

[Cargt HaLoW] 750-928MHz 12nd review

Aug 26th, 2025

TE antenna engineering

EVERY CONNECTION COUNTS



Requirement spec

TE Engineering Location, Engineer	
Customer Equipment Name	[Cargt HaLoW]
Bands / Frequencies[MHz]	750-928MHz / Wi-Fi Dual band(2400-2500, 5150-5895)MHz
Requirements of Targets	- Antenna Specifications Required: - Small Flex PCB - 8mmx under 120mm - 100mm cable length or shorter - Verify cable 1.13mm with U.FL connector Target spec S11/VSWR <2.5:1 Omnidirectional Linear/Vertical Total Efficiency : >40% (30% would be acceptable) ~1-2 dBi Per design allows by the size limitations(0 - 1 dB would be acceptable) - Samples needed by April---Production May/June 2025
Test Equipment	Network Analyzer, A+tech Chamber / Indoor office, typical consumer environment
Test Report Type	CST Simulation
Antennas	[TE] FPC with U.FL cable + Extra conductive tape
Matching value	Refer to the 8 and 9 slides

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12nd review

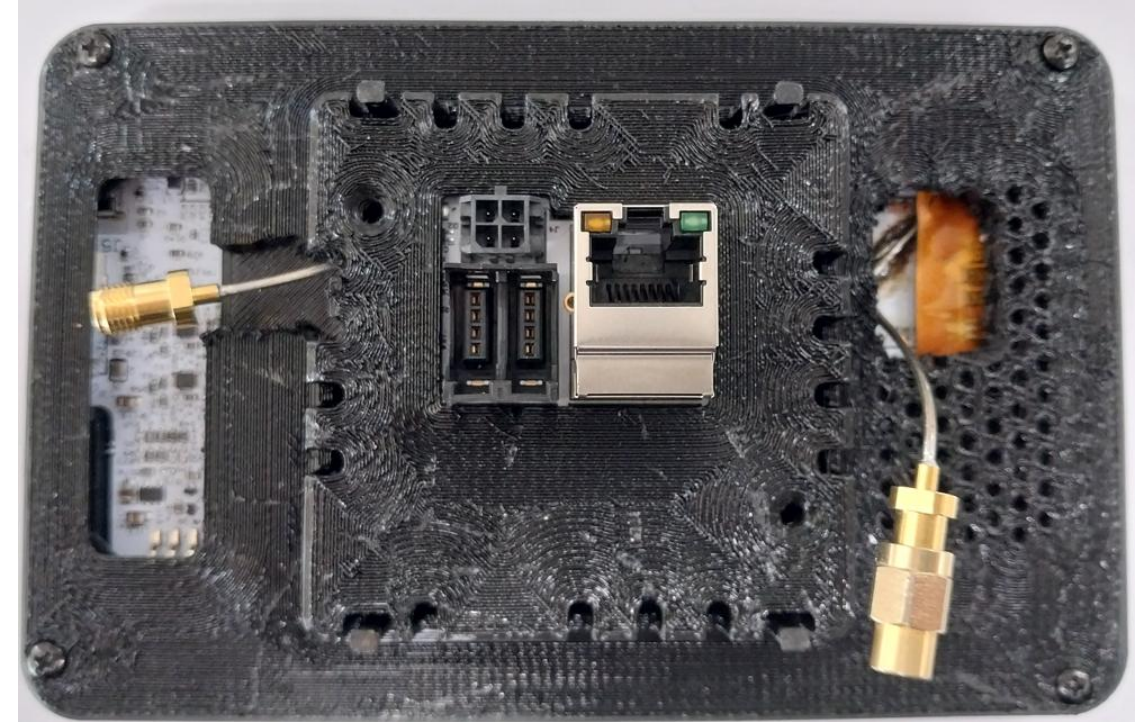
750-928MHz Antenna

Device conditions

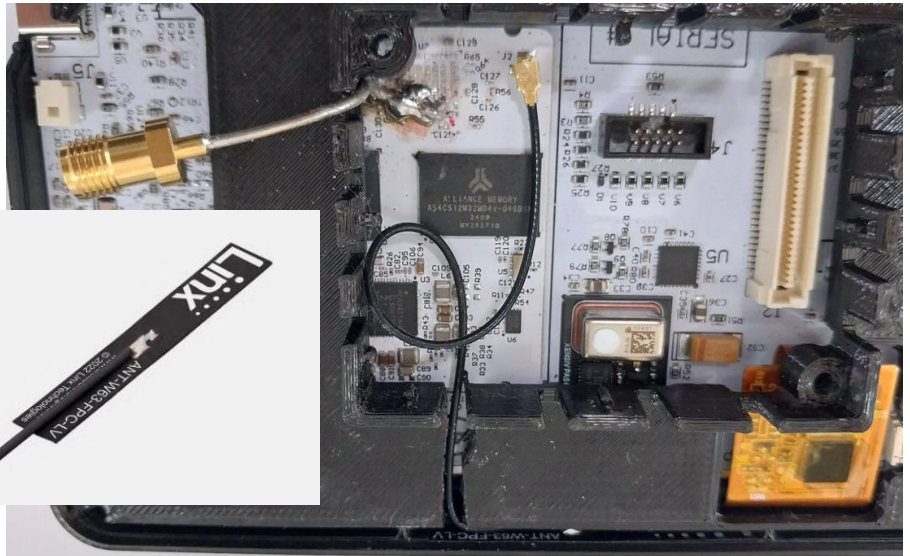
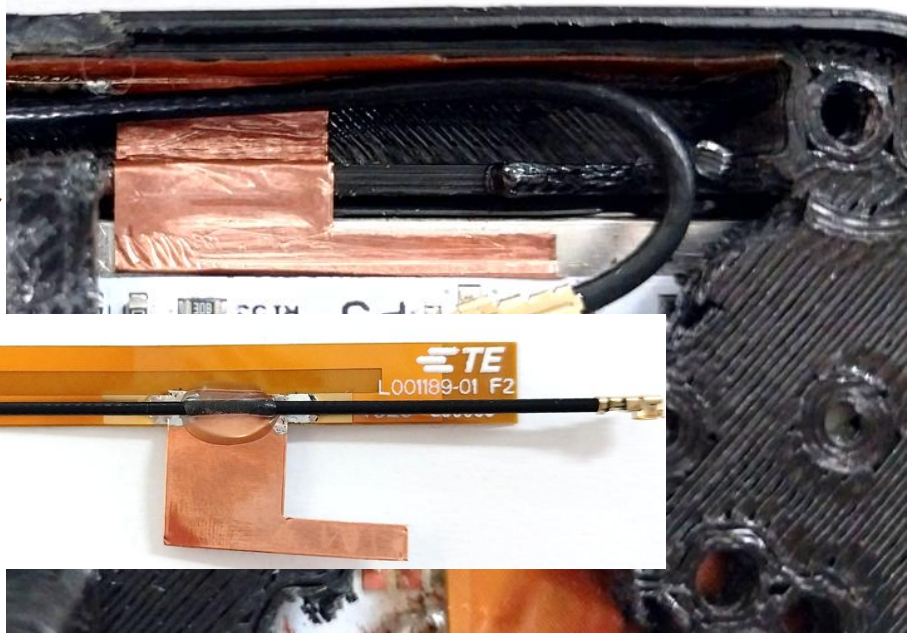
Front side view



