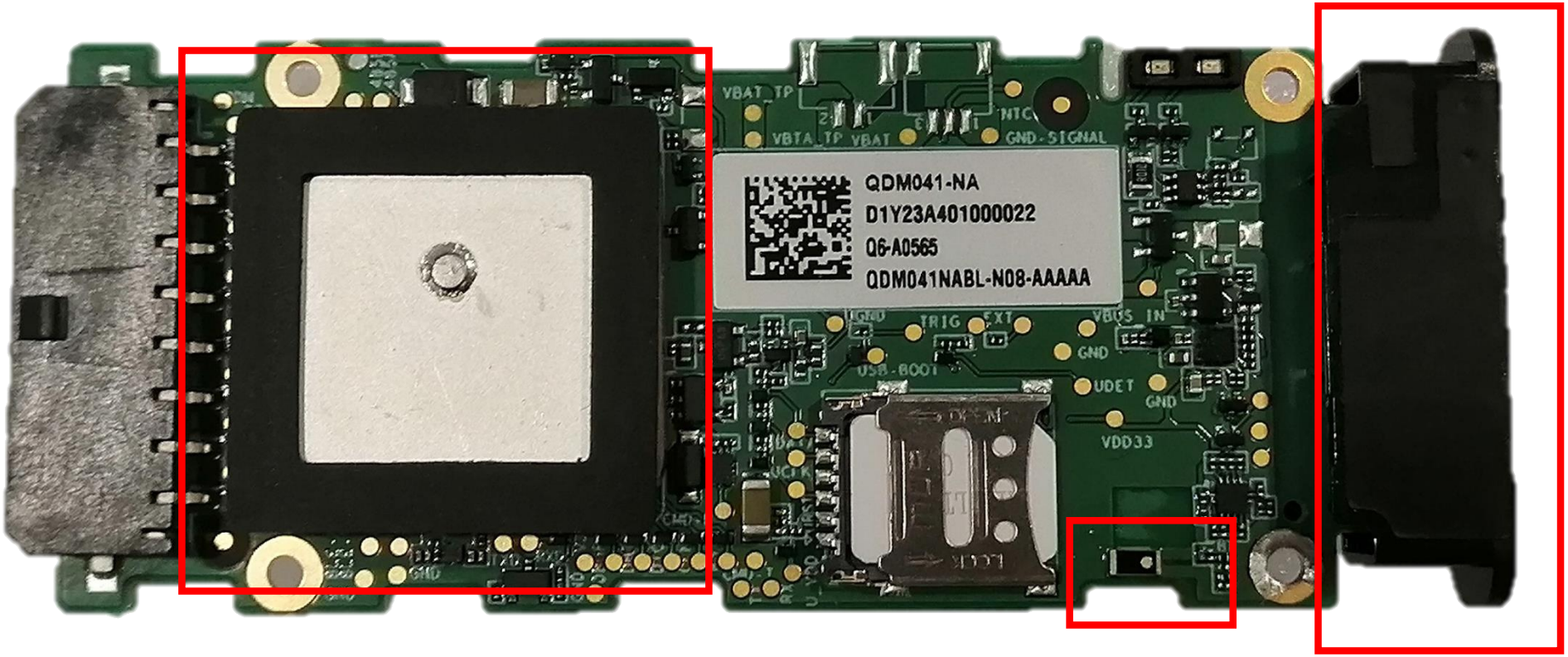
Project Overview

- Customer Name:Procon
- Project Name: QDM041-NA
- Device Dimensions:91*39.5*12mm
- Mainboard Dimensions: 85mm*35mm
- Antenna Number:3
- Antenna Network Type & Frequency Band:
  - LTE*1: 700-960MHz&1710-2170MHz
  - BT*1: 2400-2500MHz
  - GNSS*1:1559-1609MHz
- Module No.: BG95-M1
- Requirement:
  - Pass Verizon & T-Mobile Certification

    Bluetooth Antenna Gain: 3.8dBi
    Band 13: 3.05dBi; Band 25: 4.67dBi;Band 26: 3.03dBi;
    Band 66: 2.77dBi

