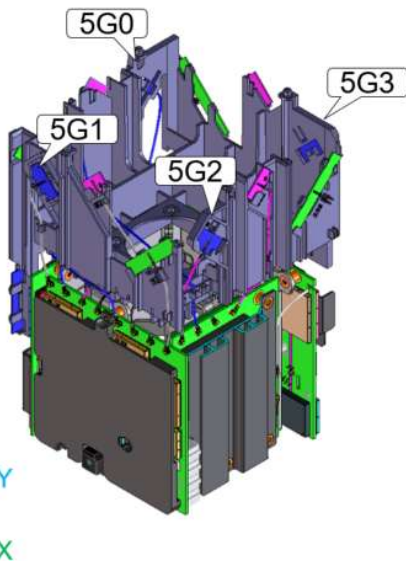
— 20240320 EVT
— 20240517 Pre-DVT



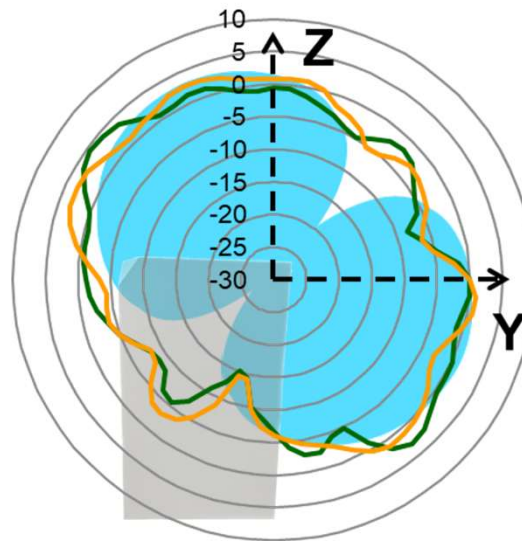
YZ Plane – 5G0/1



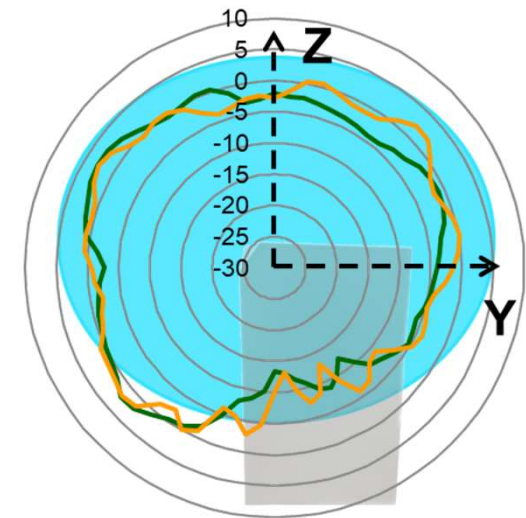
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G0

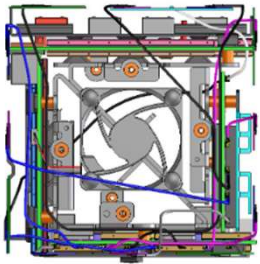


LVR5 5G1

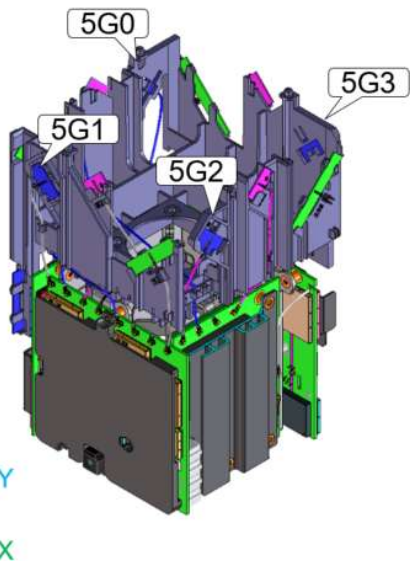


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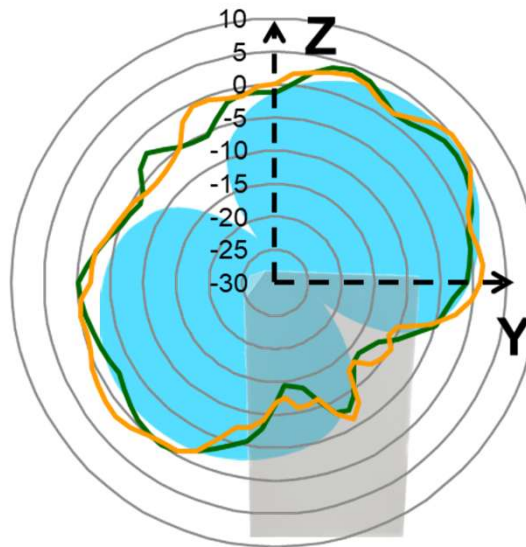
YZ Plane – 5G2/3



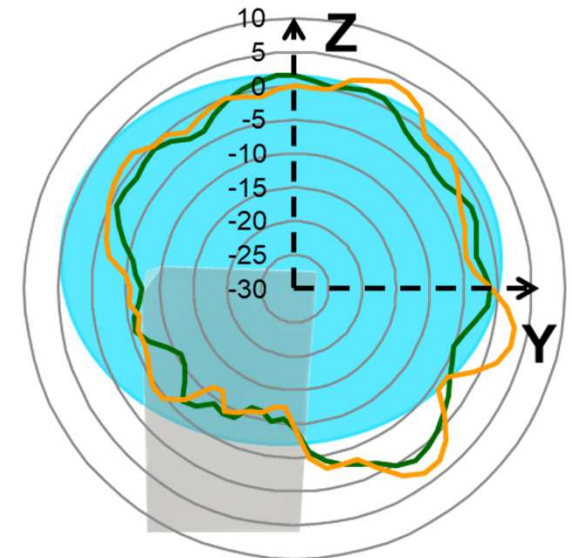
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G2

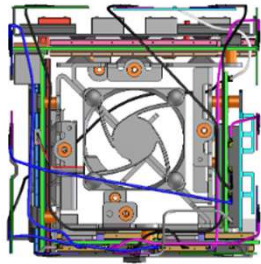


LVR5 5G3

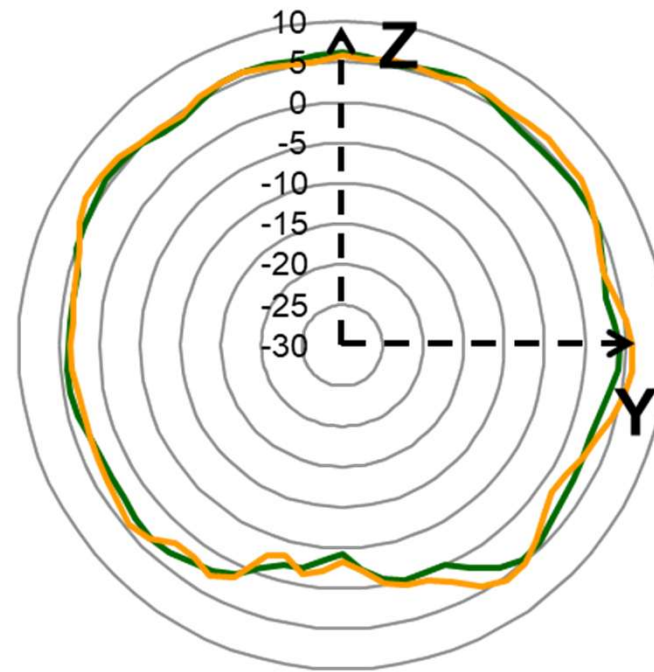
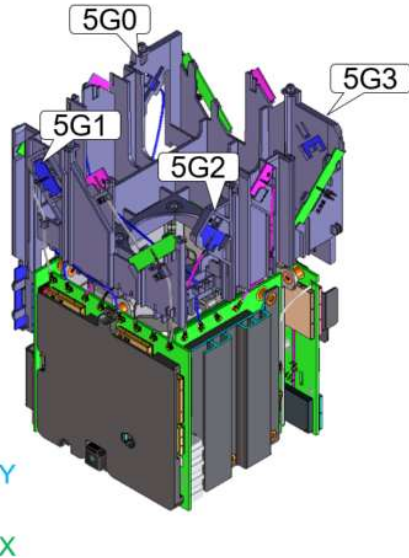


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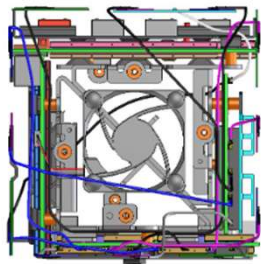
YZ Plane – 5G Composite Gain