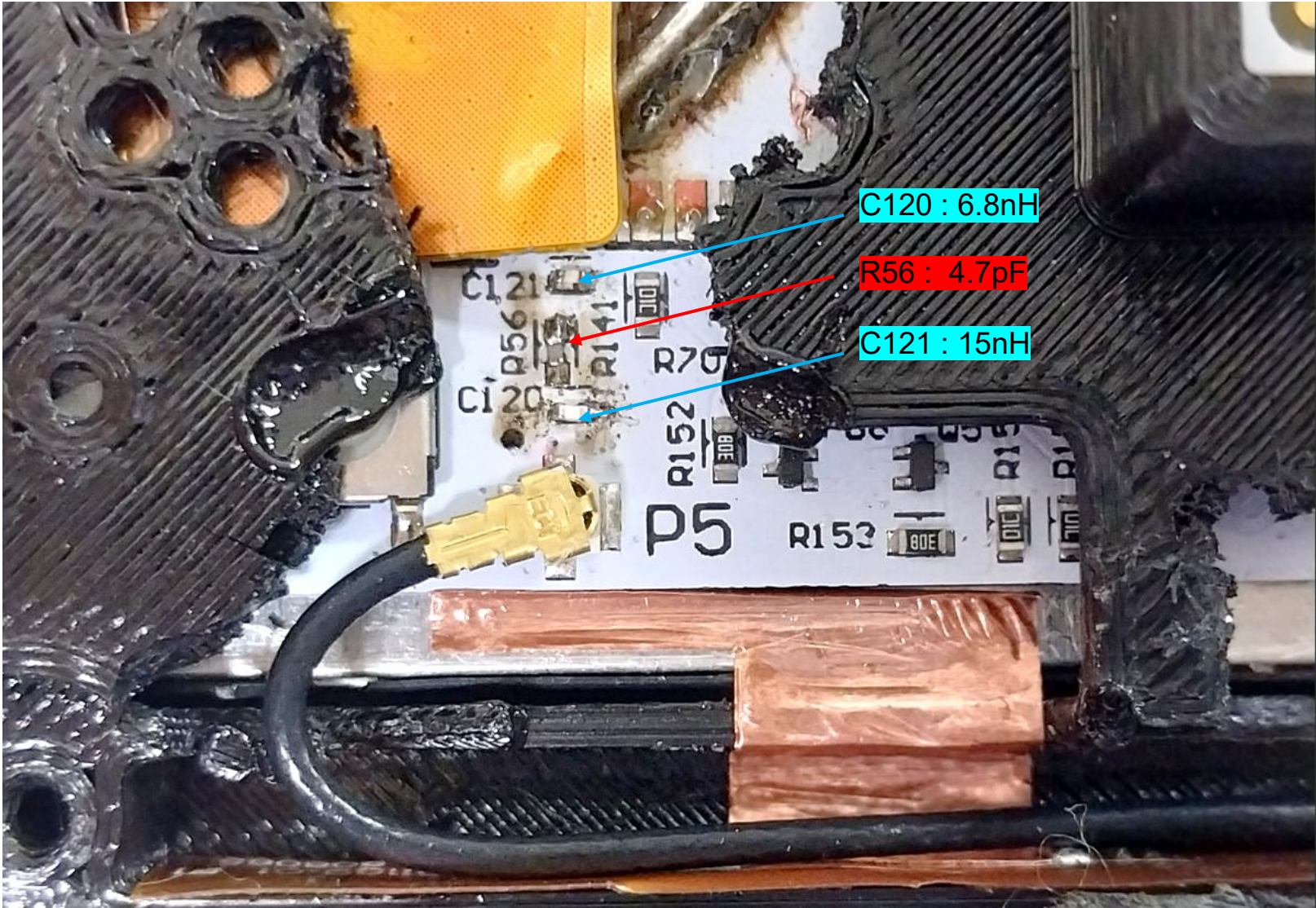
Back side view



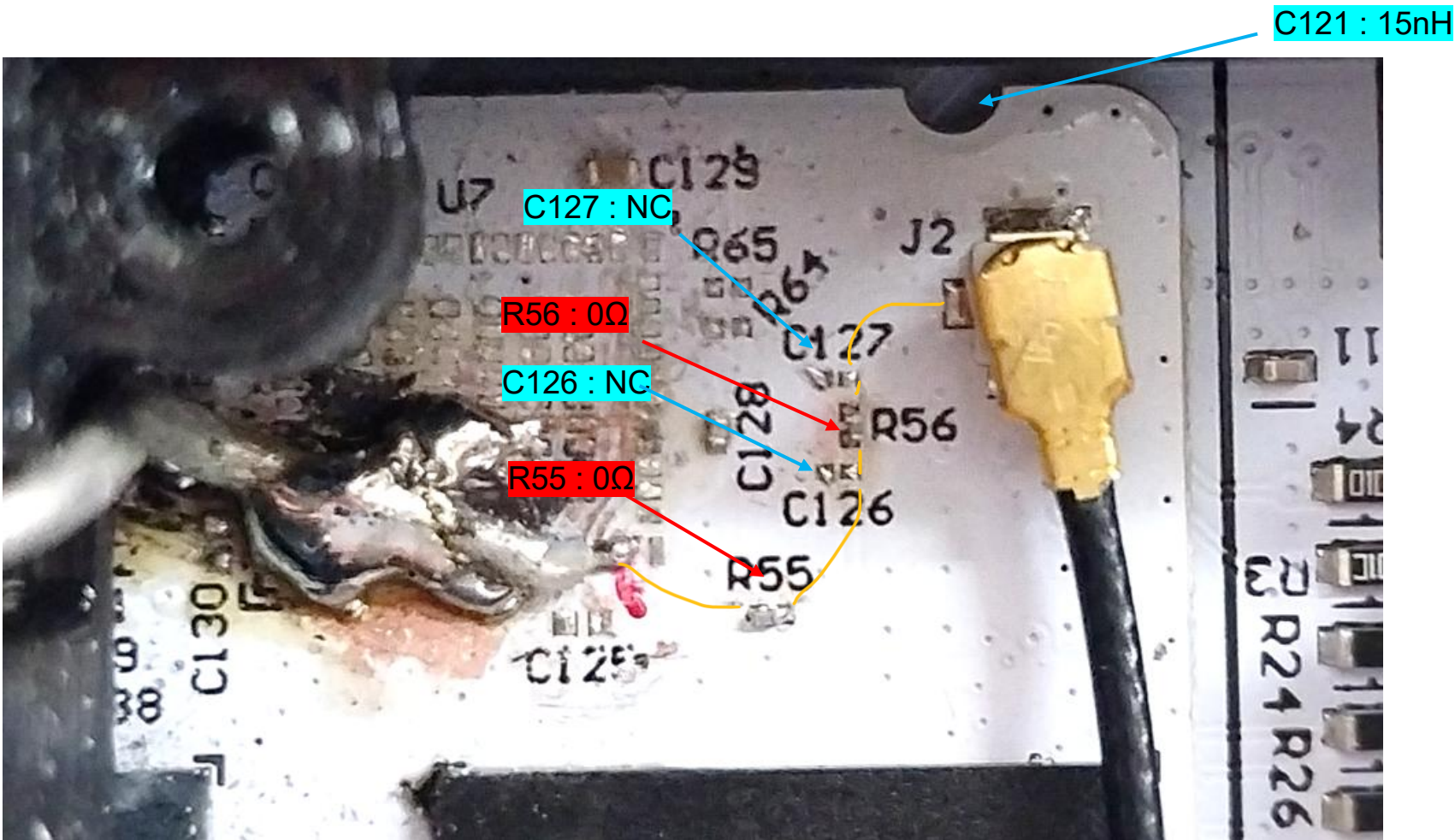
