

Confidential Information

# **Amphenol Mobile**

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T&M Antennas/Shanghai Amphenol Airwave Communication Limited

**HTC  
JESSIE 7-850**

**Tri Band  
(GSM850/DCS/PCS)**

**19 July 2004**

[www.amphenol-tmantennas.com](http://www.amphenol-tmantennas.com)

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## 1.0 Overview

This report summarizes the electrical results of proposed antenna to support the HTC JESSIE 7-850 Project program.

### 1.1 Specifications

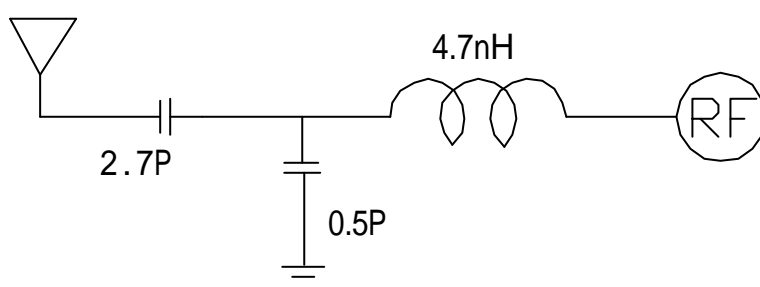
### 1.2 Antenna Configuration

The antenna operates in GSM850, DCS1800, PCS1900 bands, the phone fixture used is shown in Figure 1.



Figure 1 : Test Fixture

### 1.3 Antenna Matching Network



## 2.0 Electrical Testing

### 2.1 Voltage Standing Wave Ratio (VSWR) Measurements

#### 2.1.1 Test Setup

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VSWR measurements ( $S_{11}$ ) were performed using a Hewlett Packard 8753ES Network Analyzer and previously described test fixture. One setup was used: free space measurement. The complete VSWR plots are provided in Appendix A.

## 2.1.2 Test Results

Table-1 VSWR Performance Summary					
Freq(MHz)	824	894	1710	1880	1990
VSWR-GSM	2.11	2.79	2.23	1.28	1.61

## 2.2 Gain Measurement

### 2.2.1 Test Setup

The gain of the antenna was measured in the anechoic chamber. The chamber provides less than -30 dB reflectivity from 800 MHz through 6 GHz and an 18" diameter spherical quiet zone. The measurement results are calibrated using both dipole and leaky wave horn standards. A decoupling sleeve is used to reduce feed line radiation.

### 2.2.2 Test Results

Tables 2 provide a summary of the gain measurements in free space using the JESSIE 7-850. The complete gain plots are provided in Appendix B.

Table 2 - Free Space Gain Performance Summary (dBi)						
Frequency(MHz)	H		E1		E2	
	Peak	Average	Peak	Average	Peak	Average
824	-0.65	-2.02	-1.11	-4.53	-1.07	-4.48
849	-1.51	-2.83	-1.20	-5.19	-2.20	-5.42
869	-0.96	-2.34	-1.47	-5.36	-1.66	-4.98
894	-1.01	-3.00	-0.62	-5.14	-1.36	-4.86
1710	-2.13	-4.91	-1.36	-4.93	-0.93	-5.54
1785	-1.65	-4.07	-2.22	-4.52	-1.06	-5.30
1805	-2.24	-4.36	-3.23	-5.10	-1.64	-6.13
1850	-1.90	-4.62	-4.44	-5.91	-2.58	-7.33
1880	-1.98	-5.06	-3.89	-6.47	-2.82	-7.23
1910	-2.22	-4.77	-3.01	-5.31	-1.56	-6.07
1930	-3.09	-4.97	-2.73	-5.39	-1.74	-6.14
1990	-1.00	-4.87	-0.91	-3.81	-1.11	-4.55



### **3.0 Summary and Conclusion**

This report summarizes the electrical performance of Tri band antenna designed for HTC JESSIE 7-850 project. This report describes the antenna design using PIFA approach.

The engineering department of Amphenol will continue working on the program to improve the mechanical and electrical characteristics of the antenna. Please let us know if you have any question.