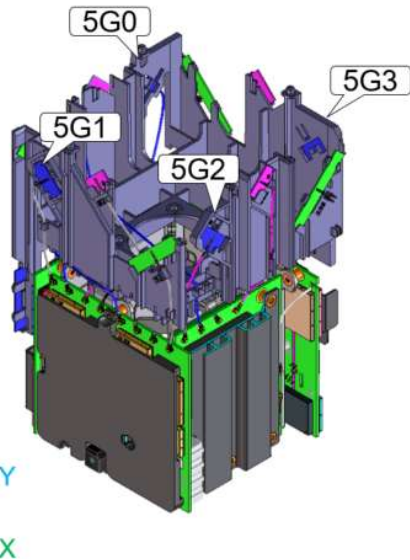
— 20240320 EVT
— 20240517 Pre-DVT



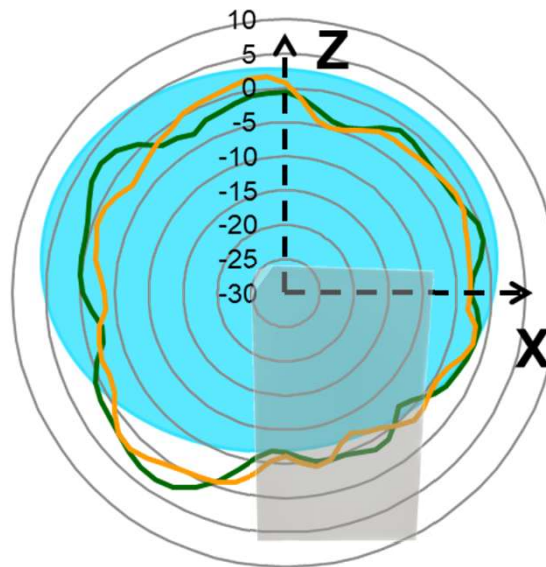
XZ Plane – 5G0/1



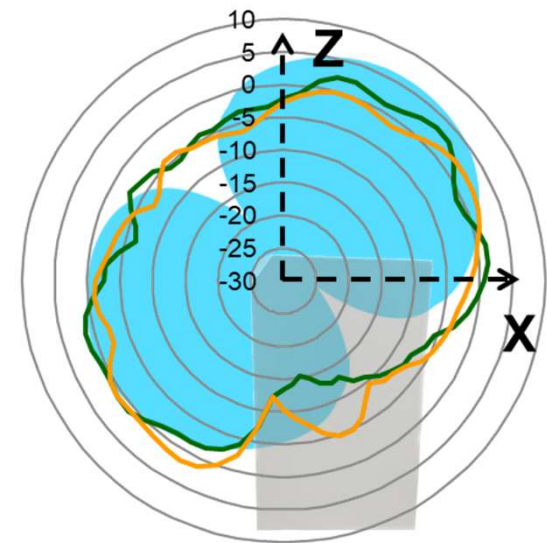
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G0

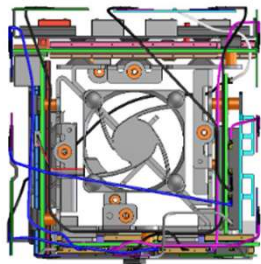


LVR5 5G1

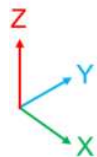
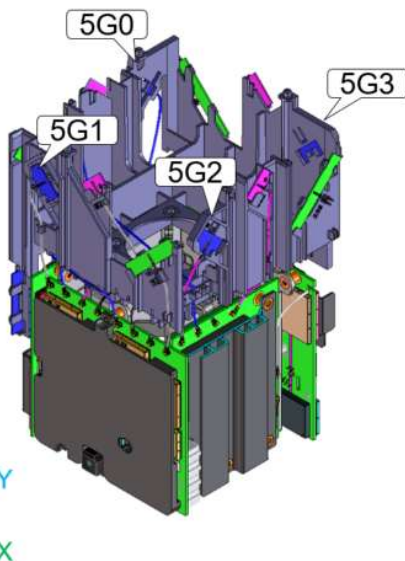


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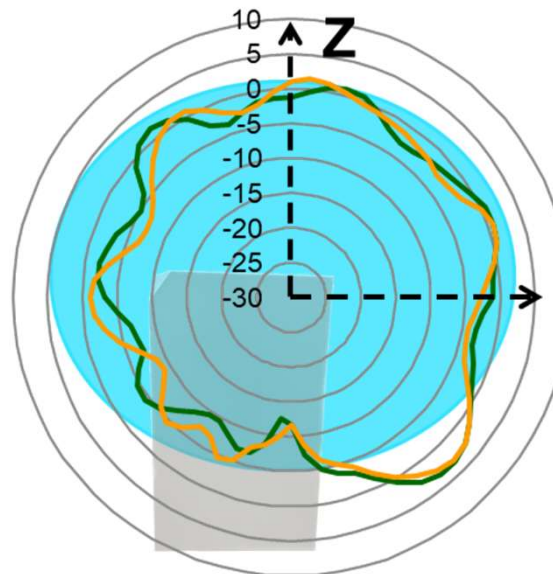
XZ Plane – 5G2/3



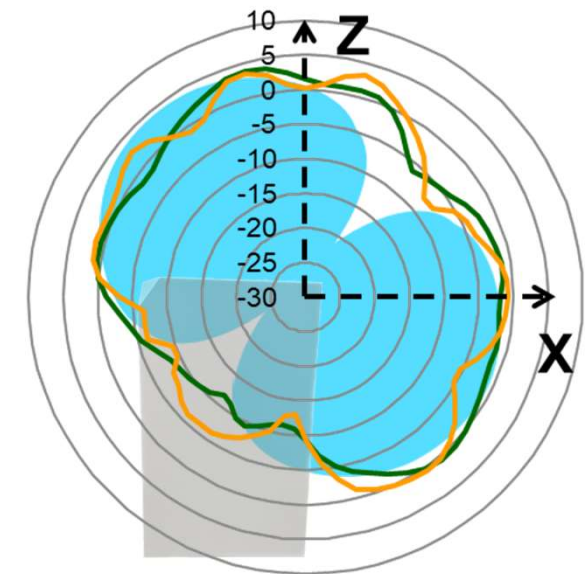
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 5G2

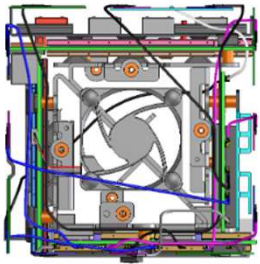


LVR5 5G3

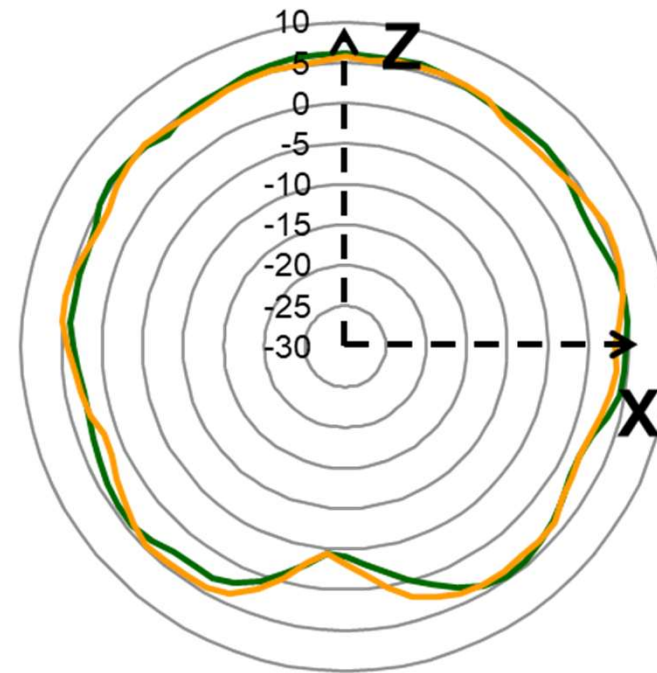
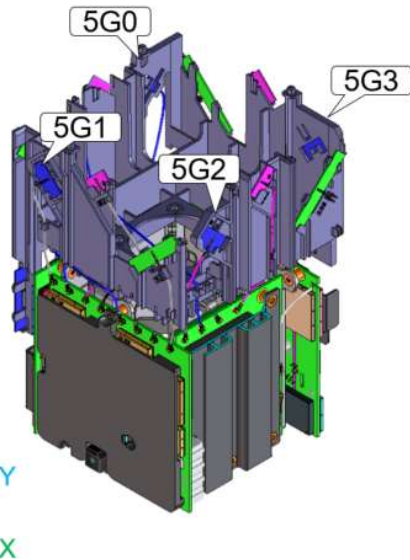


