GlobeSurfer Antenna Measurement

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1	Xiaohai Shen	29-04-05	Initial draft, radiated gain, VSWR and isolation of GlobeSurfer antennas were measured in Satimo Paris and Option Leuven on 27/04/2005.

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2 Introduction

For Option GlobeSurfer project, the antennas of Possio PX40 were measured in Option Leuven and in Satimo Paris. In this report, all the measured results are presented.

3 Test setup and DUT

3.1 Measurement system

The radiated gain is measured in Satimo Paris with the Stargate 64 system as shown in the picture.

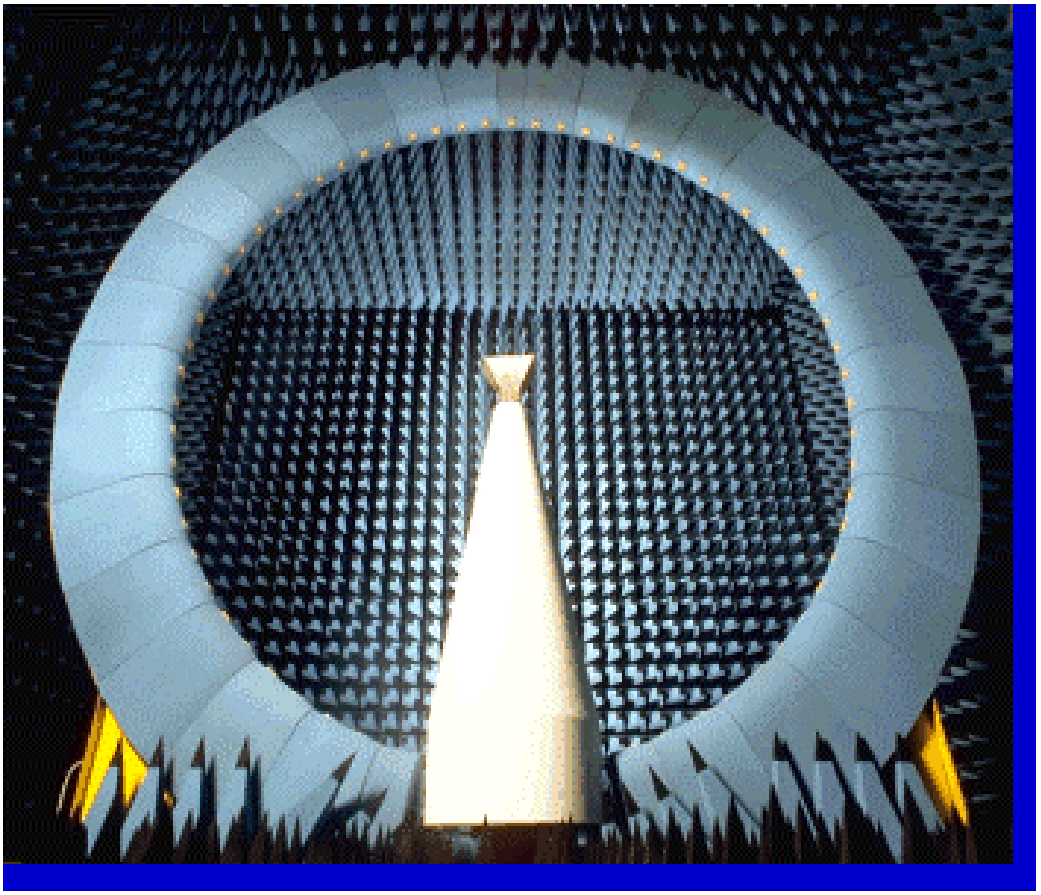

Fig. 1. Satimo Stargate 64 measurement system.

3.2 DUT

Three printed antennas (two WLAN antennas and one GSM/UMTS antenna) on Possio PX40 PCB are measured. In Fig. 2, these three antennas are illustrated.

