Project Name: **C250**
Customer:
ODM: **BandRich**

Rev. D

For GSM850/900/DCS/PCS/WCDMA

Antenna Tested by Ethertronics Taiwan Lab.

Test Date: May 22nd 2008
Report Date: May 22nd 2008

Contact Information:

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Revision History

Revision	Date	Description of changes
Rev. A	2008/03/20	Initial Release
Rev. B	2008/04/01	Using the original method of connecting the USB connecter and DUT PCB
Rev. C	2008/04/10	Fine tune the antenna under the test condition defined by BandRich
Rev. D	2008/05/22	Fine tune the antenna under the test condition defined by BandRich C240_main_M23 C240_Div_Rev C & C240_Div_Rev D

CONTENTS

1. Technical Summary

This report summarizes the RF performance of the proposed penta-band antenna to support BandRich C250 program.

2. General Description

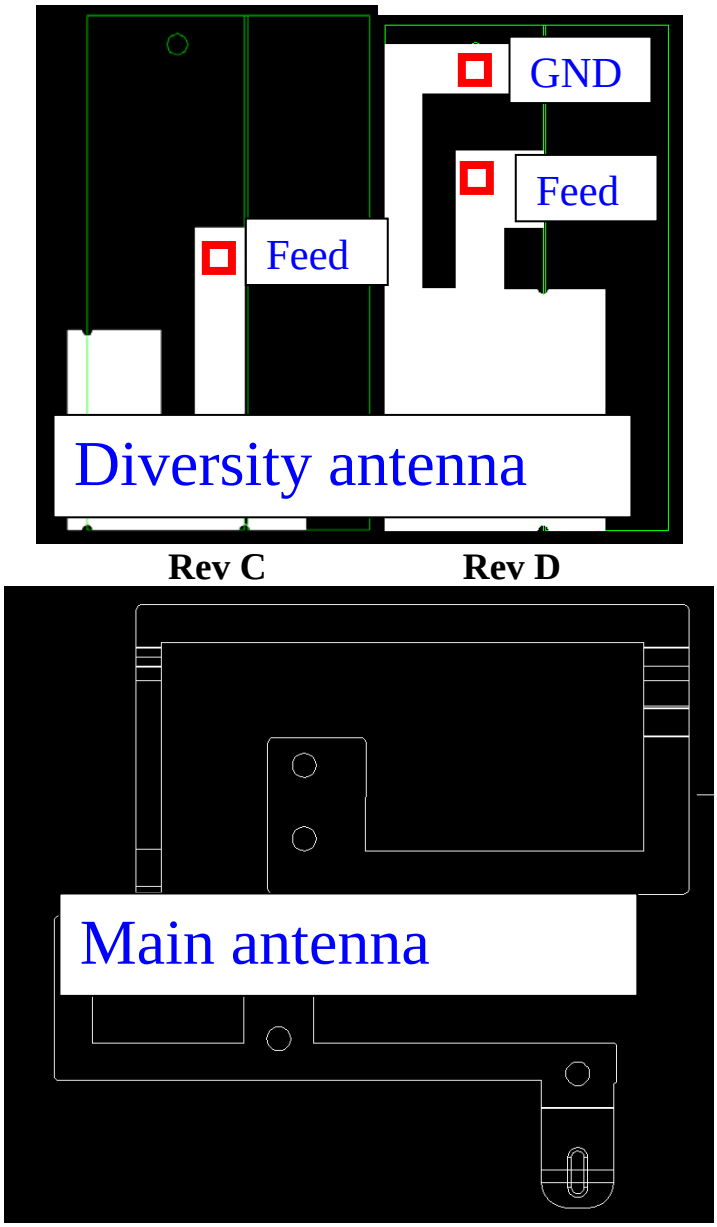

Figure 1 Location of antenna

2.1. Test fixtures condition

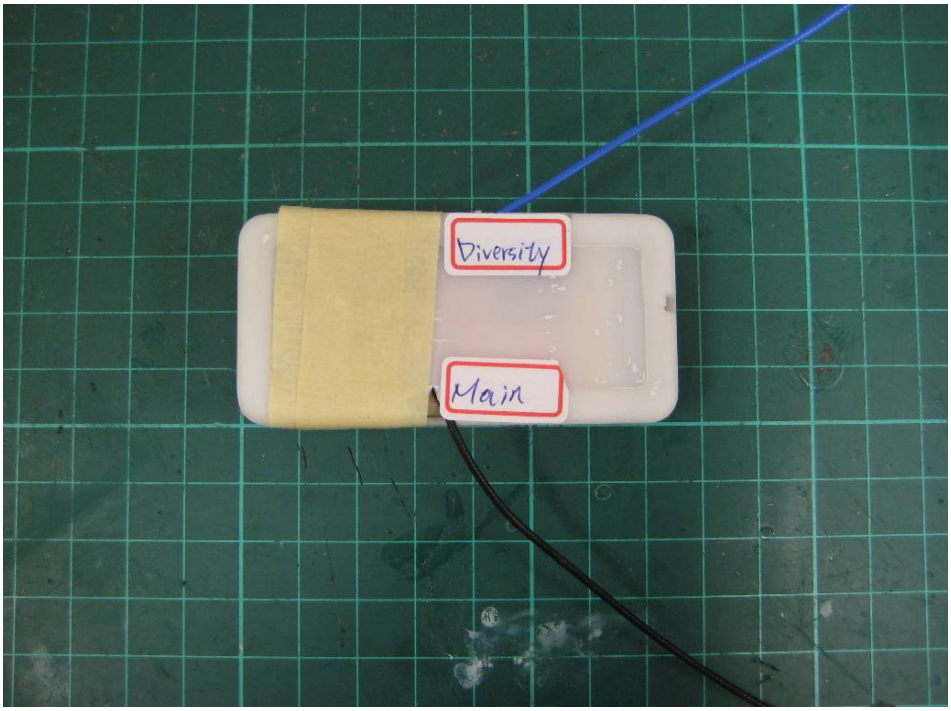

Figure 2-1 Test fixture condition used during testing

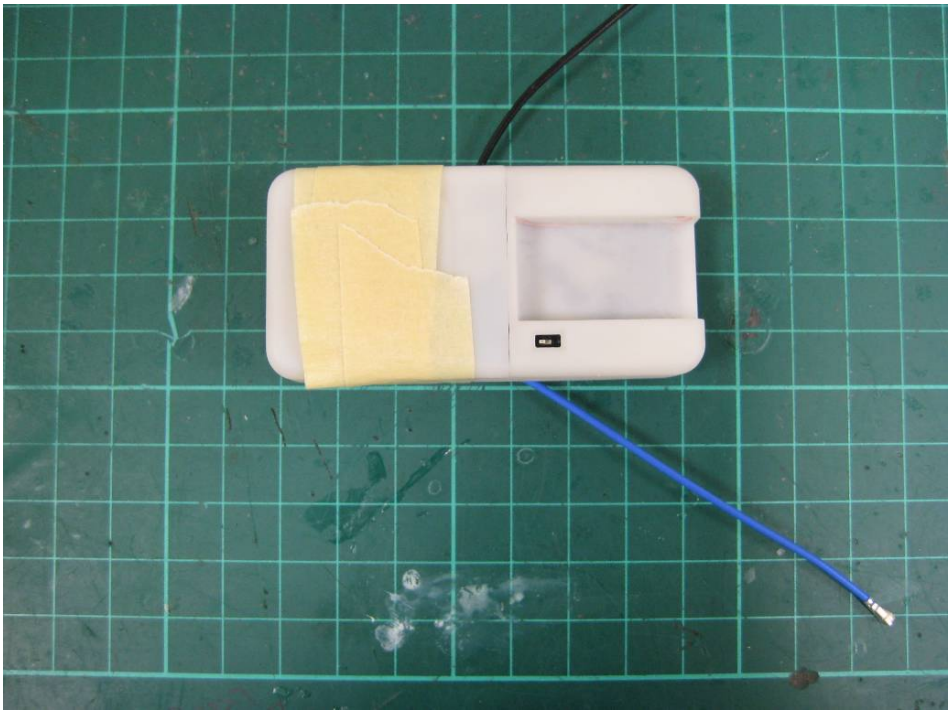

Figure 3-2 Test fixture condition used during testing

2.2. Matching Network

No matching network used.

