

2024.04.08

RA-N2403-81

APPROVAL SHEET

MODEL : 60S
BT Antenna layout

Review	Consent	Approval

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1. Revision History

NO.	Before	After	Reason	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

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2.Product Information

2.1 General Features

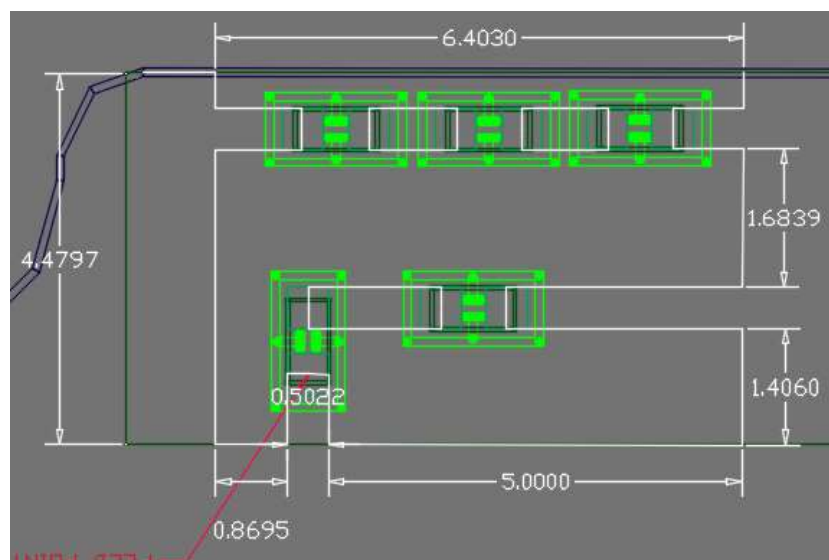
PART NUMBER	GRSN24048BT71
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	Bluetooth

2.2 Electrical Specifications

Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		3 ↓	3 ↓
	RX	2400MHz	2485MHz
		3 ↓	3 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

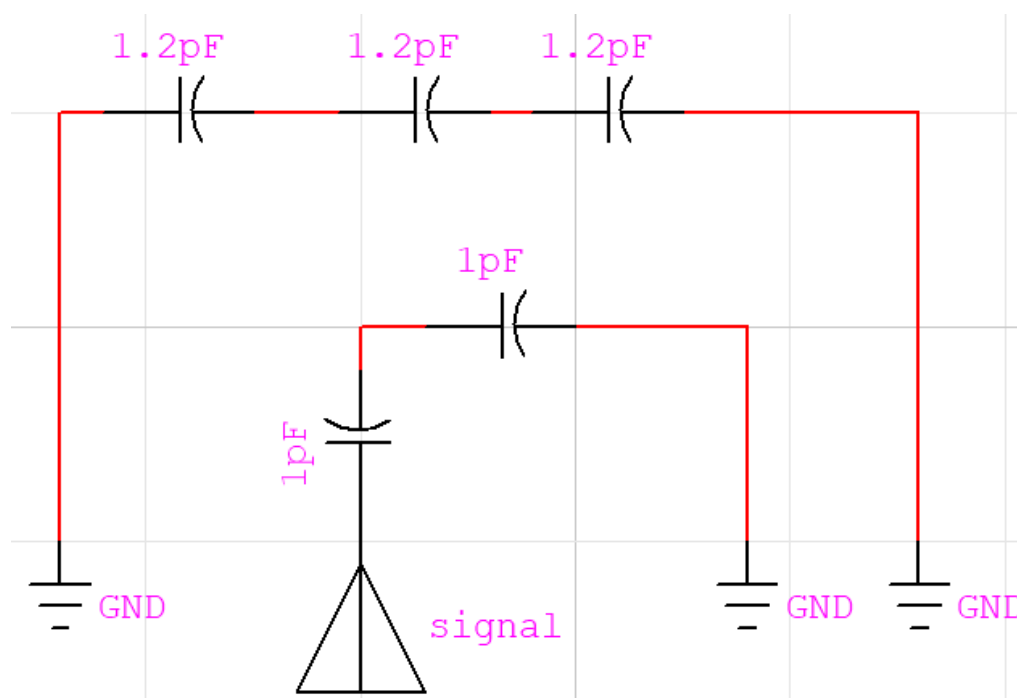
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3. Pattern Specifications