Measurement condition



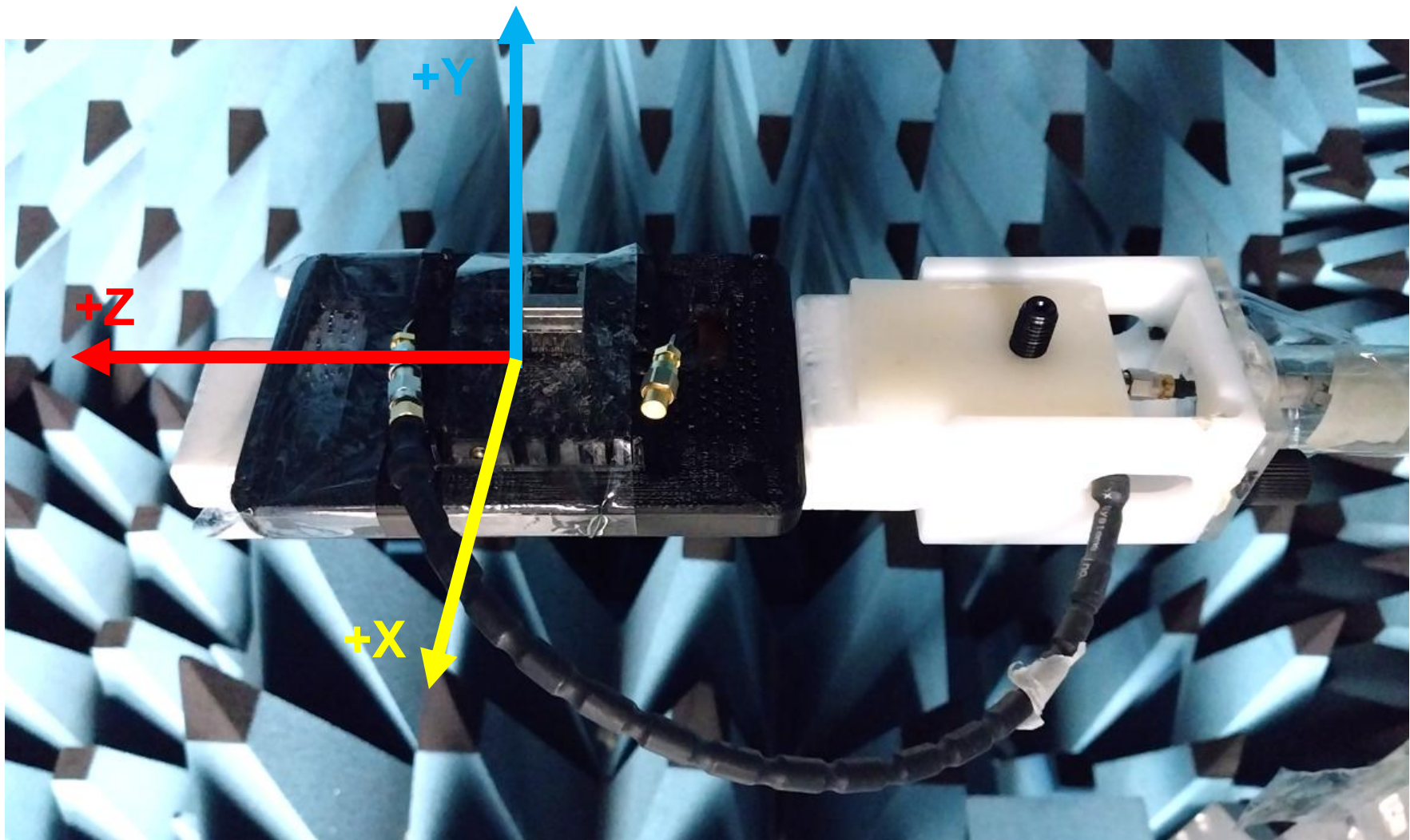
Matching circuit value#1 of 750-928MHz ANT