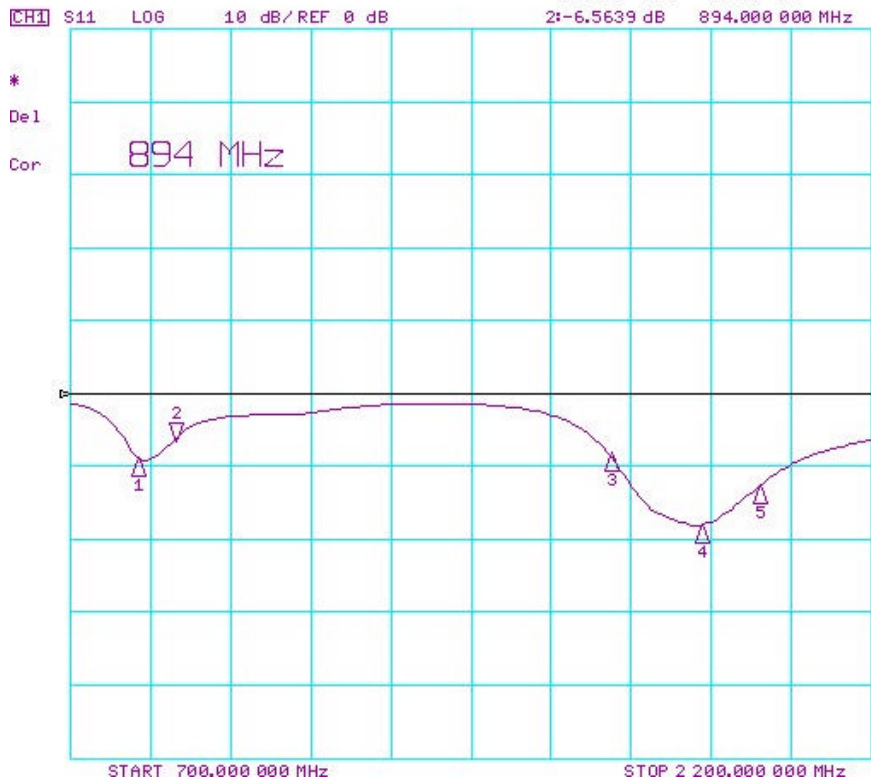
## **Appendix A**

### **Return Loss/VSWR**



## Return Loss

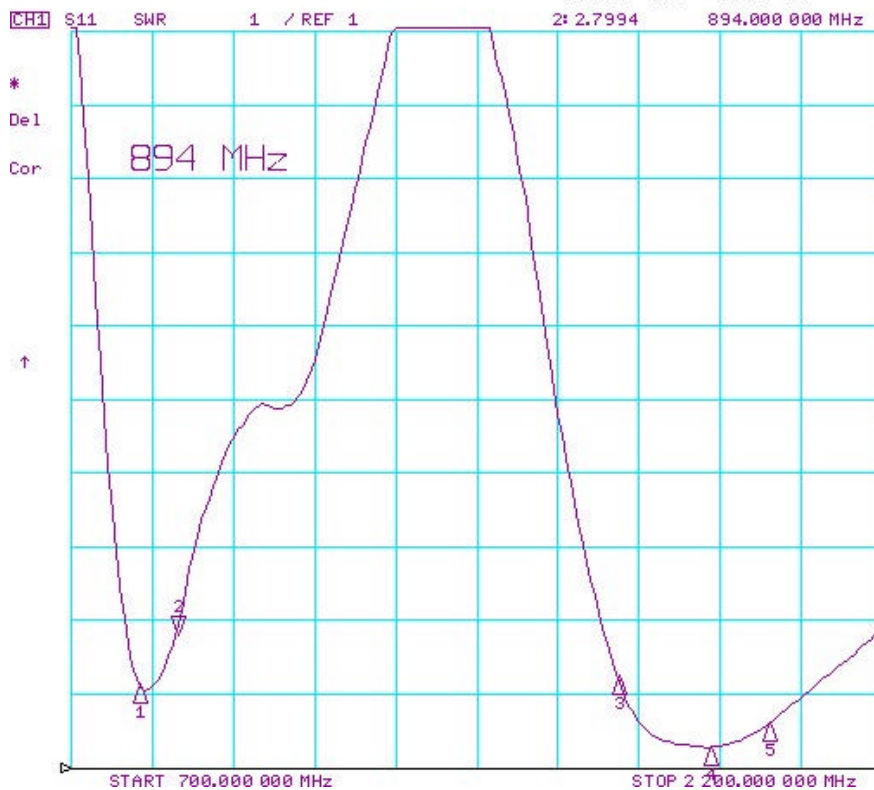
19 Jul 2004 10:07:52



CH1 Markers  
1: -9.0234 dB  
824.000 MHz  
  
3: -8.3190 dB  
1.71000 GHz  
  
4: -18.057 dB  
1.88000 GHz  
  
5: -12.672 dB  
1.99000 GHz

## VSWR

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CH1 Markers  
1: 2.1182  
824.000 MHz  
  