4. Matching Network

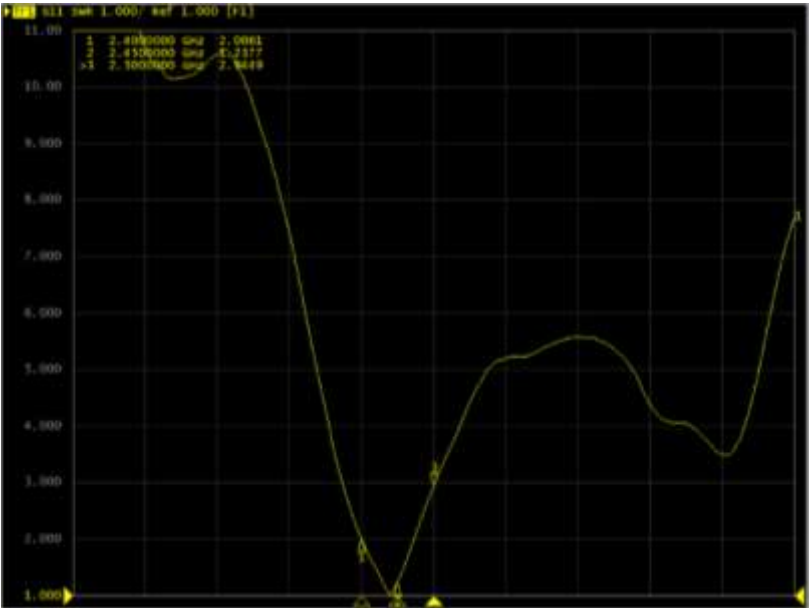
Capacitor value can be changed depending on different situation



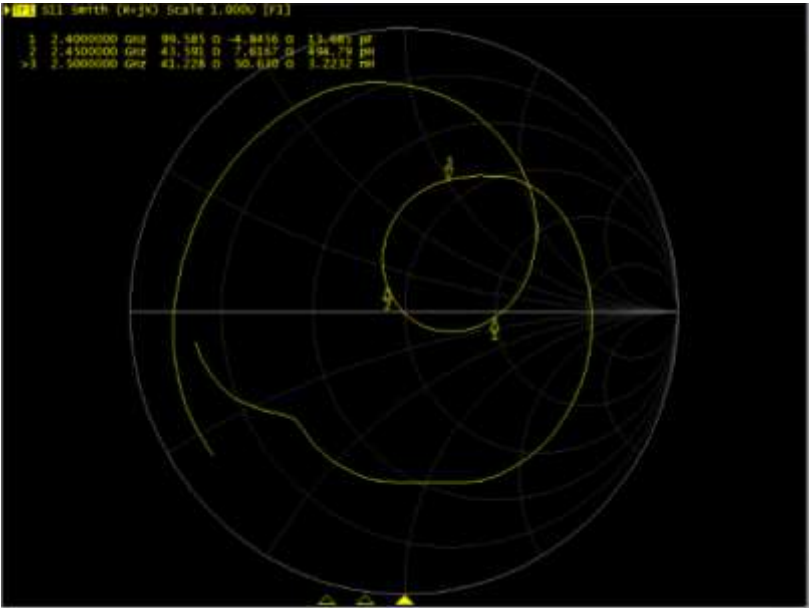
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5. Electrical Characterristics