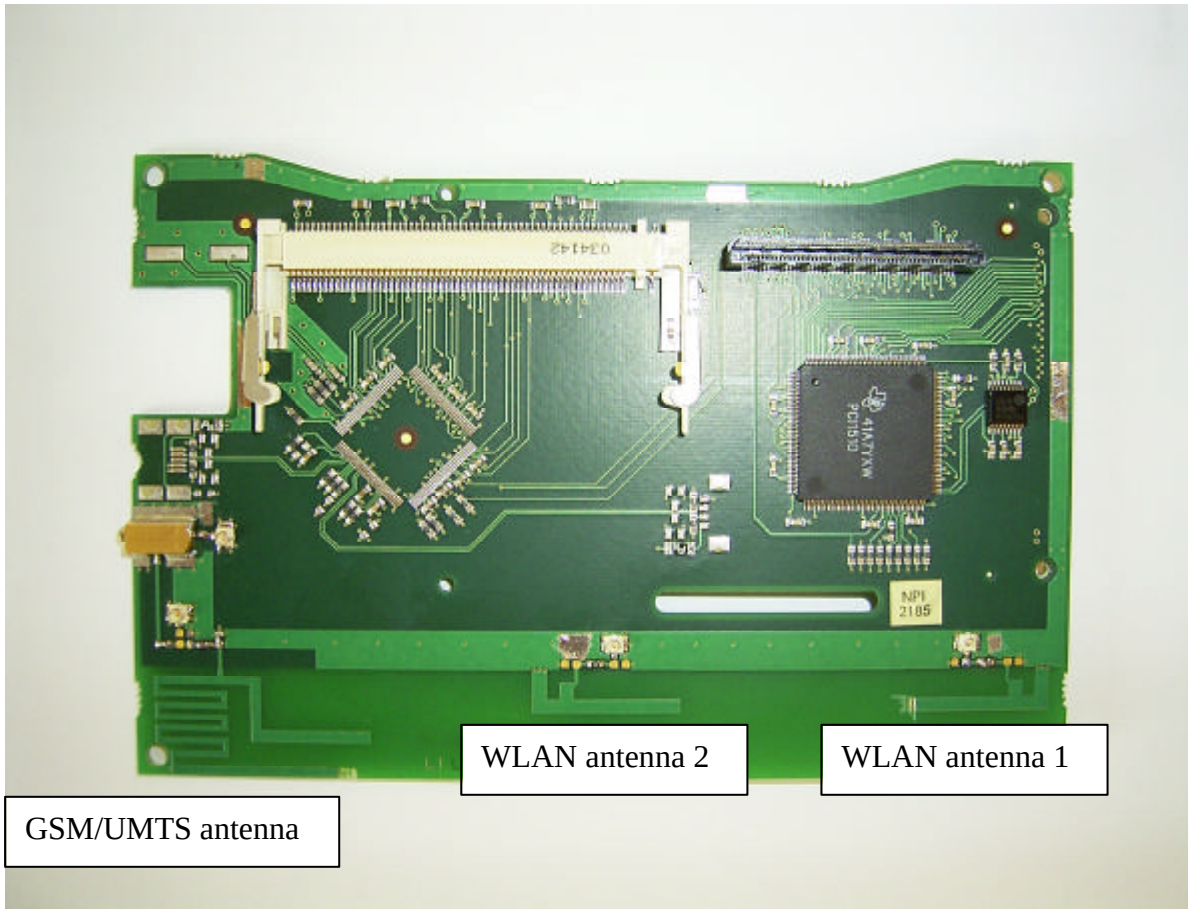

Fig. 2. Three printed antennas on Possio PX40 PCB.

