

# FCC Test Report

## FCC Part 24

**FOR:**

**GSM/UMTS/HSDPA Mobile Phone**

**MODEL #: RG4-J01**

**Toshiba Information Systems (UK) Ltd., Mobile Communications Division**

**Riverside Way  
Camberley, Surrey, GU15 3YA UK**

**FCC ID: SP2-RG4-J01**

**TEST REPORT #: EMC\_CETEC\_0010\_06502\_FCC\_24\_DT1J\_0707  
DATE: 2007-7-23**



Certificate # 2135.01

**Bluetooth™**  
Bluetooth  
Qualification Test  
Facility  
(BQTF)

**CTIA Authorized Test Lab**

LAB CODE 20020328-00

FCC listed:  
A2LA accredited

IC recognized #  
3925

**CETECOM Inc.**

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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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## **1 Assessment**

**The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS132 and RSS133.**

Company	Description	Model #
<b>Toshiba Information Systems (UK) Ltd., MobileCommunications Division</b>	<b>GSM/UMTS/HSDPA Mobile Phone</b>	<b>RG4-J01</b>

This report is reviewed by:

**Lothar Schmidt**  
(Director Regulatory and  
Antenna Services)

**2007-7-23 EMC & Radio**

Date	Section	Name	Signature
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This report is prepared by:

**Peter Mu**  
(EMC Project Engineer)

**2007-7-23 EMC & Radio**

Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	<b>CETECOM Inc.</b>
Department:	<b>EMC</b>
Address:	<b>411 Dixon Landing Road Milpitas, CA 95035 U.S.A.</b>
Telephone:	<b>+1 (408) 586 6200</b>
Fax:	<b>+1 (408) 586 6299</b>
Responsible Test Lab Manager:	<b>Lothar Schmidt</b>
Responsible Project Leader:	<b>Peter Mu</b>
Date of test:	<b>2007-7-18</b>

### 2.2 Identification of the Client

APPLICANT	
<b>Applicant (Company Name)</b>	<b>Toshiba Information Systems (UK) Ltd., Mobile Communications Division</b>
<b>Street Address</b>	<b>Riverside Way</b>
<b>City/Zip Code</b>	<b>Camberley, Surrey, GU15 3YA</b>
<b>Country</b>	<b>UK</b>
<b>Contact Person</b>	<b>Adrian Coyle</b>
<b>Telephone</b>	<b>+44 1276 405100</b>
<b>Fax</b>	<b>+44 1276 405111</b>
<b>e-mail</b>	<b>adrian.coyle@toshiba.co.uk</b>

### 2.3 Identification of the Manufacturer

MANUFACTURER	
<b>Manufacturer</b>	<b>Toshiba Corporation</b>
<b>Street Address</b>	<b>1-1, Shibaura 1-Chome, Minato-ku</b>
<b>City/Zip Code</b>	<b>Tokyo, 105-8001</b>
<b>Country</b>	<b>Japan</b>

### **3 Equipment under Test (EUT)**

#### **3.1 Specification of the Equipment under Test**

<b>EUT</b>	
Marketing Name of EUT (if not same as Model No.)	RG4-J01
Description	GSM/UMTS/HSDPA Mobile Phone
Model No.	RG4-J01
Serial No.	
H/W & S/W	HW version: PP SW version: 02.12BAQ/02.11BAI (SVN:01)
FCC-ID	SP2-RG4-J01
IC-ID (Industry Canada)	N/A

Frequency Range:	1850.2MHz – 1909.8MHz for PCS 1900
Type(s) of Modulation:	GMSK, 8-PSK
Number of Channels:	299 for PCS-1900
Antenna Type:	PIFA/average Gain is about -5dBi
Max. Output Power:	Radiated : 25.57dBm (0.361W) @CH512, GMSK 25.13dBm (0.326W) @ CH512, 8PSK

#### **3.2 Identification of the Equipment Under Test (EUT)**

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	EUT	Toshiba Corporation	RG4-J01	005XYAA0067

