

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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## Evaluation Board Information

**$\mu$ PG2006TB**

**1.8 V  $V_{\text{cont}}$  SPDT SW IC Evaluation Board**

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- Evaluation Board Pattern Layout
  - Circuit Description
  - Insertion Loss Data  
(Including loss of the test fixture)
  - Isolation Data
  - Input and Output Return Loss Data
  - 1 GHz and 2.5 GHz  $P_{\text{in}}$  vs.  $P_{\text{out}}$  Data
  - Loss of The Test Fixture vs. Frequency Data  
(Microstrip Line + RF Connectors)

<b>Caution</b>	GaAs Products	<p>This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none"> <li>• Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.</li> </ul> <ol style="list-style-type: none"> <li>1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.</li> <li>2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.</li> </ol> <ul style="list-style-type: none"> <li>• Do not burn, destroy, cut, crush, or chemically dissolve the product.</li> <li>• Do not lick the product or in any way allow it to enter the mouth.</li> </ul>
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**This document outlines general applications for this product. The application circuits and circuit constants provided in this document are simply examples and should not be used for mass production design. Be aware also that there is no intention to standardize the restrictions and characteristics of these application circuits.**

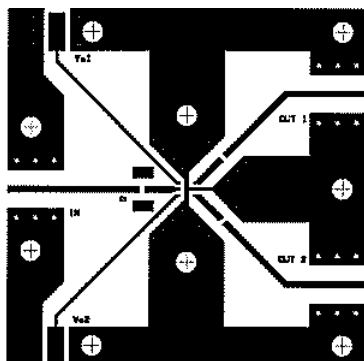
**The characteristics of high-frequency devices in particular vary depending on the external components and mounting pattern used.**

**Customers are requested to confirm all characteristics when designing a system based in part or wholly on the information in this document.**

- **The information in this document is current as of March, 2003. The information is subject to change without notice. For actual design-in, refer to the latest publications of NEC's data sheets or data books, etc., for the most up-to-date specifications of NEC semiconductor products. Not all products and/or types are available in every country. Please check with an NEC sales representative for availability and additional information.**
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"Special": Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)  
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M8E 00.4-0110