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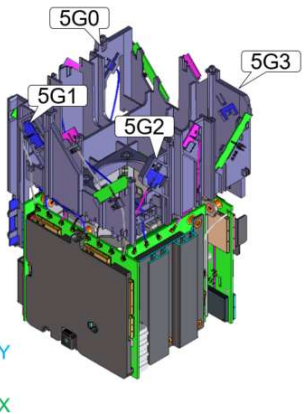
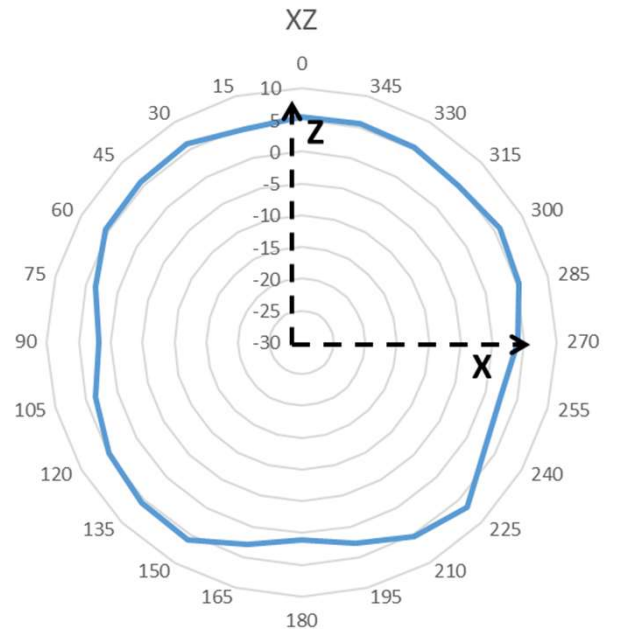
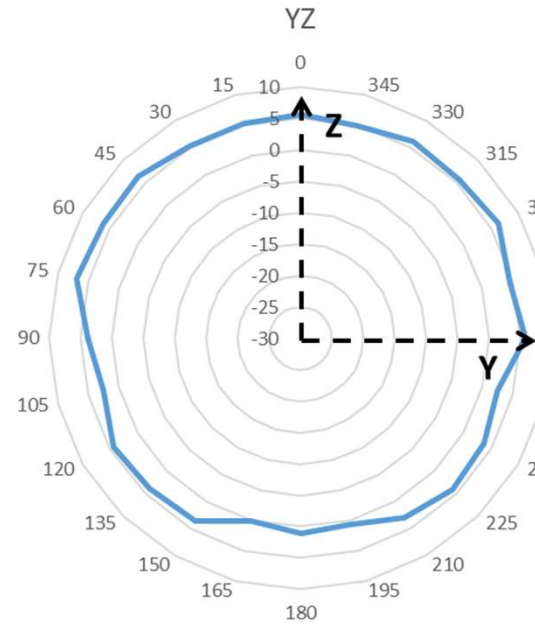
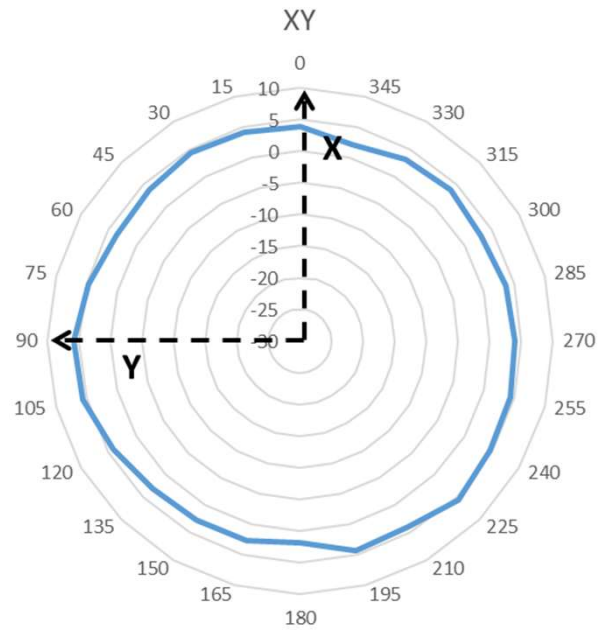
XZ Plane – 5G Composite Gain



— 20240320 EVT
— 20240517 Pre-DVT

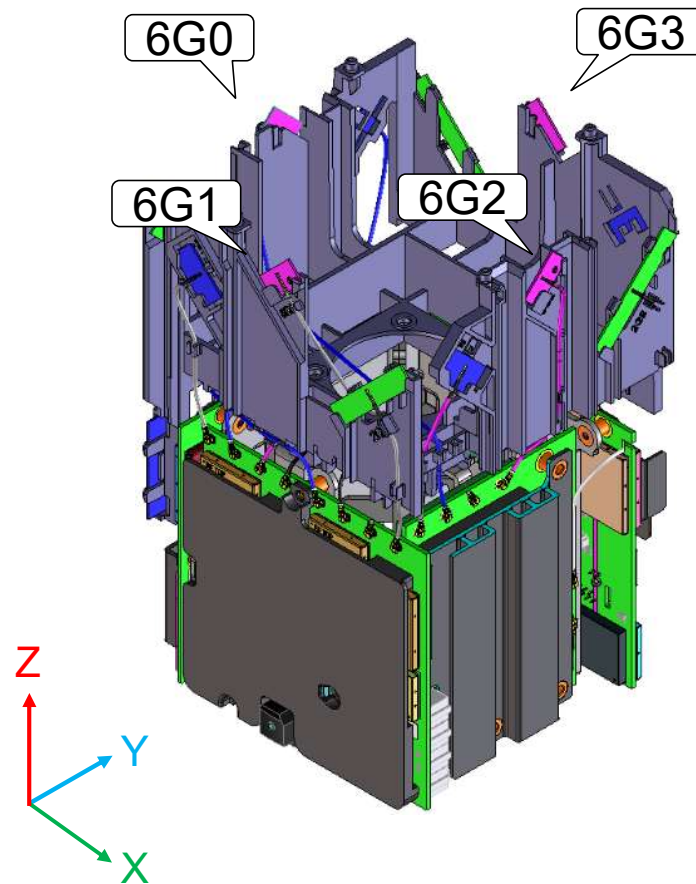


5G Composite Gain_Active

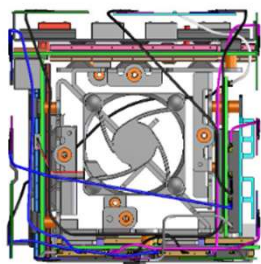


☐ Normal
 ☐ Internal Use
 ☒ Confidential
 ☐ Restricted Confidential

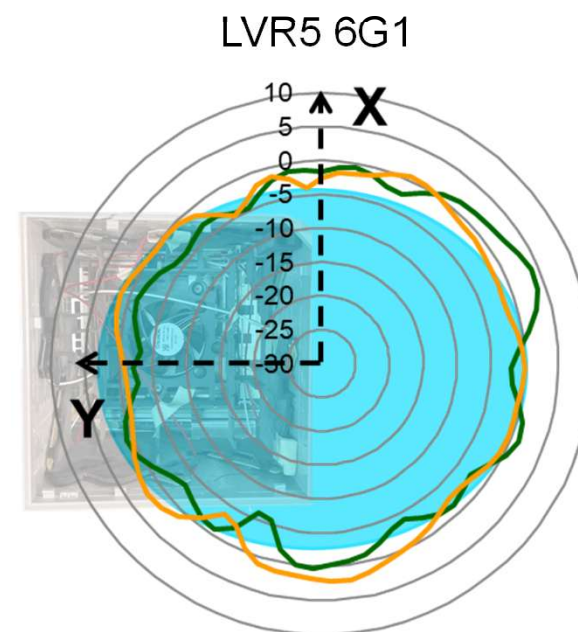
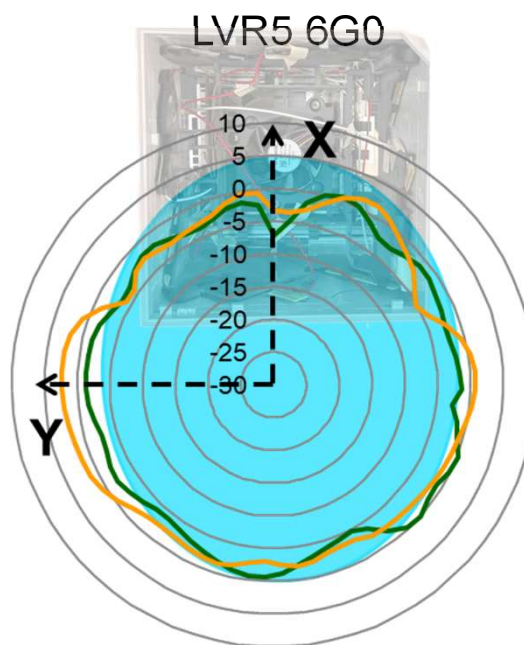
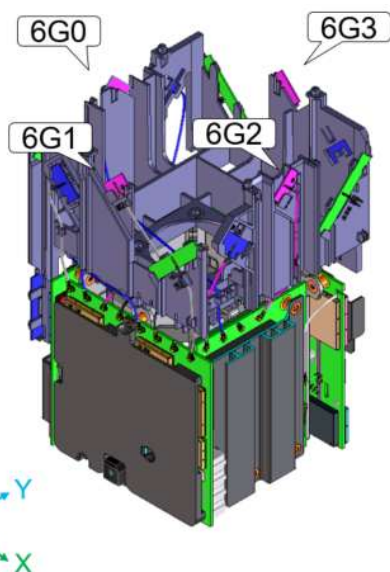
6G Antenna Placement