#### **3.3 Identification of Accessory equipment**

AE #	TYPE	MANF.	MODEL	SERIAL #
1	AC/DC ADAPTER	Toshiba	TS-ADP001	0706

#### **4 Subject of Investigation**

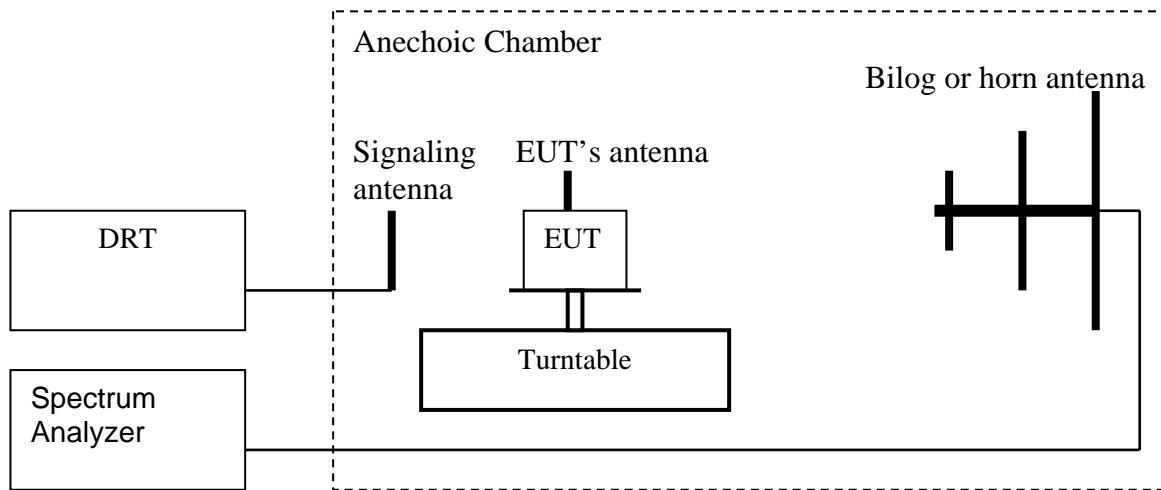
All testing was performed on the EUT listed in Section 3. The EUT was measured in the X,Y, Z positions for maximum EIRP.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS132 and RSS133. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

## 5 Measurements

### 5.1.1 Radiated Output Power Measurement procedure:

Based on TIA-603C 2004 2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:  
$$\text{ERP (dBm)} = \text{LVL (dBm)} + \text{LOSS (dB)}$$
8. Determine the EIRP using the following equation:  
$$\text{EIRP (dBm)} = \text{ERP (dBm)} + 2.14 \text{ (dB)}$$
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band. **Spectrum analyzer settings** = **rbw=vbw=3MHz**

(note: Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)

**5.1.2 EIRP Results 1900 MHz band:**

<b>Power Control Level</b>	<b>Burst Peak EIRP</b>
<b>0</b>	<b>≤33dBm (2W)</b>

<b>Frequency (MHz)</b>	<b>Effective Isotropic Radiated Power (dBm)</b>	
	<b>GPRS</b>	<b>EGPRS</b>
<b>1850.2</b>	<b>25.57</b>	<b>25.13</b>
<b>1880.0</b>	<b>24.59</b>	<b>24.24</b>
<b>1909.8</b>	<b>23.2</b>	<b>22.88</b>