## Evaluation Board Pattern Layout

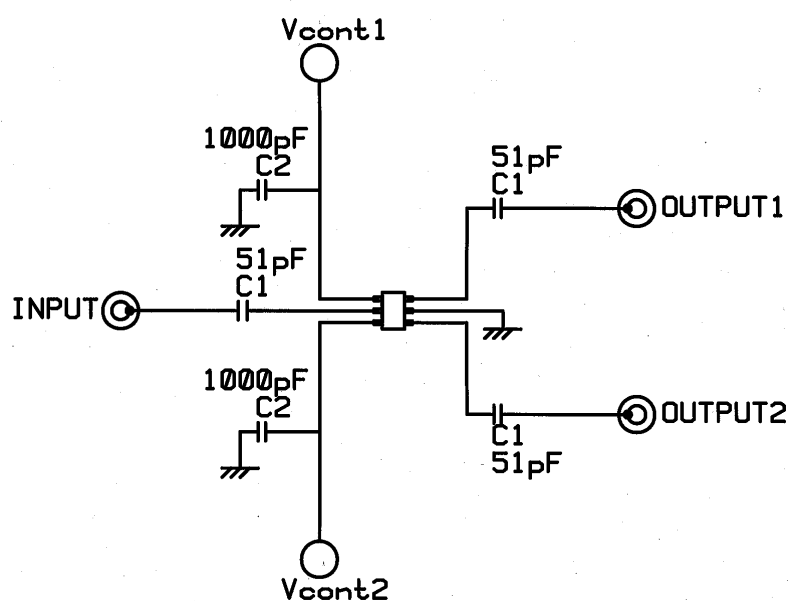


scale 1 : 1

size 38 mm × 38 mm

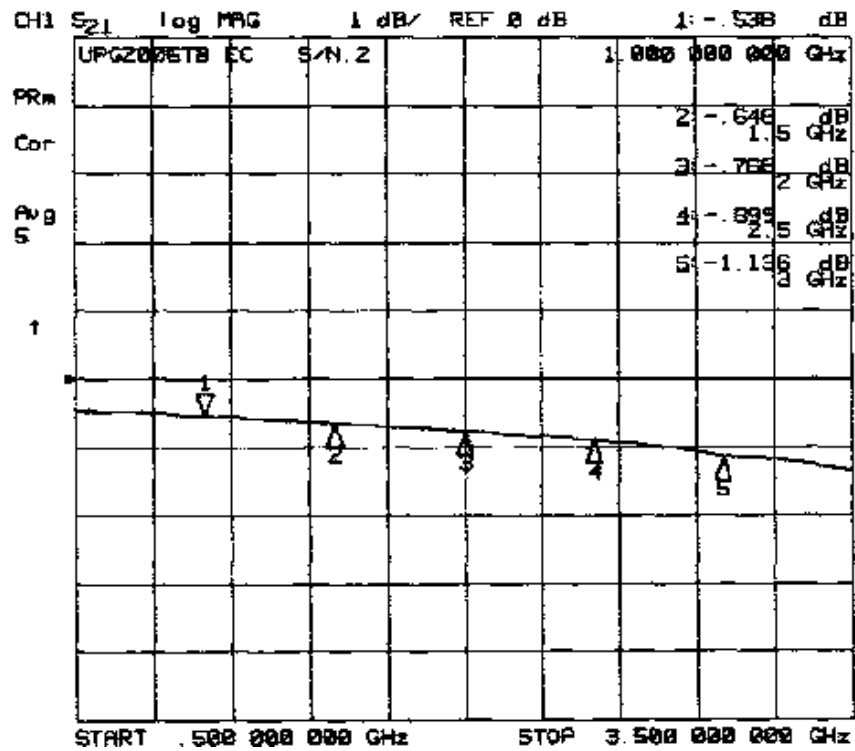
material FR4 (ELC4756/Sumitomo)  
h = 0.4 mm,  $\epsilon_r = 4.6$

## Circuit Description

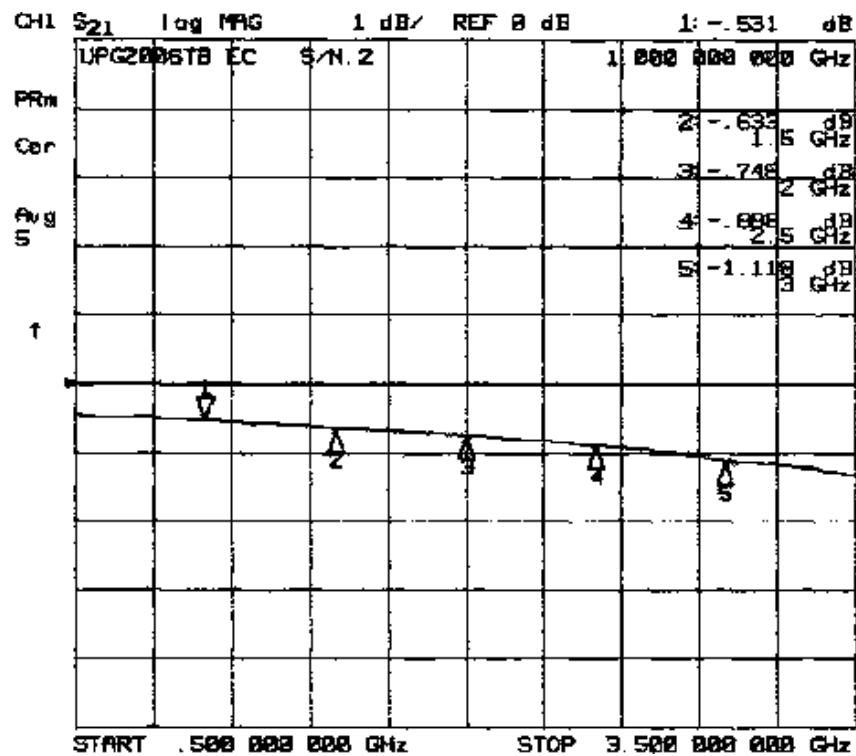


Parts	Model No.	Value	Maker	Symbol
Chip Capacitance	GRM36CH510K50	51 pF	Murata	C1
	GRM36B102K50	1000 pF	Murata	C2
PC Terminal	A2-2PA-2.54DSA	—	Hirose	—
RF Connector	142-0721-821	—	Jhonson	—
Substrate	FR4 (t = 0.4 mm)	—	Sumitomo	—