Antenna Placement



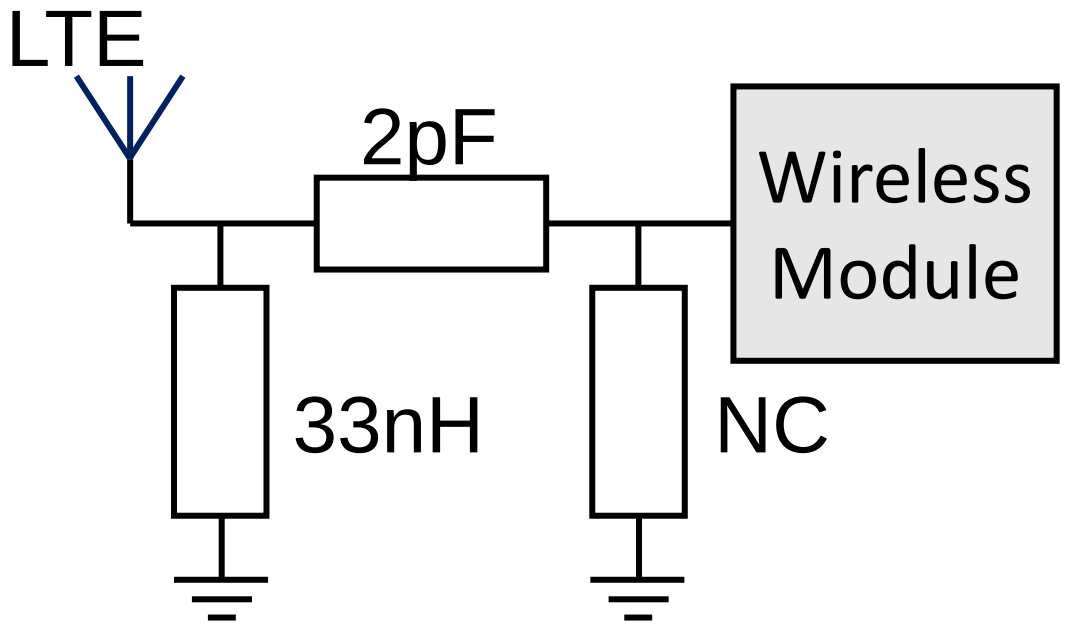
LTE

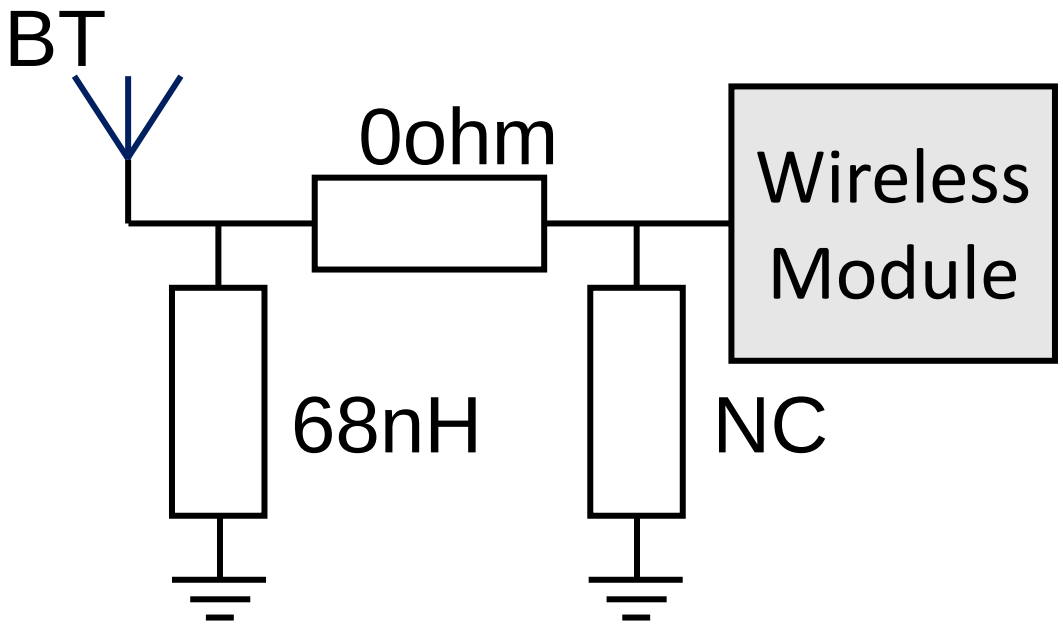
GNSS

BT

Antenna Matching

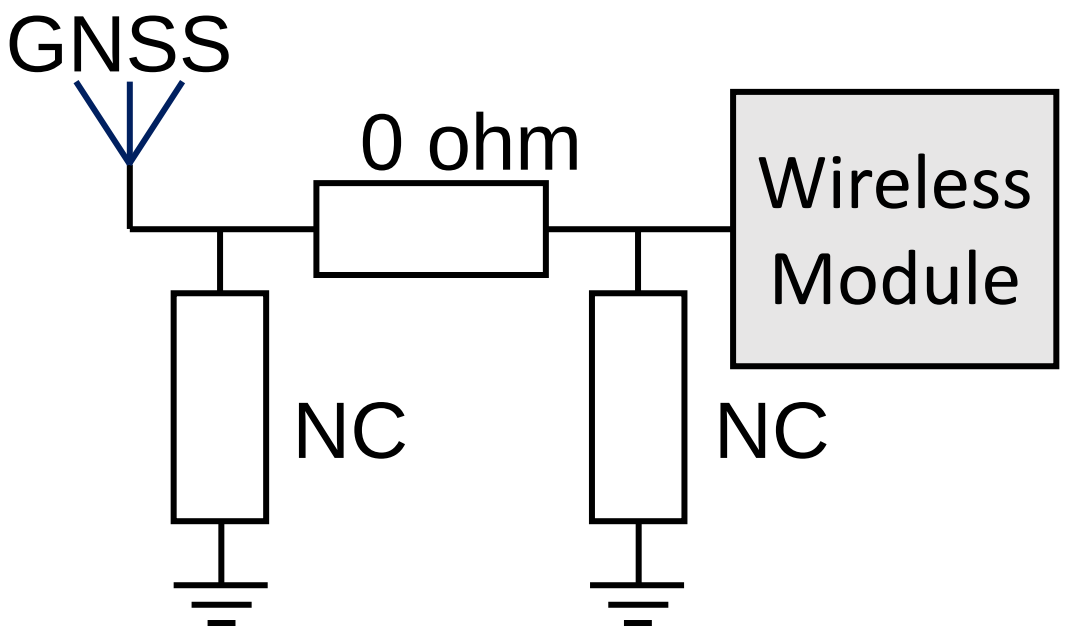
- Matching Circuit





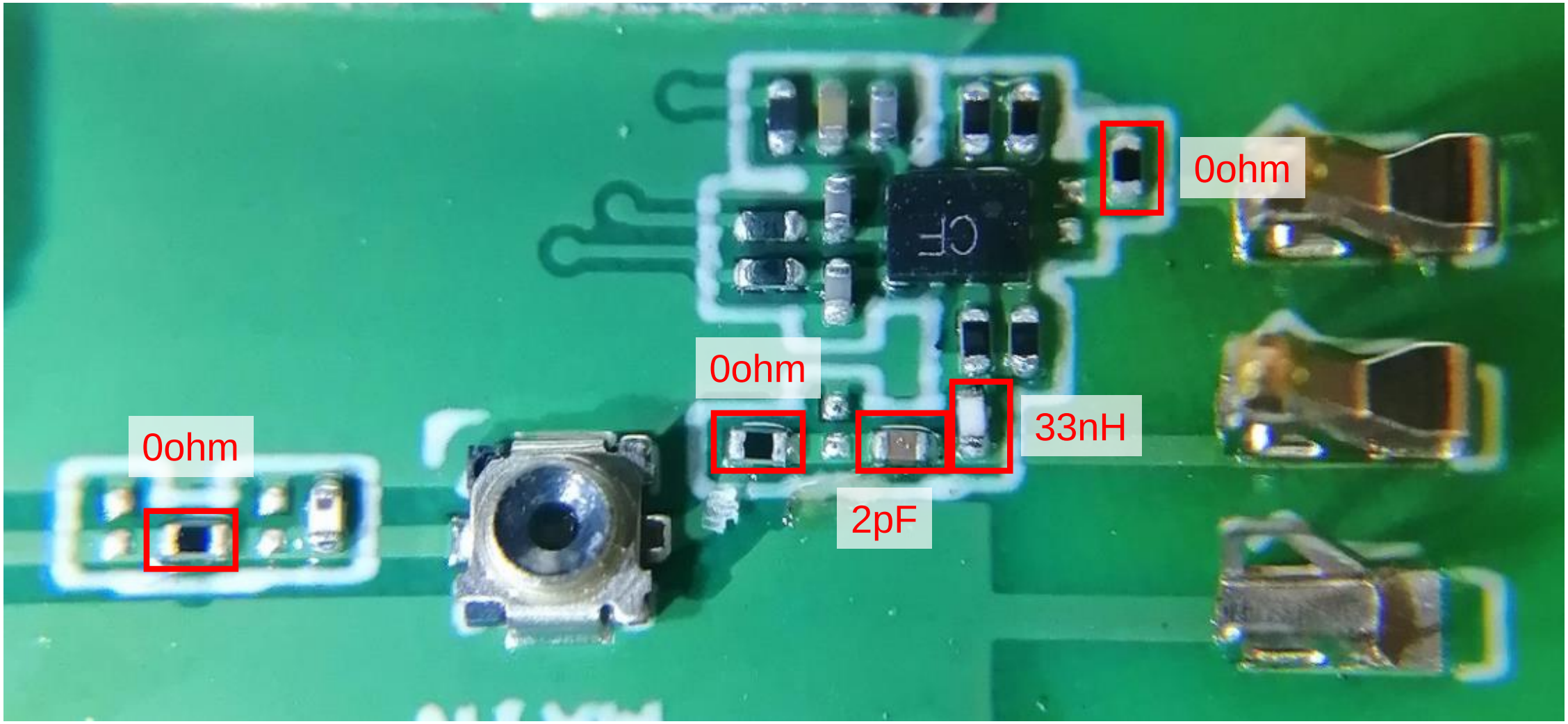
Antenna Matching

- Matching Circuit



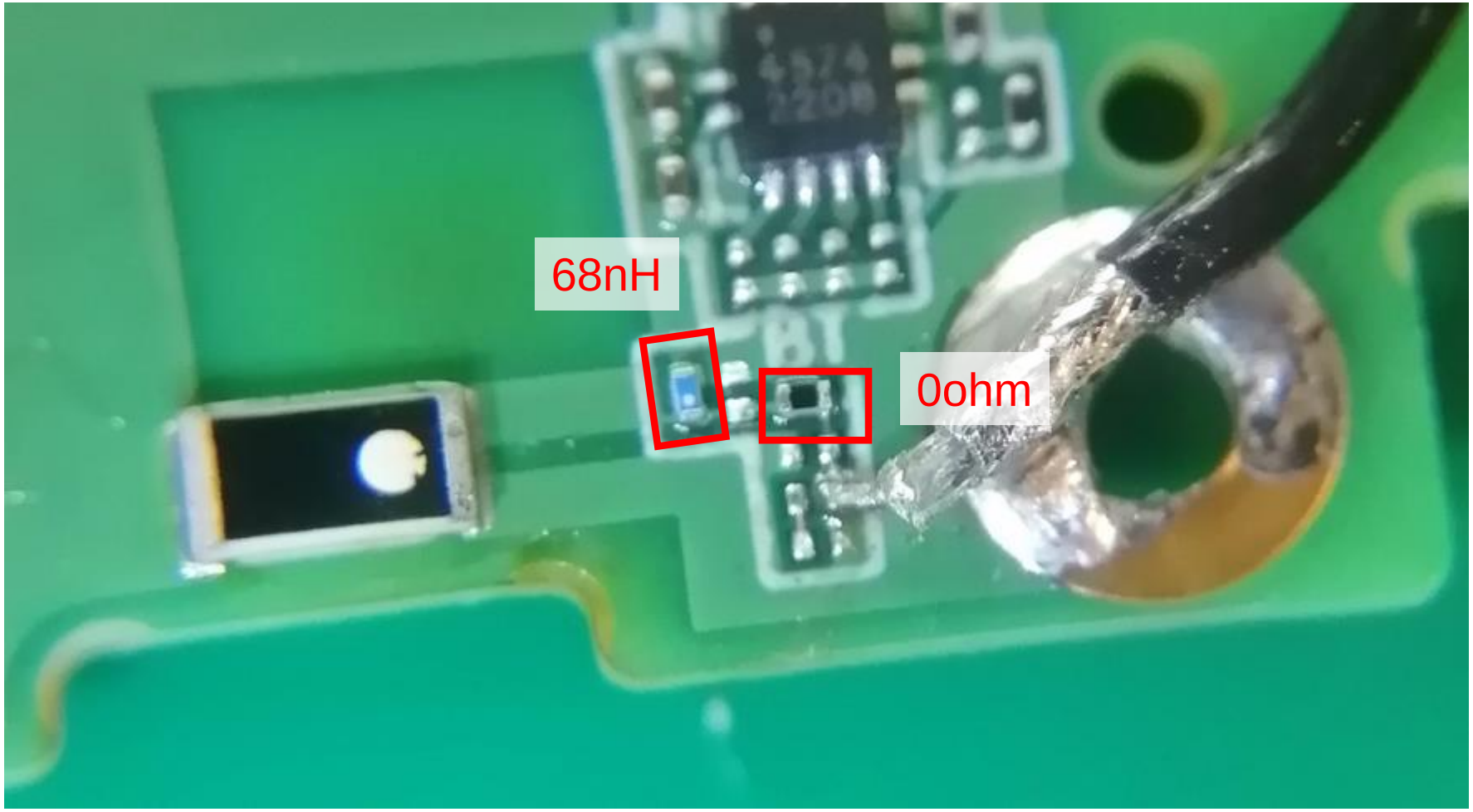
Antenna Matching

- Matching Circuit



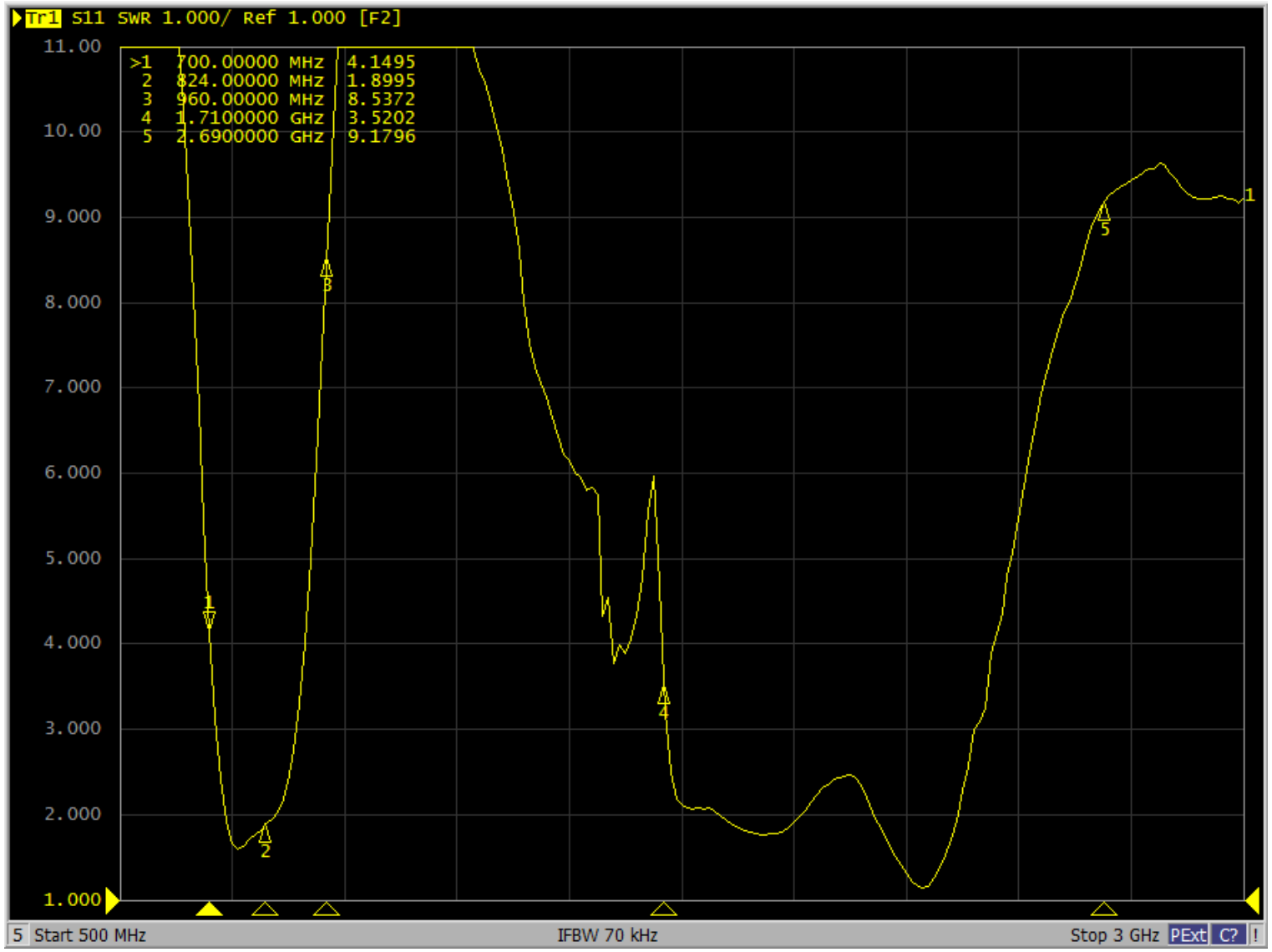
Antenna Matching

- Matching Circuit



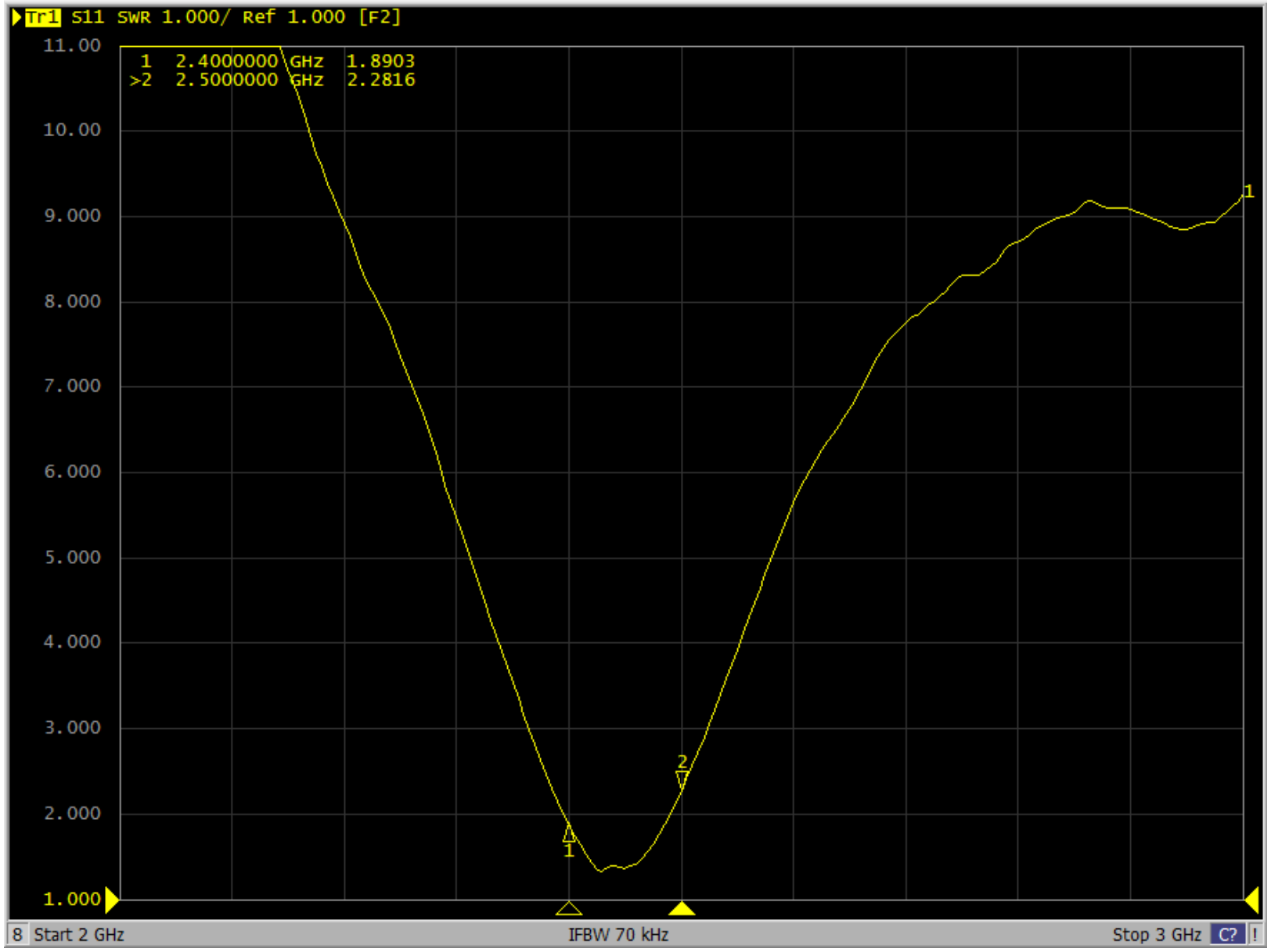
Passive Test

- VSWR_LTE