3: 2.2320  
1.71000 GHz  
  
4: 1.2841  
1.88000 GHz  
  
5: 1.6105  
1.99000 GHz

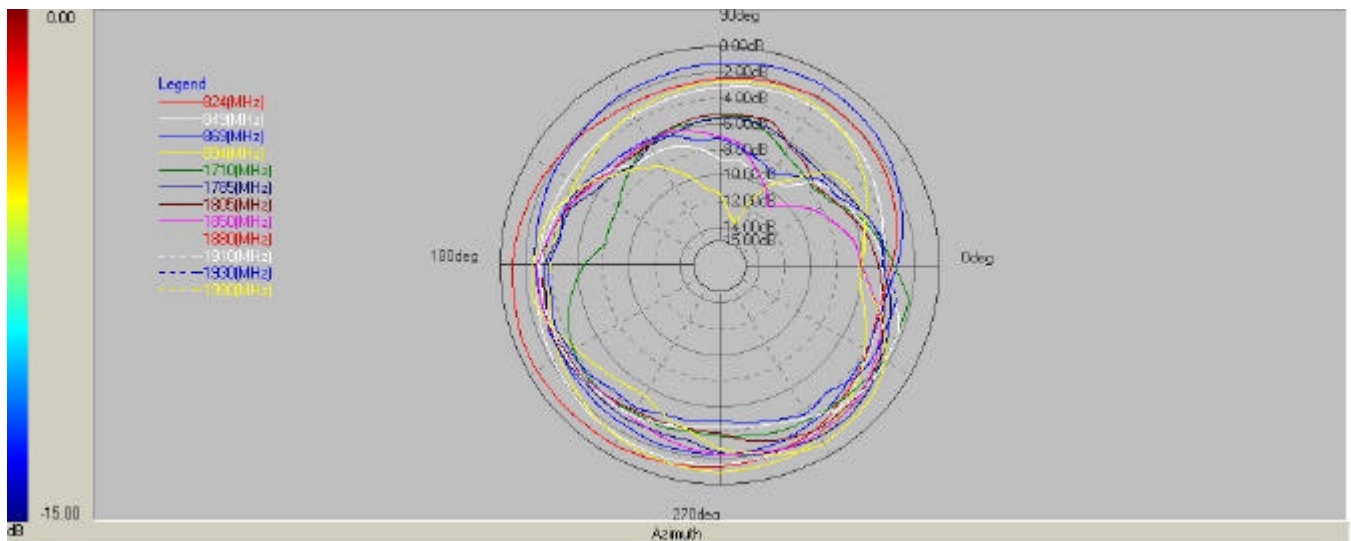


# **Appendix B**

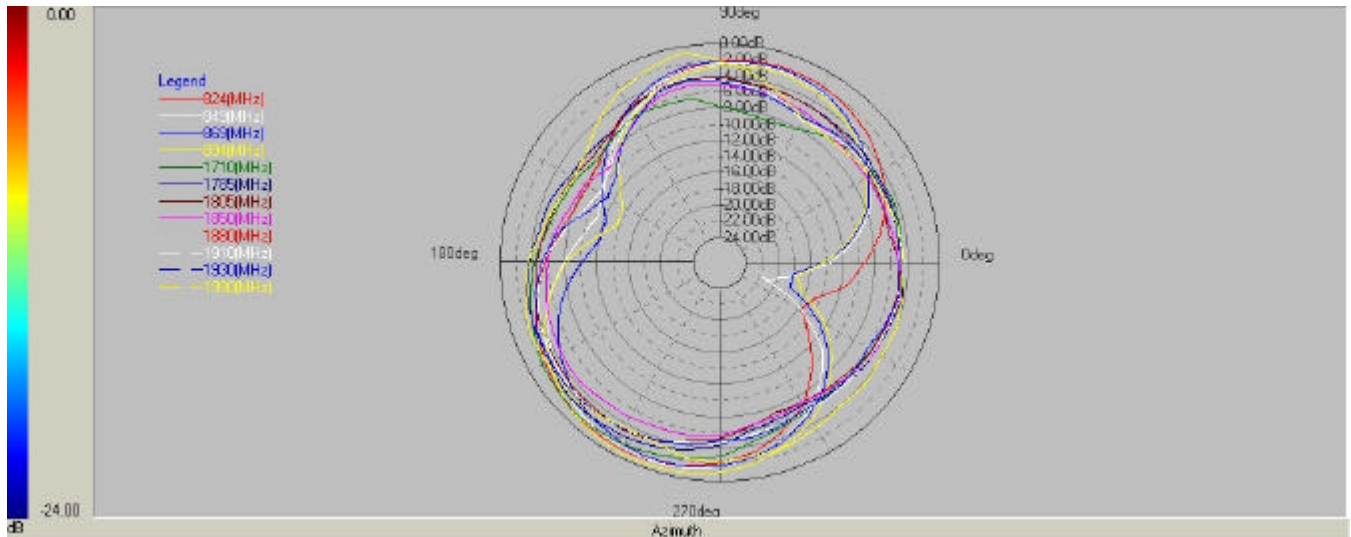
## **Radiation Pattern**



## H- Plane



## E1- Plane



## E2- Plane