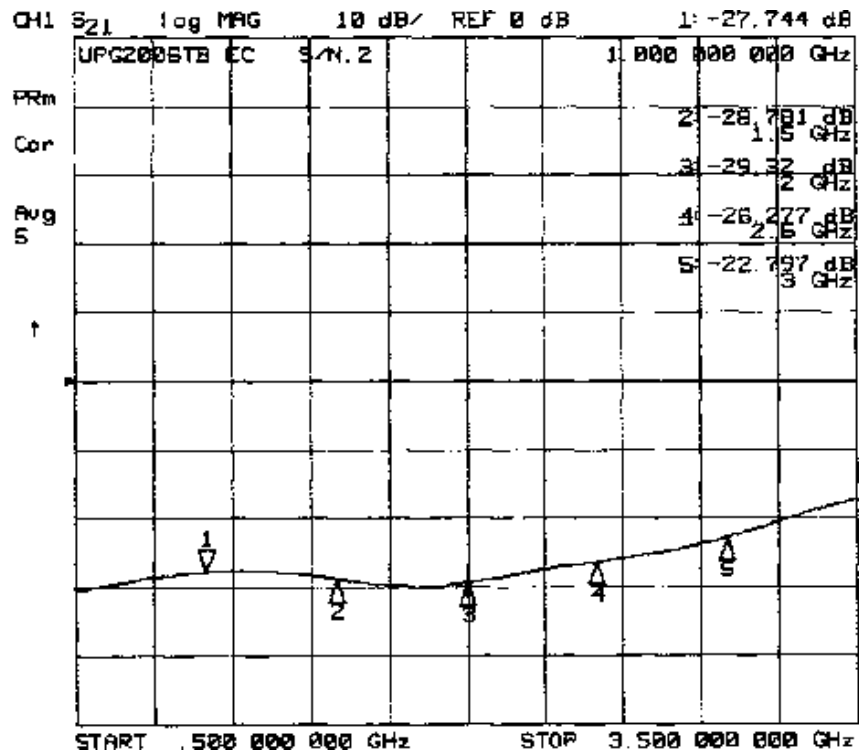
### OUT1 Insertion Loss



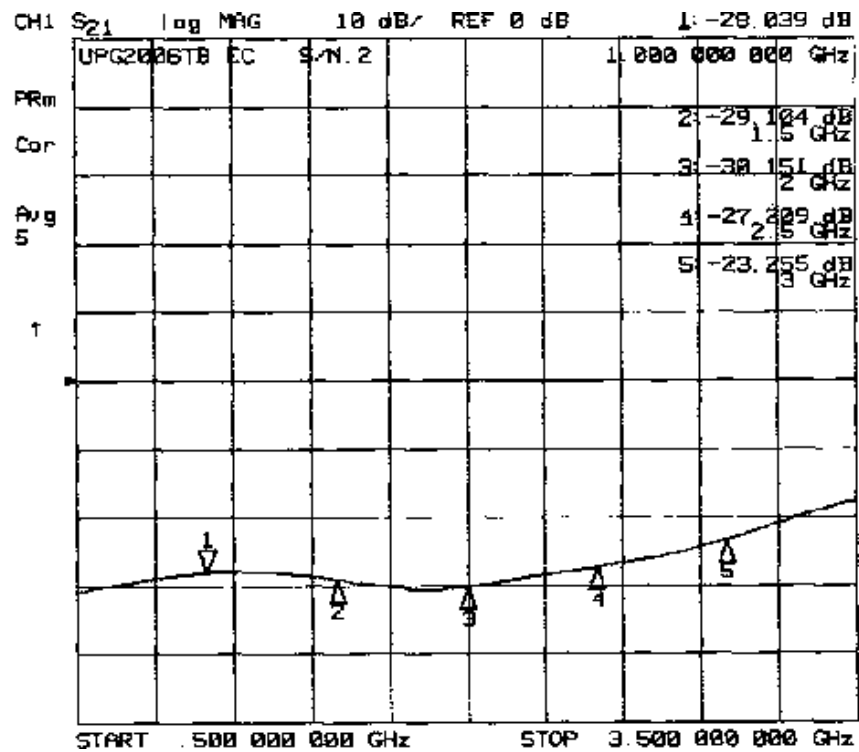
### OUT2 Insertion Loss



### OUT1 Isolation

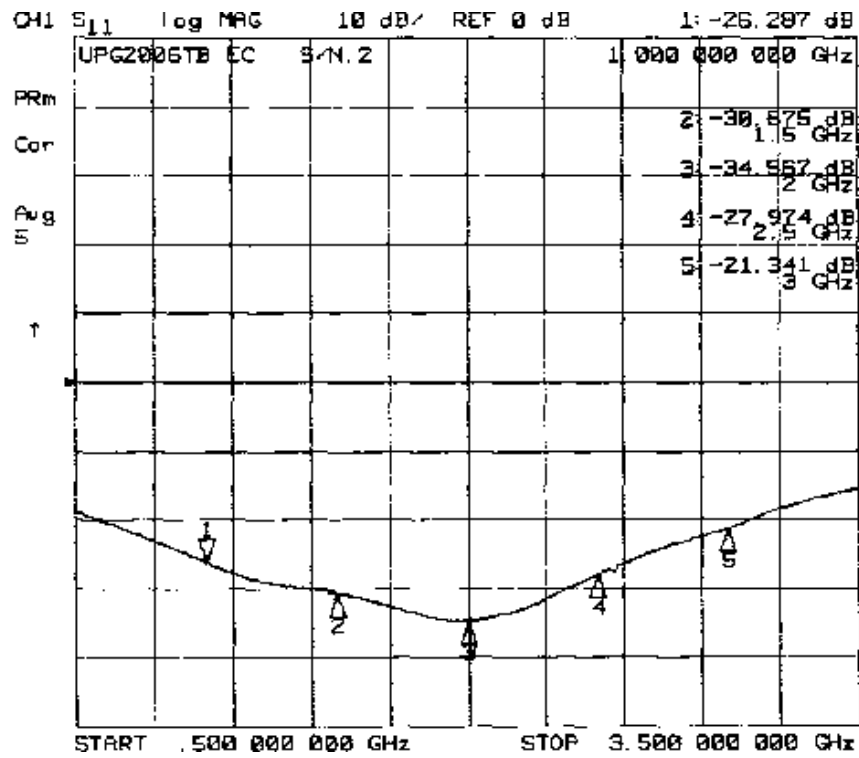


### OUT2 Isolation

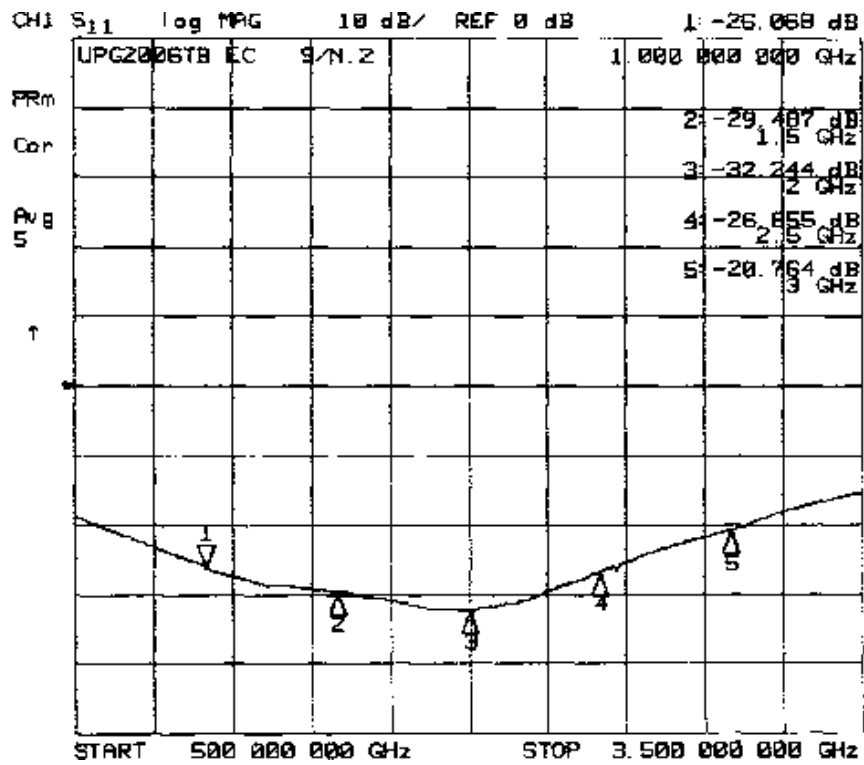




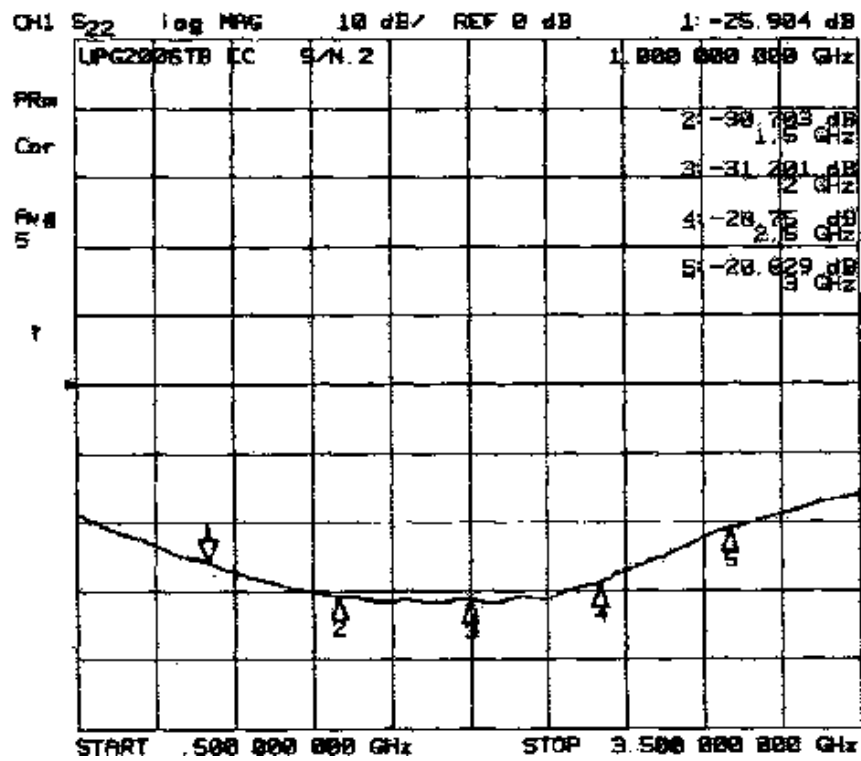