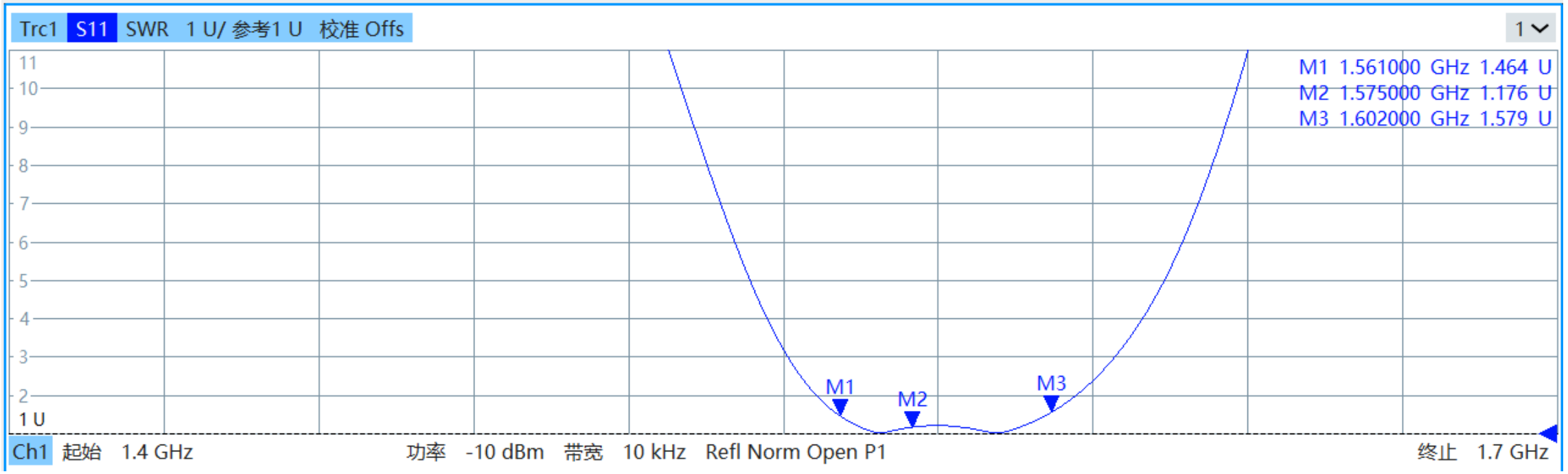
Passive Test

- VSWR_BT



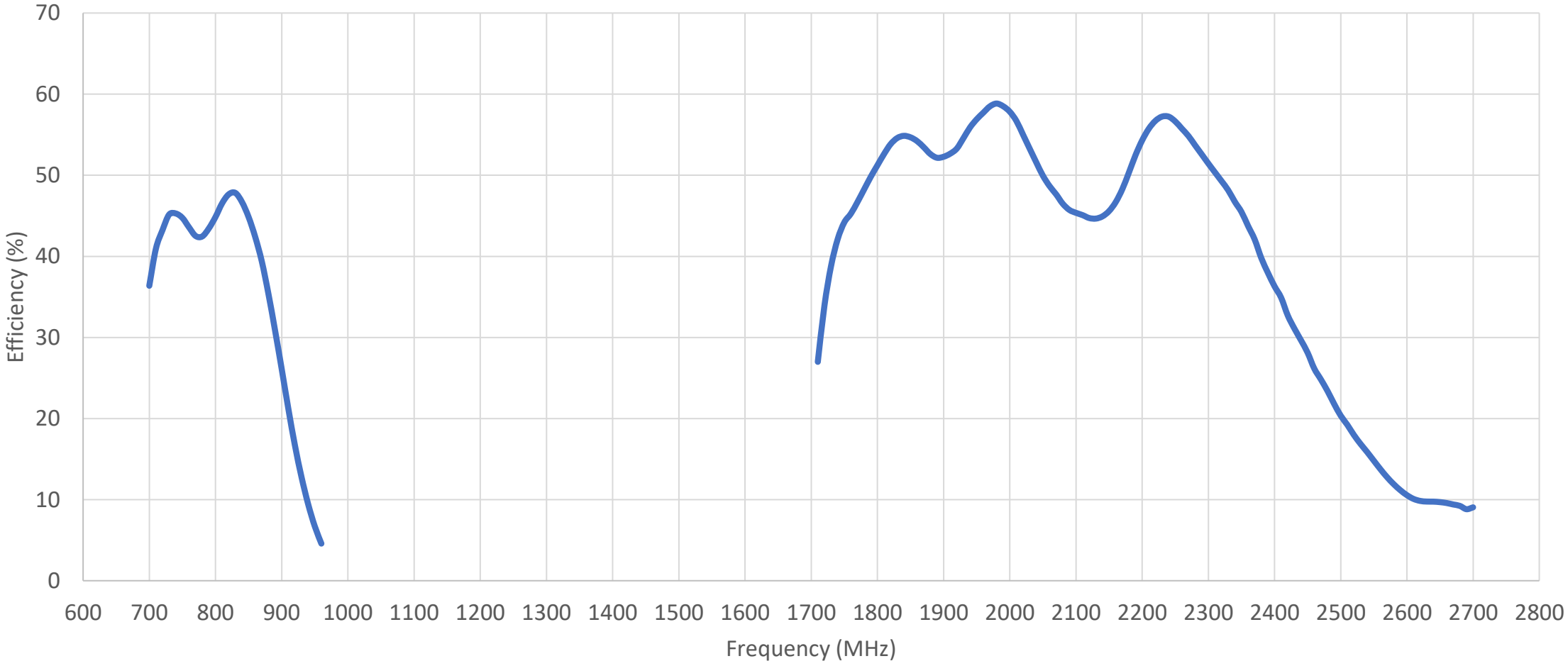
Passive Test

- VSWR_GNSS



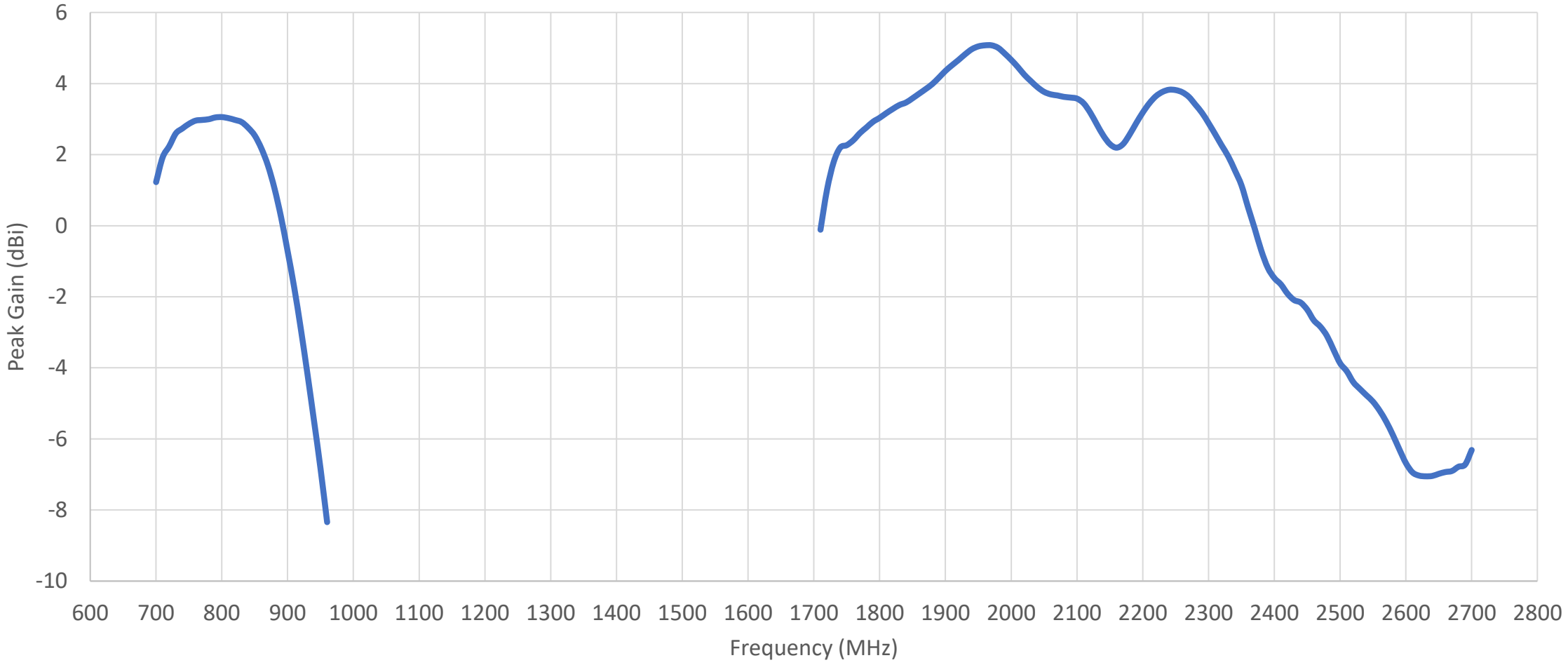
Passive Test

- Efficiency_LTE



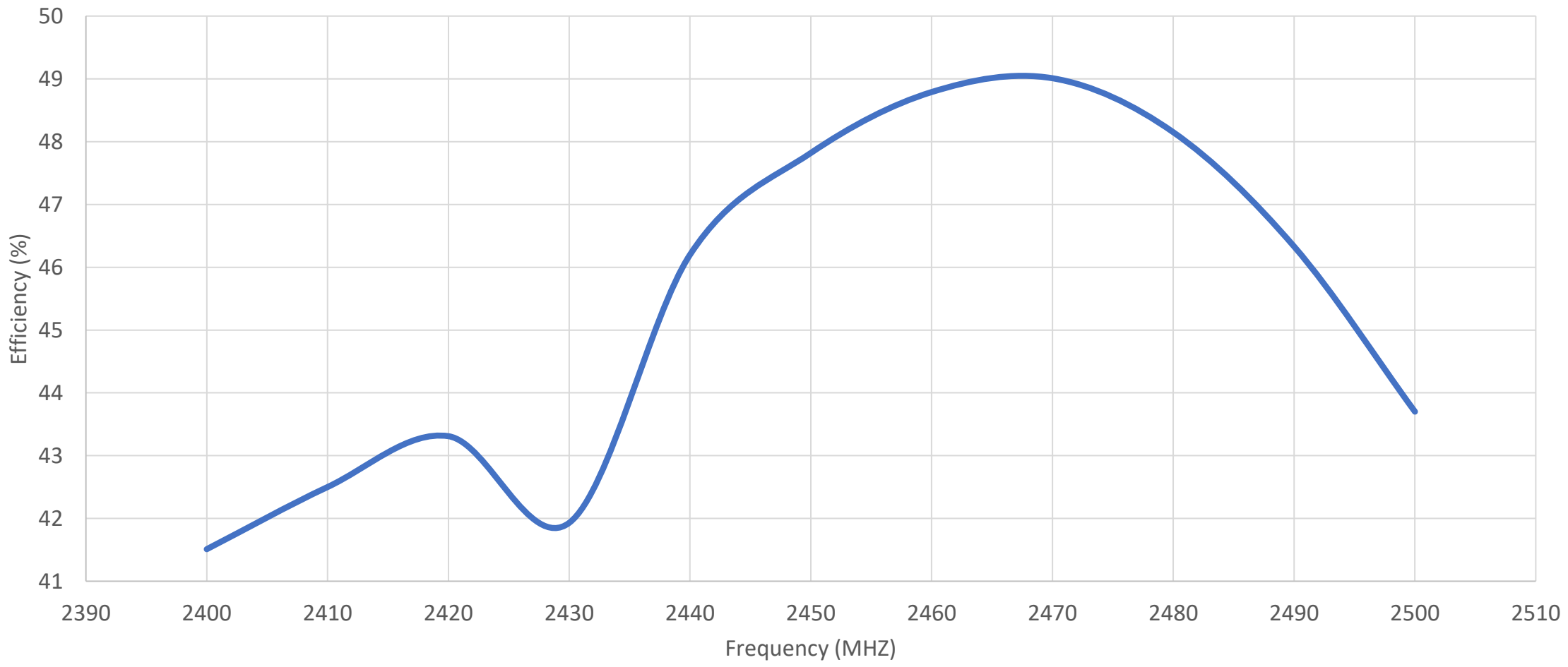
Passive Test

- Peak Gain_LTE



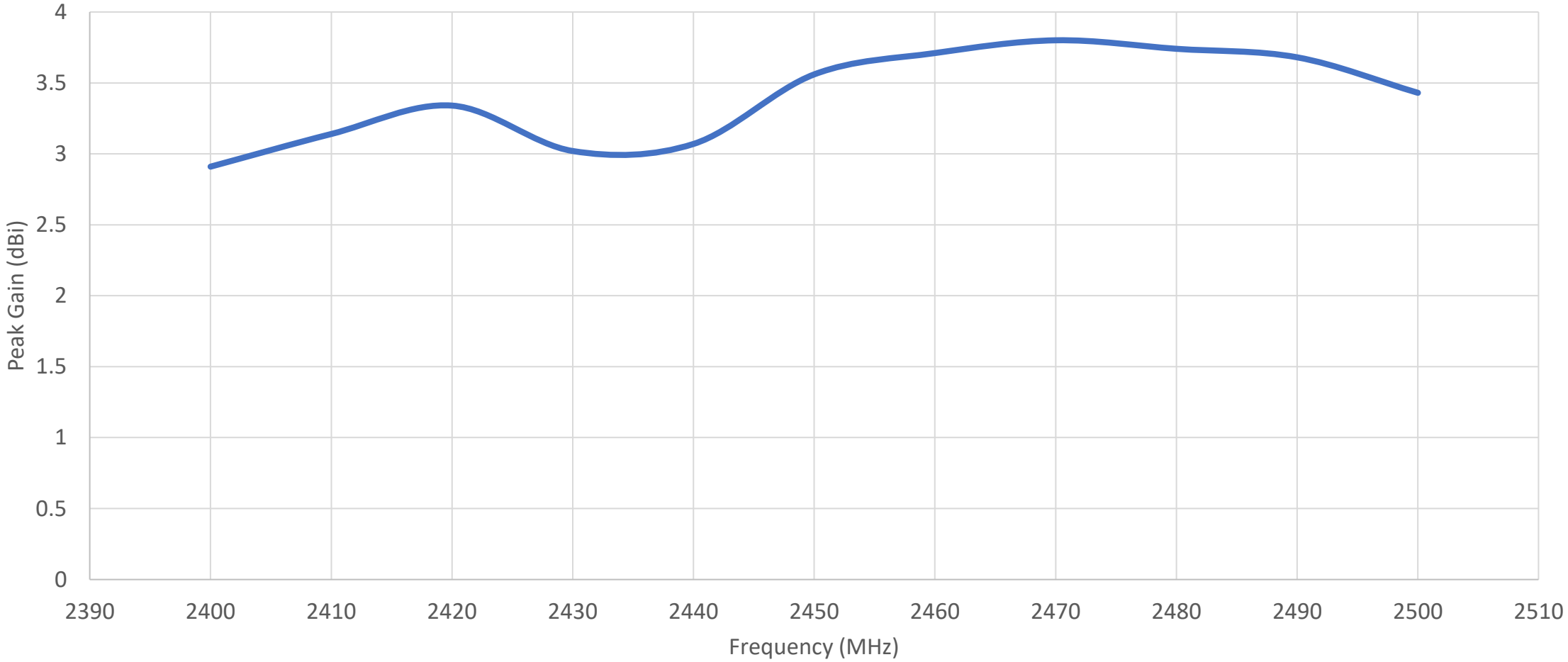
Passive Test

- Efficiency_BT



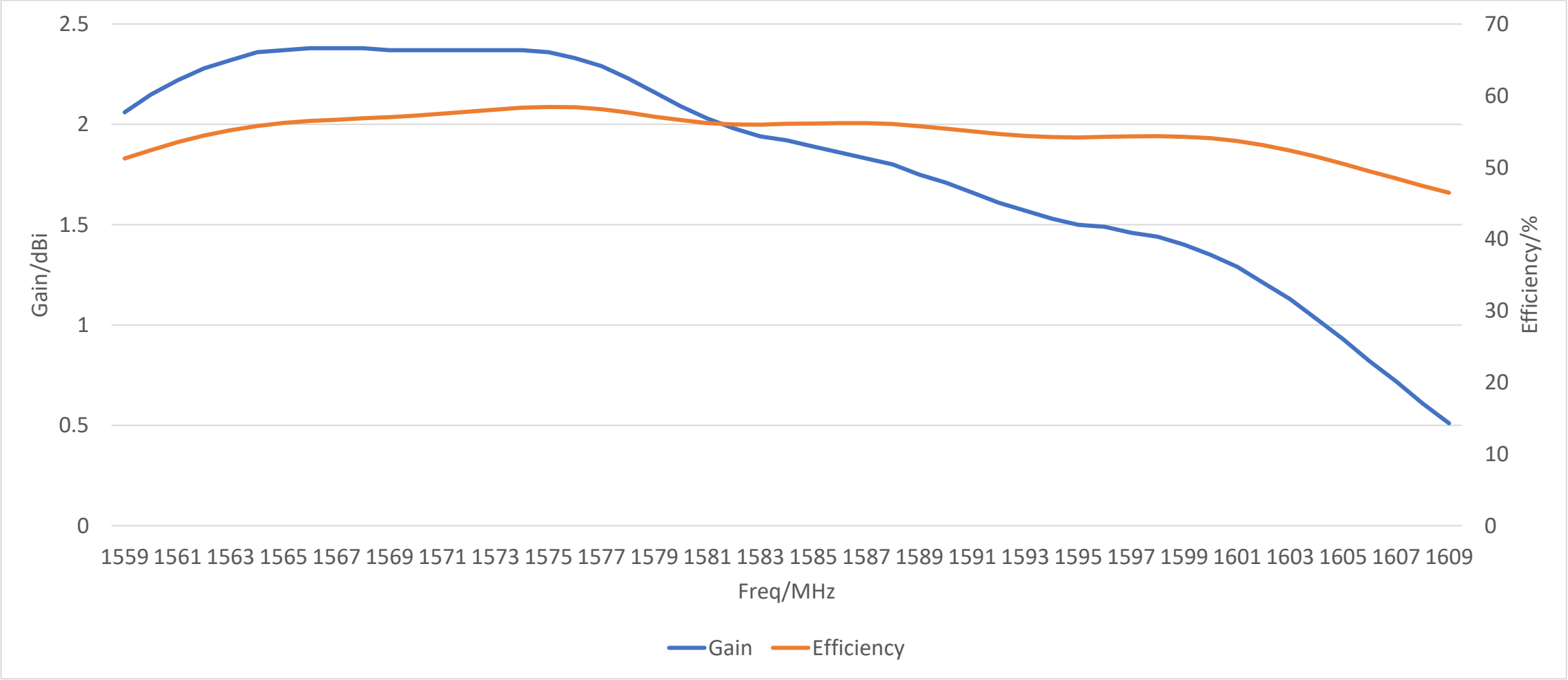
Passive Test

- Peak Gain_BT

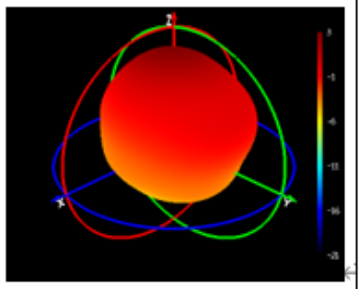
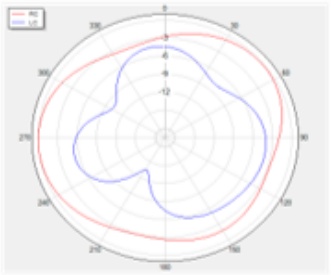
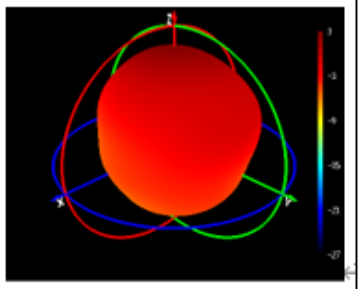