3. Test Setup

3.1. VNA Test Setup

VSWR measurements (S_{11}) were performed using an Agilent E5071B Network Analyzer (**Figure 4**) and the test fixture shown in **Figure 3**. The testing was performed in free space.

Figure 4 Agilent E5071B Network Analyzer

3.2. Anechoic Chamber Test Setup

The antenna efficiency and gain were measured with Ethertronics 3D chamber (www.ethertronics.com). The configuration and the accuracy of the chamber are shown in **Figure 5** and **Figure 6**.

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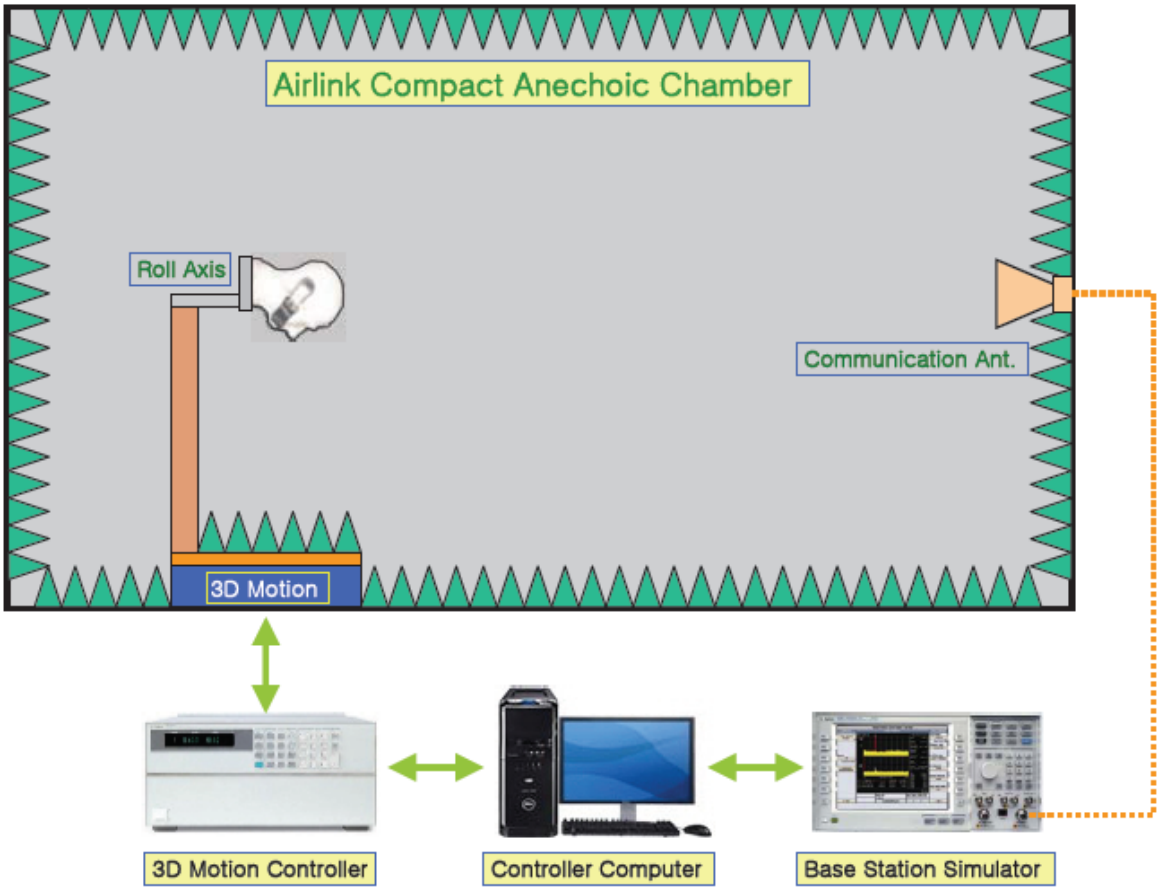