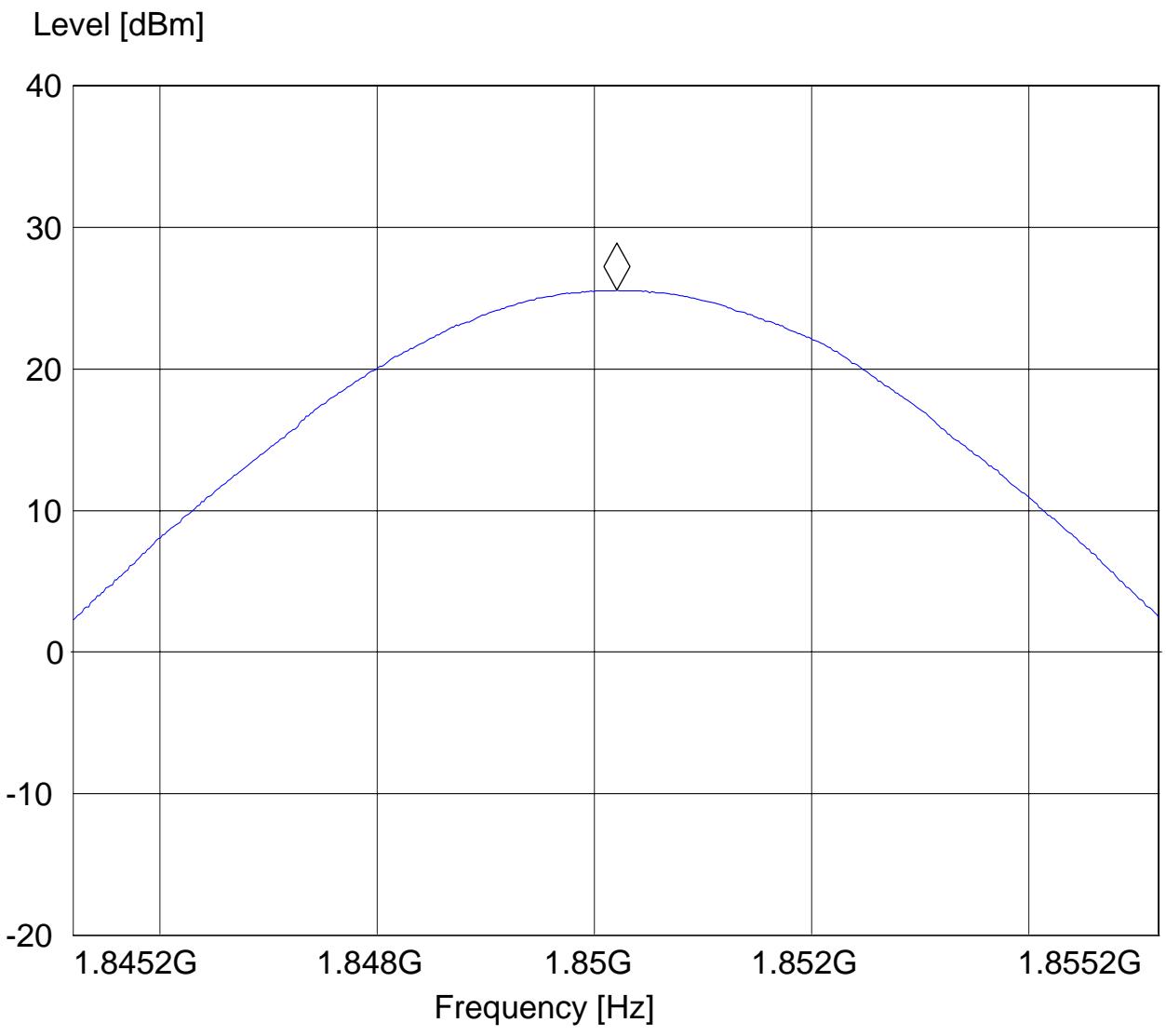
## GMSK CH512

EUT: DT1J  
Customer: Toshiba  
Test Mode: GPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### ***SWEET TABLE: "EIRP 1900 CH512"***

Short Description:		EIRP PCS 1900 for channel-512			
Start Frequency	Stop Frequency	Detector	Meas.	IF	Transducer
1.8 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