3.3 Orientation during the radiation test

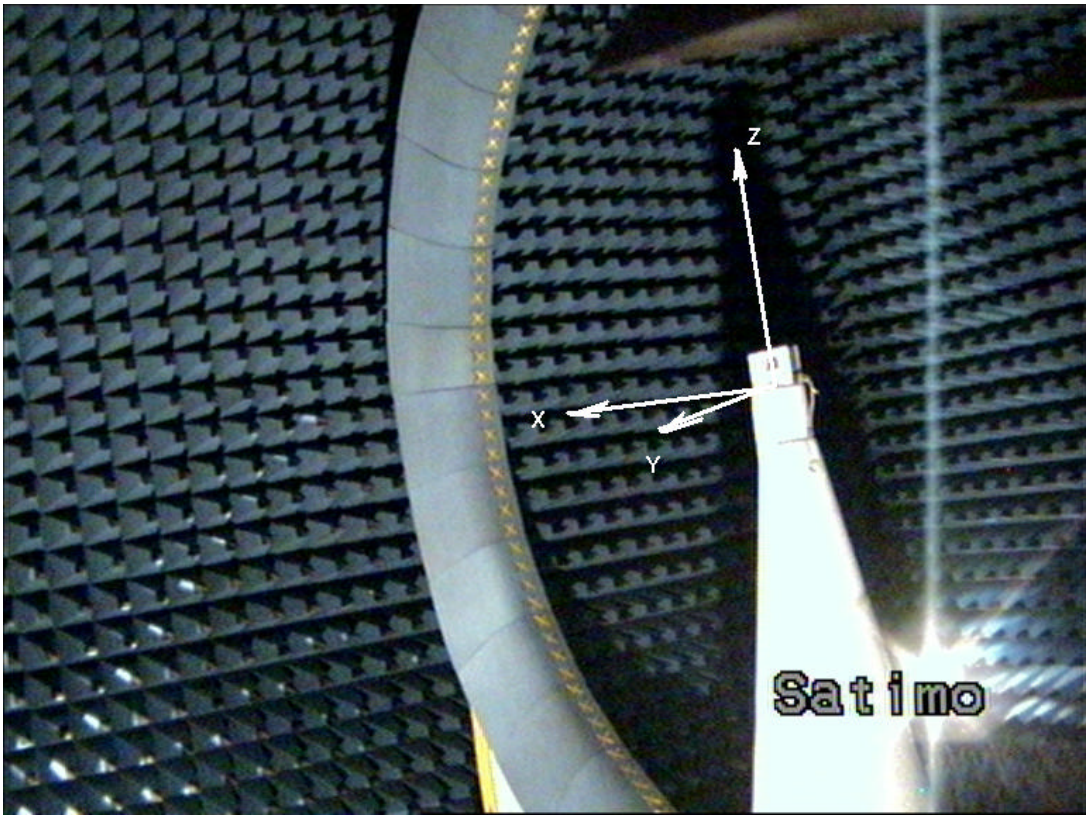

Fig. 3. Orientation during the radiation measurement.

The orientation and the coordinate system are illustrated in Fig. 3. With this 3D coordinate system, XOY plane is the azimuth plane with $\theta = 90°$, XOZ plane is the elevation plane with $\varphi = 0°$, and YOZ plane is the elevation plane with $\varphi = 90°$. The measured radiated power in these three main planes will be presented.

