

25.12.15

RA-N2512-11

APPROVAL SHEET

MODEL : ERA 1X
Bluetooth
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	GRSN251275BT99
ANTENNA TYPE	PCB pattern Antenna
APPLICATIONS	Bluetooth

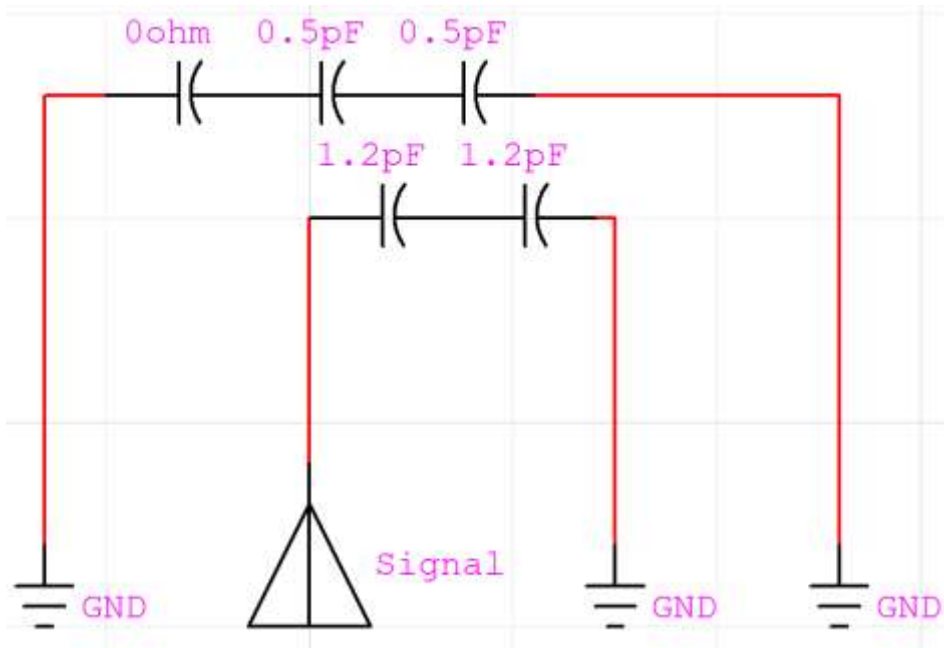
2.2 Electrical Specifications

Frequency Range1 (TX)		2400MHz~2485MHz	
Frequency Range1 (RX)		2400MHz~2485MHz.	
IMPEDANCE		50 Ω	
V.S.W.R	TX	2400MHz	2485MHz
		5 ↓	5 ↓
	RX	2400MHz	2485MHz
		5 ↓	5 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

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4. Matching Network

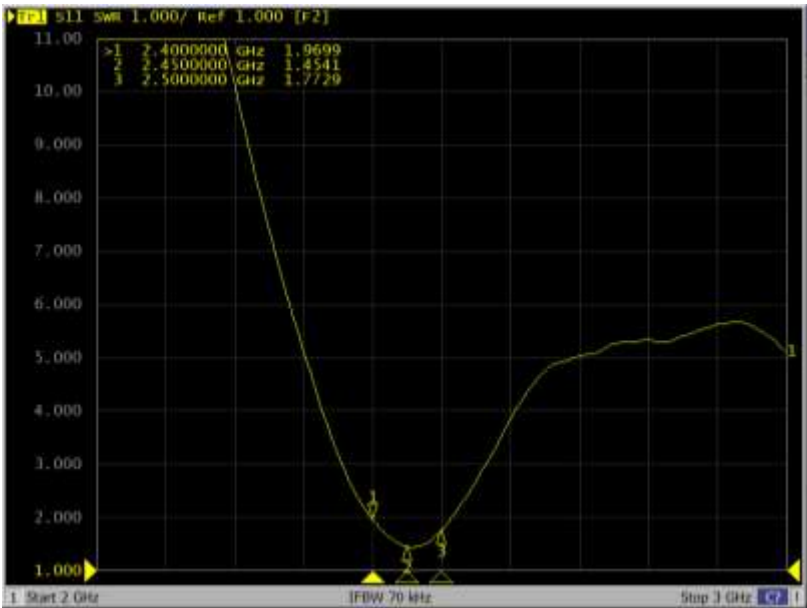
Capacitor value can be changed depending on different situation



