



Deutscher
Akkreditierungs
Rat

No. DAT-P-114/01-01

CTIA Authorized Test Lab

LAB CODE 20050815-00

TEST REPORT

No. 2007OTA0030

Model B7CA

Product name GSM/GPRS 850/1900 Mobile Terminal

Client T&A Mobile Phones

**Classification
of test** Type Approval

**Telecommunication Metrology Center
of Ministry of Information Industry**

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SUMMARY

Product name	GSM/GPRS 850/1900 Mobile Terminal	Sample Model	B7CA
Client	T&A Mobile Phones	Type of test	Type Approval
Manufacturing plant	4F, South Building, No.2966, JinKe Road, Zhangjiang High-Tech Park Shanghai 201203, P.R.China	Sampling arrival date	July 19th, 2007
Manufacturer	T&A Mobile Phones		
Sampling/ Sending sample	Sending sample	Sample sent by	Qiang Wang
Sampling location	(Blank)	Sampling person	(Blank)
Sample quantity	One	Sample matrix	(Blank)
Series number of the Sample	011290000000061		
Manufacture date	(Blank)	Manufacture location	(Blank)
Test basis	CTIA Certification Program, Test Plan for Mobile Station Over the Air Performance, Cellular Telecommunications & Internet Association, Method of Measurement for Radiated RF Power and Receiver Performance, April 2005, Revision 2.1		
Test conclusion	No pass/fail criteria were considered applied for this test since CTIA has yet to imposed limits.		
Note	The test results relate only to the items tested of the sample(s).		

Approved by  (Xiao Li)
 Reviewed by  (GuoLin)
 Tested by  (YangMeng)

Xiao Li- Deputy Director of the laboratory;

COMPETENCE AND WARRANTIES

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited by DAR (DATech) – Deutschen Akkreditierungs Rat (The German Accreditation Body Technology) for the tests indicated in the Certificate No. **DAT-P-114/01-01**.

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited by CTIA for the tests indicated in the Certificate No. **20050815-00**.

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited by CNAL – Accreditation Certificate of China National Accreditation Board for Laboratories, for the tests indicated in the Certificate No. **L0442**.

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited both by CTIA and Wi-Fi Alliance for the tests according to 《Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices》 .

Telecommunication Metrology Center (TMC) of Ministry of Information Industry (MII) is a test laboratory competent to carry out the tests described in this test report.

TMC of MII guarantees the integrity of the data presented in this test report, which is the results of measurements. Tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and test conditions available at **TMC of MII** at the time of execution of the test. **TMC of MII** maintains the confidentiality of all information related to the items under test and results of the test

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1.0 INTRODUCTION

1.1 Description of EUT and Test(s) Performed

From July 20th to July 27th, 2007 TMC performed radiated power measurements on the following wireless mobile device:

Client: T&A Mobile Phones
Model: B7CA
Serial Number/ESN/IMEI: 011290000000061
FCC ID Number: RAD064
Hardware Version: PROTO
Software Version: V321
Device Power Class: GSM 850:4
PCS 1900: 1

The device was tested in free-space at the following band and channels/frequencies:

Band	Channel	Frequency (MHz)
GSM 850	128	824.20
	190	836.60
	251	848.80
GSM 1900	512	1850.20
	661	1880.00
	810	1909.80

In addition to this report, all measured data is available in Microsoft[®] Excel spreadsheet format and EMQuest pattern file format.

1.2 Contact Information

Questions or concerns relating to information contained within this report should be directed to:

Mr. Xiao Li

Deputy Laboratory Director

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Beijing 100083, P. R. China

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Fax: 86-1062304793

E-mail: xiaoli@emcite.com

1.3 Location of the TMC Wireless Test Laboratory

The TMC Wireless Device Test Laboratory (TMC-WTL) is located at

Telecommunication Metrology Center of the Ministry of Information Industry

No. 52 Huayunbei Road, Haidian District

Beijing 100083, P. R. China

Attn: Mr. Xiao Li

Deputy Laboratory Director

Telephone: 86-1062303288-2040

Fax: 86-1062304793

E-mail: xiaoli@emcite.com

2.0 PHYSICAL LAYOUT AND SITE DESCRIPTION

2.1 Wireless Device Test Laboratory

All tests were performed in TMC's state-of-the-art Wireless Mobile Device Test Laboratory consisting of a hybrid tapered and rectangular anechoic chamber equipped with a multi-axis positioning system (MAPS) with SAM head phantom, a dual polarized quad-ridge waveguide horn, and two EMCO-3102 circularly polarized communication antennas. A base station simulator is used to establish communication with the EUT and place it in the proper mode, and a spectrum analyzer and Relay switch combination is used for measuring the signal from the EUT at each position and polarization.

2.2 Anechoic Tapered Chamber

The anechoic chamber is a custom hybrid tapered and rectangular anechoic chamber designed and built in 2004 with the following nominal dimensions:

Tapered Section	
Length :	8.75 m
Width :	3.66 m
Height :	3.66 m
Rectangular Region	
Length:	7.32 m
Width:	3.97 m
Height:	3.66 m

The tapered chamber consists of a shielded enclosure constructed of rigid, steel-clad, wood core modular panels with steel framing. The chamber is treated with microwave absorber, utilizing both pyramidal and wedge shaped absorber. Lighting in the chamber is RF-filtered and consists of Four (4) incandescent lamps mounted in recessed waveguide vents in the chamber ceiling. The chamber is forced air ventilated to maintain it at the same ambient as the surrounding facility. A single leaf swing type shielded door is provided for equipment and personnel access into the chamber. The Anechoic Tapered Chamber is capable of meeting RF attenuation levels of over 100 dB throughout the frequency range of 30 MHz to 40 GHz, so that testing performed within the chamber does not interfere with other testing activities at the facility, and vice-versa. Power is supplied on separate circuits to the chamber and control area. All power filters provide a minimum of 100 dB attenuation over a frequency range of 14 kHz to 18 GHz when tested per MIL STD 220A.

2.3 Multi Axis Positioning System (MAPS™)

The MAPS™ positioning system is capable of rotating the article under test (AUT) on both theta and phi axes with full 360 degree angular range on each axis, while keeping the AUT on the center of both rotation axes. Under normal conditions it provides 0.1 degree positioning accuracy.

The MAPS™ utilizes different support structures for the second axis based on the required load. This allows the use of a light-duty support for free-space testing to minimize the effect of the support on the measurement. A stronger medium-duty support is used for the SAM phantom head testing. During the SAM head test, the support structure is largely shadowed by the phantom so that its effects are negligible. The electrically driven MAPS™ does not introduce conducted or radiated electrical noise above the ambient levels existing with the chamber. MAPS™ rotation is controlled by an EMCO Model 2090 Multi-device Controller with IEEE-488 data/control for automation.