4 Test result

4.1 Measured VSWR and isolation

4.1.1 Measured VSWR

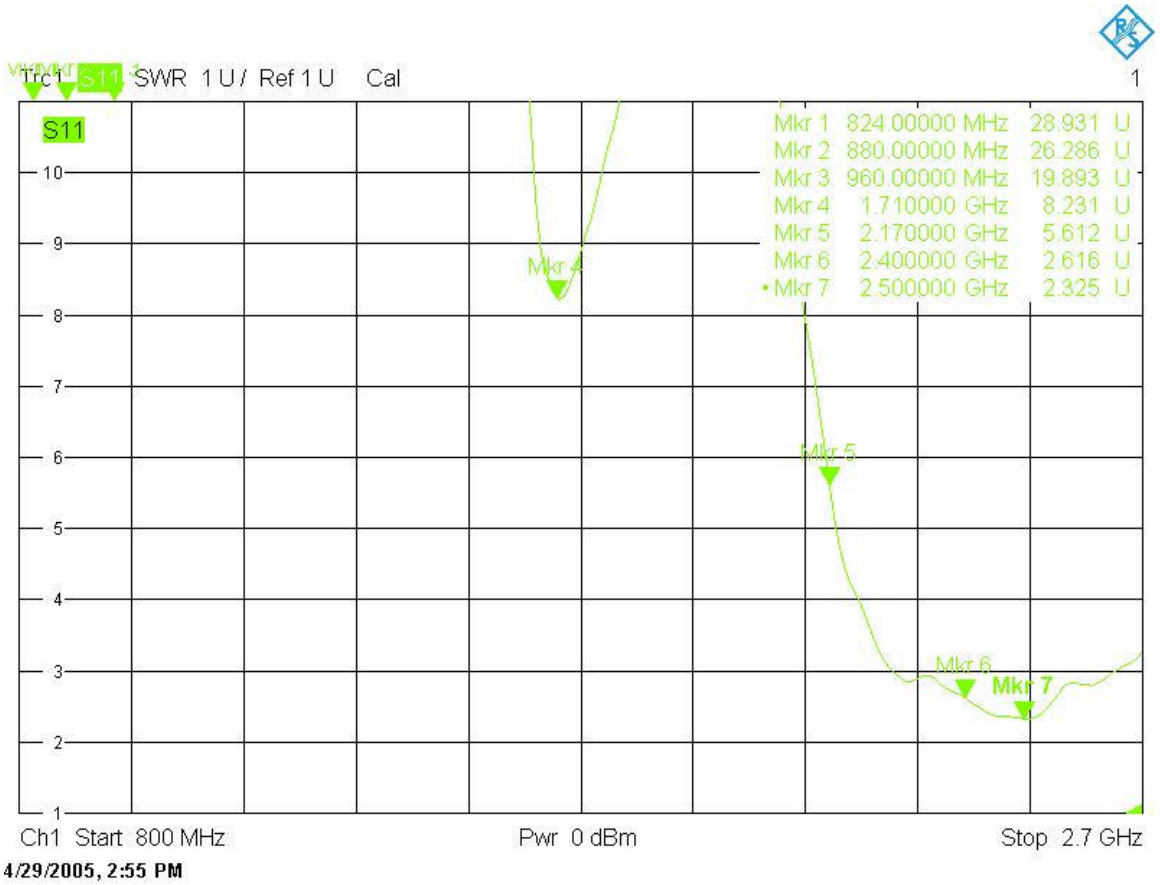

Fig. 4. Measured VSWR of WLAN antenna 1.

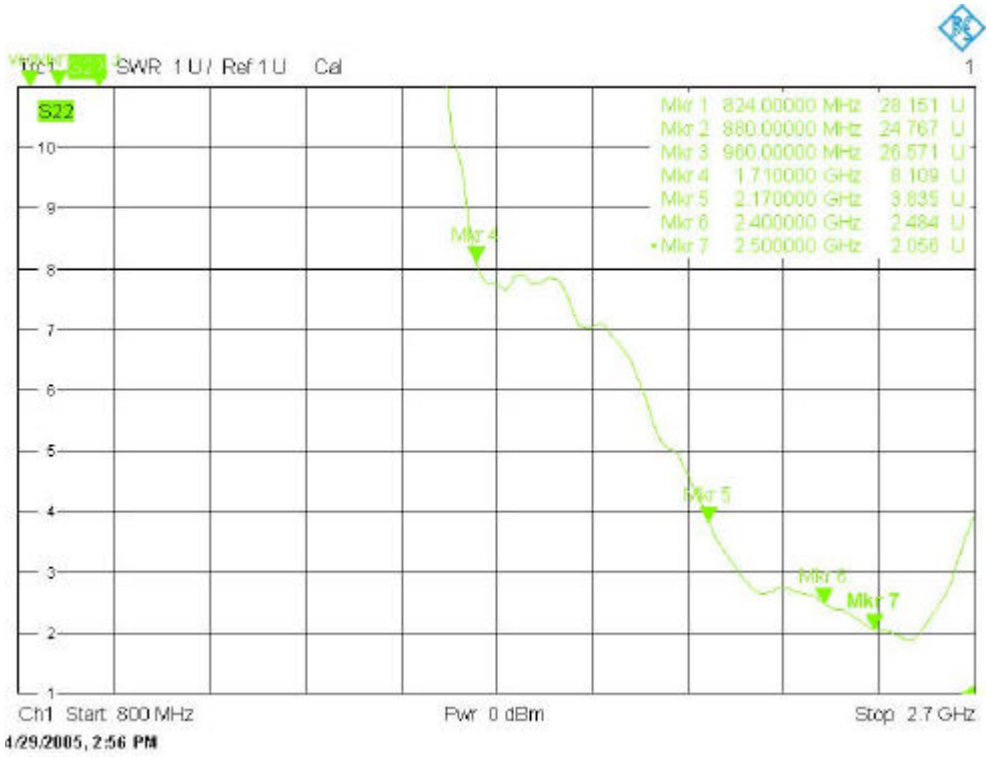

Fig. 5. Measured VSWR of WLAN antenna 2.