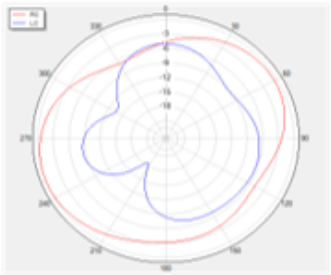
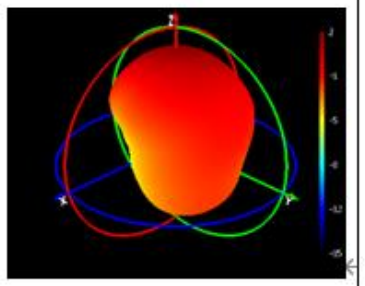
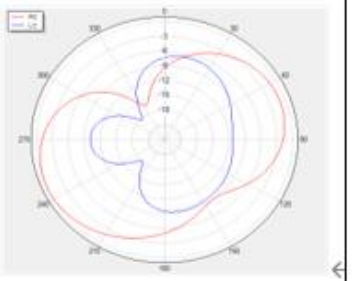
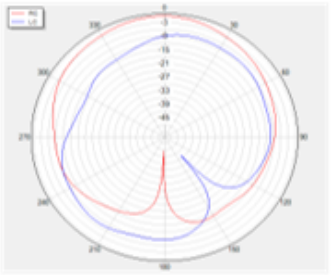
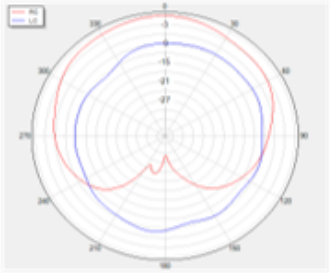
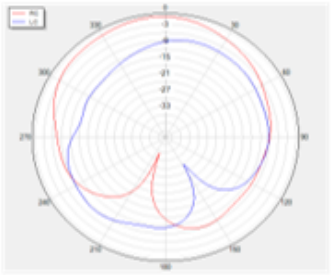
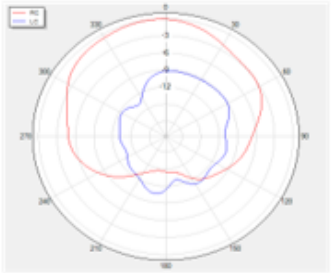
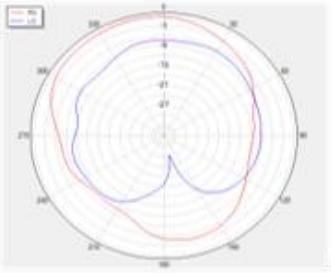
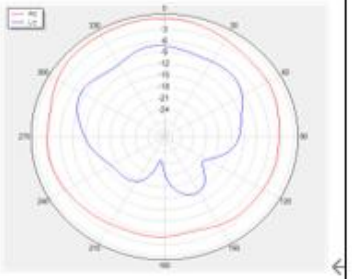


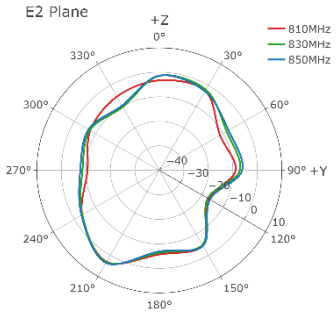
Passive Test

- Efficiency+peak gain_GNSS



GNSS Radiation Pattern Plots

1561MHz		1575MHz		1602MHz	