Marker: 1.85021002 GHz 25.57 dBm



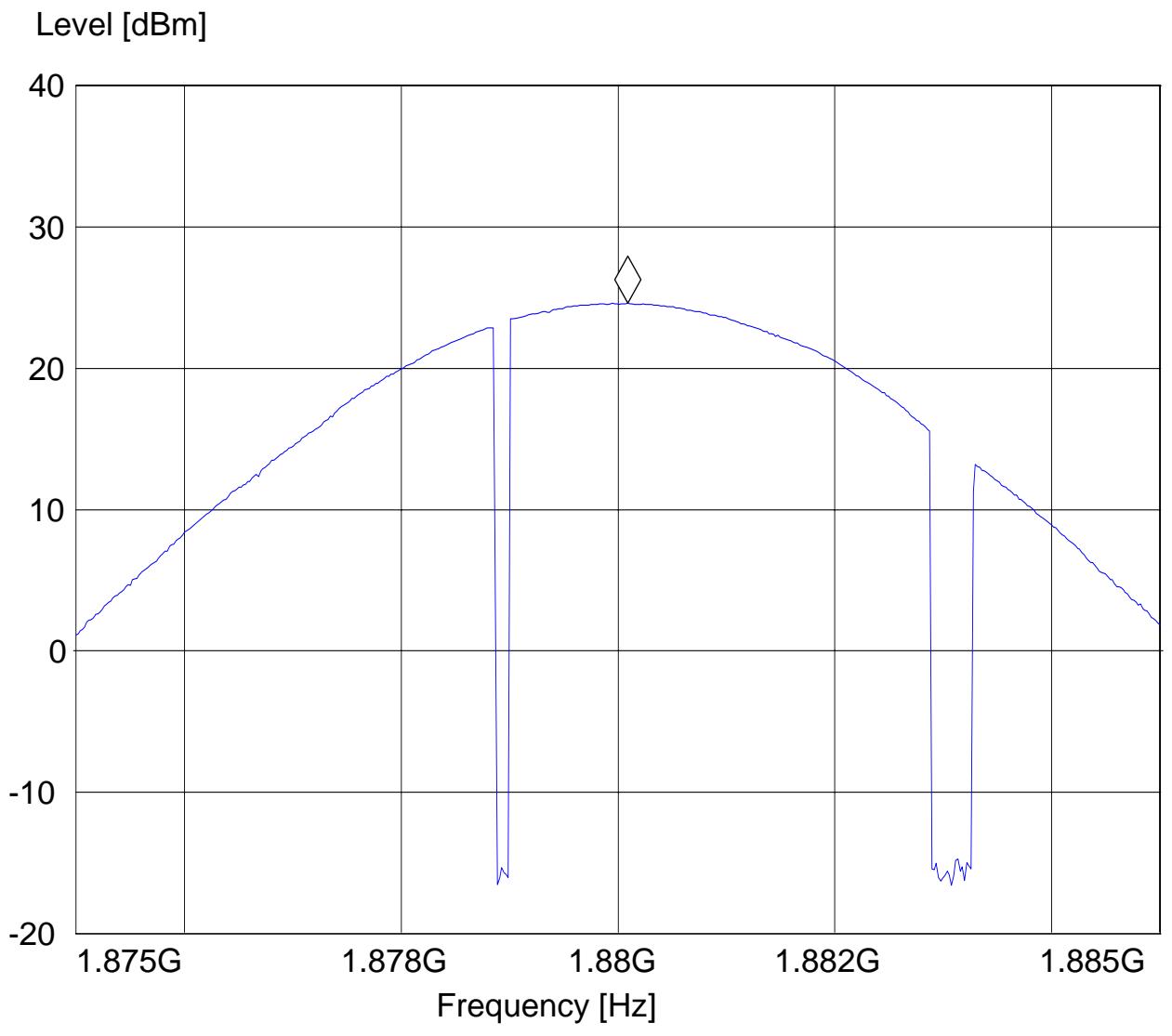
## GMSK CH661

EUT: DT1J  
Customer: Toshiba  
Test Mode: GPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### **SWEEP TABLE: "EIRP 1900 CH661"**

Short Description:		EIRP PCS 1900 for channel-661		
Start Frequency	Stop Frequency	Detector	Meas.	IF Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz DUMMY-DBM
		MaxPeak		

Marker: 1.88009018 GHz 24.59 dBm



## GMSK CH810

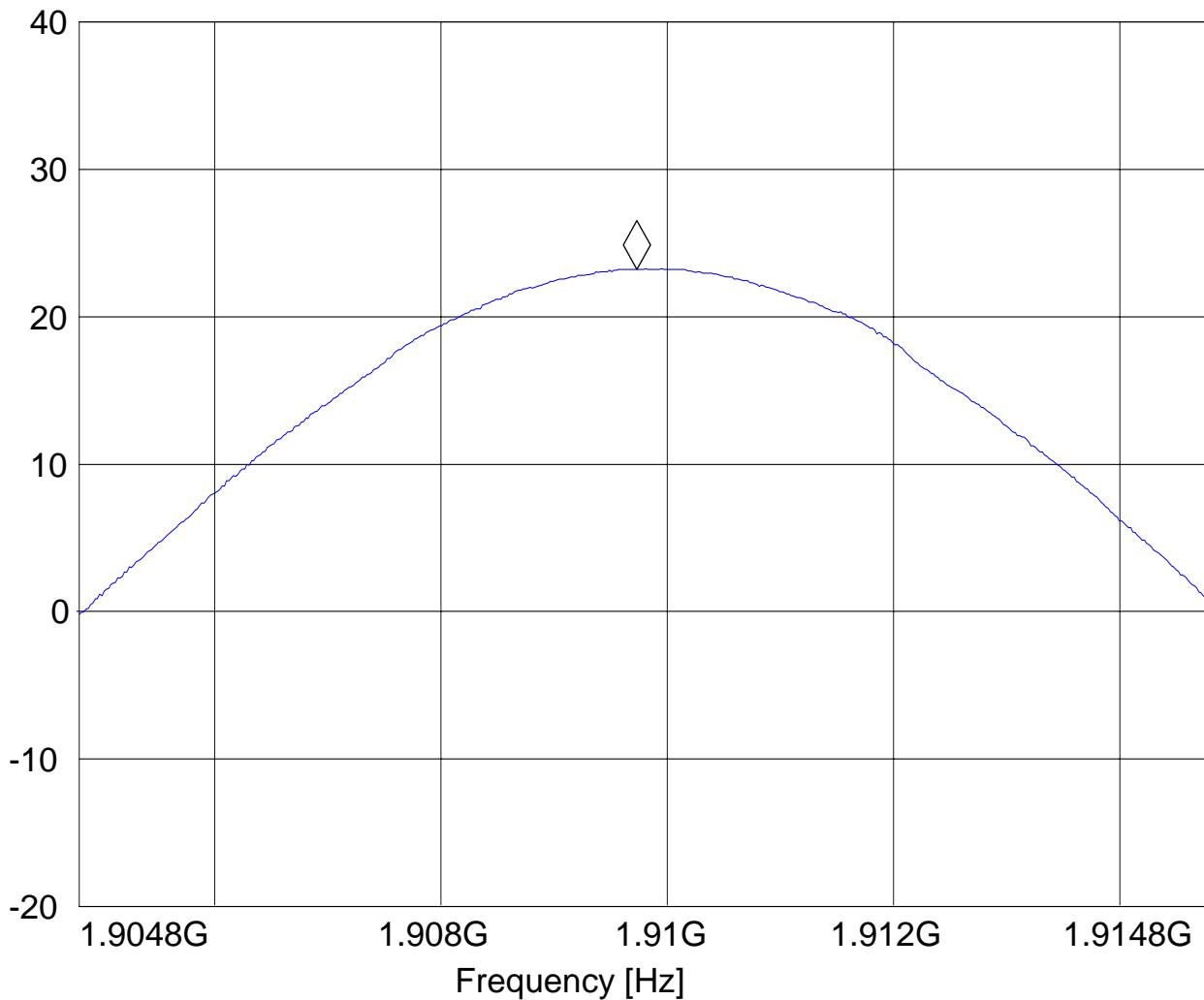
EUT: DT1J  
Customer: Toshiba  
Test Mode: GPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### ***SWEEP TABLE: "EIRP 1900 CH810"***