2.4 SAM Head Phantom and Fluid

A SAM head phantom meeting the requirements of the CTIA Certification Program Test Plan is used for the phantom head testing. The fluid for SAM head is made from the recipes given in table C-1 of CTIA Method of Measurement for Radiated RF Power and Receiver Performance, Revisions 2.1, April 2005.

2.5 Quiet Zone

A 0.3m diameter by 0.3m tall cylindrical quiet zone volume was qualified for each axis of the MAPS and polarization of the receive antenna per an internal test plan that encompasses the requirements of the Cellular Telecommunications & Internet Association (CTIA) Method of Measurement for Radiated RF Power and Receiver Performance, Revisions 2.1, published in April, 2005. The associated effects are included in the measurement uncertainty reported for the Total Radiated Power.

2.6 EMCO Model 3164-03 Diagonal Dual-Polarized Horn

The apex of the tapered chamber is equipped with an EMCO Model 3164-03 Diagonal Dual Polarized Quad-Ridge Waveguide Horn Antenna. This antenna is designed for wireless test applications and covers all currently known wireless service frequencies. The antenna has two orthogonally placed input feeds that permit simultaneous measurements for dual polarizations. The antenna can be used for both linearly and circularly polarized waves (with the addition of a quadrature hybrid coupler) over a very broad frequency range.

2.7 EMCO-3102 Circularly Polarized Communication Antennas

To the top of the MAPS and the side of the chamber are each fitted with a broadband circularly polarized communication antenna (EMCO Model 3102 Conical Log Spiral) to provide a relatively low loss link to the base station simulator in any position. A 20-dB limited amplifier is installed to stabilize the uplink radio signal to CMU-200 RF4 port. This feature provides a very robust radio-link between the mobile phone and the Radio Communication Tester. Therefore, the TRP/TIS measurement can be conducted without dropping the links.

2.8 Test Equipment

The test was performed using the following additional test equipment:

- Rohde & Schwarz CMU-200 Base Station Simulator with the following Optional Features
 - GSM 850/900/1800/1900 CDMA2000 CELL-Band and PCS-Band
- Rohde & Schwarz FSU-46 Spectrum Analyzer
- Rohde & Schwarz TS-RSP Relay Switch Unit with options RSP-EMI and RSP-BRF
- EMCO Model 2090 Positioning Controller

3.0 TEST METHODS

3.1 Total Radiated Power

The Total Radiated Power (TRP) test is performed according to the (CTIA) Method of Measurement for Radiated RF Power and Receiver Performance, Revisions 2.1, Section 5, using the conical section data acquisition order. The call is established through the two communication antennas and the EUT is positioned

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along the required MAPS centerline, either on the light duty mount or against the phantom head. The call parameters are adjusted on the base station simulator to bring the EUT to the required traffic channel and output power level. The EUT is then stepped between 0 and 180 degrees along the theta axis in 15-degree increments. At each theta position, the phi axis is stepped from 0-360 degrees or from 360-0 degrees, alternating to minimize test time, in 15-degree increments. Data is recorded using the spectrum analyzer for both theta and phi polarizations at each position. Depending on the protocol, an appropriate filter is used in the EMQuest software to process the data. Upon completion of the test, the net power (angular dependent EIRP) is calculated at each measurement point and the required values of TRP and Near Horizon Partial Radiated Power (NHPRP) are automatically calculated. This test procedure is repeated for each channel, band, and configuration as required

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4.0 TEST RESULTS

4.1 Total Radiated Power

The test results for the TRP testing are summarized below.

Band	Channel	Frequency (MHz)	Conducted Power (dBm)	TRP (dBm)		NHPRP $\pm\pi/4$ (dBm)			NHPRP $\pm\pi/6$ (dBm)			NHPRP $\pm\pi/8$ (dBm)			
				FS	SAM	FS	SAM		FS	SAM		FS	SAM		
GSM 850	128	824.20	32.5	28.17	L	21.93	27.6	L	20.25	26.54	L	18.67	25.56	L	17.47
					R	21.71		R	20.05		R	18.46		R	17.27
	190	836.60	32.5	29.51	L	23	28.92	L	21.32	27.85	L	19.75	26.87	L	18.56
					R	23.02		R	21.36		R	19.78		R	18.59
	251	848.80	32.4	30.02	L	23.06	29.41	L	21.38	28.32	L	19.82	27.33	L	18.62
					R	23.39		R	21.73		R	20.16		R	18.97
GSM 1900	512	1850.20	29.8	27.88	L	24.14	26.31	L	23.02	24.6	L	21.66	23.4	L	20.54
					R	24.18		R	23.05		R	21.66		R	20.55
	661	1880.00	29	28.76	L	24.41	27.21	L	23.3	25.65	L	21.93	24.57	L	20.81
					R	24.53		R	23.39		R	22.01		R	20.9
	810	1909.80	28.3	28.91	L	24.53	27.36	L	23.43	25.92	L	22.07	24.94	L	20.94
					R	24.56		R	23.42		R	22.04		R	20.93

FS = Free Space, SAM = SAM Phantom Head

4.2 Measurement Uncertainty

The expanded measurement uncertainties ($k = 2$) for the TRP and NHPRP results reported above have been determined to be as follows:

Band	Free-Space	SAM Head Phantom
Cell	0.96 dB	1.17 dB
PCS	1.07 dB	1.59 dB

4.3 3-D Pattern Plots

3-D plots of the pattern for each measurement are provided in Appendix A.2.

5.0 TEST EQUIPMENT LIST

5.1 Total Radiated Power

Test equipment for conducting Total Radiated Power measurements is shown in Table 1.