XY Plane – 6G0/1

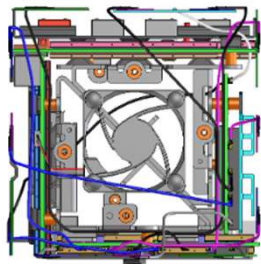


— 20240320 EVT
— 20240517 Pre-DVT

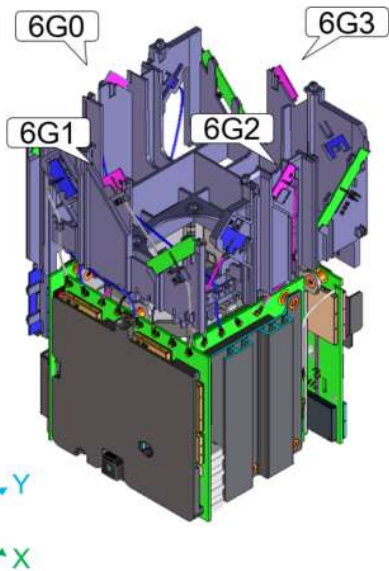


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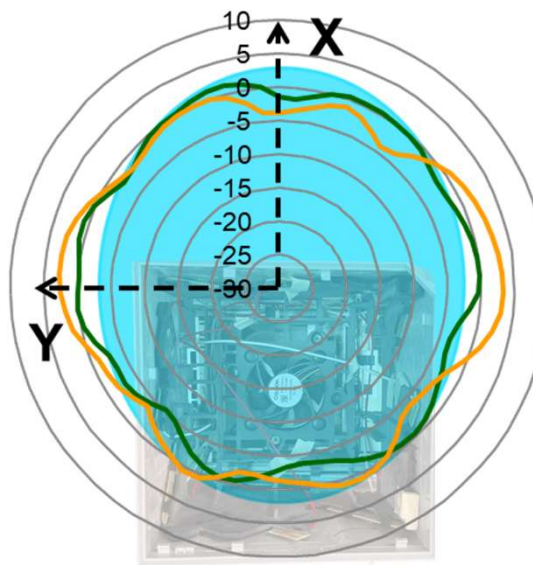
XY Plane – 6G2/3



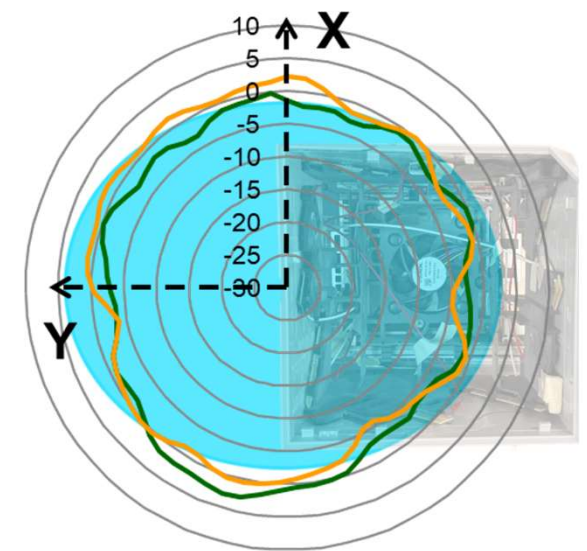
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 6G2

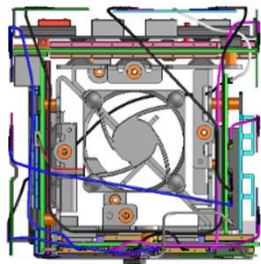


LVR5 6G3

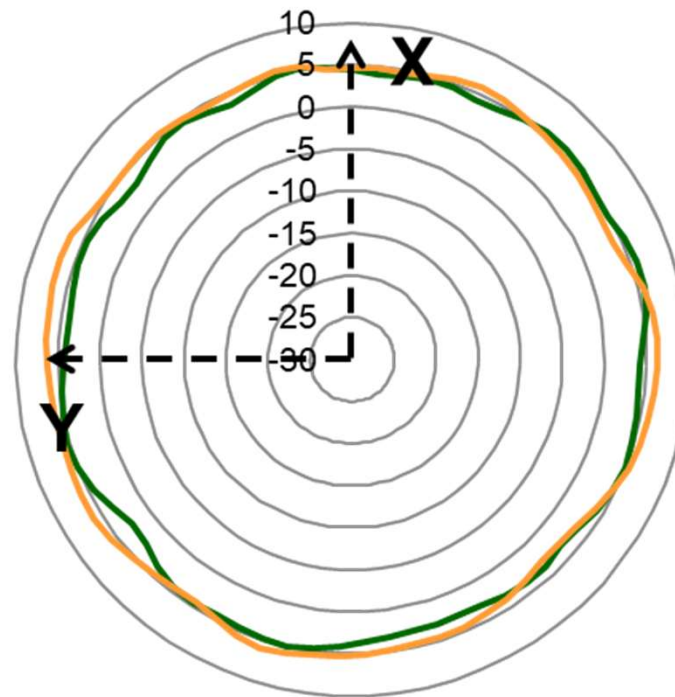
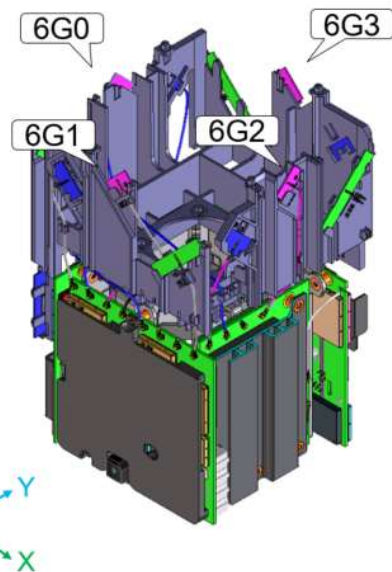


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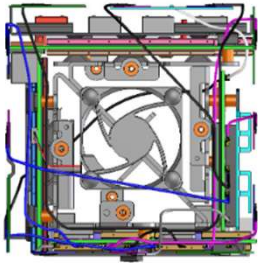
XY Plane – 6G Composite Gain