Short Description:		EIRP PCS 1900 for channel-810			
Start Frequency	Stop Frequency	Detector	Meas.	IF	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

Marker: 1.90972986 GHz 23.2 dBm

Level [dBm]



## 8PSK CH512

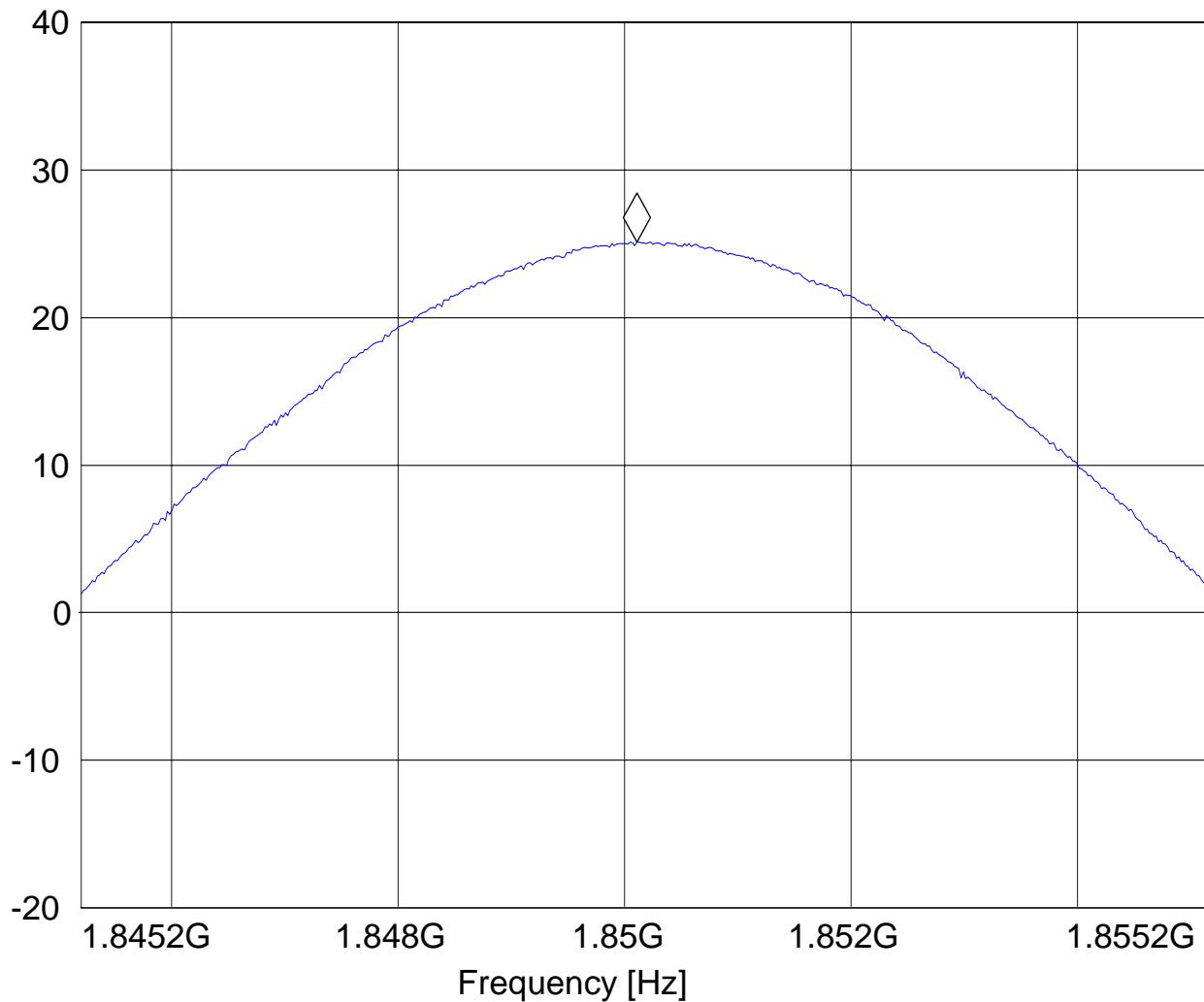
EUT: DT1J  
Customer: Toshiba  
Test Mode: EGPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### ***SWEET TABLE: "EIRP 1900 CH512"***