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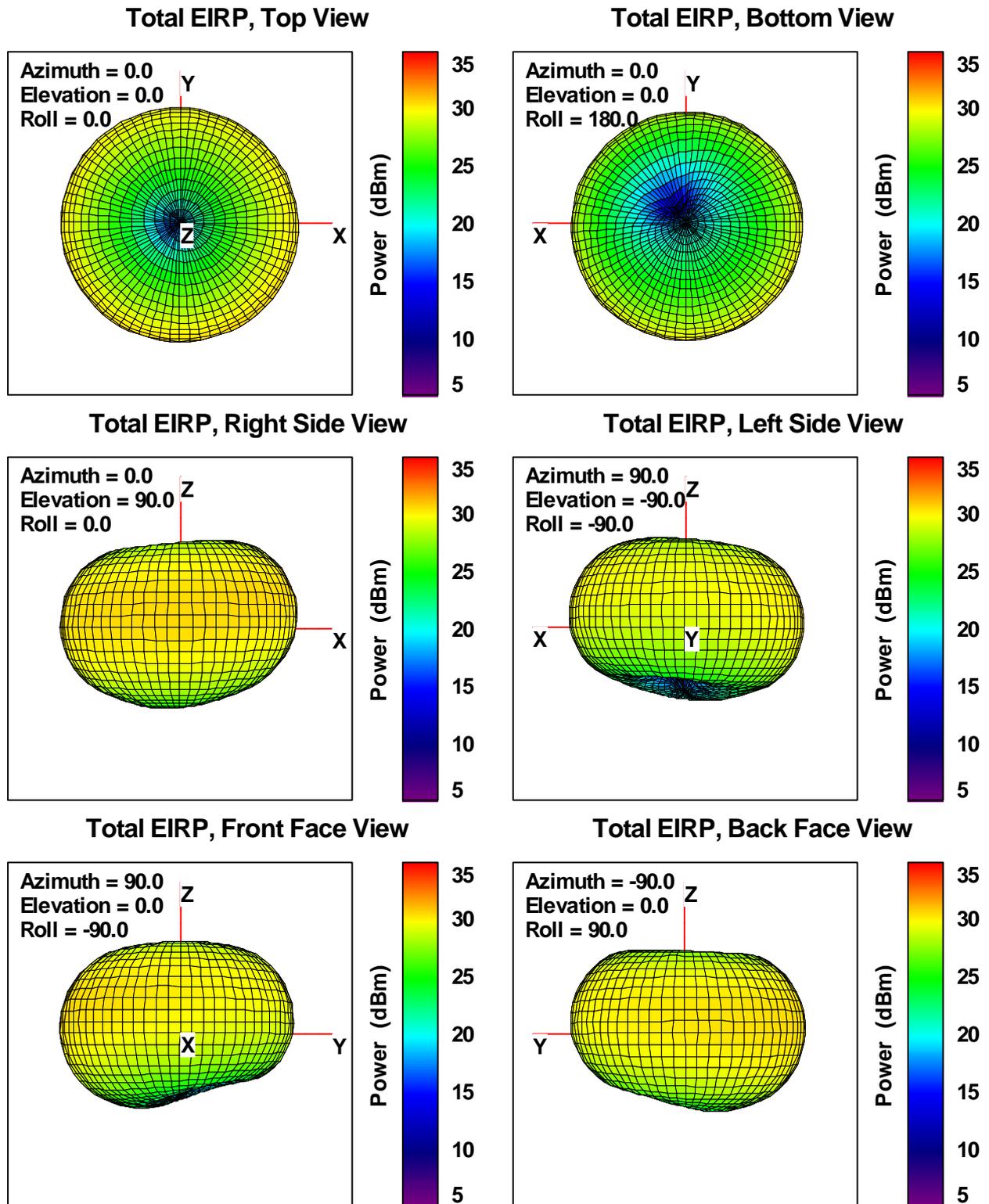
APPENDIX

A.1 TABLES

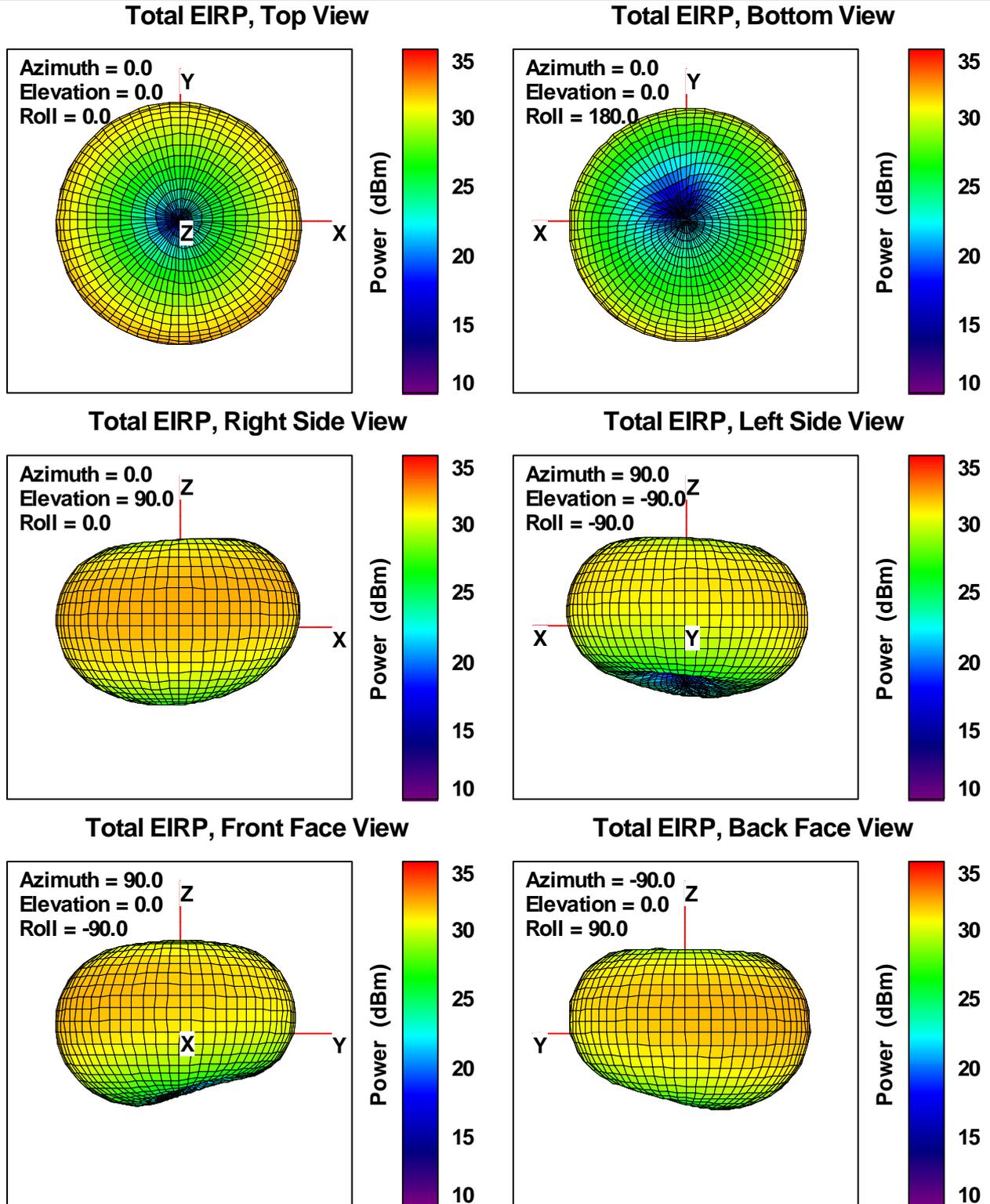
Table 1. Test equipment used for measuring Total Radiated Power.