5.1 VSWR

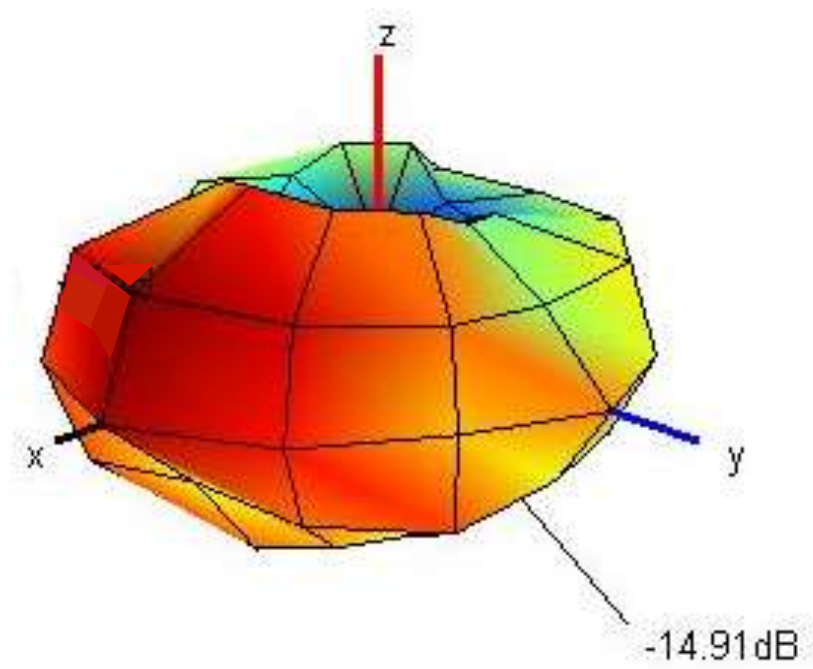


5.2 SMITH CHART

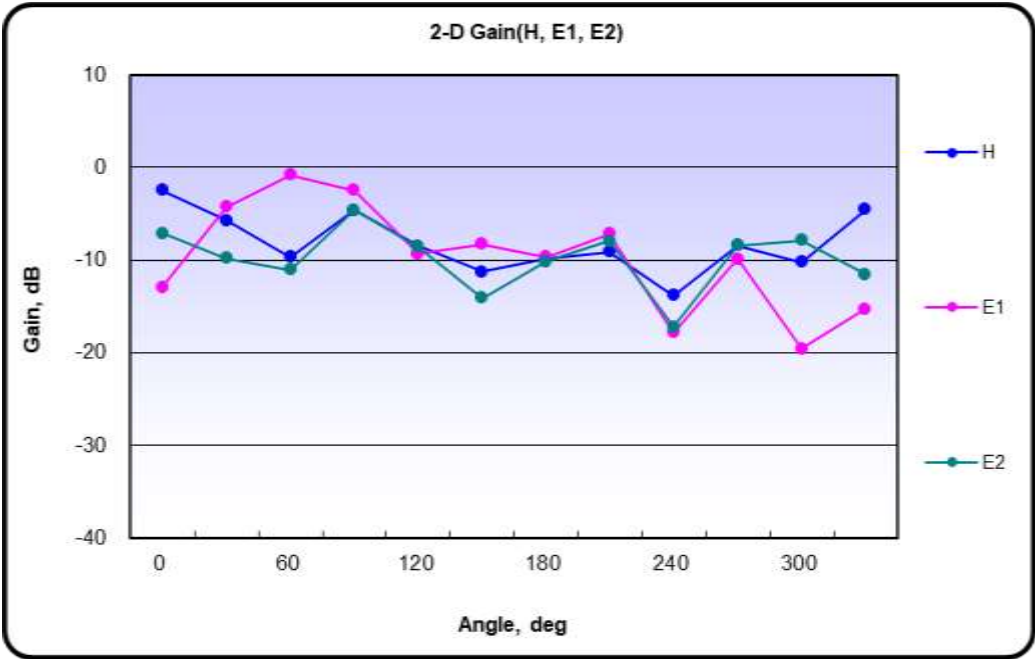


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5.3 3D-PLOTs



5.4 2D-GAIN



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6. Passive Measurement

	1	2	3	4	5	6	7	8	9	10
Frequency [MHz]	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445
Efficiency [dB]	-4.00	-3.94	-4.00	-4.00	-4.05	-3.93	-3.75	-3.71	-3.79	-3.83
Efficiency [%]	39.8	40.4	39.9	39.8	39.3	40.4	42.1	42.6	41.8	41.4
TRG _θ [dB]	-7.52	-7.48	-7.55	-7.60	-7.68	-7.63	-7.32	-7.26	-7.36	-7.36
Gain _{θ Peak} [dB]	-1.82	-1.94	-1.92	-2.07	-1.94	-1.69	-1.27	-1.06	-1.01	-0.84
Gain _{θ Min} [dB]	-22.16	-20.58	-21.40	-24.63	-25.59	-25.62	-21.44	-19.60	-20.28	-19.57
TRG _φ [dB]	-6.55	-6.47	-6.52	-6.49	-6.52	-6.35	-6.27	-6.24	-6.31	-6.37
Gain _{φ Peak} [dB]	-0.61	-0.46	-0.38	-0.29	-0.32	-0.12	-0.06	-0.14	-0.36	-0.48
Gain _{φ Min} [dB]	-24.61	-21.74	-23.88	-26.12	-25.11	-23.57	-23.46	-24.08	-22.91	-22.15
UHRG [dB]	-7.31	-7.23	-7.27	-7.25	-7.29	-7.13	-6.89	-6.82	-6.86	-6.87
UHRG/TRG [%]	46.6	46.9	47.0	47.3	47.5	47.9	48.6	48.9	49.4	49.6
H-Plane	-6.52	-6.57	-6.72	-6.85	-7.01	-7.10	-6.92	-6.90	-7.03	-7.08
E1-Plane, AVG [dB]	-6.99	-6.97	-7.05	-7.14	-7.16	-7.18	-6.79	-6.75	-6.84	-6.76
E2-Plane, AVG [dB]	-8.86	-8.89	-9.00	-8.98	-9.06	-9.08	-8.82	-8.74	-8.79	-8.88
Peak Gain [dB]	-0.40	-0.28	-0.23	-0.26	-0.26	-0.16	0.20	0.38	0.43	0.49