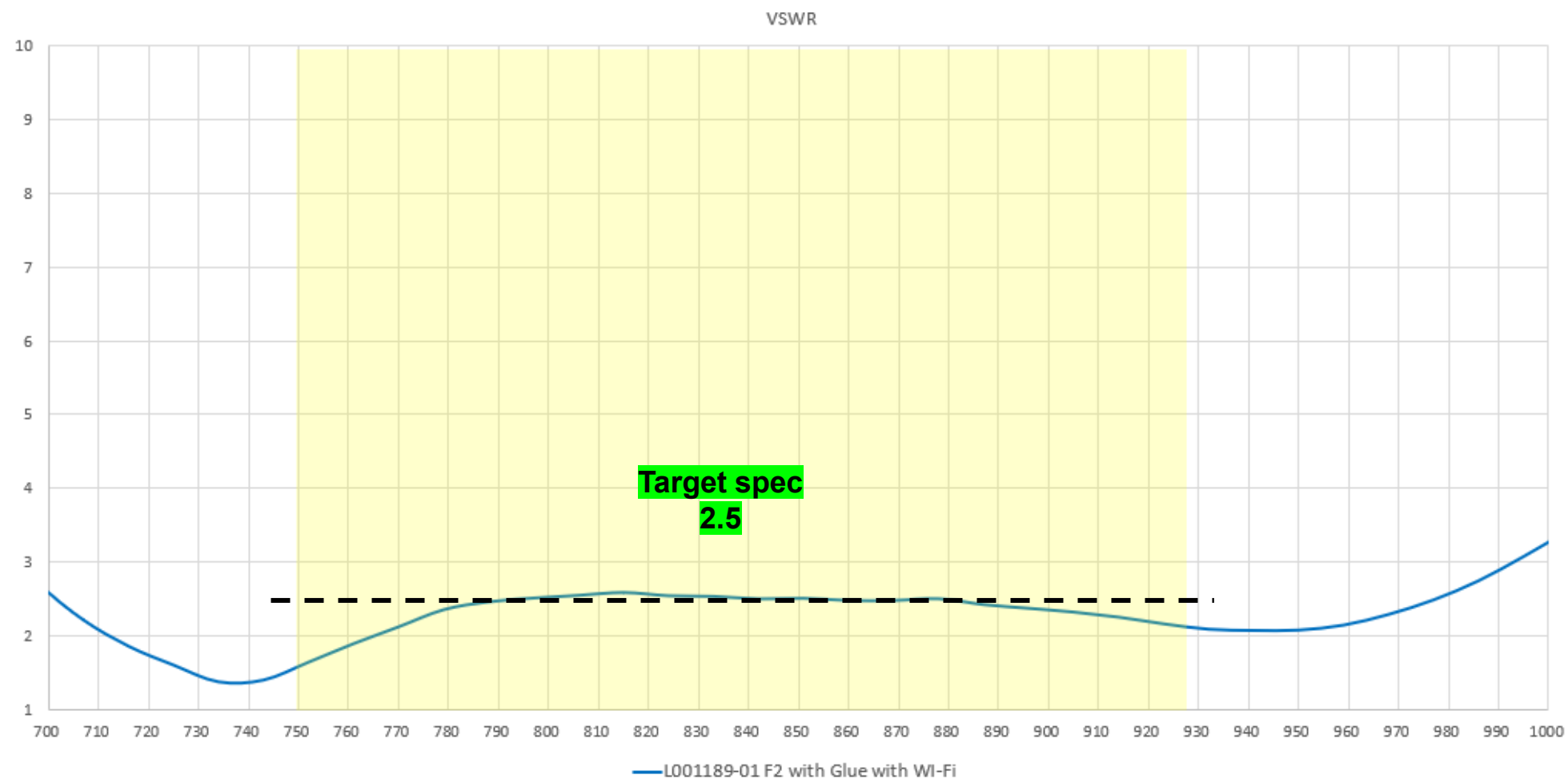
Matching circuit value #1 of Wi-Fi ANT



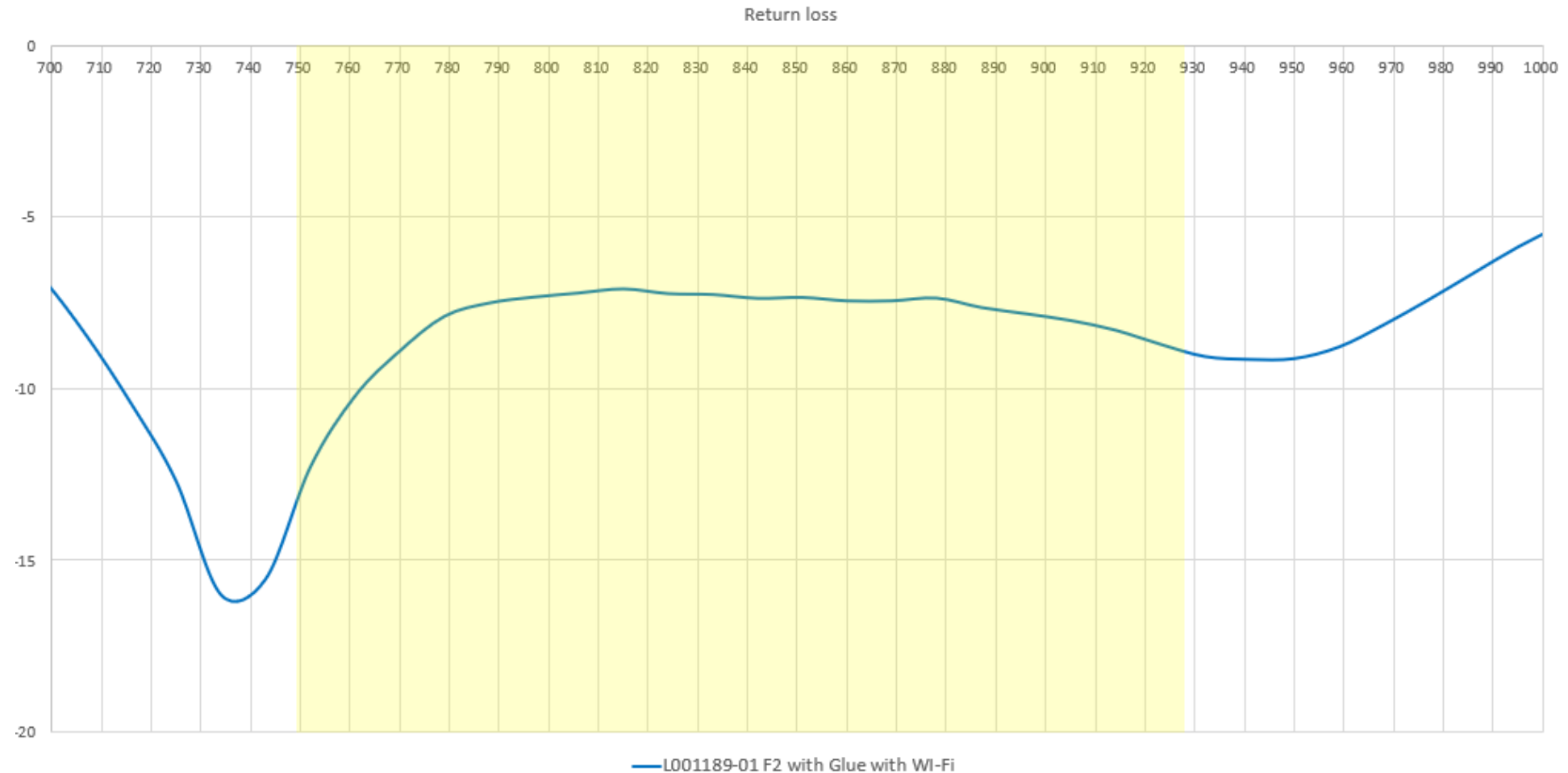
Orientation(Axis)