TYPE OF EQUIPMENT	MODEL NUMBER	MANUFACTURER	CALIBRATION DUE DATE
Pattern Measurement Software	EMQuest™ EMQ-100	ETS-Lindgren	NA
Desktop Computer with Windows 2000	Optiplex D26HY51	Dell Computers	NA
Base Station Simulator	CMU-200 S/N 105948	Rohde & Schwarz	August 15, 2008
Tapered Chamber	TMC Asset #: Y452-50-76	ETS-Lindgren	June 8, 2008
Quad-Ridge Horn Antenna 400 MHz-6 GHz	EMCO 3164-03 S/N 40672	ETS-Lindgren	Included in Tapered Chamber Calibration
Circularly Polarized Communication Antennas	EMCO 3102 TMC's Asset # 1338 & 1339	ETS-Lindgren	NA
Antenna Positioner Controller	EMCO 2090 S/N 40984	ETS-Lindgren	NA
MAPS Positioner	EMCO 2010/2015	ETS-Lindgren	NA
Low Loss Phase Matched RF Cables	UFB-311A	MICRO-COAX	NA

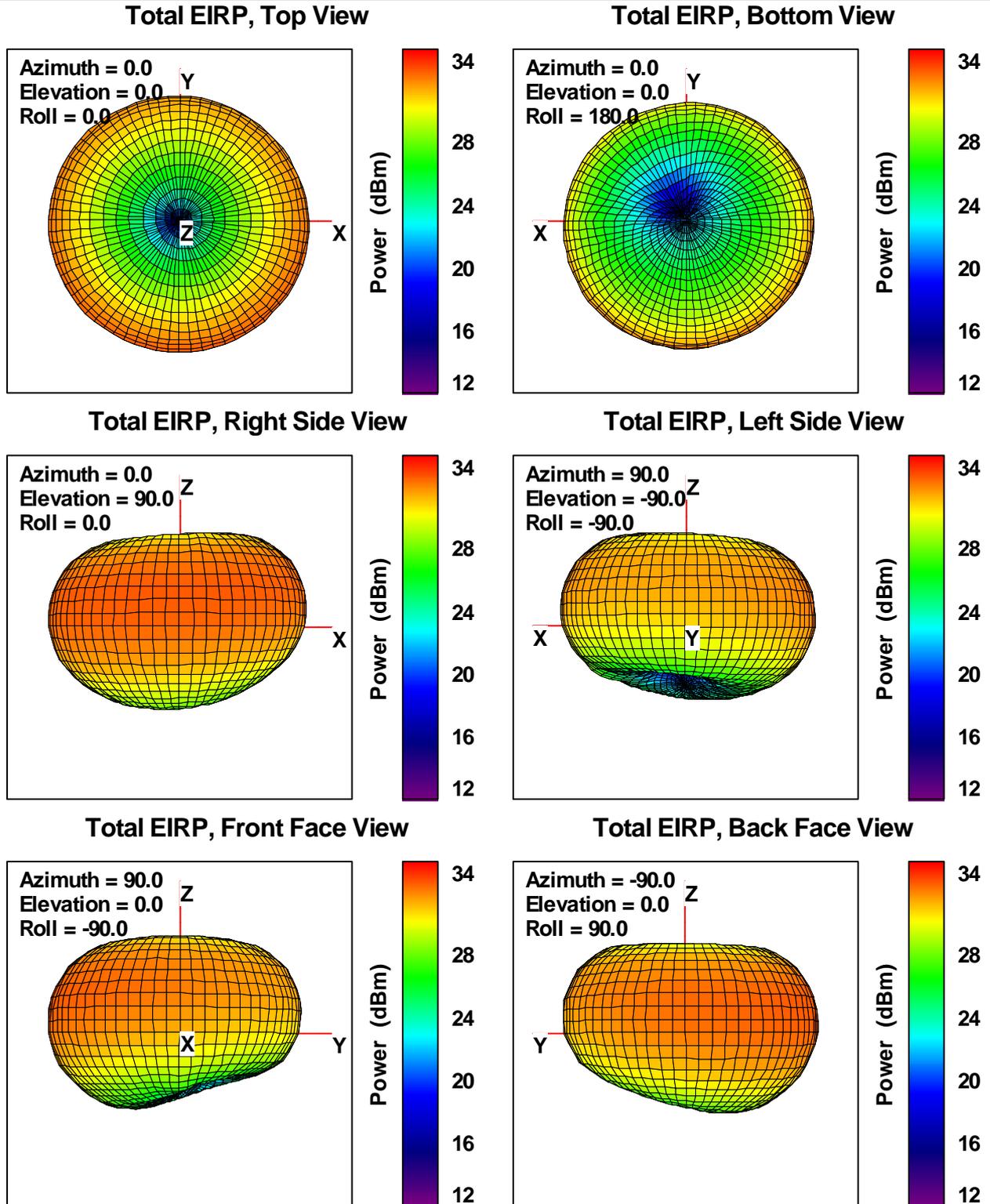
A.2 3-D PATTERN PLOTS



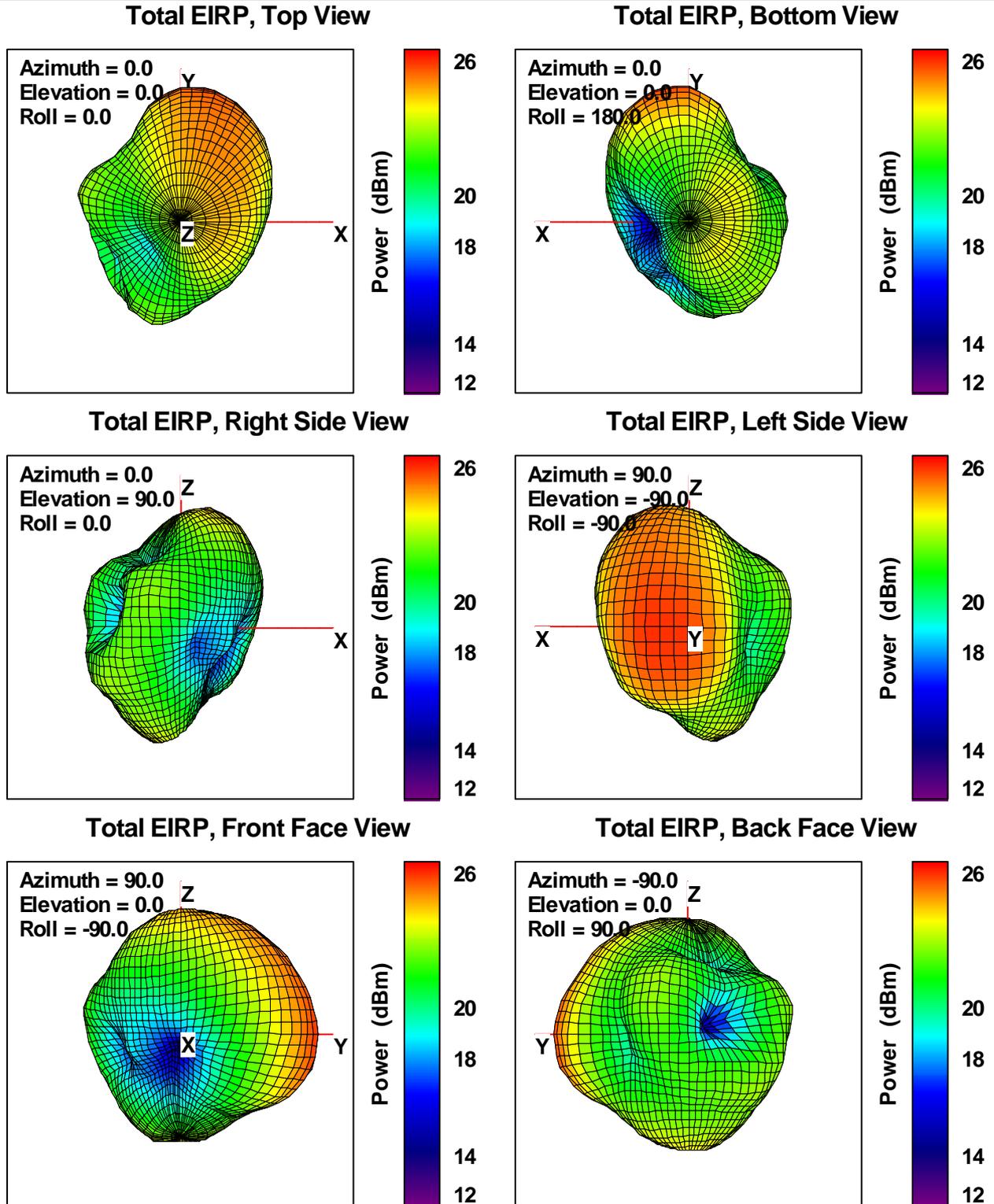
Plot 1. GSM 850 Free-Space Total EIRP, 824.2 MHz