Short Description:		EIRP PCS 1900 for channel-512			
Start Frequency	Stop Frequency	Detector	Meas.	IF	Transducer
1.8 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

Marker: 1.85010982 GHz 25.13 dBm

Level [dBm]



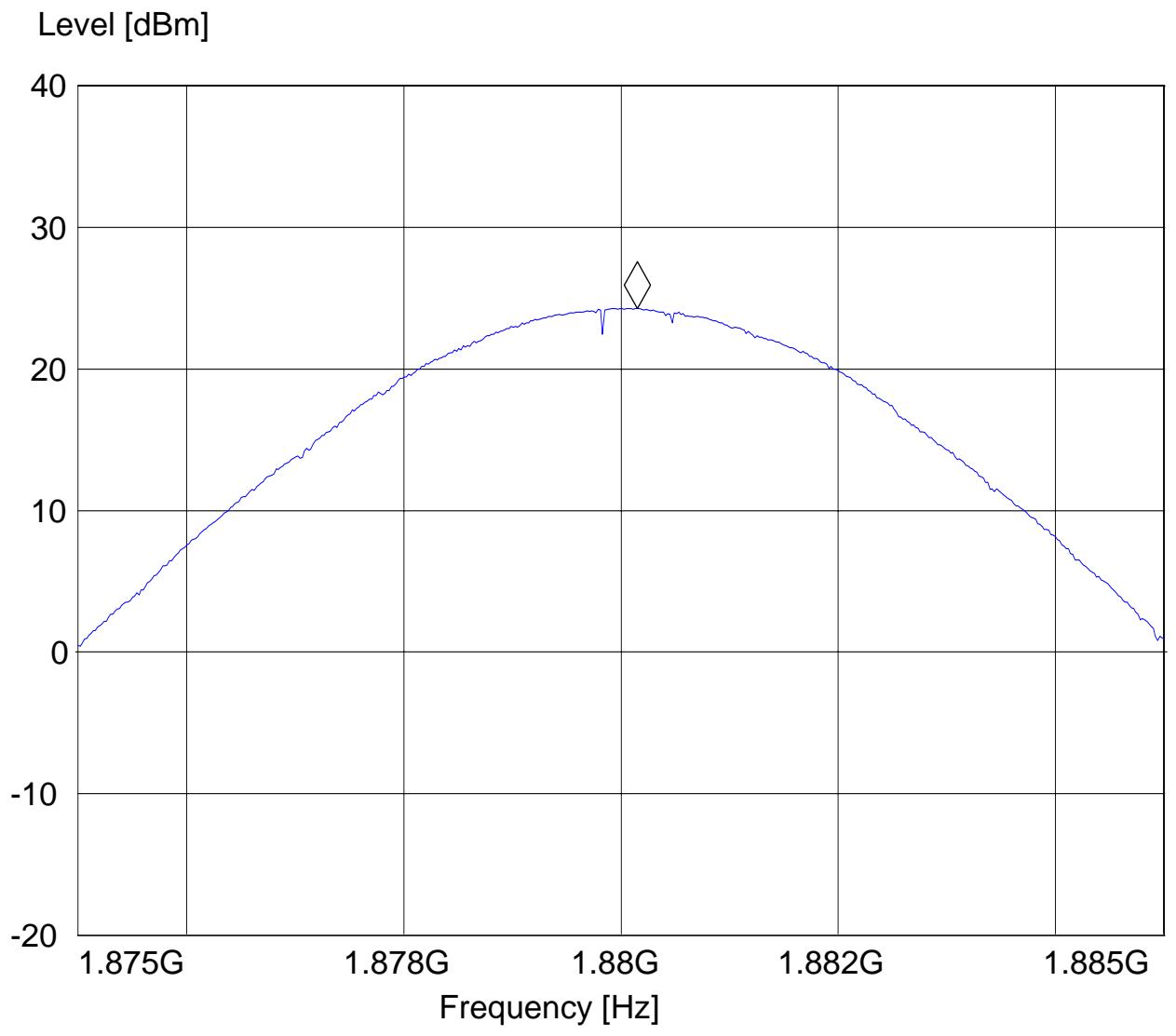
## 8PSK CH661

EUT: DT1J  
Customer: Toshiba  
Test Mode: EGPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### **SWEEP TABLE: "EIRP 1900 CH661"**

