



Specification

SPECIFICATION

- Part No. : **TG-09**
- Product Name : Penta-band GSM Hinged R/A SMA Male Dipole
- Features : 180 rotatable hinge design for optimal reception
Top quality casing with brass hinge and connector
Extended operation temperature range
ROHS Compliant

Photo :



REVISION STATUS

Version	Date	Page	Revision Description	Prepared	Approved
01	Jan 9 th 2007	All	New product	TW Product Centre	Zita Lin



Specification

1.0 Introduction

TG-09 Penta-band GSM Hinged R/A SMA antenna is a quality antenna with high level electrical performance. The unique hinge design let the user able to rotate the antenna 180° for an optimal GSM signal reception. With the environmental harden casing, this antenna is the ideal GSM antenna for vehicle tracking device.

2.0 Key Antenna Performance Indicators

Communication System	Penta-band Cellular				
	AMPS	GSM	DCS	PCS	UMTS
Frequency	824 ~ 896	880~960	1710~1880	1850~1990	1710~2170
Average Efficiency	45%	64%	72%	57%	62%
Average Gain	3.3	4.1	4.8	5.5	5.0
Impedance	50 Ohm				
Radiation Pattern	Omni-directional				
Polarization	Linear (Vertical)				

3.0 Environmental Conditions

2.1.1	Operation Temperature	-20°C to + 60°C
2.1.2	Storage Temperature	-30°C to + 75°C
2.1.3	Relative Humidity	40% to 95%

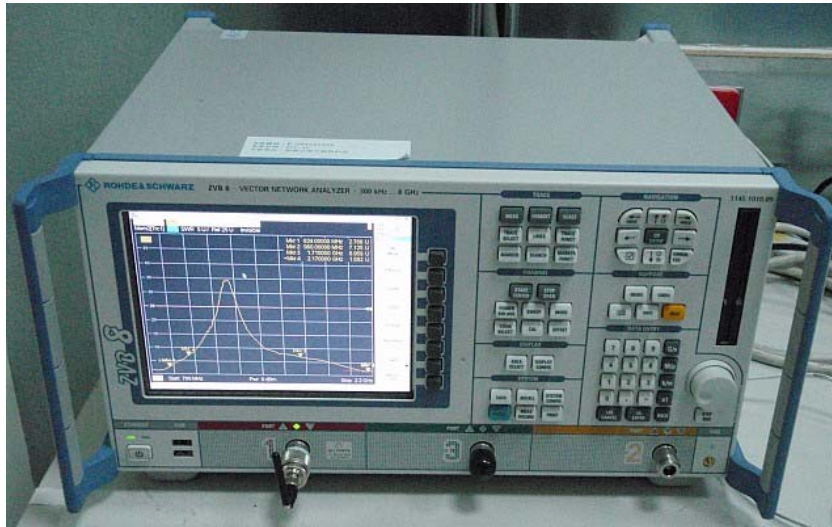


Specification

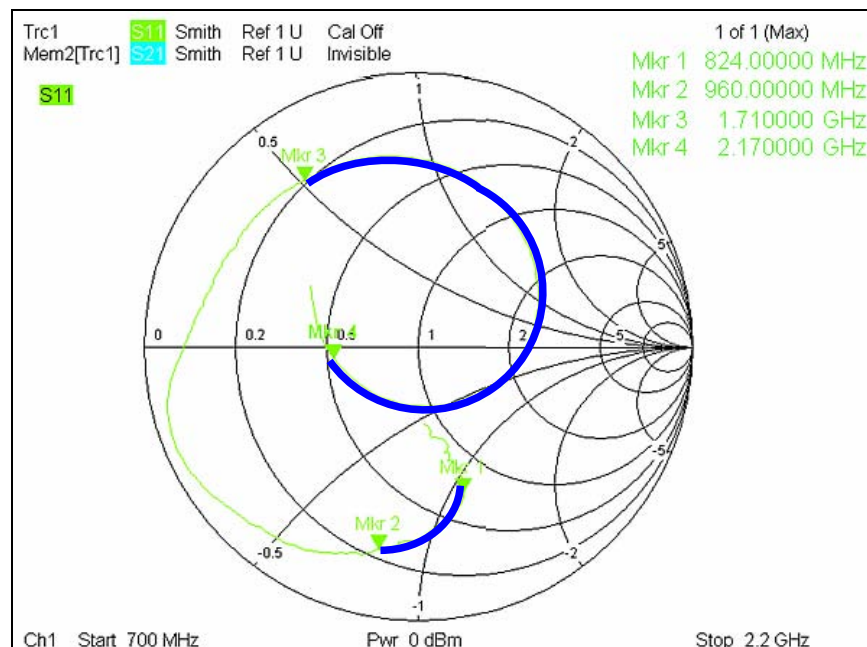
4.0 Antenna Electrical Characteristics

4.1 Smith Chart

Rohde & Schwarz RVB8 Vector Network Analyzer is used for the matching test.