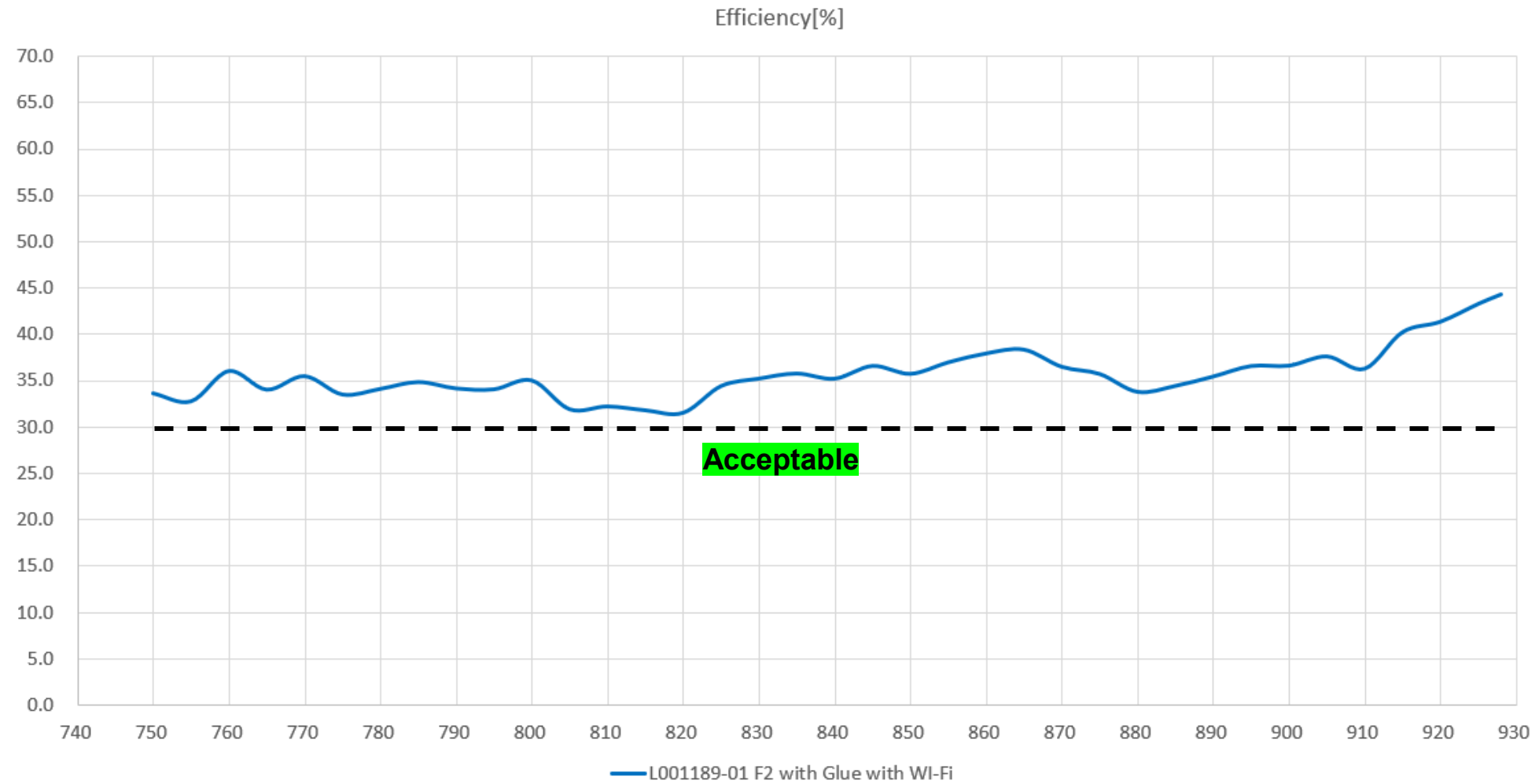
VSWR of 750-928MHz Antenna



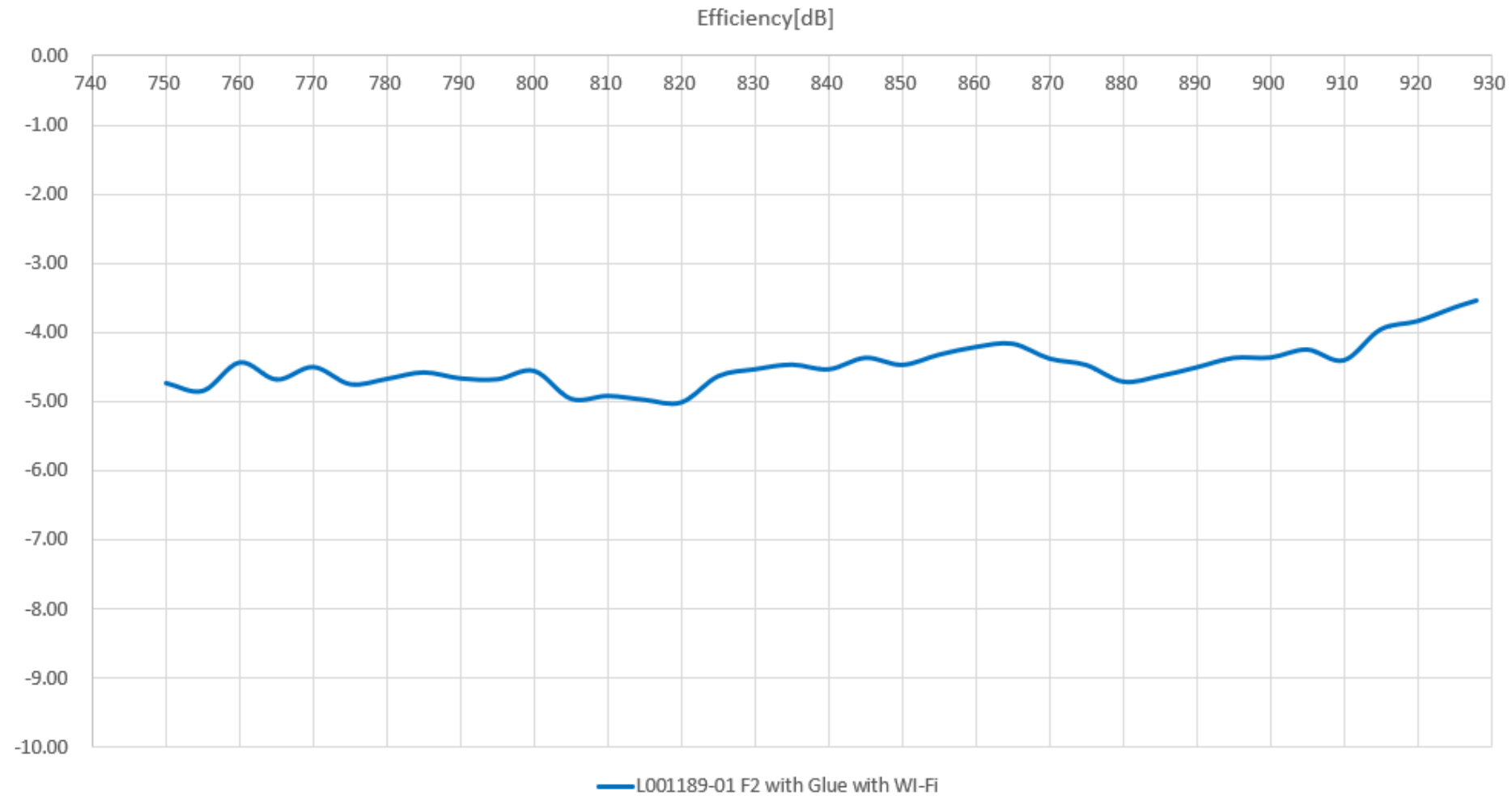
Return loss of 750-928MHz Antenna



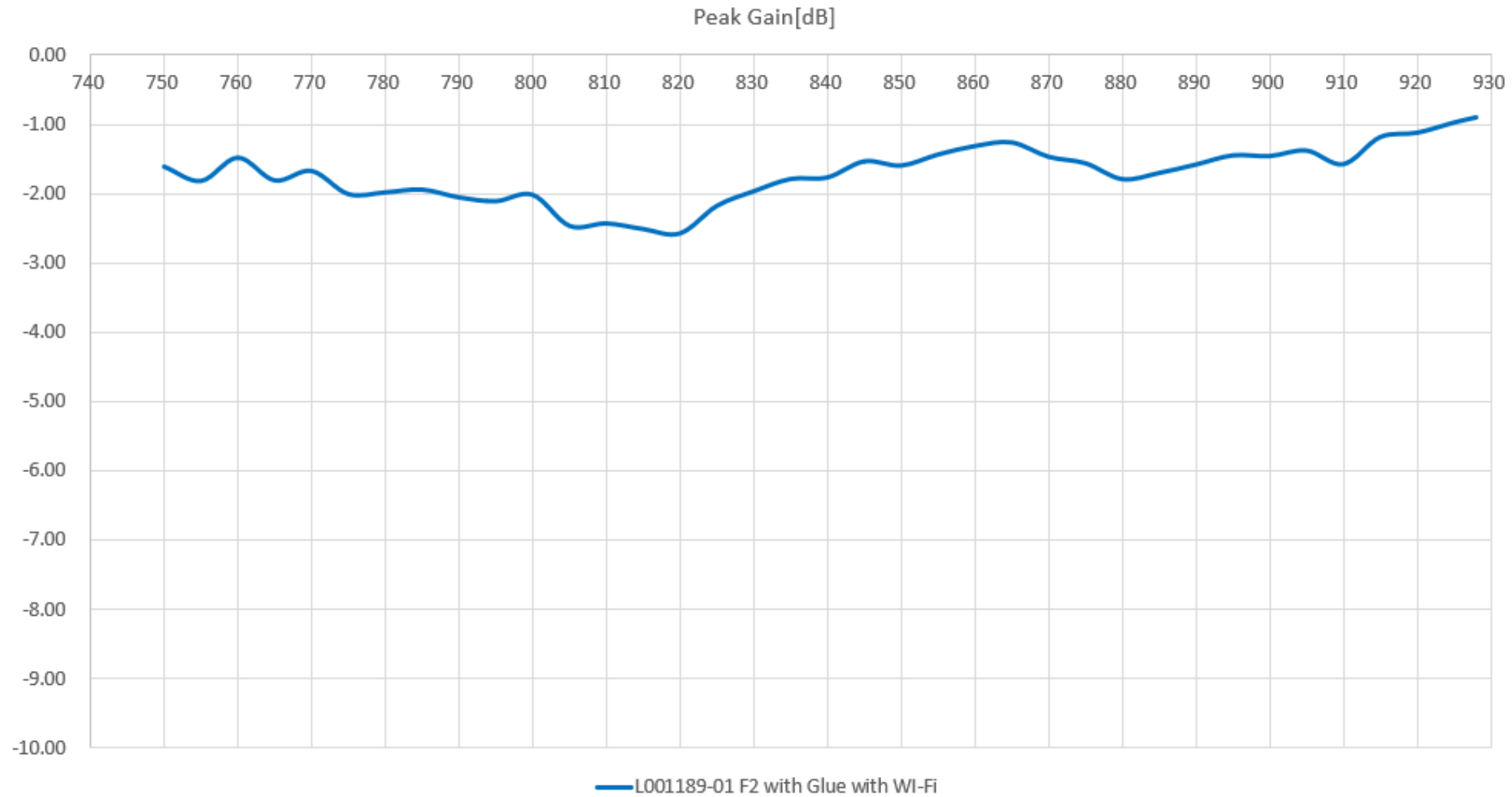
Efficiency[%] of 750-928MHz Antenna



Efficiency[dB] of 750-928MHz Antenna



Peak Gain[dB] of 750-928MHz Antenna

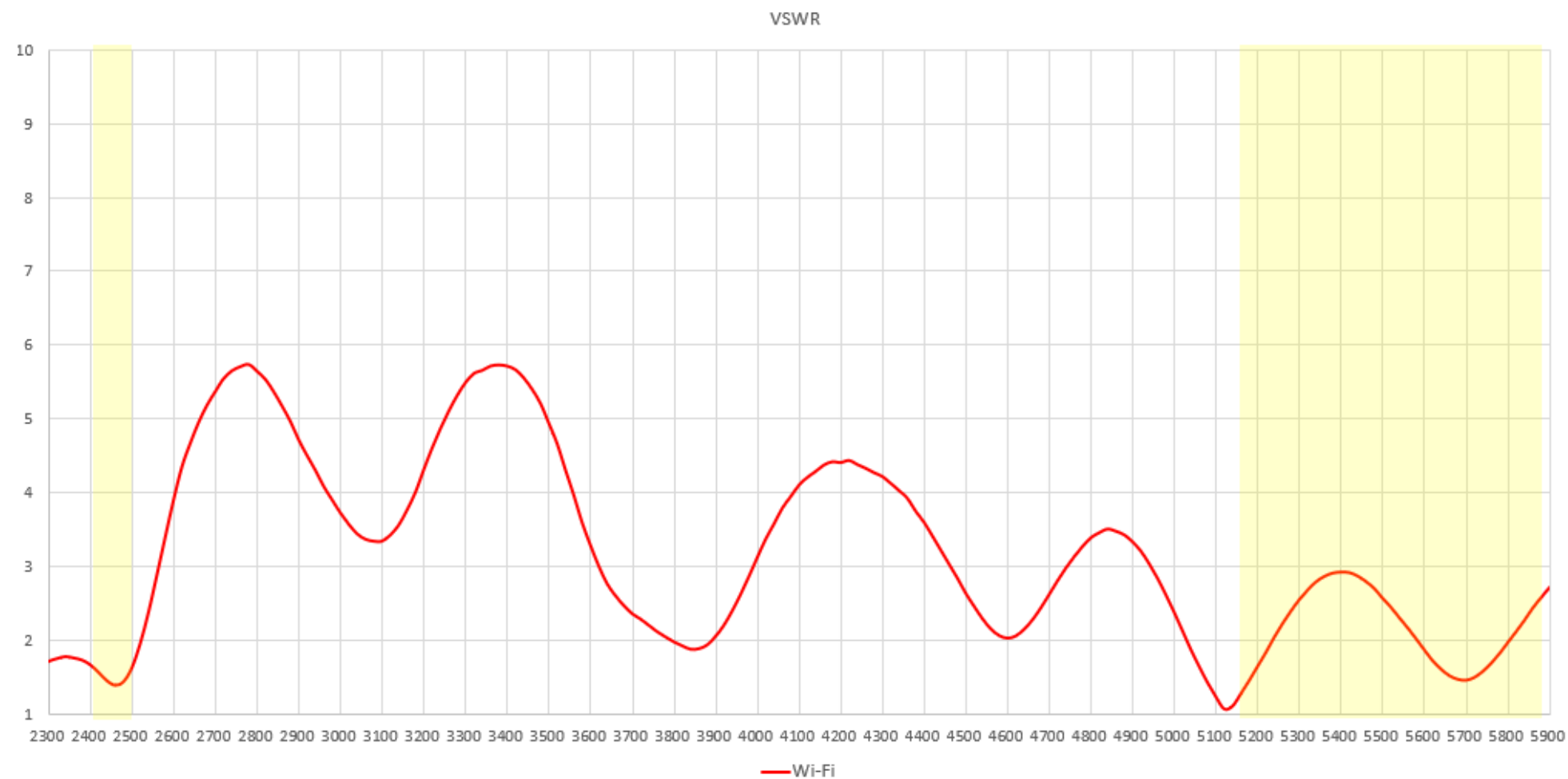


12nd review

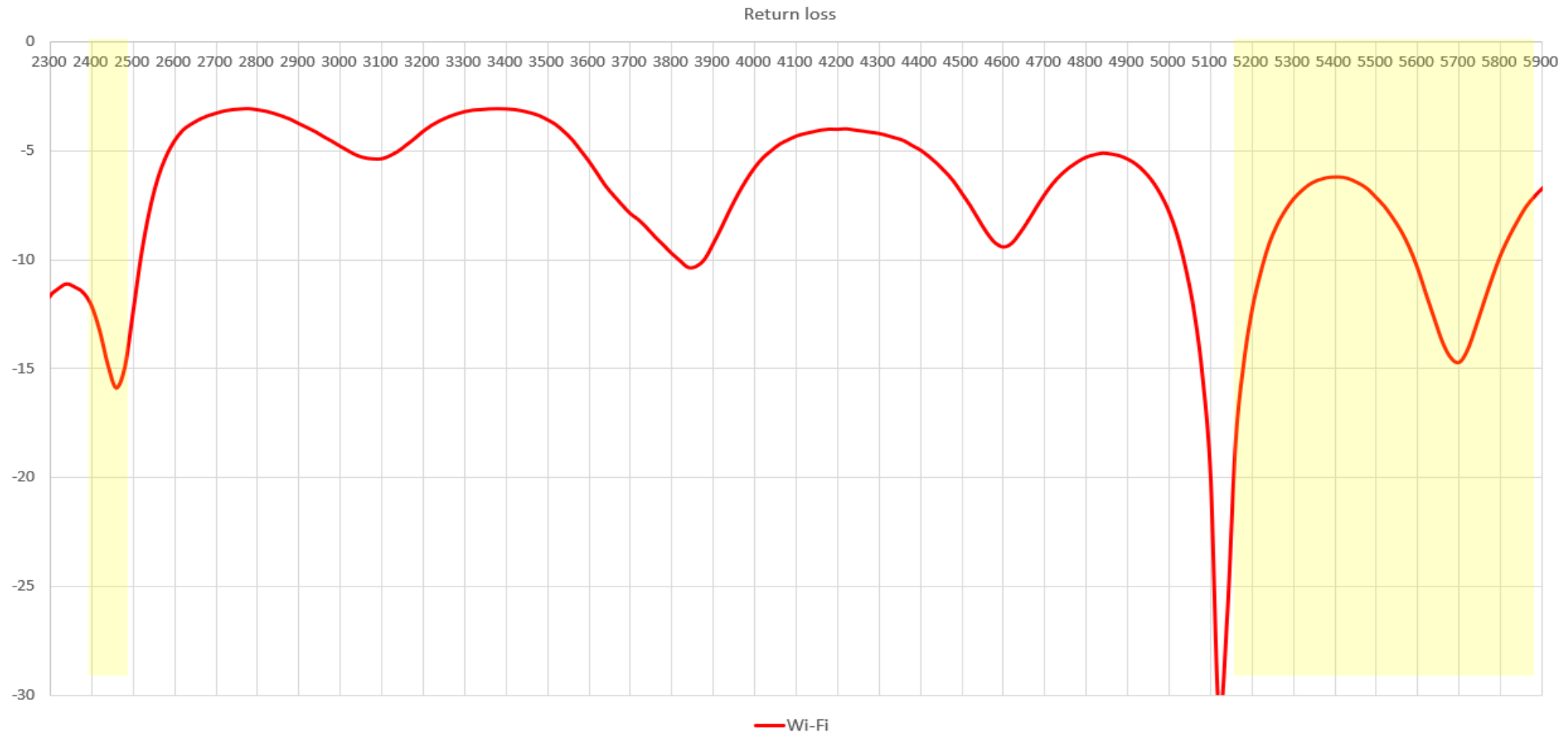
Dual Wi-Fi Antenna

ANT-W63-FPC-LV100UF

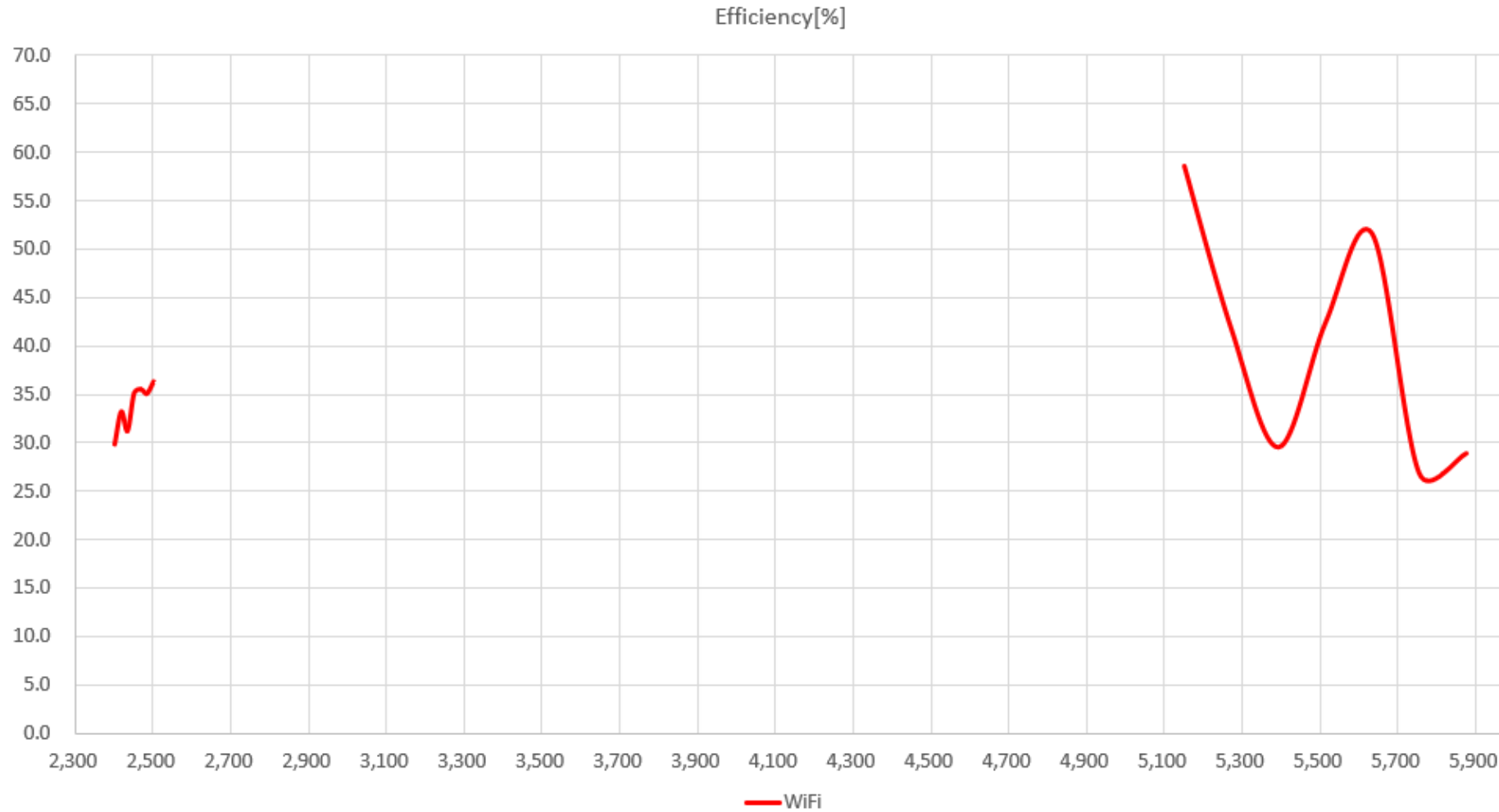
VSWR of Wi-Fi



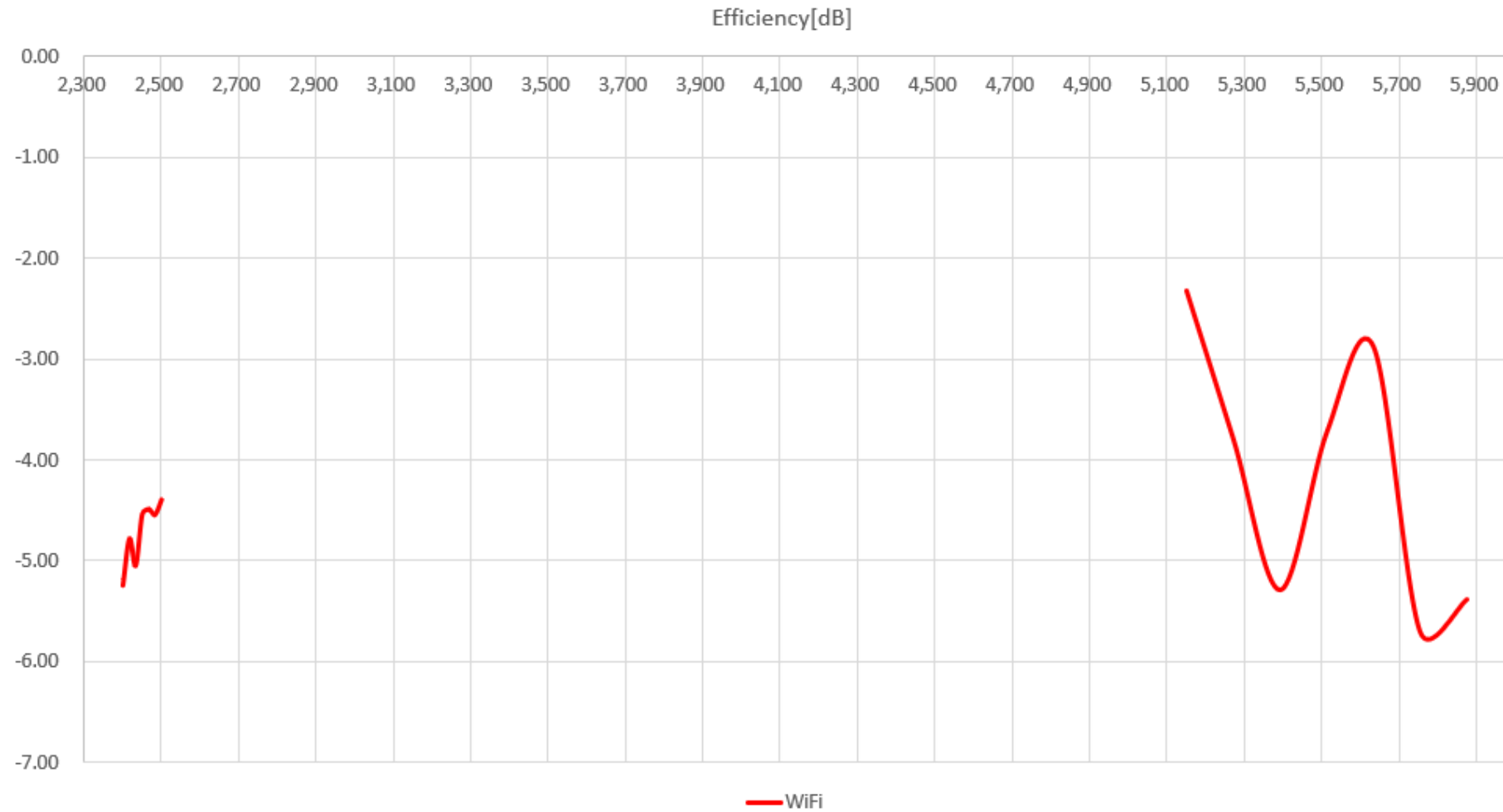
Return loss of Wi-Fi



Efficiency[%] of Wi-Fi



Efficiency[dB] of Wi-Fi



Peak Gain[dB] of Wi-Fi



Summary

◆ 750-928MHz Antenna

(1) 12nd review(L001189-01 F2 with Glue) ← **TE antenna recommended conditions**