Short Description:		EIRP PCS 1900 for channel-661		
Start Frequency	Stop Frequency	Detector	Meas.	IF Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz DUMMY-DBM
		MaxPeak		

Marker: 1.880150301 GHz 24.24 dBm



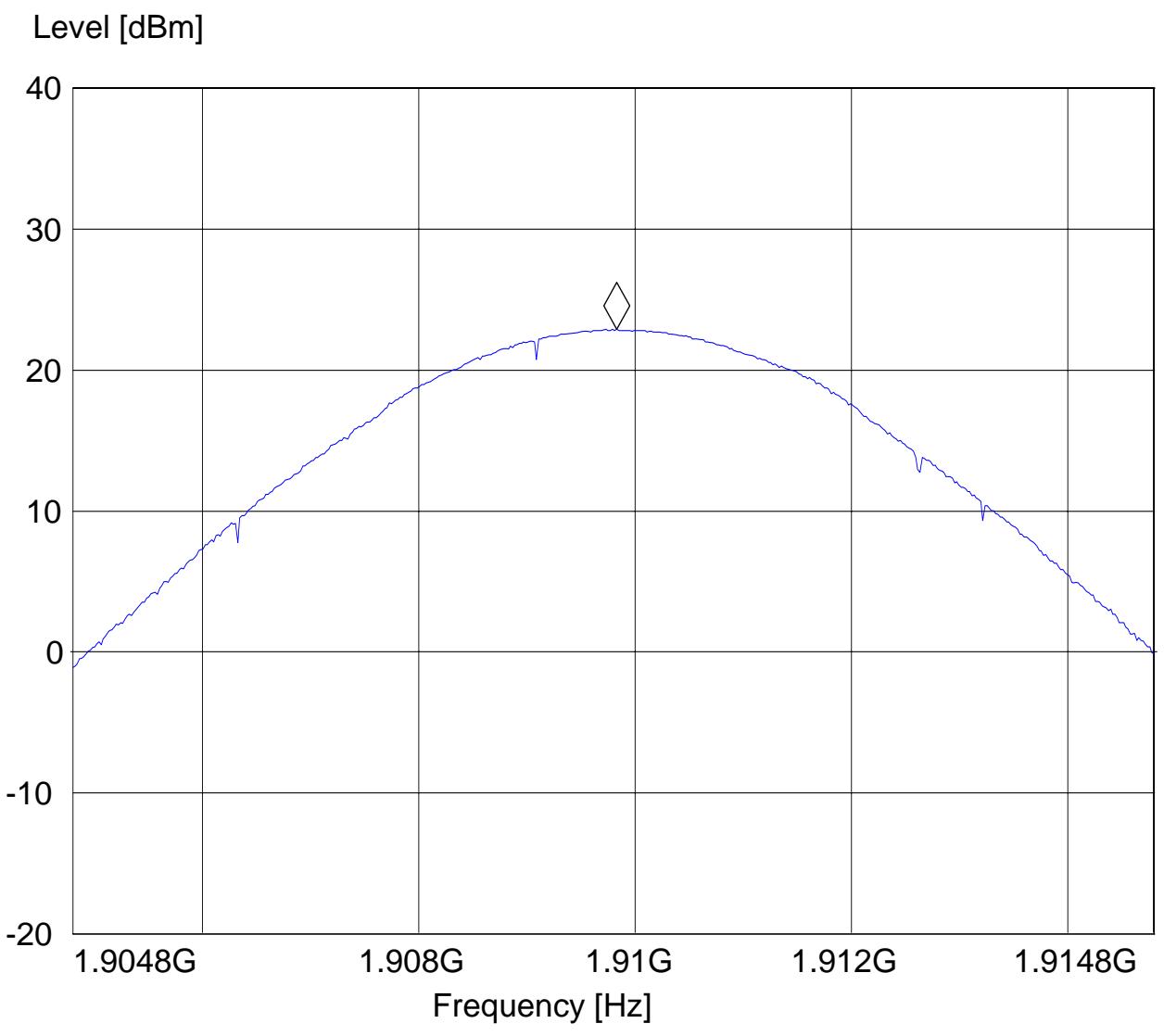
## 8PSK CH810

EUT: DT1J  
Customer: Toshiba  
Test Mode: EGPRS 1900  
ANT Orientation: H  
EUT Orientation: H, standing on side  
Test Engineer: Peter Mu  
Power Supply: AC Adapter  
Comments: Max EIRP TT323°