	H plane 		H plane 		H plane 
E1 plane 	E2 plane 	E1 plane 	E2 plane 	E1 plane 	E2 plane 



diation Pattern Plots

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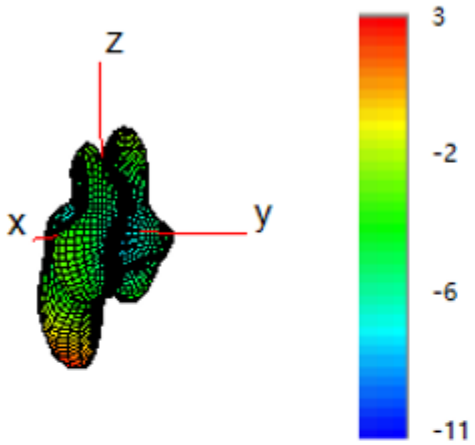
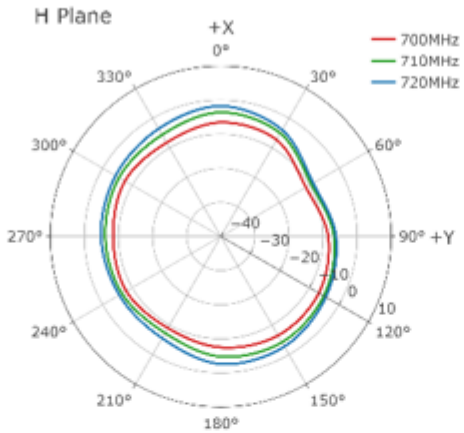
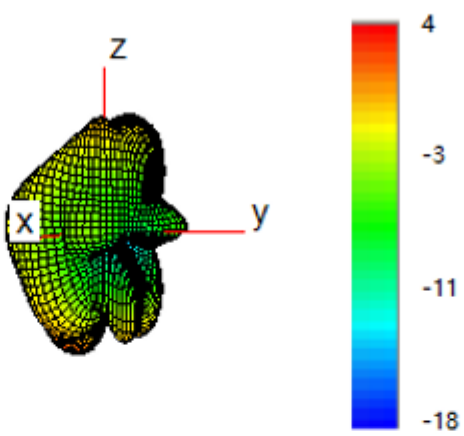
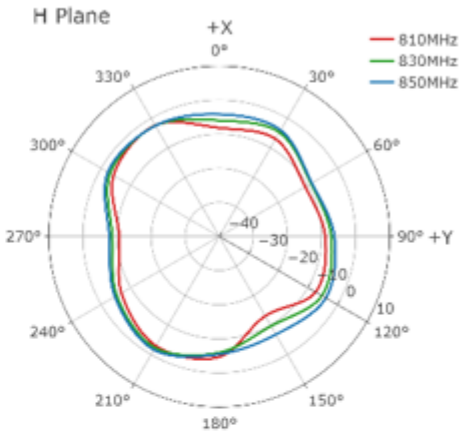
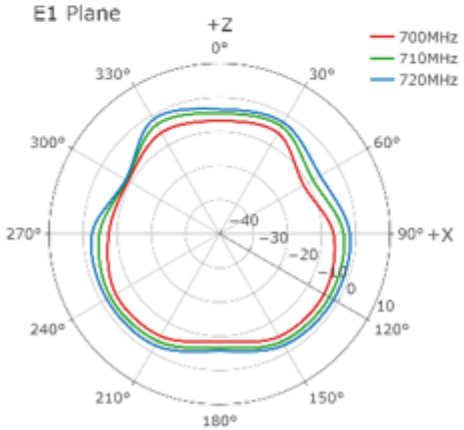
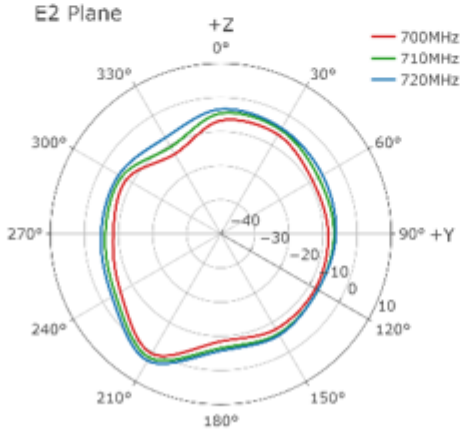
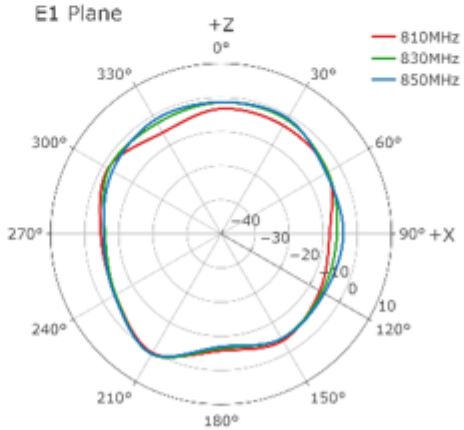
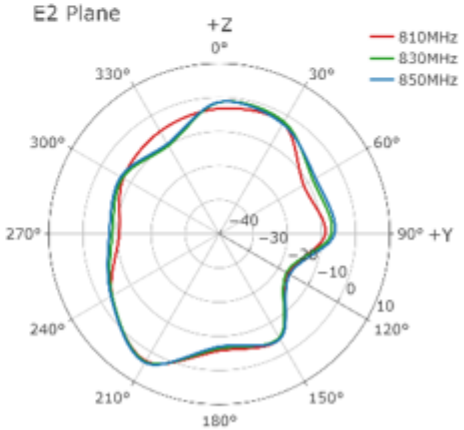
710MHz		830MHz	
			
			