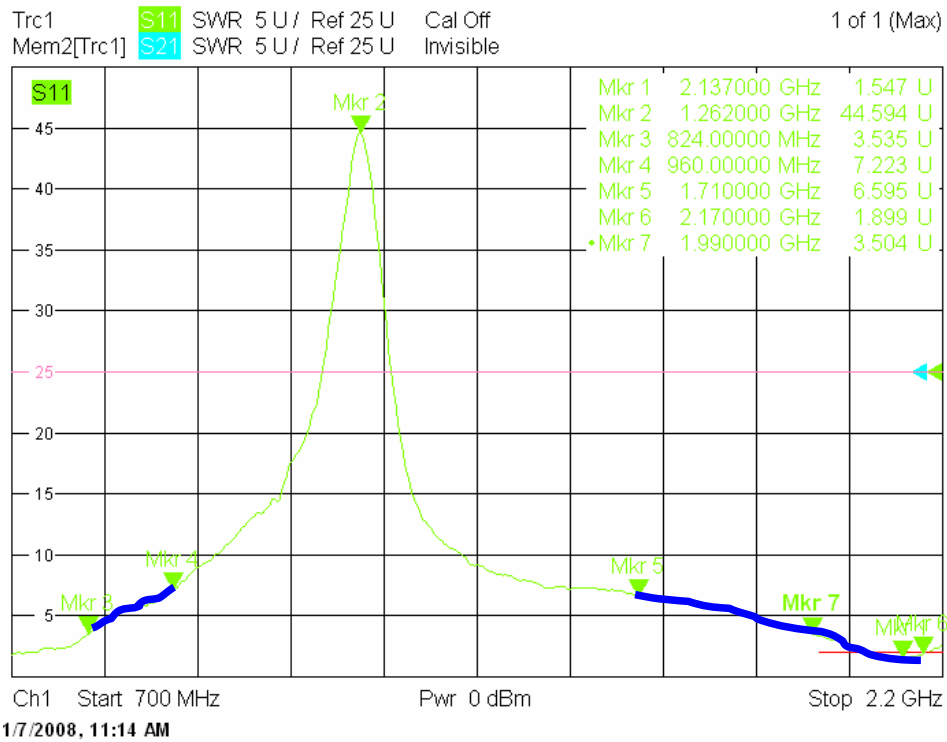
Smith Chart





Specification

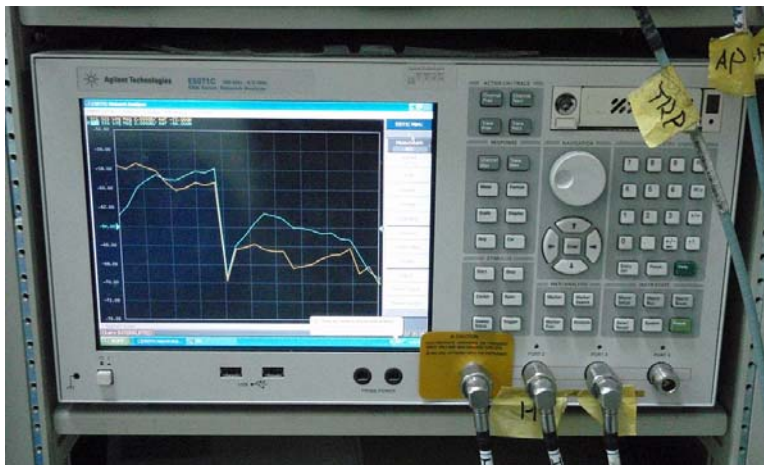
SWR



— operation frequency

4.2 3D CHAMBER TESTING

Agilent E5071C Network Analyzer is used for the test





Specification



Tabular Result

Frequency (MHz)	824	900	1805	1910	2170
Ant. Port Input Pwr.	0	0	0	0	0
Tot. Rad. Pwr. (dBm)	-5.5662	-1.8214	-0.9378	-2.6566	-2.7183
Peak EIRP (dBm)	1.2116	4.4216	4.5779	5.5136	4.1230
Directivity (dBi)	6.7778	6.2430	5.5158	8.1702	6.8414
Efficiency (dB)	-5.5662	-1.8214	-0.9378	-2.6566	-2.7183
Efficiency (%)	27.757	65.744	80.577	54.242	53.477
Gain (dBi)	1.2116	4.4216	4.5779	5.5136	4.1230
NHPRP $\pm\pi/4$ (dBm)	-8.3118	-4.2364	-2.2268	-5.1818	-4.7560
NHPRP $\pm\pi/6$ (dBm)	-9.8127	-5.9766	-4.1473	-8.0768	-5.4642
NHPRP $\pm\pi/8$ (dBm)	-11.039	-7.7559	-5.5871	-10.008	-5.9975