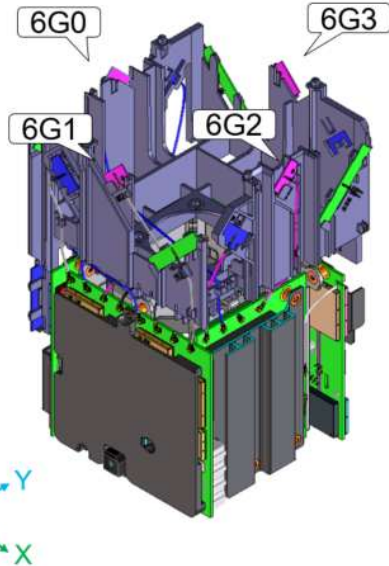
— 20240320 EVT
— 20240517 Pre-DVT



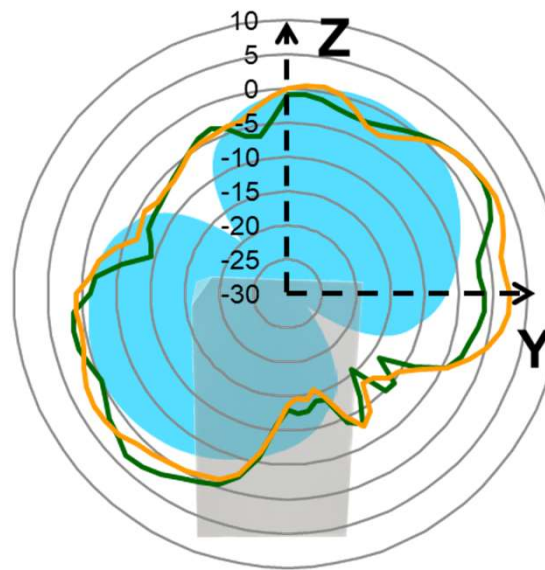
YZ Plane – 6G0/1



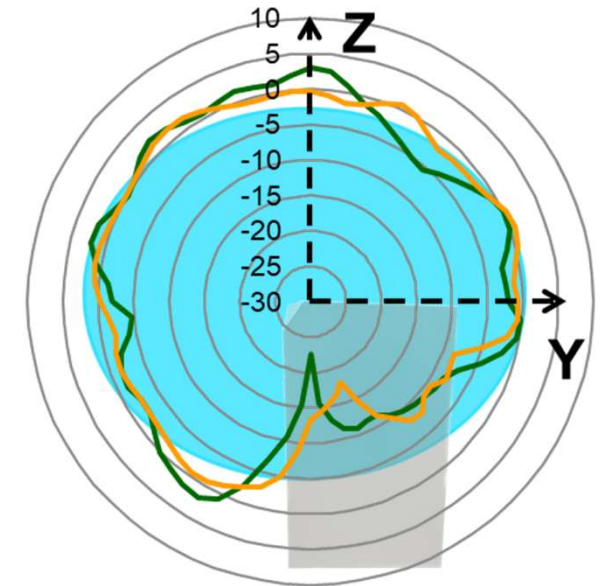
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 6G0

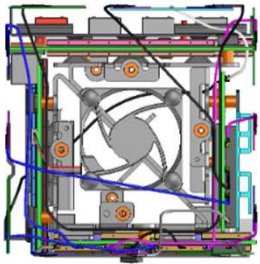


LVR5 6G1

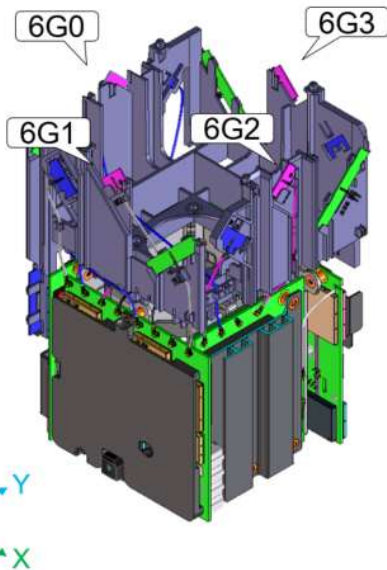


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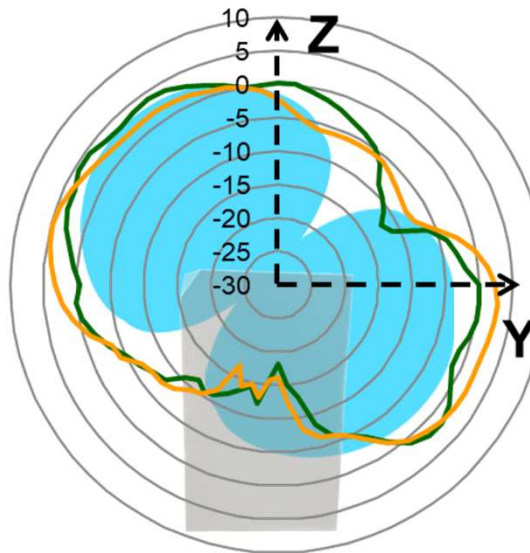
YZ Plane – 6G2/3



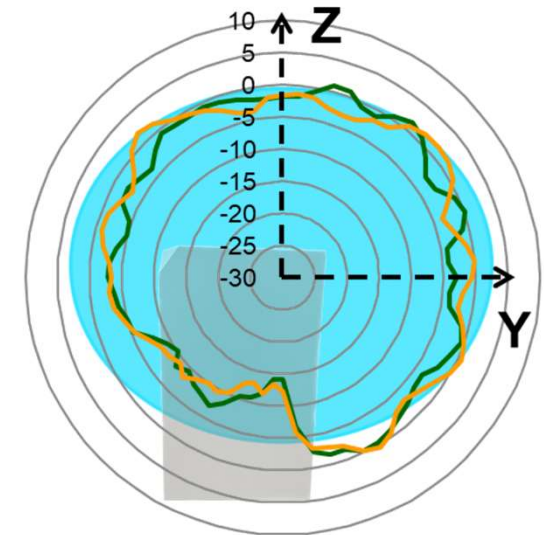
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 6G2

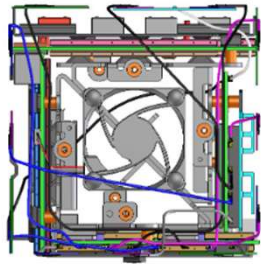


LVR5 6G3

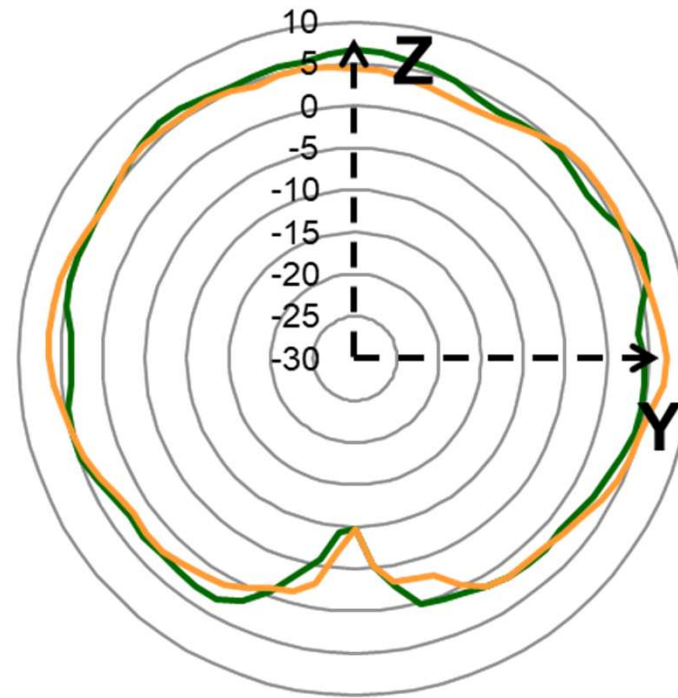
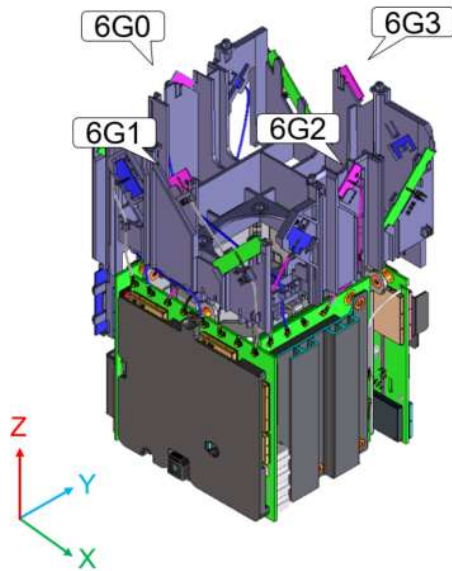


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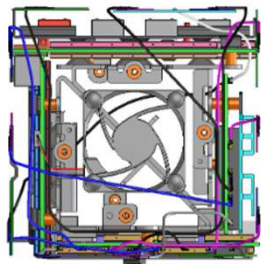
YZ Plane – 6G Composite Gain