→ Efficiency[%] in the 750-928MHz : Min 31.6% / Max 44.4%

→ Efficiency[dB] in the 750-928MHz : Min -5.0dB / Max -3.5dB

	750MHz	840MHz	928MHz
Peak Gain[dB]	-1.62	-1.77	-0.90
Average Gain[dB]	-4.73	-4.53	-3.53

Target spec

- S11/VSWR <2.5:1
- Omnidirectional
- Linear/Vertical
- >40% (30% would be acceptable)
- ~1-2 dBi Per design allows by the size limitations (0 - 1 dB would be acceptable)

◆ Dual Wi-Fi Antenna

→ Efficiency[%] in the 2400-2500MHz : Min 29.9% / Max 36.4%

→ Efficiency[dB] in the 2400-2500MHz : Min -5.2dB / Max -4.4dB

	2400MHz	2450MHz	2500MHz	5150MHz	5513MHz	5875MHz
Peak Gain[dB]	-0.31	-0.08	-0.15	+1.28	+1.16	-0.84
Average Gain[dB]	-5.24	-4.54	-4.39	-2.32	-3.72	-5.38

Appendix

3D Efficiency measurement results

750-928MHz Antenna

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840
Efficiency [dB]	-4.85	-4.73	-4.84	-4.43	-4.68	-4.50	-4.75	-4.67	-4.57	-4.66	-4.67	-4.55	-4.96	-4.92	-4.97	-5.01	-4.63	-4.53	-4.46	-4.53
Efficiency [%]	32.7	33.7	32.8	36.1	34.1	35.5	33.5	34.1	34.9	34.2	34.1	35.1	31.9	32.2	31.8	31.6	34.4	35.3	35.8	35.2
Peak Gain [dB]	-1.66	-1.62	-1.82	-1.49	-1.82	-1.68	-2.01	-1.99	-1.95	-2.06	-2.12	-2.02	-2.47	-2.44	-2.52	-2.58	-2.18	-1.97	-1.79	-1.77

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Frequency [MHz]	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	928	930	
Efficiency [dB]	-4.36	-4.46	-4.32	-4.20	-4.16	-4.37	-4.47	-4.71	-4.63	-4.50	-4.36	-4.36	-4.24	-4.40	-3.95	-3.83	-3.63	-3.53	-3.45	
Efficiency [%]	36.6	35.8	37.0	38.0	38.4	36.5	35.8	33.8	34.5	35.5	36.6	36.7	37.7	36.3	40.3	41.4	43.3	44.4	45.2	
Peak Gain [dB]	-1.54	-1.60	-1.44	-1.32	-1.27	-1.47	-1.57	-1.80	-1.71	-1.59	-1.45	-1.46	-1.38	-1.58	-1.19	-1.13	-0.98	-0.90	-0.84	

Dual Wi-Fi(2400-2500 / 5150-5875MHz) Antenna

	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
Frequency [MHz]	2400	2417	2433	2450	2467	2483	2500	5150	5271	5392	5513	5633	5754	5875						
Efficiency [dB]	-5.24	-4.78	-5.05	-4.54	-4.49	-4.54	-4.39	-2.32	-3.79	-5.29	-3.72	-2.87	-5.71	-5.38						
Efficiency [%]	29.9	33.3	31.3	35.2	35.6	35.1	36.4	58.6	41.8	29.6	42.5	51.6	26.9	29.0						
Peak Gain [dB]	-0.31	0.07	-0.38	-0.08	-0.17	-0.28	-0.15	1.28	0.42	-0.98	1.16	2.18	-0.48	-0.84						

**CONNECT
LIKE THE WORLD
DEPENDS ON IT.
BECAUSE IT DOES.**

EVERY CONNECTION COUNTS