Upper Hem. PRP (dBm)	-13.046	-8.3699	-6.6276	-11.946	-8.8677
Lower Hem. PRP (dBm)	-6.4209	-2.9082	-2.3034	-3.2007	-3.9255
NHPRP4 / TRP Ratio	-2.7455	-2.4150	-1.2889	-2.5252	-2.0377
NHPRP4 / TRP Ratio	53.142	57.344	74.319	55.908	62.549
NHPRP6 / TRP Ratio	-4.2465	-4.1552	-3.2094	-5.4201	-2.7459
NHPRP6 / TRP Ratio	37.614	38.412	47.758	28.706	53.138
NHPRP8 / TRP Ratio	-5.4733	-5.9345	-4.6492	-7.3522	-3.2791
NHPRP8 / TRP Ratio	28.357	25.500	34.282	18.398	46.998
UHPRP / TRP Ratio	-7.4798	-6.5484	-5.6897	-9.2900	-6.1494
UHPRP / TRP Ratio (%)	17.865	22.138	26.979	11.775	24.269
LHPRP / TRP Ratio (dB)	-0.8547	-1.0867	-1.3655	-0.5441	-1.2072
LHPRP / TRP Ratio (%)	82.134	77.861	73.020	88.224	75.730
Front/Back Ratio (dB)	10.070	6.5828	13.808	13.114	15.798
Phi BW (°)	56	51	36	37	55
+ Phi BW(°)	28	26	18	19	28
- Phi BW (°)	28	25	18	18	27
Theta BW (°)	27	27	19	19	25
+ Th. BW (°)	17	18	10	10	10