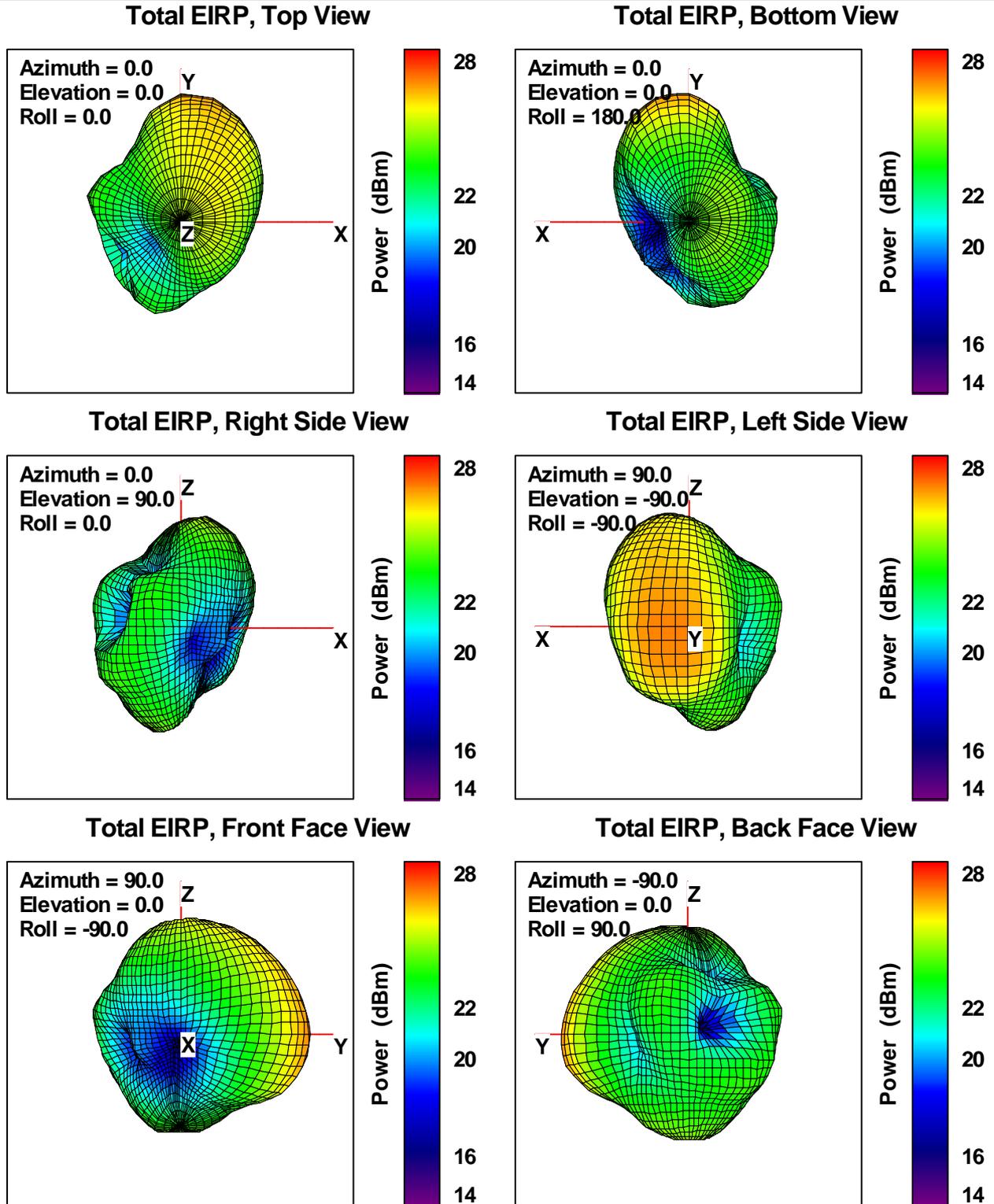
Plot 2. GSM 850Free-Space Total EIRP, 836.6 MHz