### OUT1 Input Return Loss



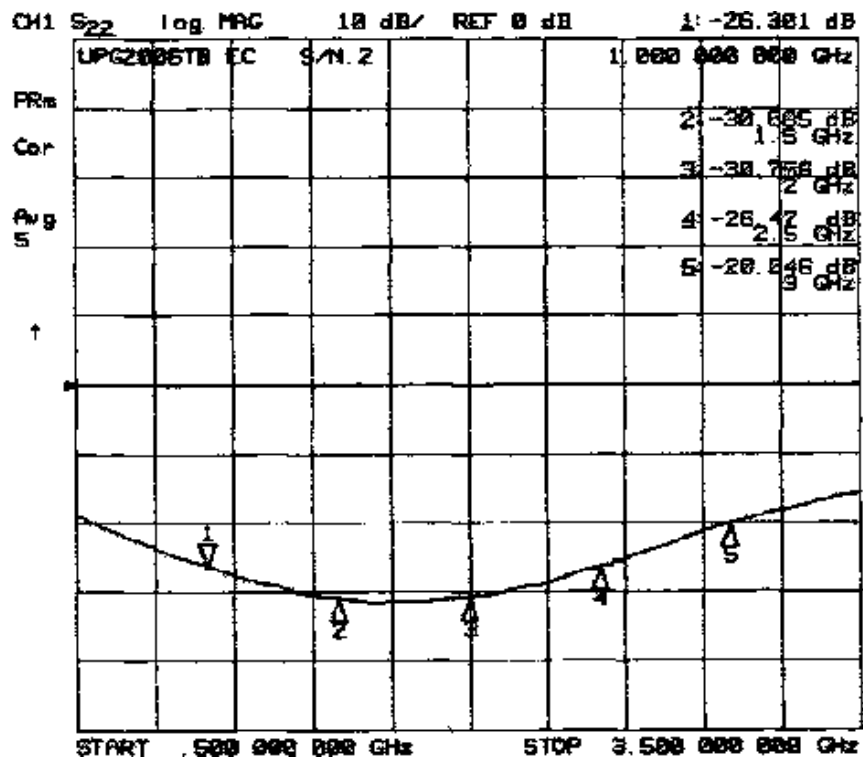
### OUT2 Input Return Loss



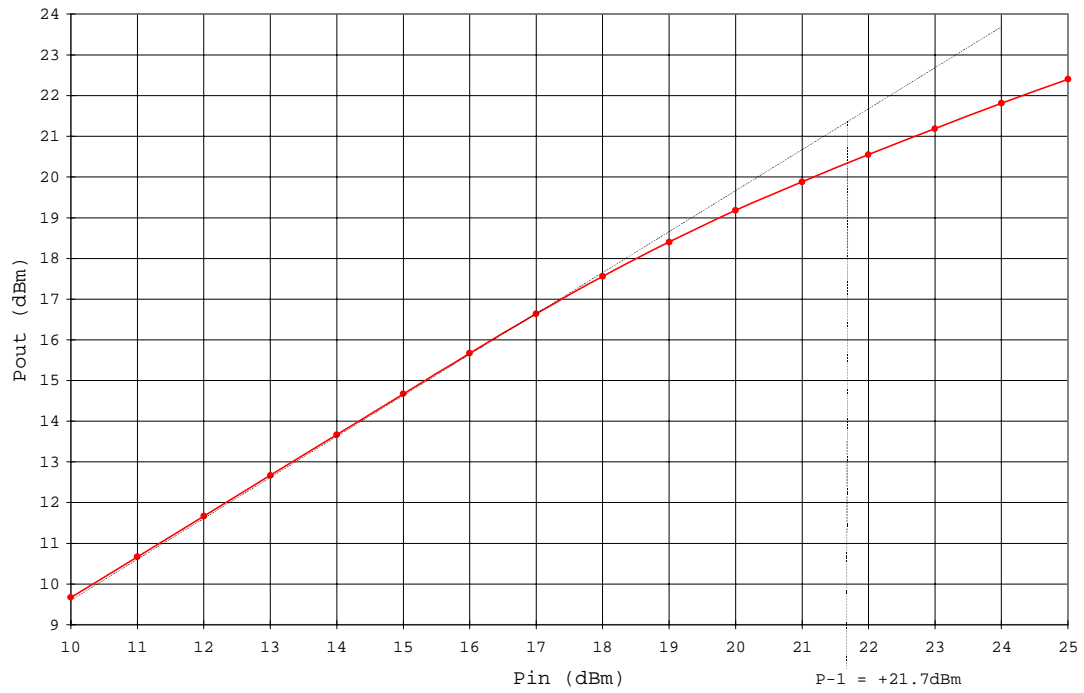
# OUT1 Output Return Loss



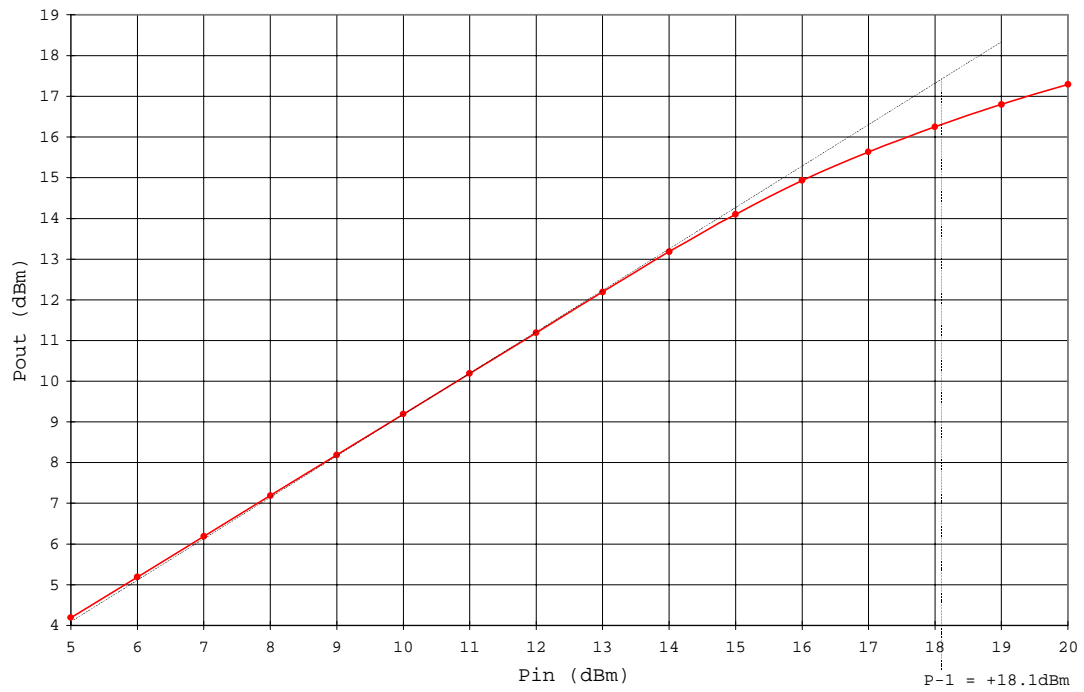
# OUT2 Output Return Loss



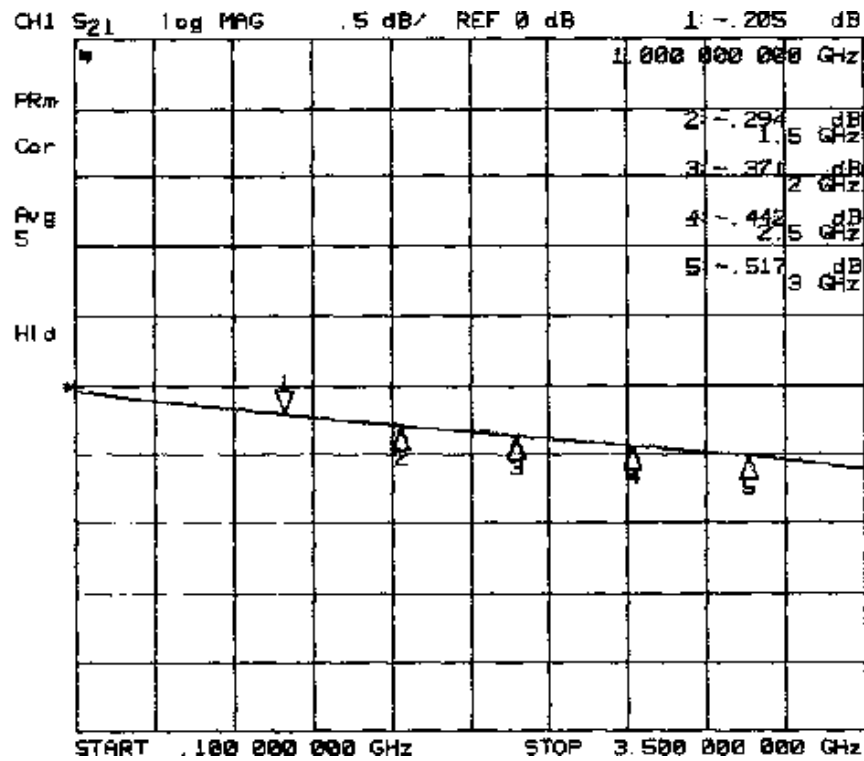
**1 GHz  $P_{in}$  vs.  $P_{out}$**



**2.5 GHz  $P_{in}$  vs.  $P_{out}$**



# Loss of The Test Fixture vs. Frequency



STIMULUS MHz	CH1 S21	STIMULUS MHz	CH1 S21
1.000 000 000	-.034 dB	3.100 000 000	-.534 dB
1.100 000 000	-.059 dB	3.200 000 000	-.551 dB
1.200 000 000	-.080 dB	3.300 000 000	-.574 dB
1.300 000 000	-.096 dB	3.400 000 000	-.595 dB
1.400 000 000	-.121 dB	3.500 000 000	-.617 dB
1.500 000 000	-.137 dB		
1.600 000 000	-.155 dB		
1.700 000 000	-.168 dB		
1.800 000 000	-.188 dB		
1.900 000 000	-.203 dB		
2.000 000 000	-.226 dB		
2.100 000 000	-.248 dB		
2.200 000 000	-.268 dB		
2.300 000 000	-.275 dB		
2.400 000 000	-.295 dB		
2.500 000 000	-.306 dB		
2.600 000 000	-.323 dB		
2.700 000 000	-.338 dB		
2.800 000 000	-.351 dB		
2.900 000 000	-.371 dB		
3.000 000 000	-.379 dB		
3.100 000 000	-.398 dB		
3.200 000 000	-.407 dB		
3.300 000 000	-.423 dB		
3.400 000 000	-.442 dB		
3.500 000 000	-.460 dB		
3.600 000 000	-.463 dB		
3.700 000 000	-.490 dB		
3.800 000 000	-.499 dB		
3.900 000 000	-.514 dB		

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