### ***SWEEP TABLE: "EIRP 1900 CH810"***

Short Description:		EIRP PCS 1900 for channel-810			
Start Frequency	Stop Frequency	Detector	Meas.	IF	Transducer
1.9 GHz	1.9 GHz	MaxPeak	Coupled	3 MHz	DUMMY-DBM

Marker: 1.90983006 GHz 22.88 dBm



## 6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2008	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2008	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2008	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2008	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2008	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2008	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2008	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2008	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2008	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2008	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2008	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2008	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2008	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2008	2 years

## **7 References**

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 2--FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS October 1, 2001.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 22 PUBLIC MOBILE SERVICES October 1, 1998.

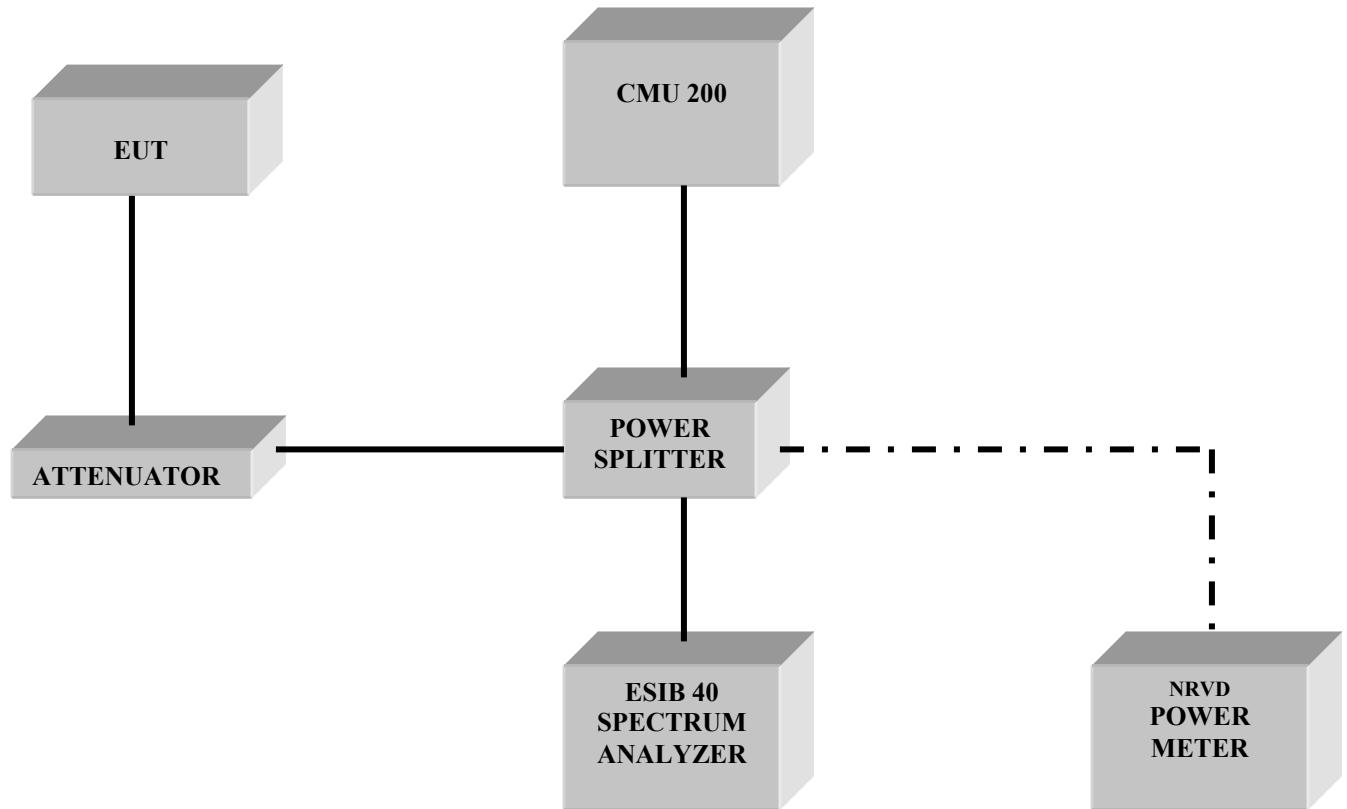
FCC Report and order 02-229 September 24, 2002.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 24 PERSONAL COMMUNICATIONS SERVICES October 1, 1998.

ANSI / TIA-603-C-2004 Land Mobile FM or PM Communications Equipment Measurement and Performance Standard November 7, 2002.

## 8 BLOCK DIAGRAMS

### Conducted Testing



## Radiated Testing

### ANECHOIC CHAMBER