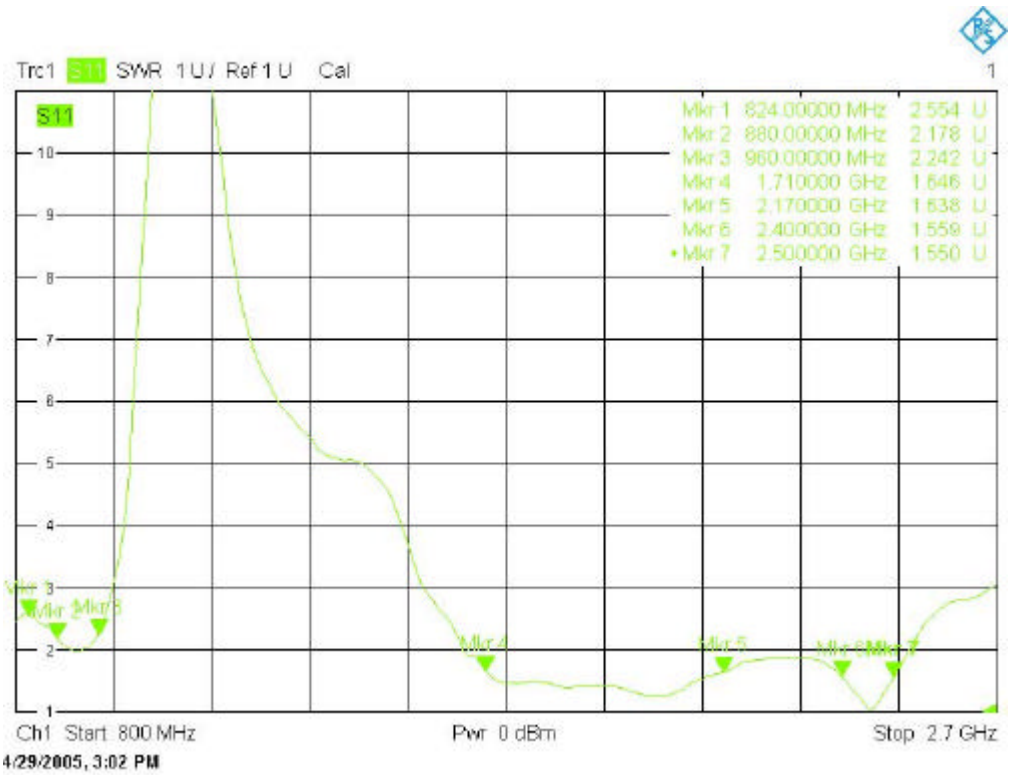

Fig. 6. Measured VSWR of GSM/UMTS antenna.

Table 1: Measured VSWR of the three printed antennas

Frequency (MHz)	Measured VSWR of		
	GSM/UMTS antenna	WLAN antenna 1	WLAN antenna2
824	2.55	Not used	Not used
880	2.18	Not used	Not used
960	2.24	Not used	Not used
1710	1.65	Not used	Not used
2170	1.64	Not used	Not used
2400	Not used	2.62	2.48
2500	Not used	2.33	2.06