Figure 5 Ethertronics compact 3D chamber setup

Frequency List	Ripple Value	Azimuth Condition
800 MHz	+/- 0.2 dB	Rotate 360` , 2`Step
900 MHz	+/- 0.25 dB	Rotate 360` , 2`Step
1500 MHz	+/- 0. 4dB	Rotate 360` , 2`Step
1800 MHz	+/- 0.9 dB	Rotate 360` , 2`Step
1900 Mhz	+/- 1 dB	Rotate 360` , 2`Step
2100 MHz	+/- 1.2 dB	Rotate 360` , 2`Step
2400 MHz	+/- 1.7 dB	Rotate 360` , 2`Step

Figure 6 Azimuth ripple characteristics

4. Measurement results

All these measurements are based on the above test fixture (Figure 3) and equipments setup (Figure 4 and **錯誤! 找不到參照來源。**). The numerical data are presented from Table 1.

*Antenna gain includes the connector and cable loss.

project	C250			
	Main antenna		Diversity Rev.C	Diversity Rev.D
Frequency (MHz)	**Eff. in %**	**Eff. in dBi**	**Eff. in %**	**Eff. in %**
824	26	-5.84		
851.2	30	-5.22		
878.4	35	-4.59		
905.6	30	-5.30		
932.8	23	-6.41		
960	15	-8.37		
1710	59	-2.31		
1744	55	-2.61		
1778	63	-2.03		
1812	71	-1.46		
1846	75	-1.25		
1880	93	-0.31		
1930	96	-0.17	55	59
1990	83	-0.83	54	48
2020	69	-1.64		
2070	60	-2.25		
2110	52	-2.82	57	20
2170	44	-3.53	43	25

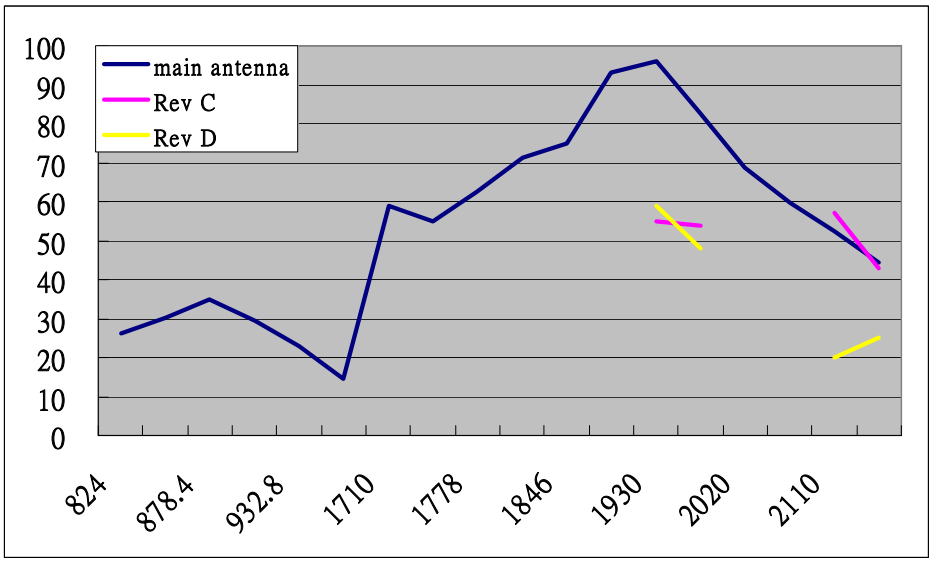

Table 1 3D gain

5. Conclusion

The active performance of main antenna is confirmed by Bandrich for hard tooling in SGS.

The passive data and pattern of diversity antenna are shown in Figure1 and Table1 including Rev C and Rev D. The pattern for hard tooling will be decides by Bandrich on May 23.

Should you have any questions, please do not hesitate to contact us.