LTE Radiation Pattern Plots

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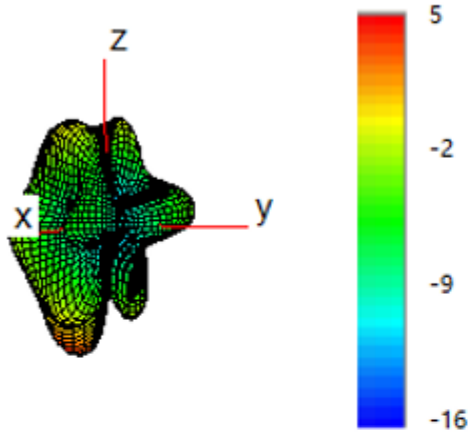
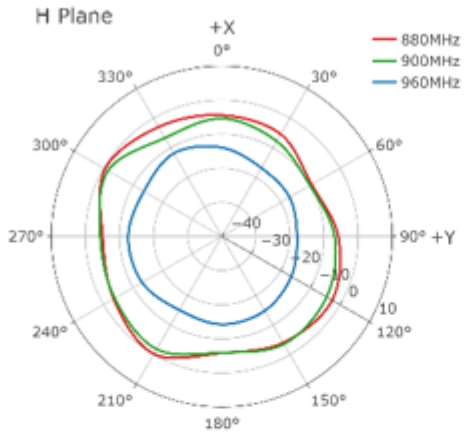
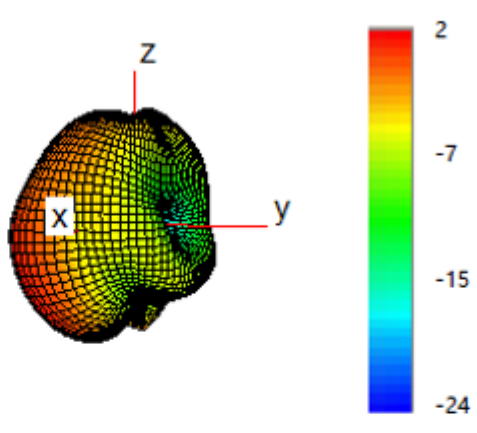
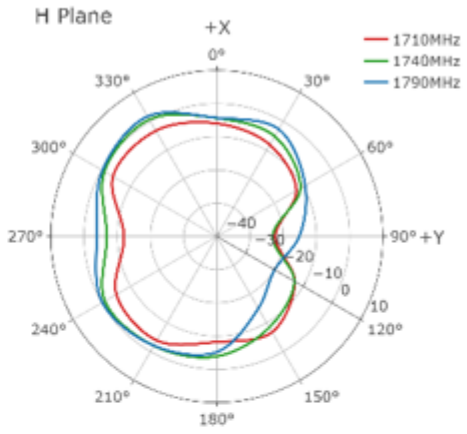
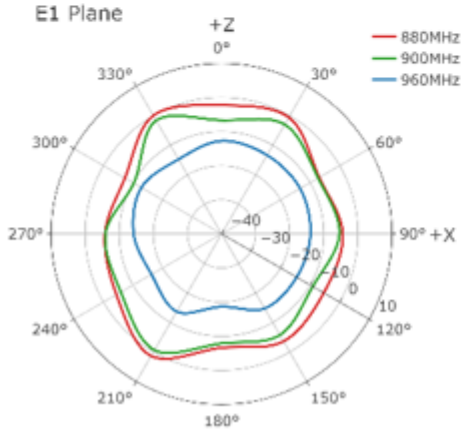
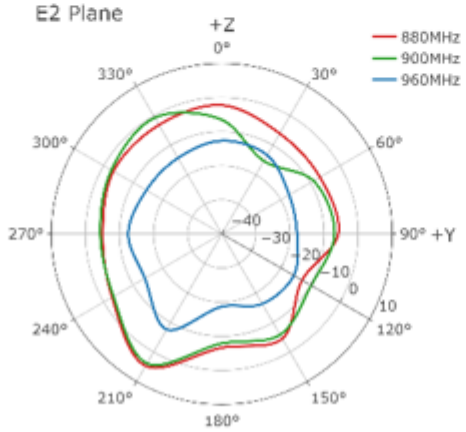
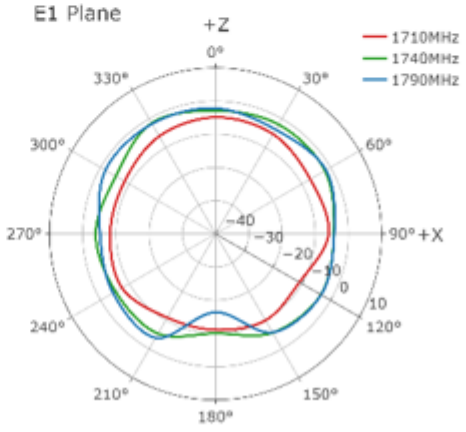
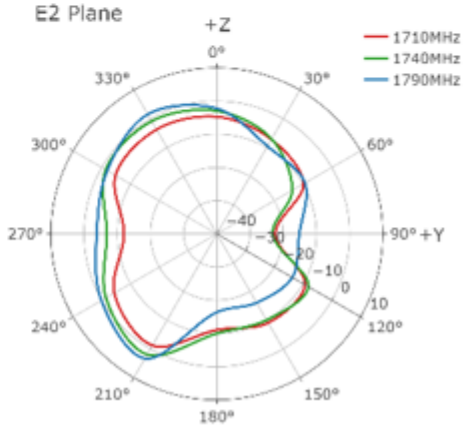
900MHz		1740MHz	
			
			

LTE Radiation Pattern Plots

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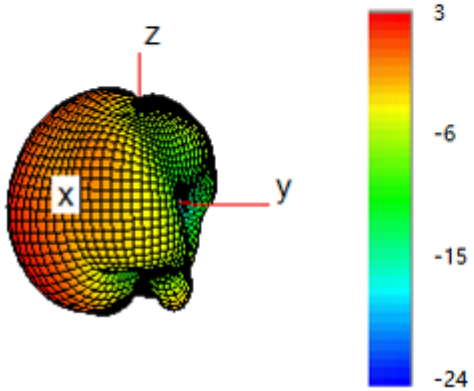
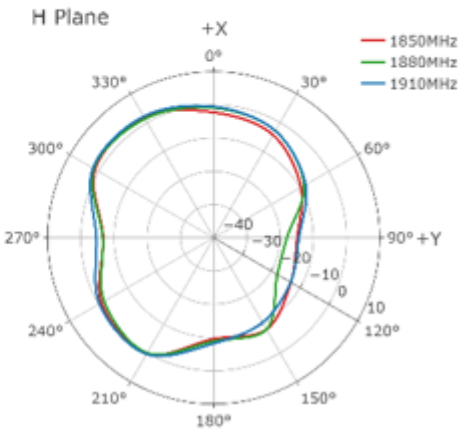
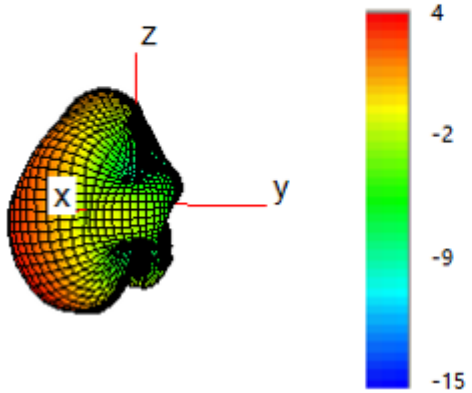
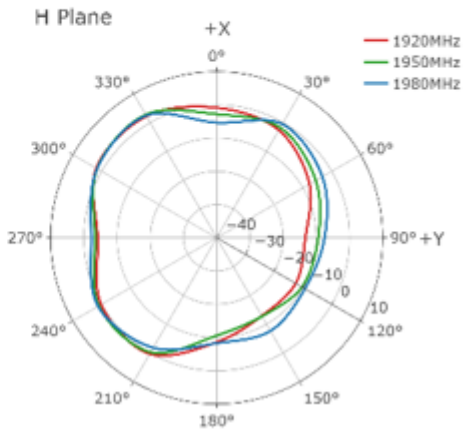
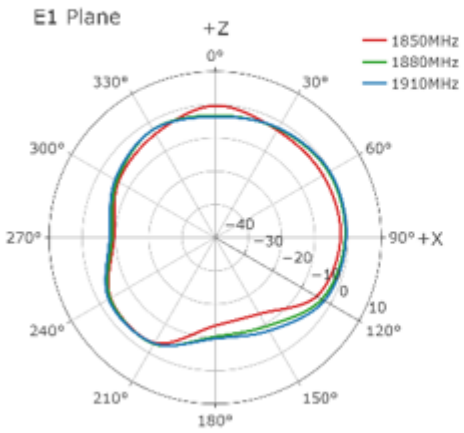
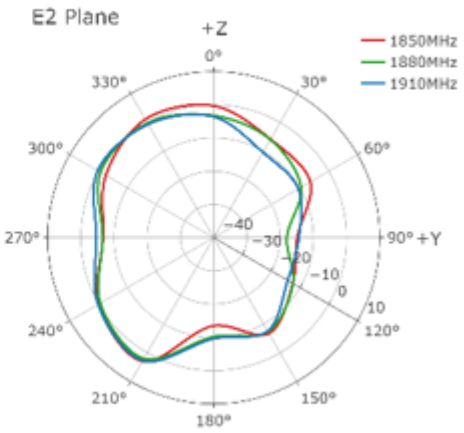
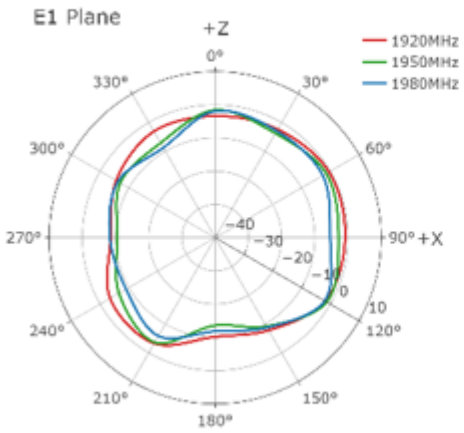
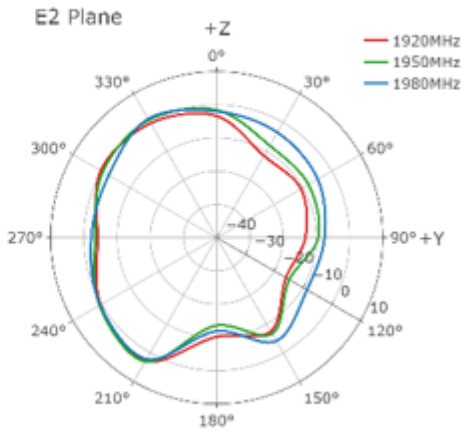
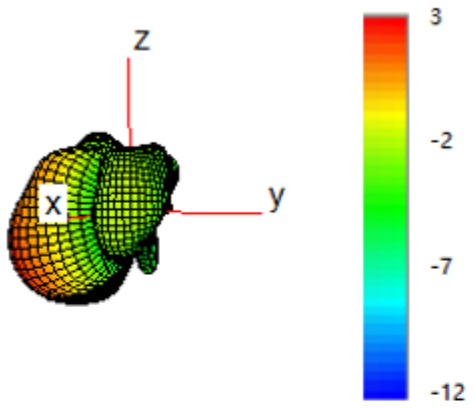
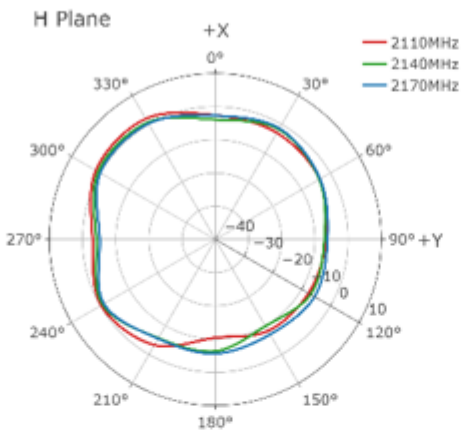
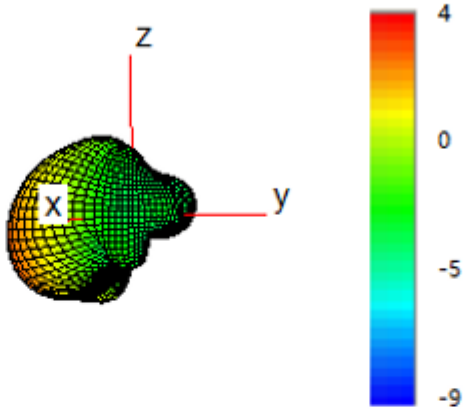
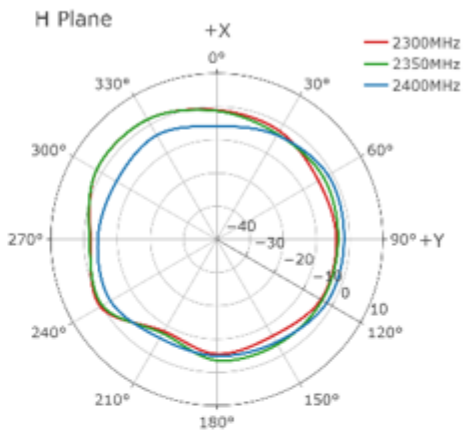
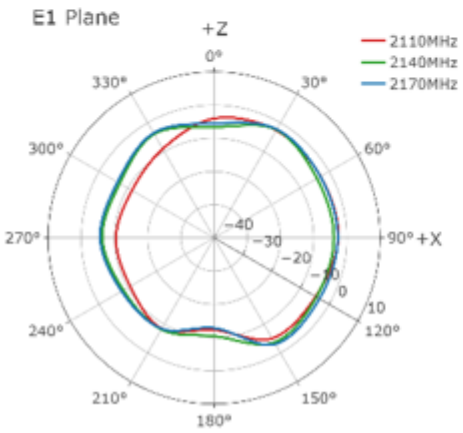
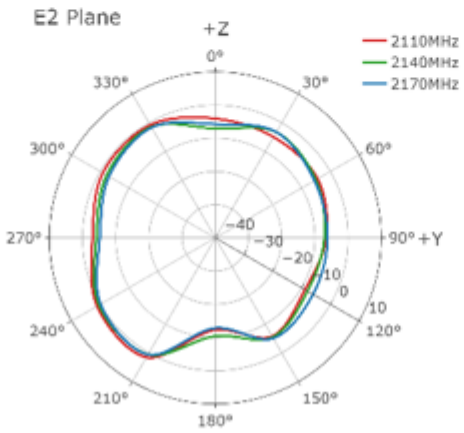
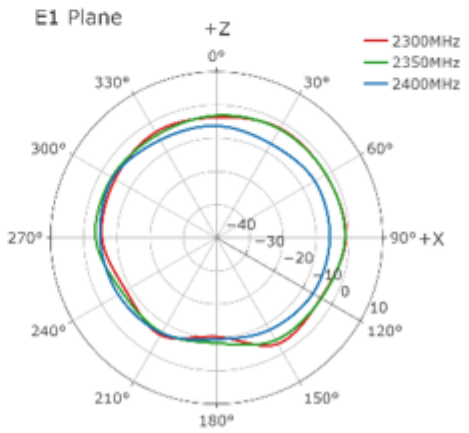
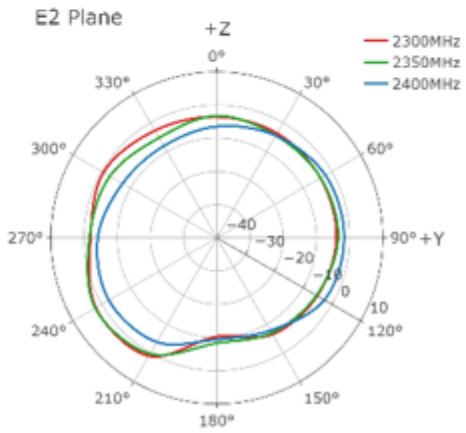
1880Hz		1950MHz	
			