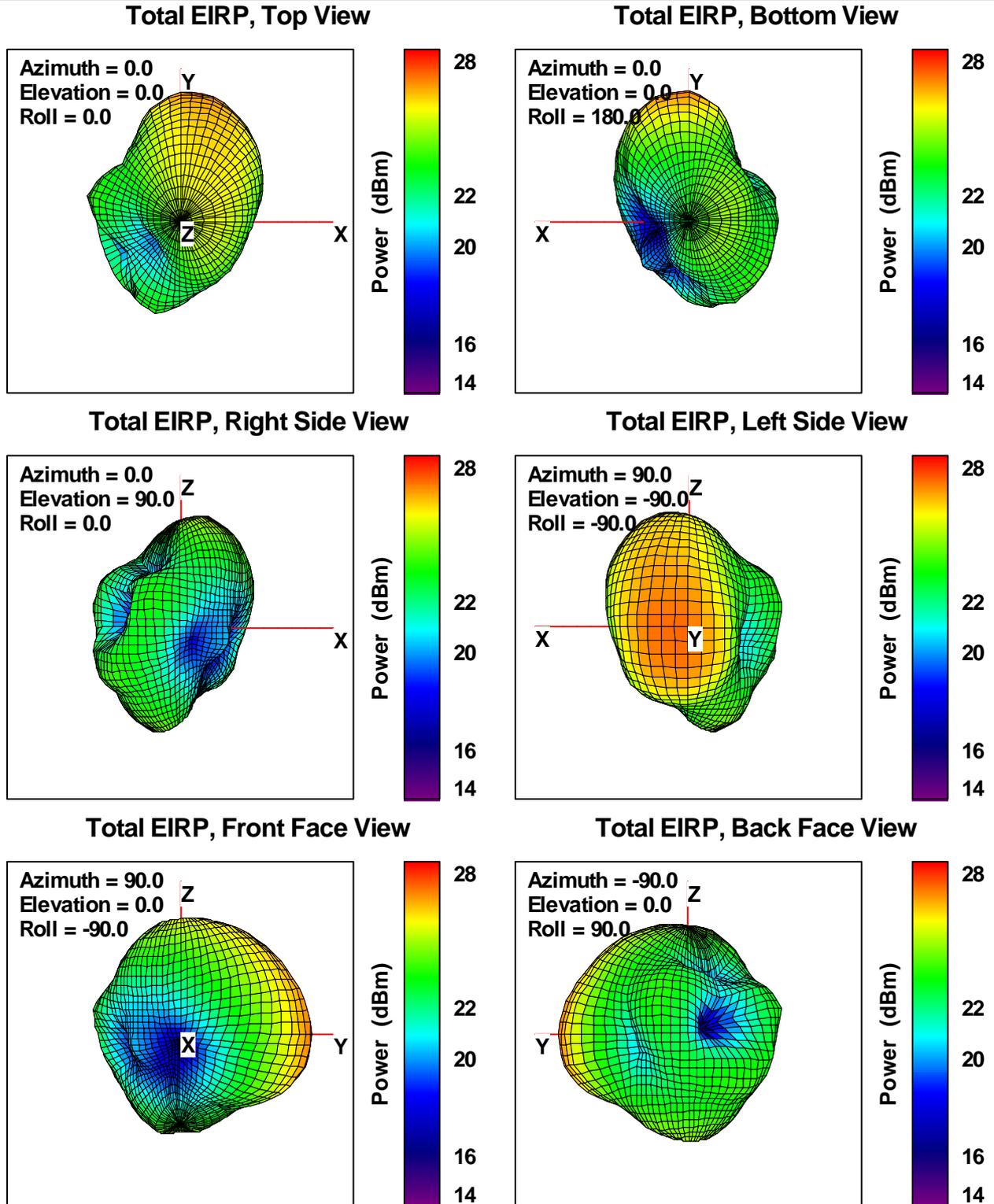
Plot 3. GSM 850 Free-Space Total EIRP, 848.8 MHz



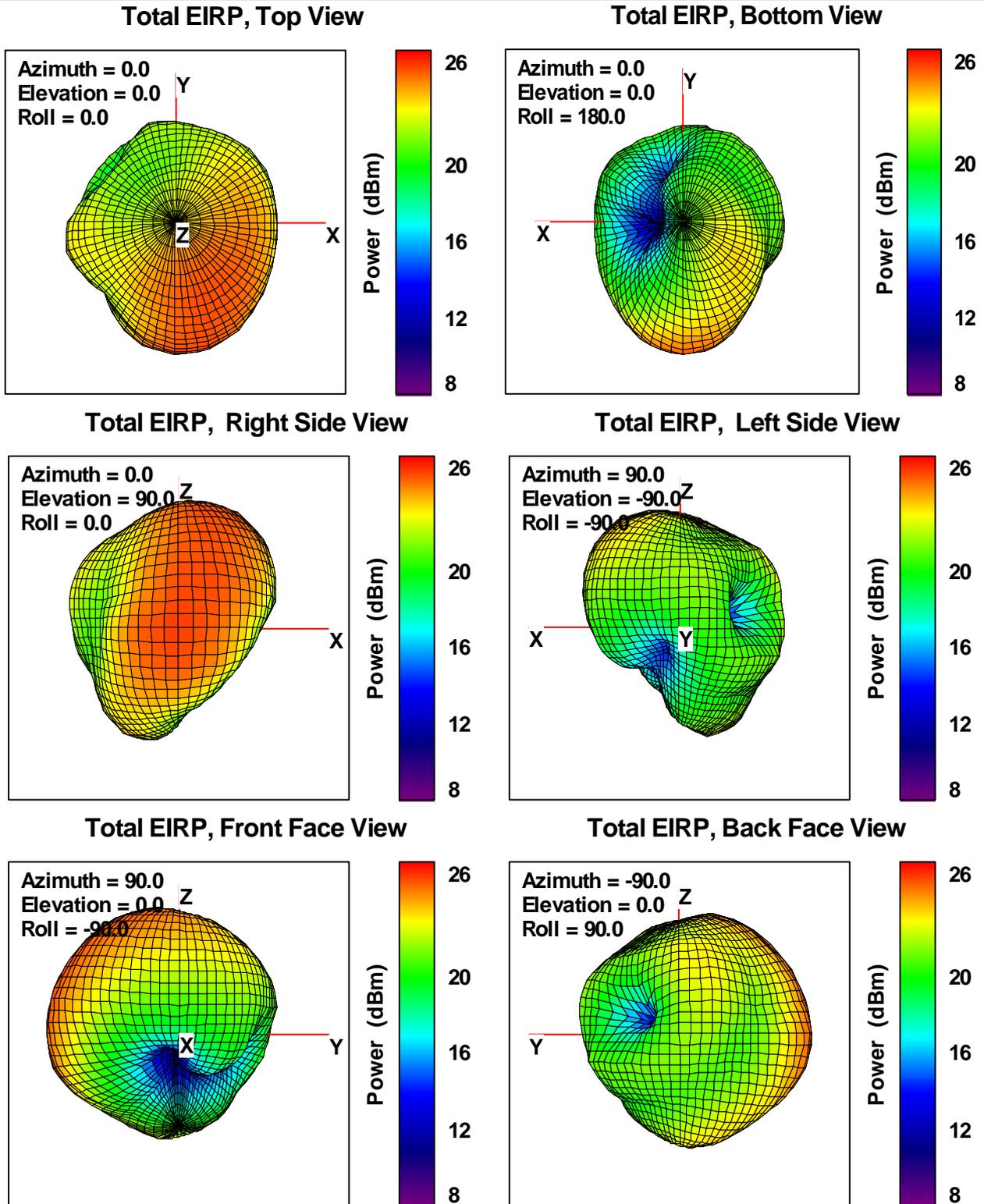
Plot 4. GSM 850 SAM Phantom Head-Left Ear Total EIRP, 824.2 MHz