4.1.2 Measured isolation among antennas

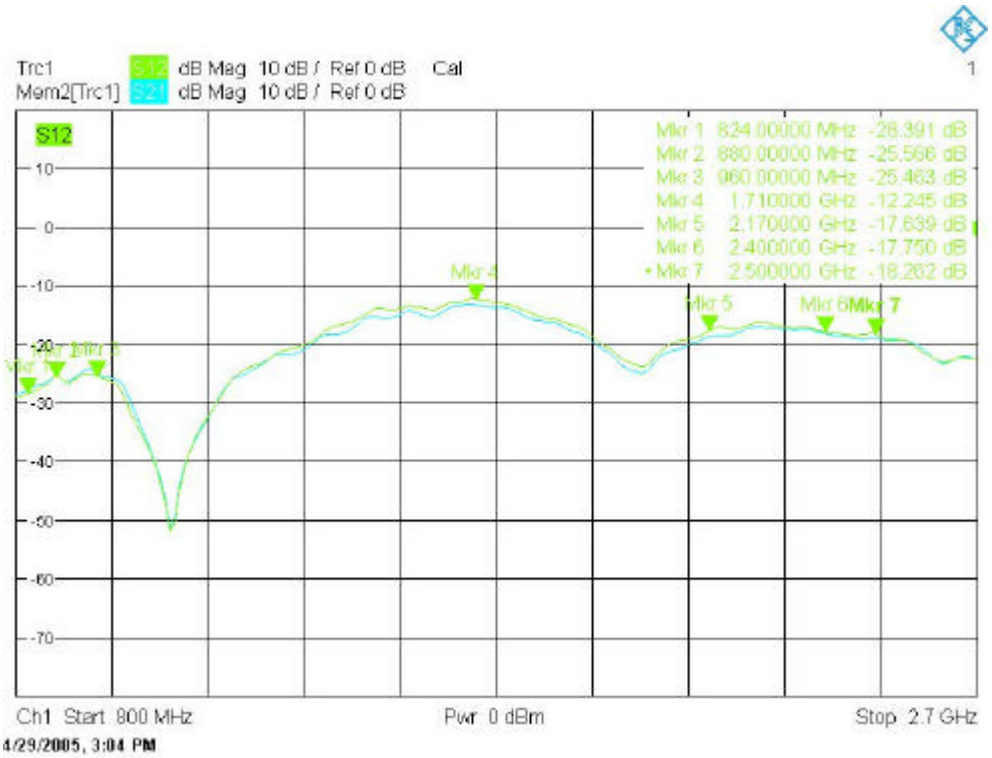

Fig. 7. Measured isolation between the GSM/UMTS antenna and the WLAN antenna 2.

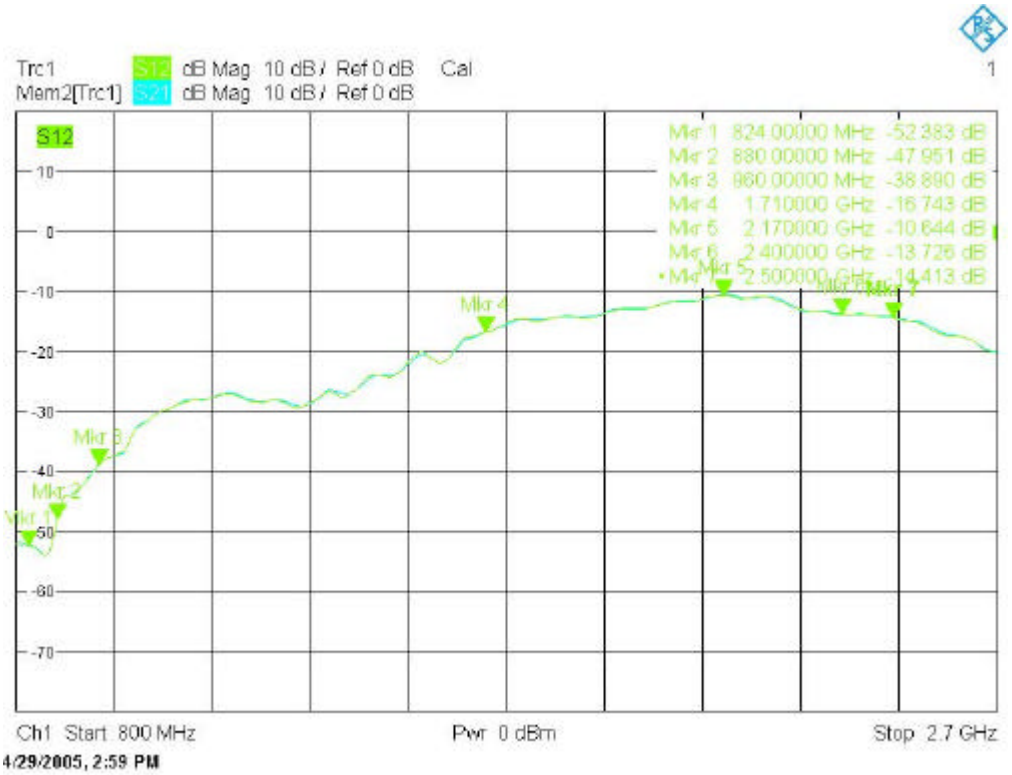

Fig. 7. Measured isolation between the WLAN antenna 1 and the WLAN antenna 2.