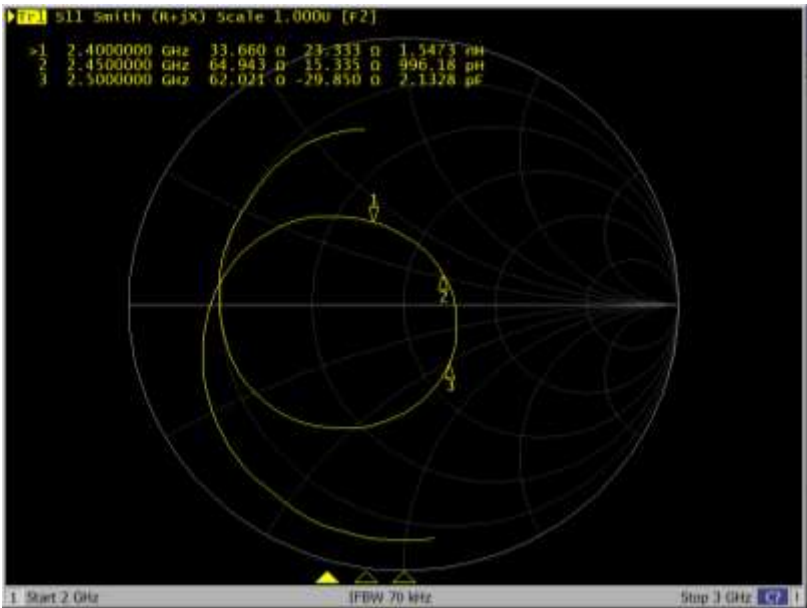
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5. Electrical Characterristics