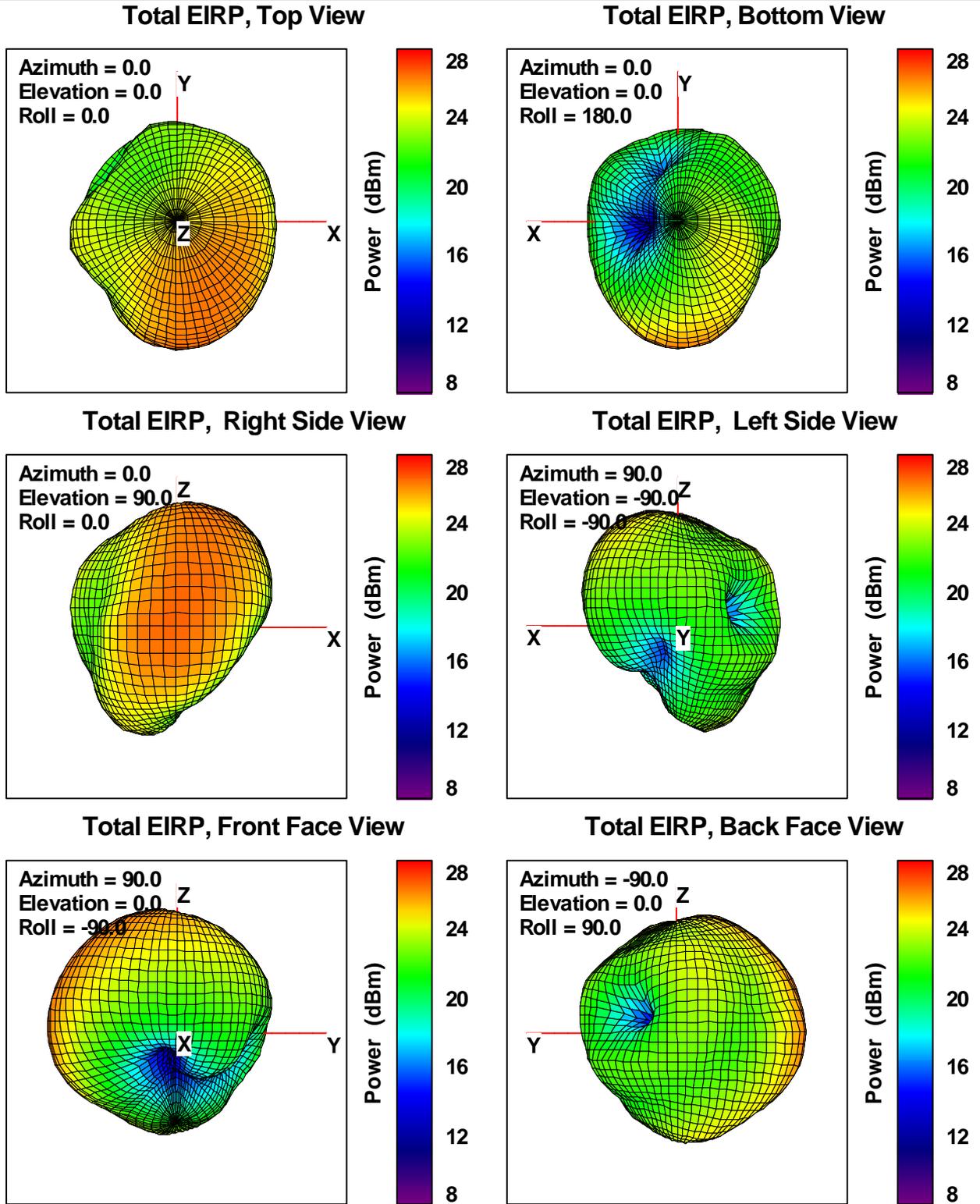
Plot 5. GSM 850 SAM Phantom Head-Left Ear Total EIRP, 836.6 MHz