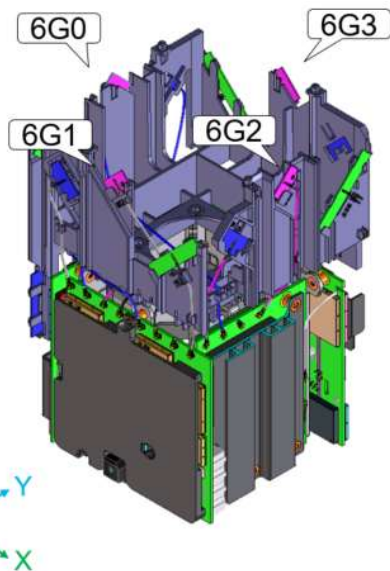
— 20240320 EVT
— 20240517 Pre-DVT



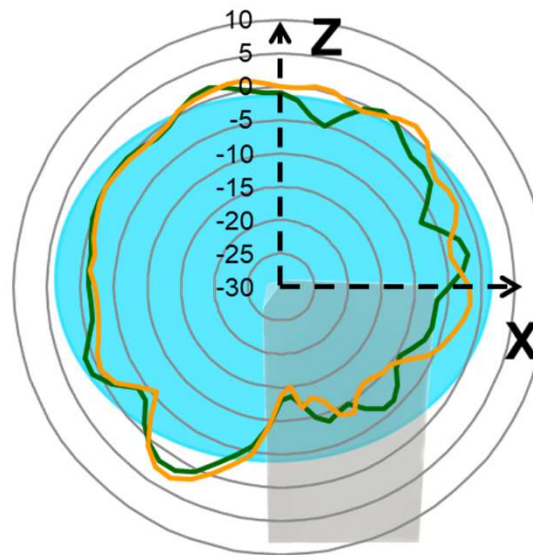
XZ Plane – 6G0/1



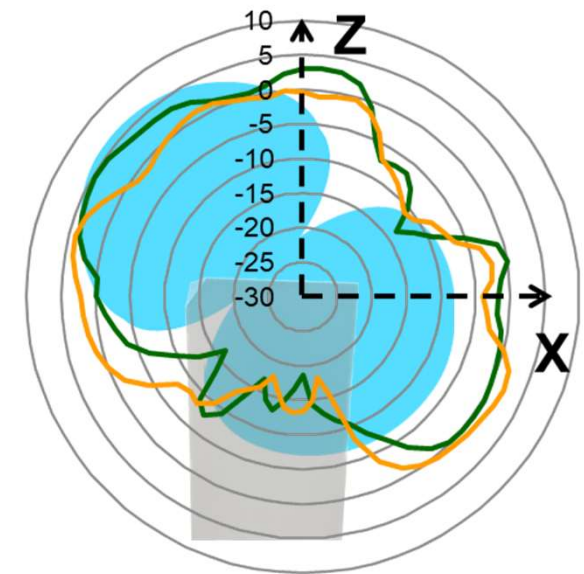
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 6G0

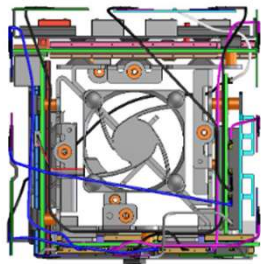


LVR5 6G1

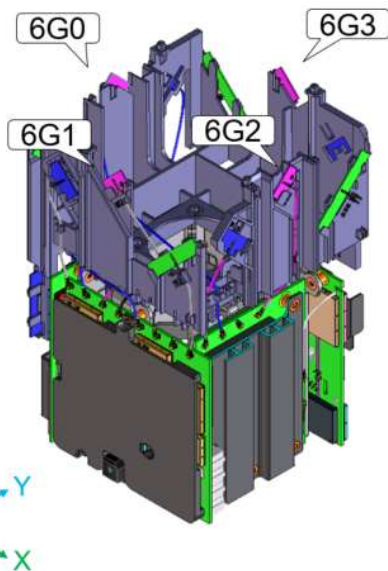


*The blue graphics are not according to the actual scale and are only for reference of the ideal radiation patterns in free-space.

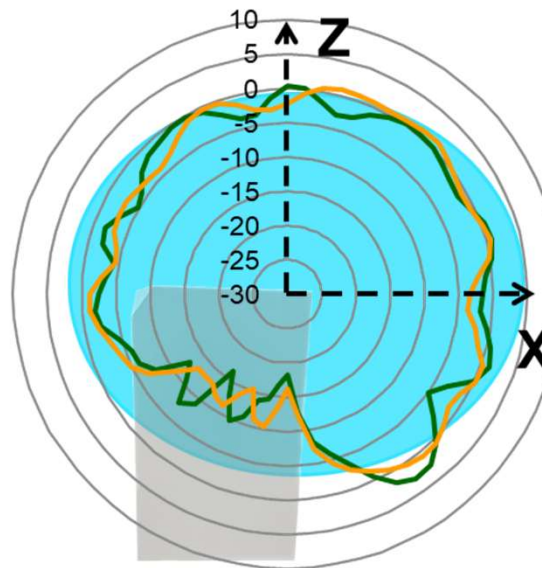
XZ Plane – 6G2/3



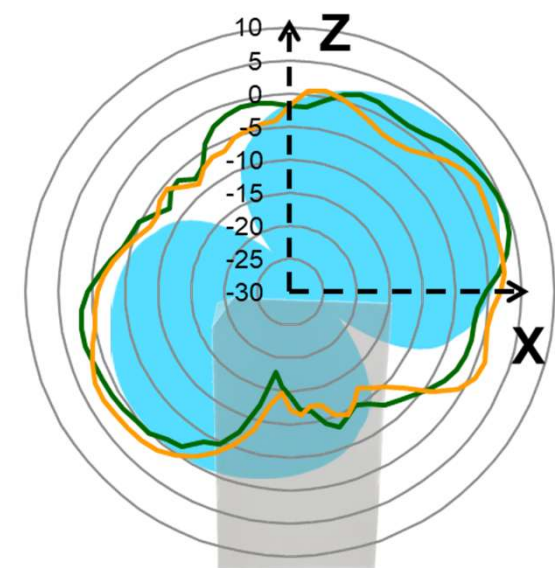
— 20240320 EVT
— 20240517 Pre-DVT



LVR5 6G2

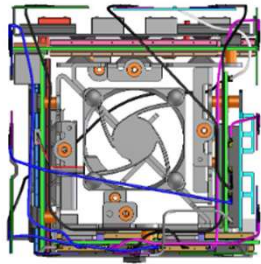


LVR5 6G3

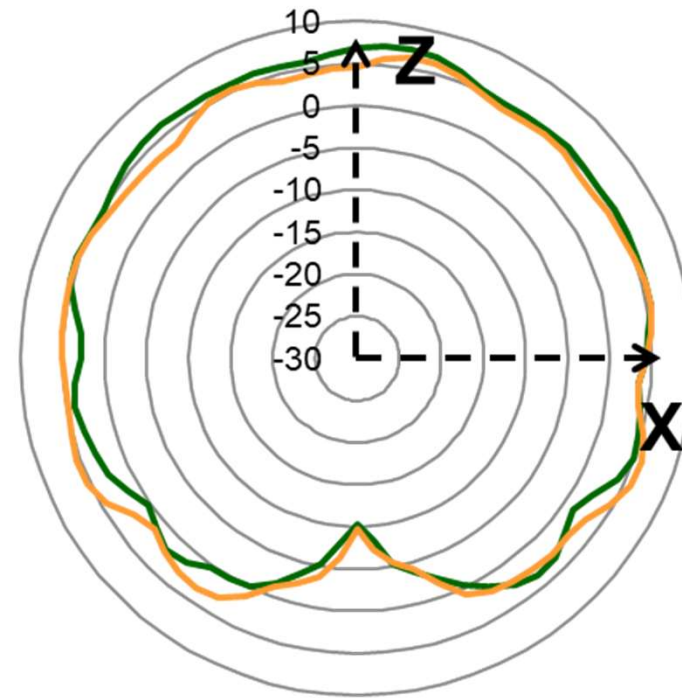
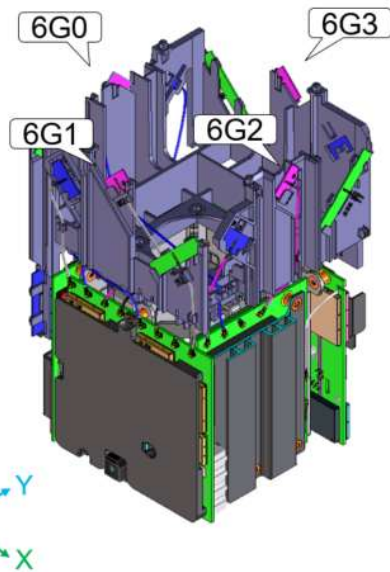