			

LTE Radiation Pattern Plots

ikotek

2140MHz		2350MHz	
			
			

LTE Radiation Pattern Plots

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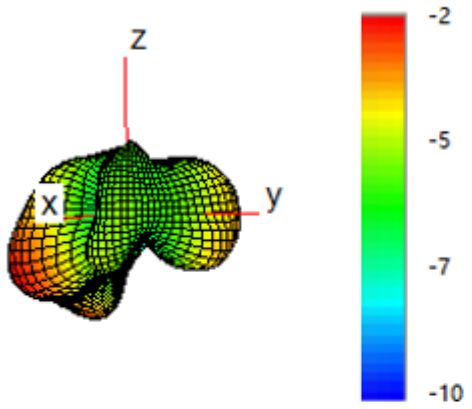
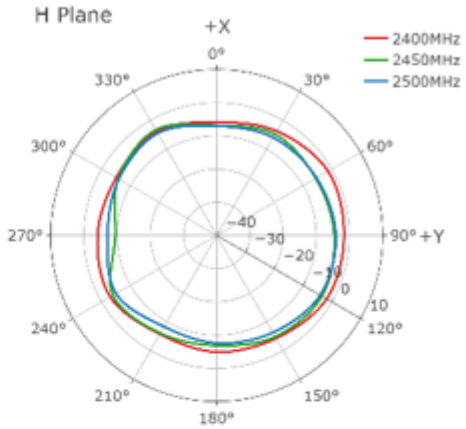
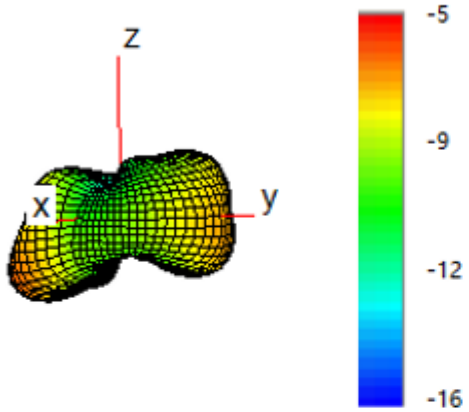
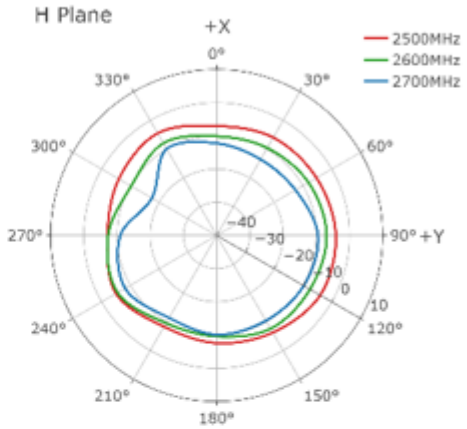
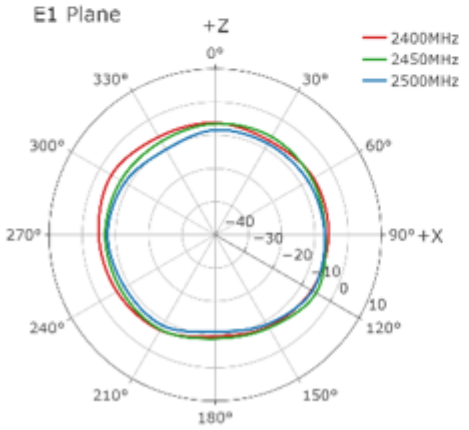
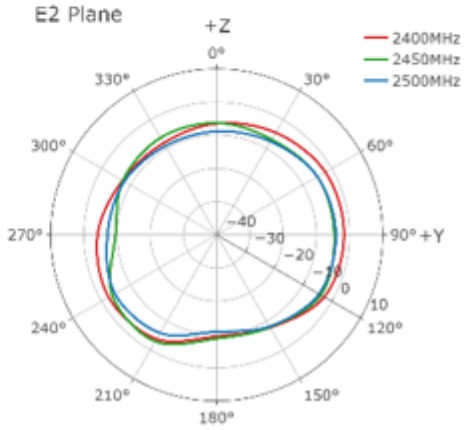
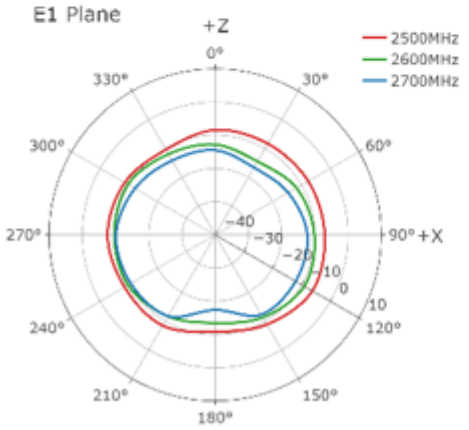
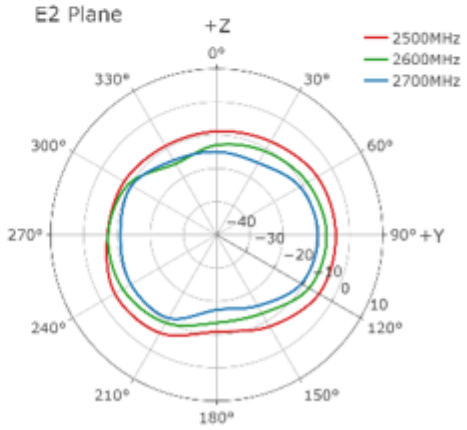
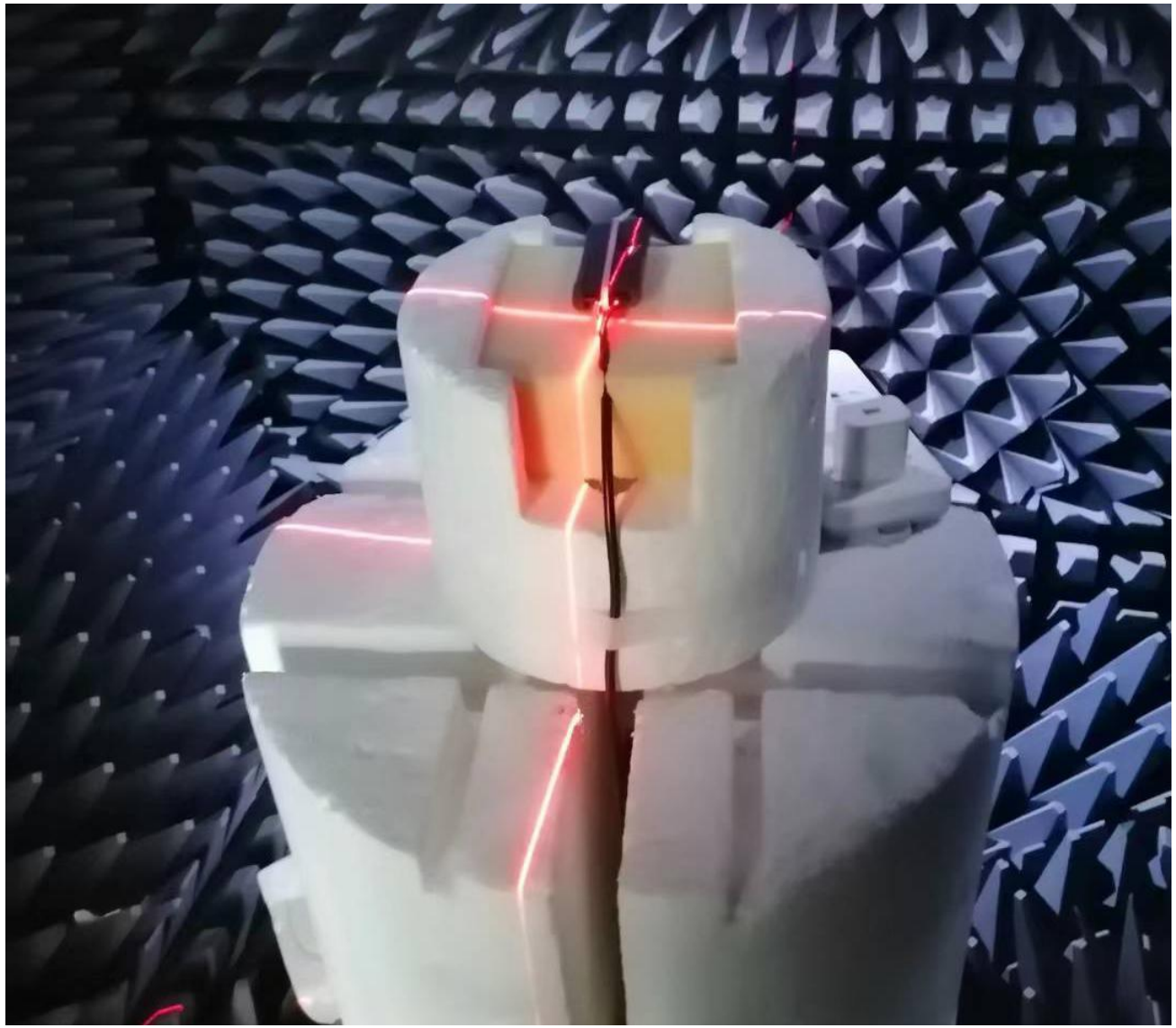
2450Hz		2600MHz	
			