Plot 6. GSM 850 SAM Phantom Head-Left Ear Total EIRP, 848.8 MHz

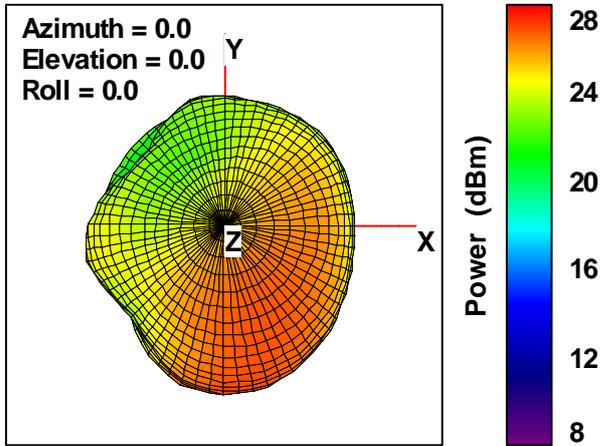


Plot 7. GSM 850 SAM Phantom Head-Right Ear Total EIRP, 824.2 MHz

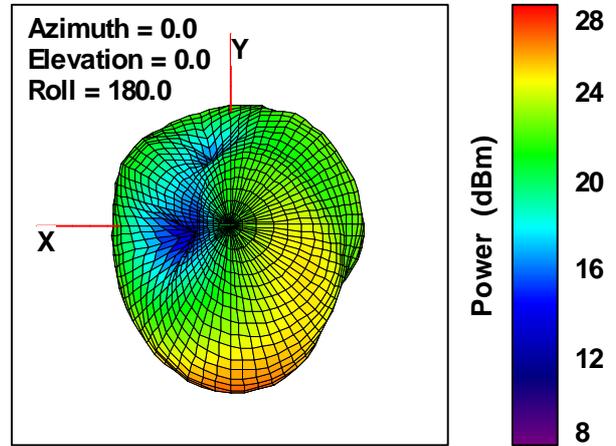


Plot 8. GSM 850 SAM Phantom Head-Right Ear Total EIRP, 836.6 MHz

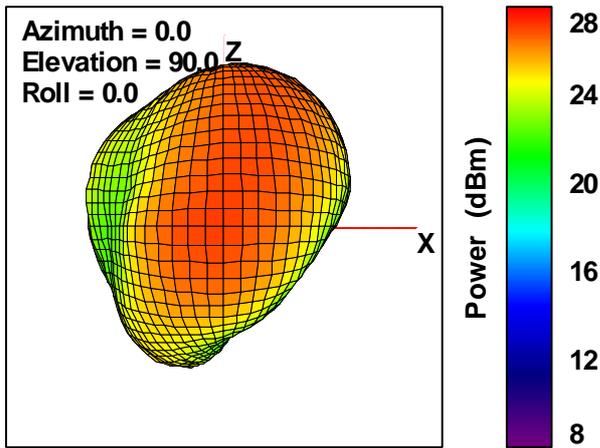
Total EIRP, Top View



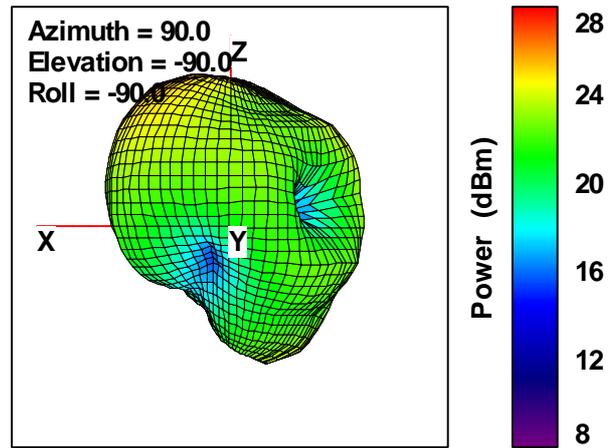
Total EIRP, Bottom View



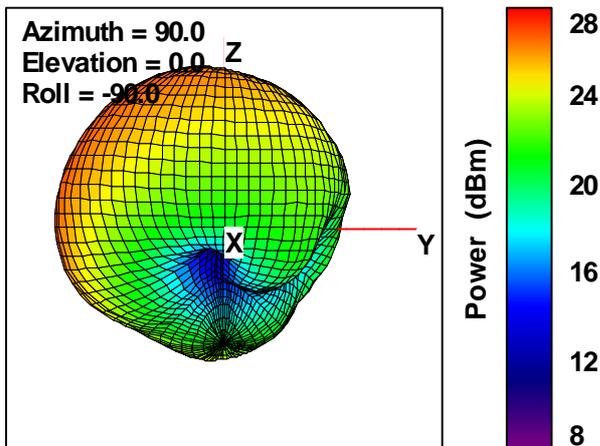
Total EIRP, Right Side View



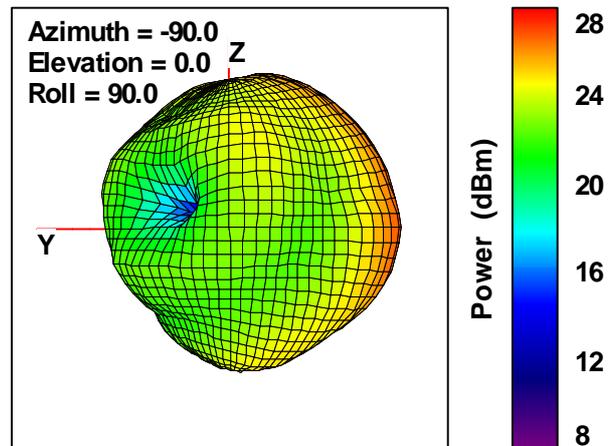
Total EIRP, Left Side View



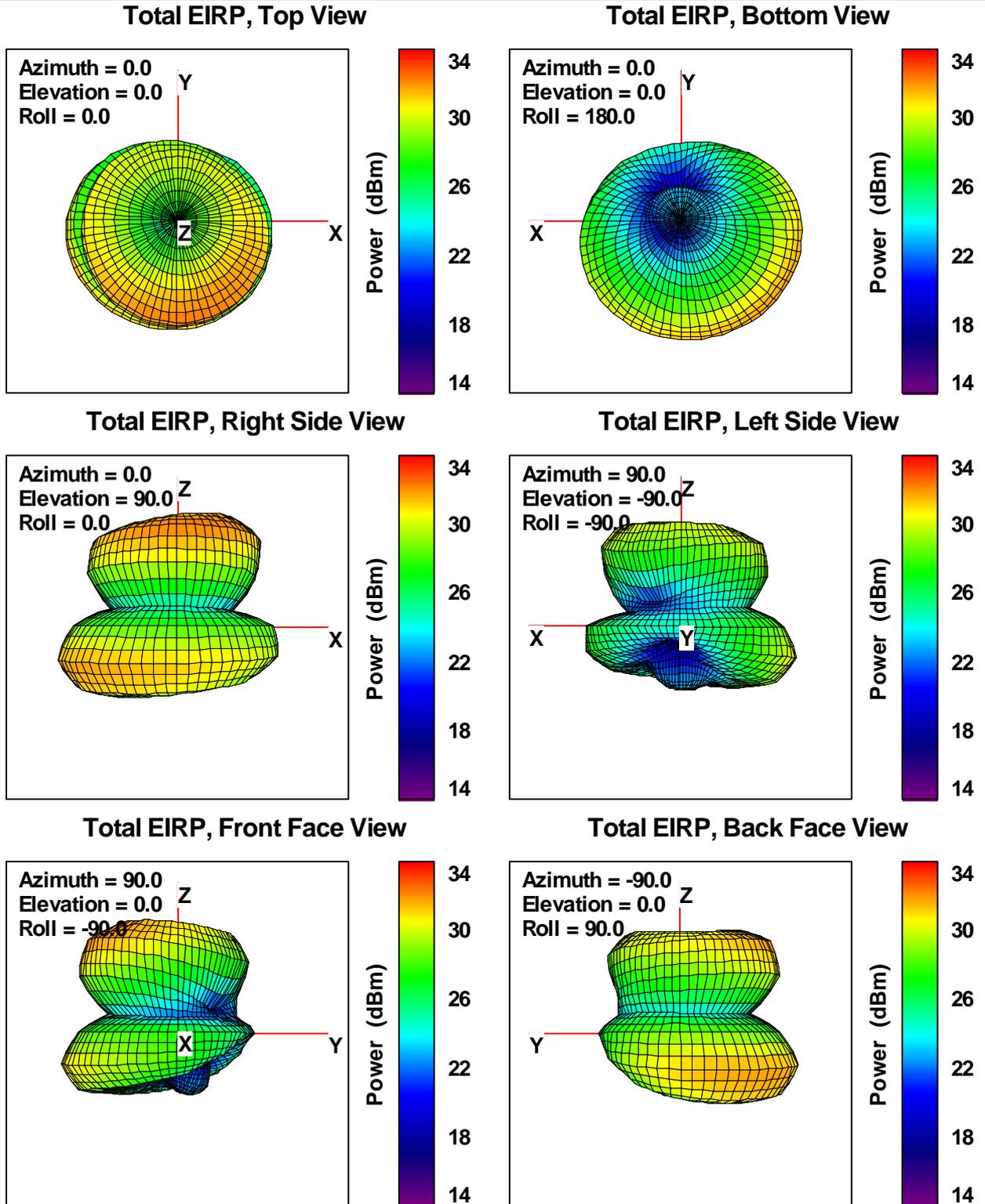
Total EIRP, Front Face View



Total EIRP, Back Face View



Plot 9. GSM 850 SAM Phantom Head-Right Ear Total EIRP, 848.8 MHz



Plot 10. PCS 1900 Free-Space Total EIRP, 1850.2 MHz