5.1 VSWR

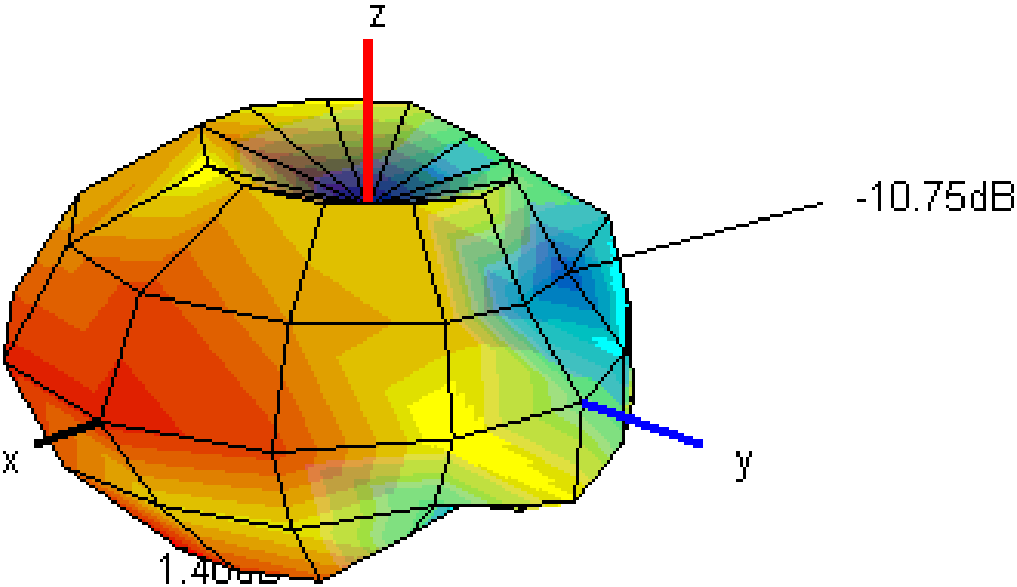


5.2 SMITH CHART

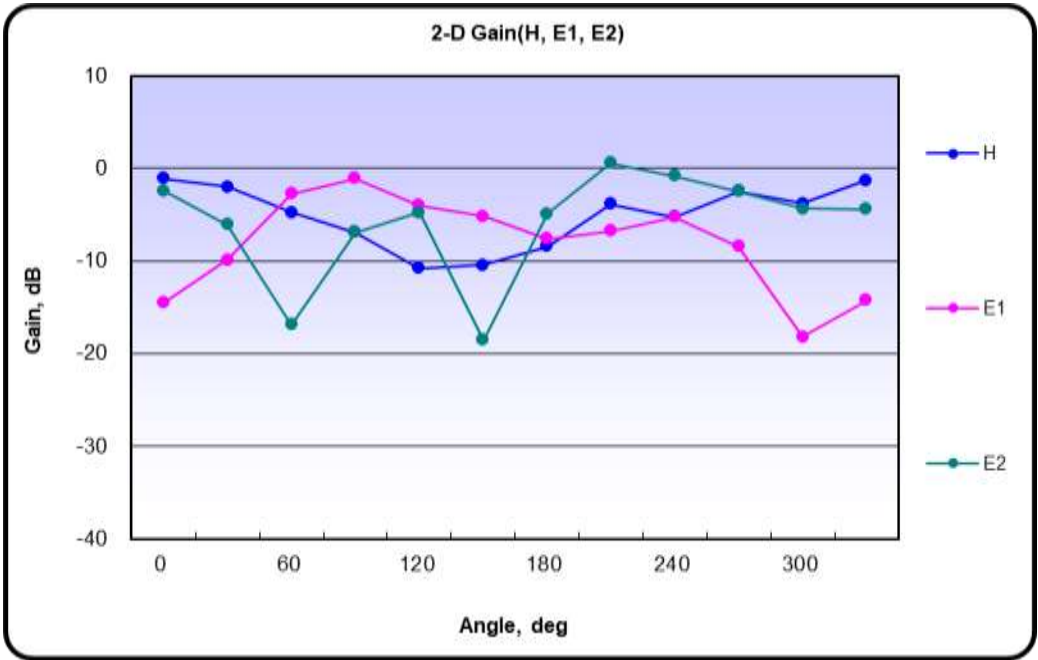


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5.3 3D-PLOTs



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]	-4.03	-3.95	-3.92	-3.79	-3.90	-3.96	-3.73	-3.55	-3.60	-3.51
Efficiency [%]	39.5	40.2	40.6	41.8	40.7	40.2	42.4	44.2	43.6	44.6
TRG _θ [dB]	-5.45	-5.34	-5.25	-5.11	-5.31	-5.41	-5.13	-4.94	-5.07	-4.98
Gain _{θ Peak} [dB]	-0.74	-0.30	-0.31	-0.25	-0.11	-0.43	0.04	0.34	0.43	0.59
Gain _{θ Min} [dB]	-20.45	-18.58	-32.77	-25.87	-17.29	-23.62	-19.17	-19.88	-18.35	-18.52
TRG _φ [dB]	-9.58	-9.58	-9.69	-9.60	-9.49	-9.42	-9.33	-9.16	-9.02	-8.93
Gain _{φ Peak} [dB]	-4.15	-4.36	-3.90	-3.88	-3.68	-3.35	-3.28	-3.87	-3.16	-3.56
Gain _{φ Min} [dB]	-29.05	-25.78	-26.37	-24.49	-30.64	-25.06	-34.21	-30.89	-27.42	-36.52
UHRG [dB]	-7.83	-7.71	-7.73	-7.64	-7.80	-7.81	-7.58	-7.45	-7.45	-7.41
UHRG/TRG [%]	41.7	42.1	41.5	41.3	40.7	41.2	41.2	40.7	41.3	40.8
H-Plane	-4.23	-4.13	-4.12	-3.87	-4.18	-4.30	-4.09	-3.96	-4.09	-4.07
E1-Plane, AVG [dB]	-6.15	-5.97	-5.98	-5.91	-5.97	-6.11	-5.87	-5.81	-6.00	-5.97
E2-Plane, AVG [dB]	-4.62	-4.42	-4.37	-4.26	-4.39	-4.40	-4.17	-3.91	-3.97	-3.81
Peak Gain [dB]	0.54	0.64	0.66	0.70	0.82	0.62	1.03	1.18	1.25	1.40
Directivity [dB]	4.57	4.59	4.58	4.49	4.73	4.57	4.76	4.73	4.86	4.91
Minimum Gain [dB]	-11.76	-12.43	-12.01	-11.08	-12.00	-13.63	-12.48	-11.69	-13.15	-10.75

	11	12	13	14	15	16	17	18	19	20
Frequency [MHz]	2450	2455	2460	2465	2470	2475	2480	2485	2490	2497
Efficiency [dB]	-3.61	-3.65	-3.65	-3.60	-3.39	-3.50	-3.52	-3.99	-4.07	-4.07
Efficiency [%]	43.5	43.2	43.2	43.6	45.9	44.6	44.4	39.9	39.1	39.2
TRG _θ [dB]	-5.05	-5.10	-5.10	-5.07	-4.85	-5.02	-5.02	-5.54	-5.61	-5.58
Gain _{θ Peak} [dB]	0.22	0.09	0.03	0.00	0.35	-0.06	0.01	-0.62	-0.05	-0.38
Gain _{θ Min} [dB]	-20.00	-21.08	-21.59	-18.08	-23.90	-22.51	-25.05	-17.93	-23.79	-22.43
TRG _φ [dB]	-9.13	-9.12	-9.10	-9.02	-8.81	-8.80	-8.87	-9.20	-9.34	-9.39
Gain _{φ Peak} [dB]	-3.09	-3.92	-3.64	-3.37	-3.90	-3.37	-3.77	-3.56	-4.11	-3.95
Gain _{φ Min} [dB]	-31.23	-28.55	-36.45	-37.42	-33.73	-25.96	-32.53	-26.97	-42.82	-40.08
UHRG [dB]	-7.54	-7.53	-7.65	-7.54	-7.33	-7.43	-7.44	-7.91	-8.11	-8.03
UHRG/TRG [%]	40.5	40.9	39.7	40.4	40.3	40.4	40.5	40.5	39.5	40.2
H-Plane	-4.21	-4.19	-4.35	-4.26	-4.21	-4.27	-4.11	-4.70	-5.04	-4.99
E1-Plane, AVG [dB]	-5.76	-5.87	-6.00	-5.68	-5.58	-5.65	-5.82	-6.33	-6.28	-6.11
E2-Plane, AVG [dB]	-3.91	-3.97	-4.15	-3.98	-3.86	-4.12	-3.93	-4.58	-4.32	-4.33
Peak Gain [dB]	1.26	1.27	1.02	1.21	1.55	1.34	1.17	0.56	0.87	0.76
Directivity [dB]	4.88	4.92	4.66	4.81	4.94	4.84	4.69	4.55	4.94	4.83
Minimum Gain [dB]	-12.04	-12.06	-10.48	-10.56	-11.23	-12.85	-10.61	-10.80	-10.41	-11.81

Average Efficiency	-3.74dBi	42.22%
Peak Gain	1.55dBi	