Table 2: Measured isolation among the antennas on PX40 PCB

Frequency (MHz)	Measured isolation (in dB) between	
	GSM/UMTS antenna and WLAN antenna 1	WLAN antenna 1 and WLAN antenna 2
824	28.39	52.38
880	25.57	47.95
960	25.46	38.89
1710	12.25	16.74
2170	17.64	10.64
2400	17.75	13.73
2500	18.26	14.41

4.2 Measured radiated gain

4.2.1 Measured gain of GSM/UMTS antenna

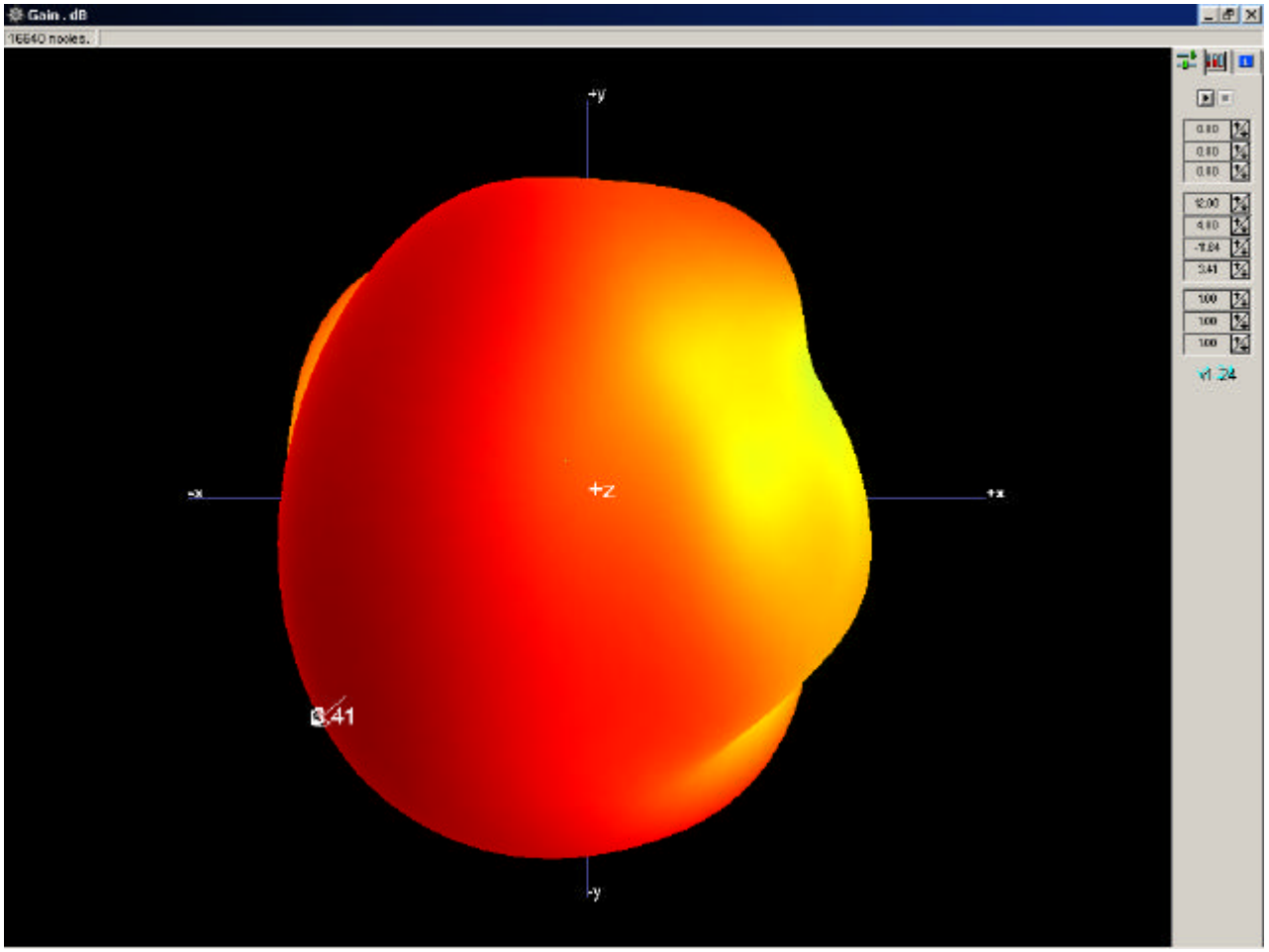

Fig. 8. Measured 3D gain of Possio GSM/UMTS antenna at 2140MHz.