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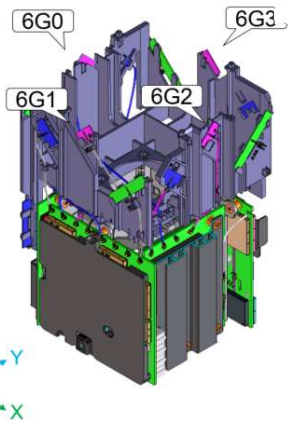
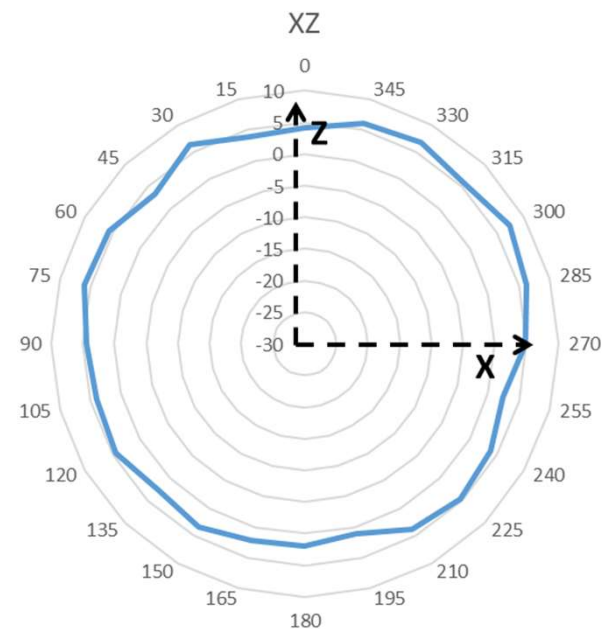
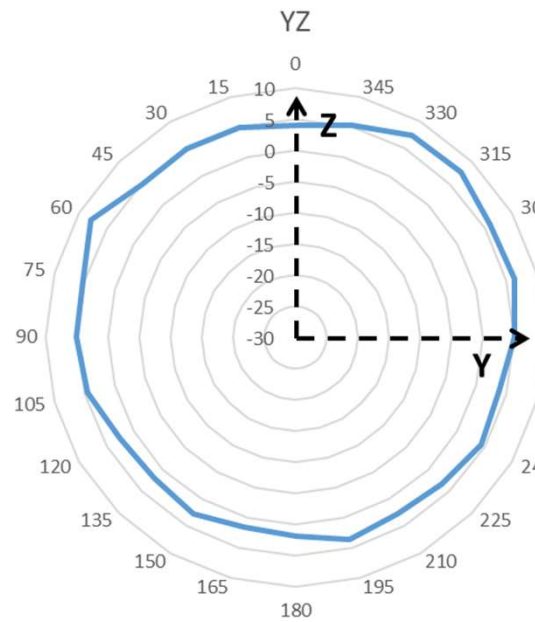
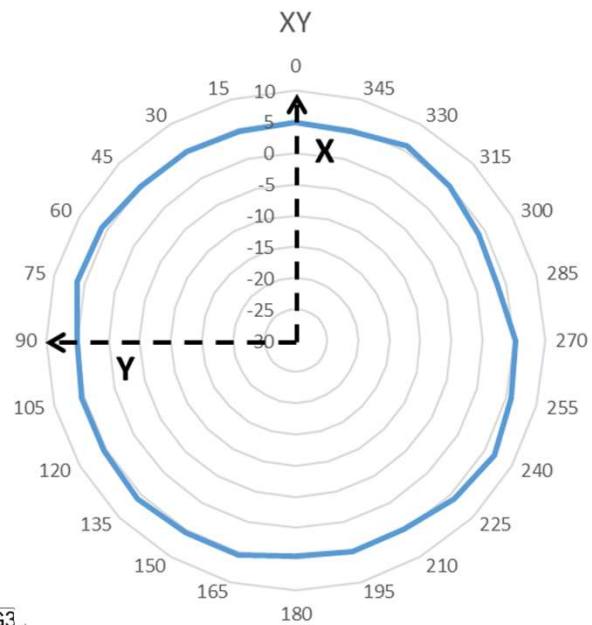
XZ Plane – 6G Composite Gain



— 20240320 EVT
— 20240517 Pre-DVT



6G Composite Gain_Active



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 ☒ Confidential
 ☐ Restricted Confidential

WiFi_2G Eff./Peak Gain

		2400	2450	2500	Avg.
2G0	Eff.	70%	71%	70%	70%
	Avg. Gain	-1.55	-1.49	-1.55	
	Peak Gain	2.88	2.68	2.54	
2G1	Eff.	70%	71%	70%	70%
	Avg. Gain	-1.55	-1.49	-1.55	
	Peak Gain	3.27	3.30	3.64	
2G2	Eff.	70%	71%	71%	71%
	Avg. Gain	-1.55	-1.49	-1.49	
	Peak Gain	2.95	2.51	2.47	
2G3	Eff.	70%	72%	71%	71%
	Avg. Gain	-1.55	-1.43	-1.49	
	Peak Gain	3.04	3.66	2.54	

WiF_5G Eff./Peak Gain

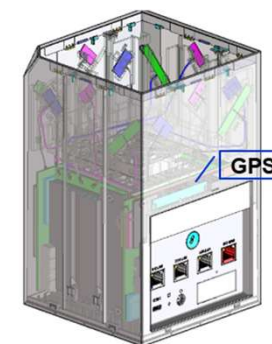
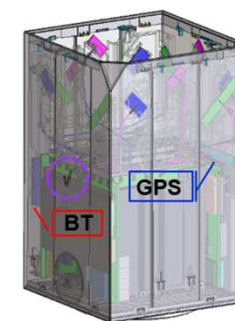
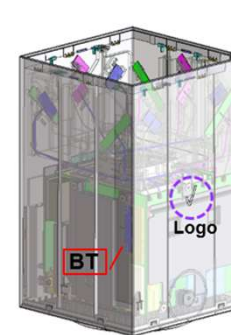
		5150	5350	5550	5750	5850	Avg.
5G0	Eff.	71%	71%	72%	72%	70%	71%
	Avg. Gain	-1.49	-1.49	-1.43	-1.43	-1.55	
	Peak Gain	3.55	3.73	3.65	3.61	4.71	
5G1	Eff.	71%	72%	73%	71%	70%	71%
	Avg. Gain	-1.49	-1.43	-1.37	-1.49	-1.55	
	Peak Gain	3.98	3.72	4.83	4.45	4.96	
5G2	Eff.	72%	75%	74%	72%	71%	73%
	Avg. Gain	-1.43	-1.25	-1.31	-1.43	-1.49	
	Peak Gain	4.88	4.51	4.69	4.38	4.33	
5G3	Eff.	72%	72%	71%	71%	72%	72%
	Avg. Gain	-1.43	-1.43	-1.49	-1.49	-1.43	
	Peak Gain	3.91	4.07	4.28	4.31	4.73	

WiFi_6G Eff./Peak Gain

		6150	6550	6850	7150	Avg.
6G0	Eff.	70%	70%	71%	71%	71%
	Avg. Gain	-1.55	-1.55	-1.49	-1.49	
	Peak Gain	4.35	5.47	4.47	4.53	
6G1	Eff.	70%	70%	71%	70%	70%
	Avg. Gain	-1.55	-1.55	-1.49	-1.55	
	Peak Gain	3.97	4.69	4.21	4.35	
6G2	Eff.	71%	70%	72%	72%	71%
	Avg. Gain	4.23	3.85	4.20	4.07	
	Peak Gain	3.16	3.46	4.38	4.42	
6G3	Eff.	71%	71%	72%	71%	71%
	Avg. Gain	-1.49	-1.49	-1.43	-1.49	
	Peak Gain	3.02	4.00	4.27	3.95	