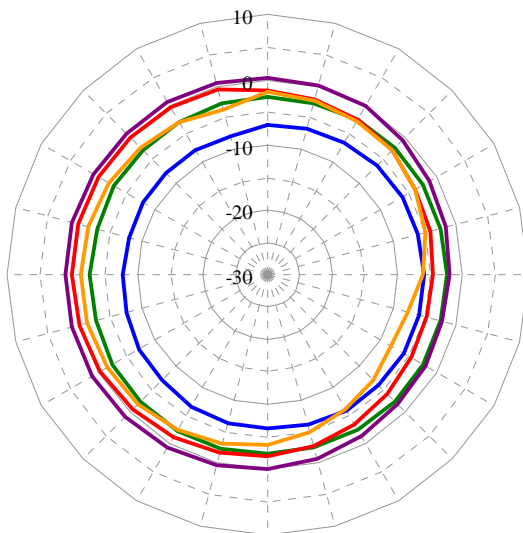


Specification

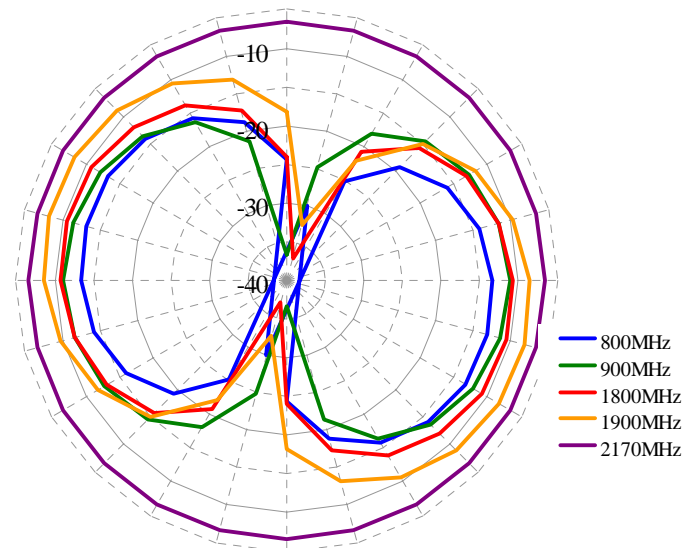
- Th. BW (°)	10	9	9	9	15
Boresight Phi (°)	135	135	135	135	120
Boresight Th. (°)	150	150	165	165	165
Maximum Power (dBm)	1.2116	4.4216	4.5779	5.5136	4.1230
Minimum Power (dBm)	-14.118	-12.307	-16.368	-19.538	-15.254
Average Power (dBm)	-5.4046	-1.8463	-1.2990	-1.9472	-2.5446
Max/Min Ratio (dB)	15.330	16.729	20.946	25.051	19.377
Max/Avg Ratio (dB)	6.6162	6.268	5.8769	7.4608	6.6677
Min/Avg Ratio (dB)	-8.7139	-10.461	-15.069	-17.590	-12.71
Average Gain (dB)	-5.5662	-1.8214	-0.9378	-2.6566	-2.7183
E-Plane BW (°)	29	28	42	42	63
+ E-Plane BW (°)	18	19	32	32	47
- E-Plane BW (°)	11	9	10	10	16
H-Plane BW (°)	60	55	38	40	57
+ H-Plane BW (°)	19	17	26	13	20
- H-Plane BW (°)	41	38	12	27	37

4.3 Radiation Pattern

x-y plane



x-z plane

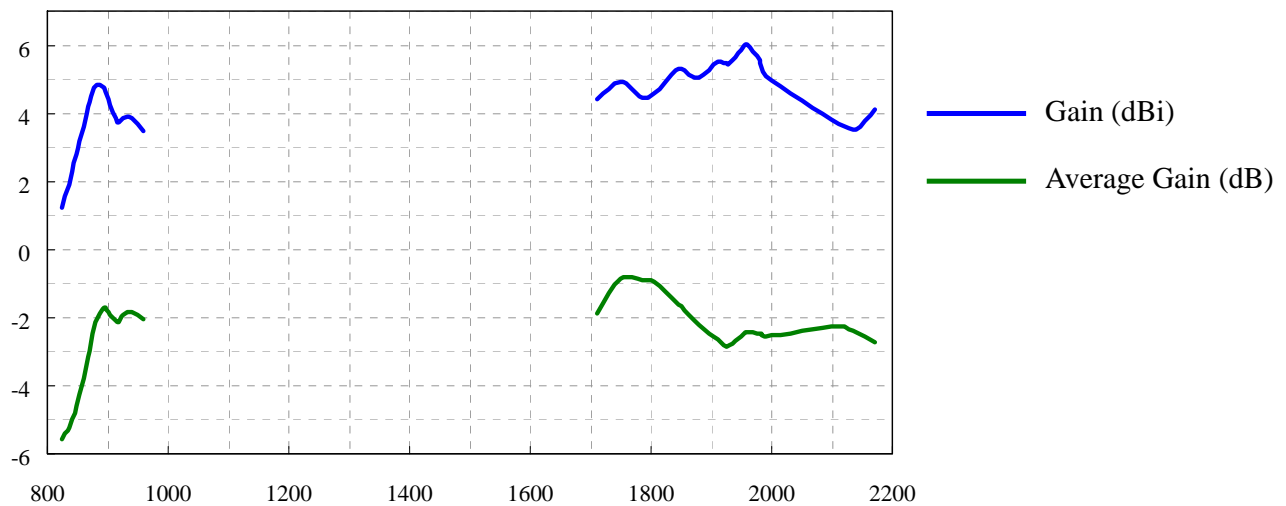




Specification

4.4 Gain & Efficiency Plot vs Frequency

Gain



Efficiency