Directivity [dB]	3.60	3.65	3.67	3.74	3.79	3.77	3.95	4.09	4.22	4.32
Minimum Gain [dB]	-16.07	-14.77	-14.60	-14.95	-15.54	-15.87	-16.16	-15.66	-15.70	-14.91

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-4.03	-4.16	-4.51	-4.71	-4.81	-4.82	-4.81	-5.21	-5.77	-5.75
Efficiency [%]	39.5	38.4	35.4	33.8	33.0	33.0	33.1	30.1	26.5	26.6
TRG _θ [dB]	-7.57	-7.60	-7.95	-8.15	-8.18	-8.17	-8.11	-8.62	-9.21	-9.12
Gain _{θ Peak} [dB]	-0.89	-0.89	-1.10	-1.27	-1.43	-1.59	-1.78	-2.53	-3.33	-3.42
Gain _{θ Min} [dB]	-20.15	-22.01	-25.66	-31.80	-35.42	-28.61	-26.74	-24.90	-27.23	-25.16
TRG _φ [dB]	-6.57	-6.77	-7.13	-7.33	-7.49	-7.51	-7.54	-7.85	-8.40	-8.42
Gain _{φ Peak} [dB]	-0.70	-1.03	-1.38	-1.53	-1.52	-1.60	-1.67	-1.95	-2.69	-2.87
Gain _{φ Min} [dB]	-23.29	-25.01	-24.54	-25.85	-28.13	-28.91	-31.32	-48.13	-37.24	-28.30
UHRG [dB]	-7.06	-7.19	-7.53	-7.72	-7.86	-7.92	-7.95	-8.39	-9.01	-9.00
UHRG/TRG [%]	49.8	49.8	49.9	50.0	49.5	48.9	48.5	48.0	47.5	47.2
H-Plane	-7.28	-7.29	-7.59	-7.67	-7.59	-7.45	-7.13	-7.46	-7.98	-7.72
E1-Plane, AVG [dB]	-6.98	-7.06	-7.44	-7.64	-7.87	-8.02	-8.16	-8.82	-9.68	-9.69
E2-Plane, AVG [dB]	-8.96	-8.97	-9.26	-9.39	-9.26	-9.04	-9.03	-9.34	-9.90	-9.69
Peak Gain [dB]	0.42	0.25	-0.03	-0.27	-0.53	-0.59	-0.74	-1.36	-2.01	-2.13
Directivity [dB]	4.45	4.41	4.49	4.44	4.28	4.22	4.07	3.84	3.76	3.61
Minimum Gain [dB]	-15.27	-15.65	-15.85	-16.51	-15.49	-15.70	-15.54	-17.02	-19.54	-20.48

Average Efficiency	-4.34dBi	36.85%
Peak Gain	0.49dBi	