			

Active Test

- Test picture



Active Test

- OTA data

Band	Channel	TRP	Channel	TIS	Requirement	
Cat-M Band 4	20000	17.34			16	
	20175	18.63			16	
	20350	18.33	2350	-103.87	16	-100
Cat-M Band 13	23230	17.64	5230	-104.32	15	-97

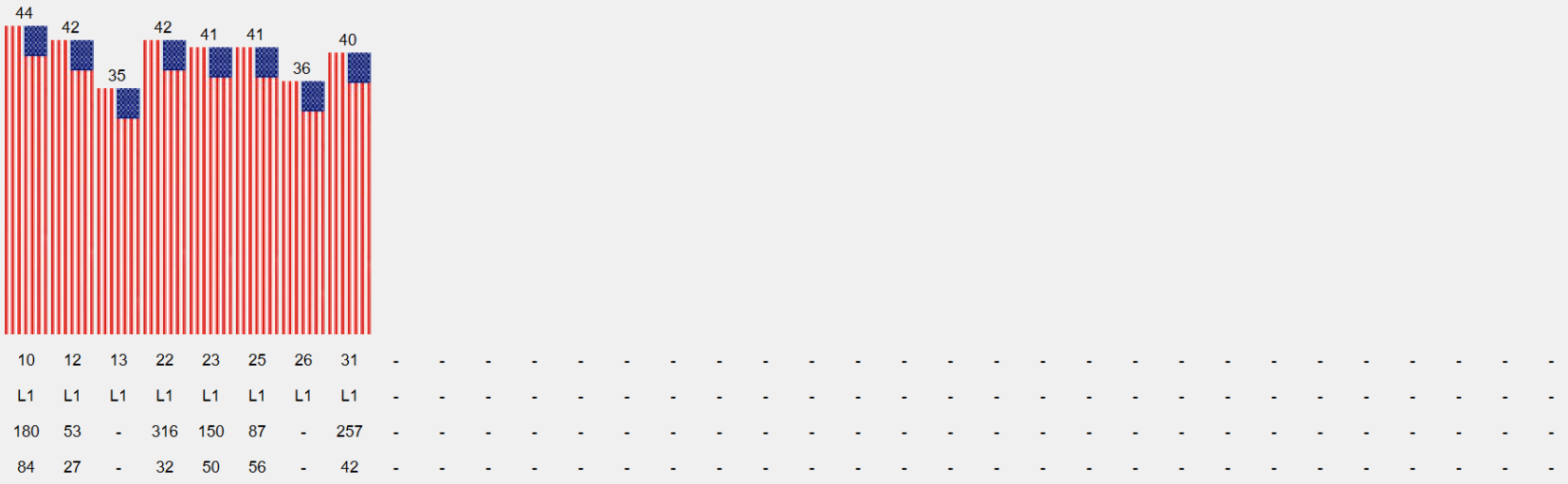
Active Test

- OTA data

Band	Channel	TRP	TIS
FDD_B1	18050	18.9	
FDD_B1	18300	18.53	
FDD_B1	18550	18.22	-97.18
FDD_B2	18650	19.98	
FDD_B2	18900	19.57	
FDD_B2	19150	19.5	-105.61
FDD_B3	19250	18.91	
FDD_B3	19575	18.83	
FDD_B3	19900	18.97	-98.74
FDD_B5	20450	18.28	
FDD_B5	20525	17.6	
FDD_B5	20600	17.55	-96.03
FDD_B8	21500	16.66	
FDD_B8	21625	15.51	
FDD_B8	21750	14.05	-85.95
FDD_B12	23060	16.35	
FDD_B12	23095	16.56	
FDD_B12	23130	16.78	-104.64
FDD_B18	23900	18.24	
FDD_B18	23925	18.08	
FDD_B18	23950	18.15	-97.73

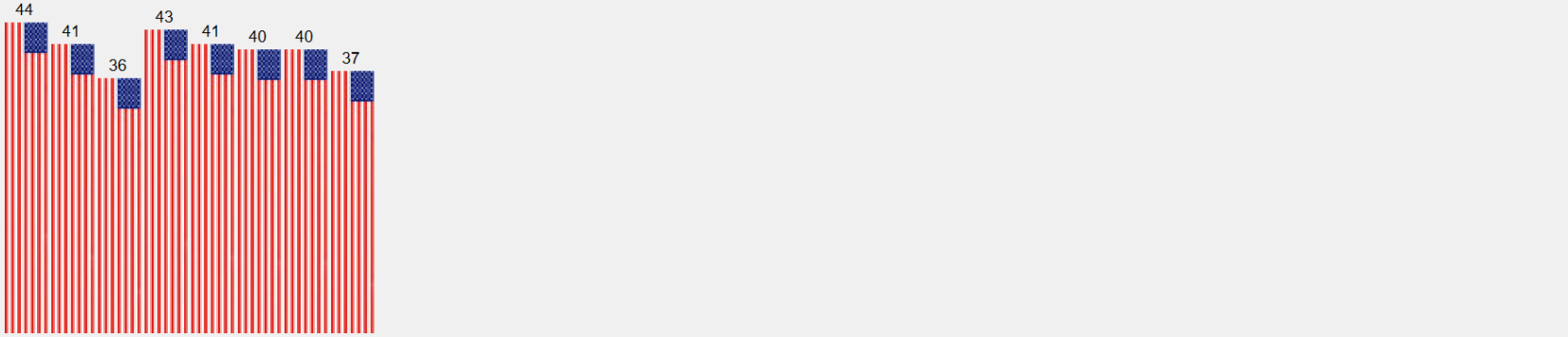
Band	Channel	TRP	TIS
FDD_B19	24050	17.48	
FDD_B19	24075	17.53	
FDD_B19	24100	17.62	-96.92
FDD_B20	24200	17.67	
FDD_B20	24300	17.35	
FDD_B20	24400	17.37	-96.97
FDD_B25	26090	18.95	
FDD_B25	26365	19.02	
FDD_B25	26640	19	-97.68
FDD_B26	26740	17.97	
FDD_B26	26865	17.69	
FDD_B26	26990	17.38	-95.56
FDD_B27	27090	17.66	
FDD_B27	27125	18.2	
FDD_B27	27160	17.68	-97.54
FDD_B28	27260	14	
FDD_B28	27435	15.1	
FDD_B28	27610	16.55	-97
FDD_B66	132022	18.7	
FDD_B66	132322	18.5	
FDD_B66	132622	18.78	-103.55

GNSS outdoor test(open sky)



PRN																																
BAND	10	12	13	22	23	25	26	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AZI	L1	L1	L1	L1	L1	L1	L1	L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ELE	180	53	-	316	150	87	-	257	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	84	27	-	32	50	56	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Direction 1

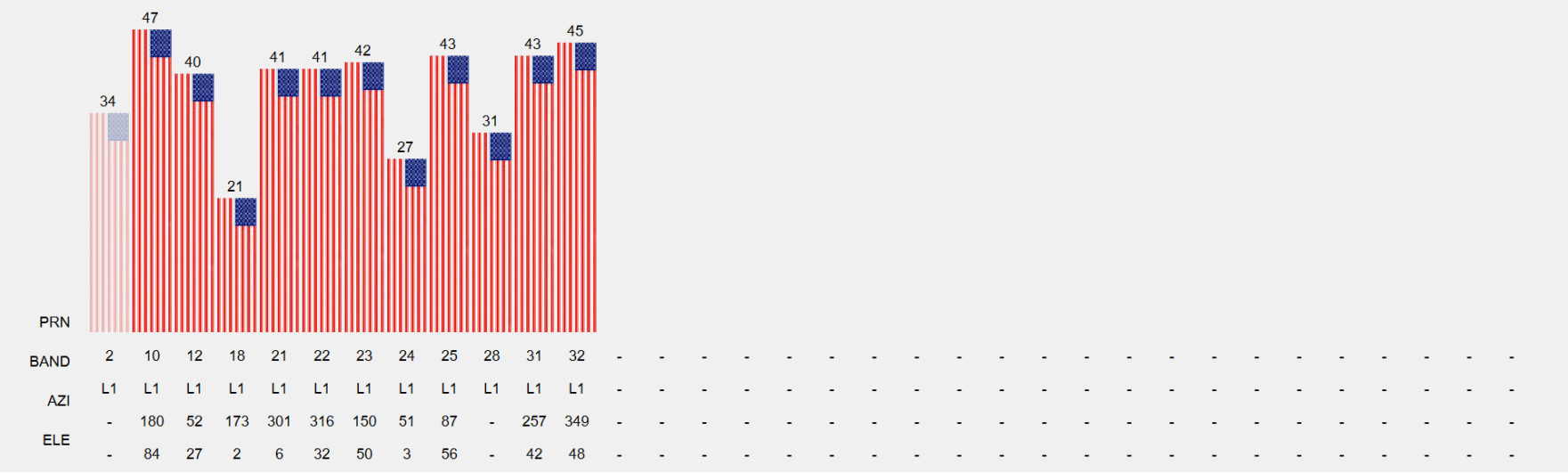


PRN																																
BAND	10	12	13	22	23	25	31	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AZI	L1	L1	L1	L1	L1	L1	L1	L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ELE	180	53	-	316	150	87	257	349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	84	27	-	32	50	56	42	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Direction 2

GNSS outdoor test(open sky)

Direction 3



Direction 4

GNSS Radiation Pattern Plots

Antenna Bom

Num.	Parts Name	Part Description	Quantity	Pic	Note
1	LTE antenna	FPC+frame	1		X4
2	BT antenna	Chip	1		
3	GNSS antenna	Ceram	1		