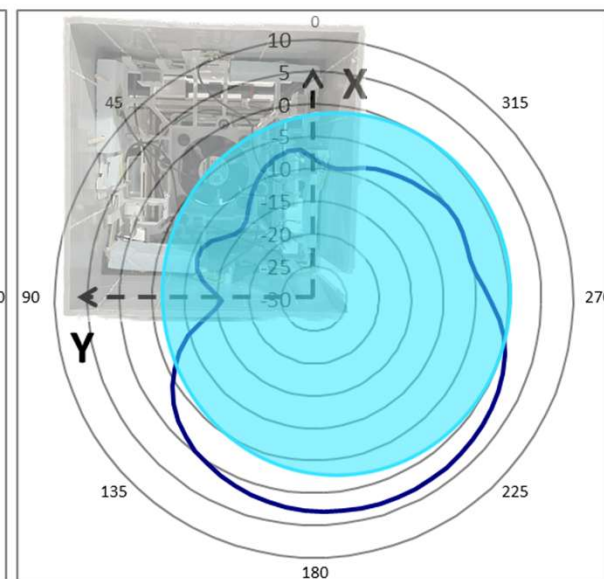
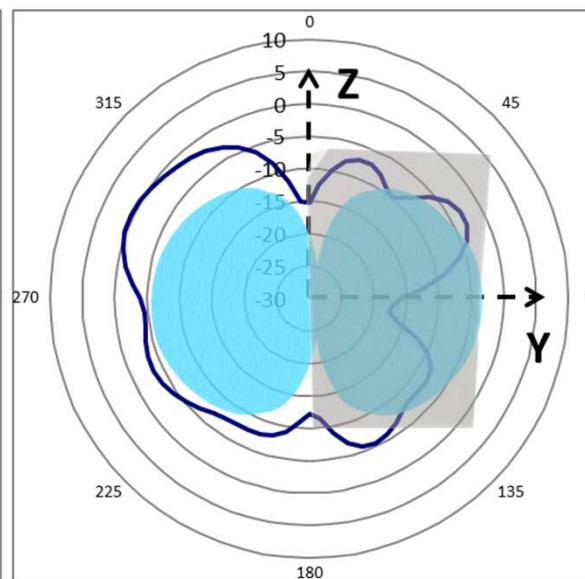
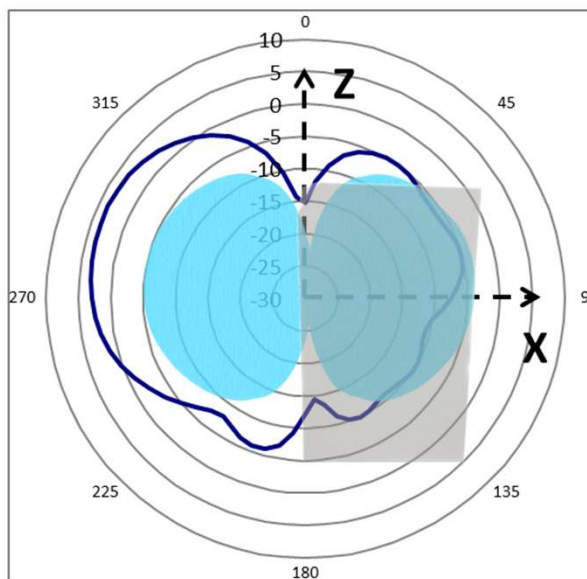
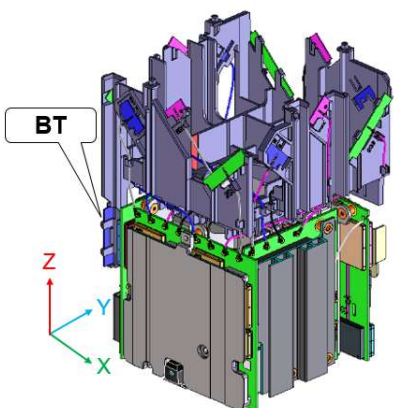
BT Antenna Pattern

		2400	2450	2500	Avg.
BT	Eff.	62%	65%	63%	63%
	Avg. Gain	-2.08	-1.87	-2.01	
	Peak Gain	5.52	5.93	5.69	



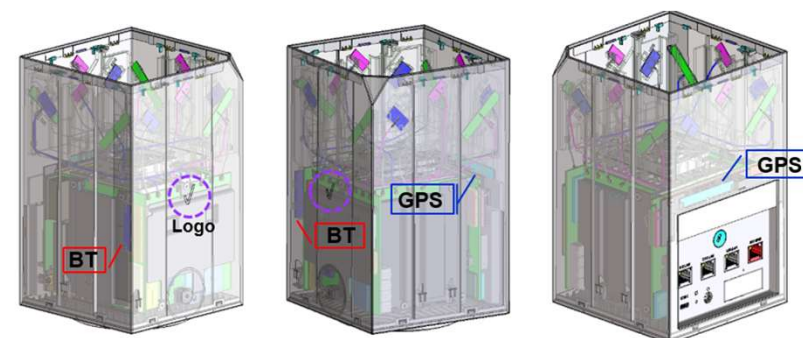
2450 MHz Radiation Pattern

— BT



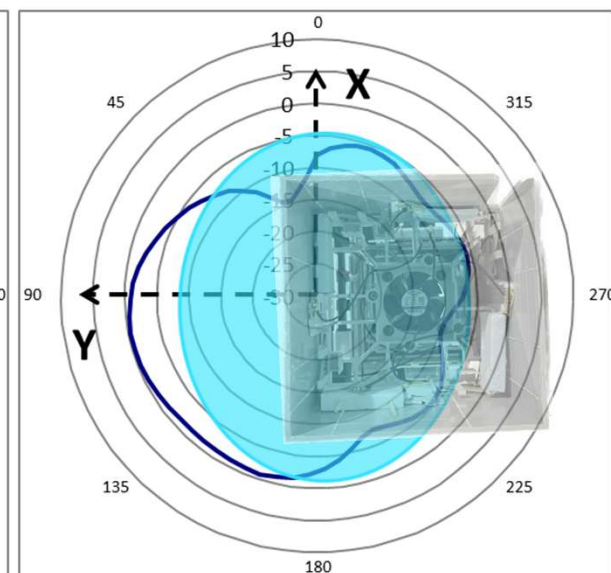
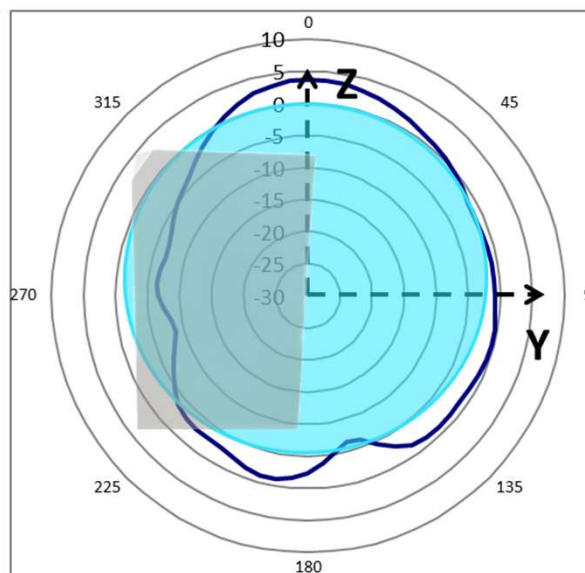
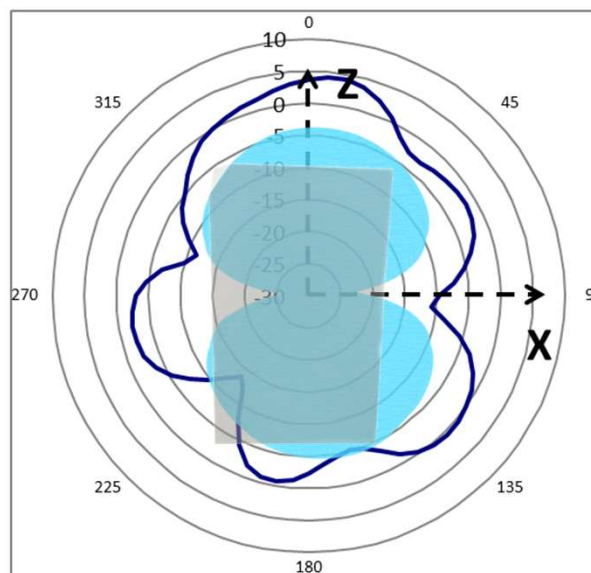
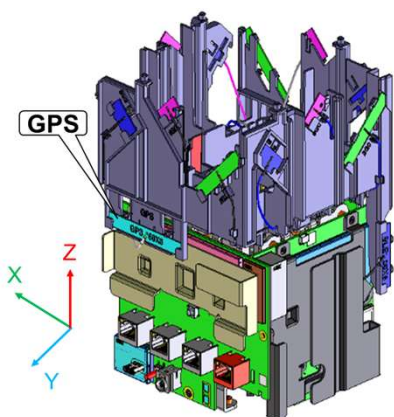
GPS Antenna Pattern

		1565	1575	1585	Avg.
GPS	Eff.	60%	61%	60%	60%
	Avg. Gain	-2.22	-2.15	-2.22	
	Peak Gain	4.27	4.47	4.33	



1575 MHz Radiation Pattern

— GPS



WNC

Wistron NeWeb Corp.

