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

April 1st, 2010
Renesas Electronics Corporation

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

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Evaluation Board Information

μ PG2009TB SPDT SW IC Evaluation Board

- **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 P_{in} vs. P_{out} Data**
- **P_{in} vs. Harmonics Data**
- **Loss of The Test Fixture vs. Frequency Data
(Microstrip Line + RF Connectors)**

Caution	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"> • 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. <ol style="list-style-type: none"> 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. 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. <ul style="list-style-type: none"> • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.
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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.

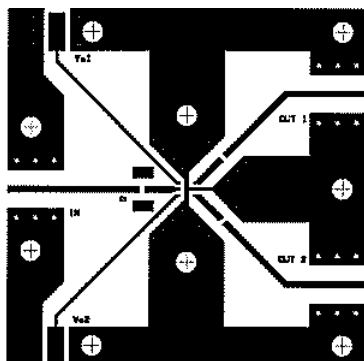
The characteristics of high-frequency devices in particular vary depending on the external components and mounting pattern used.

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

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"Standard": Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
"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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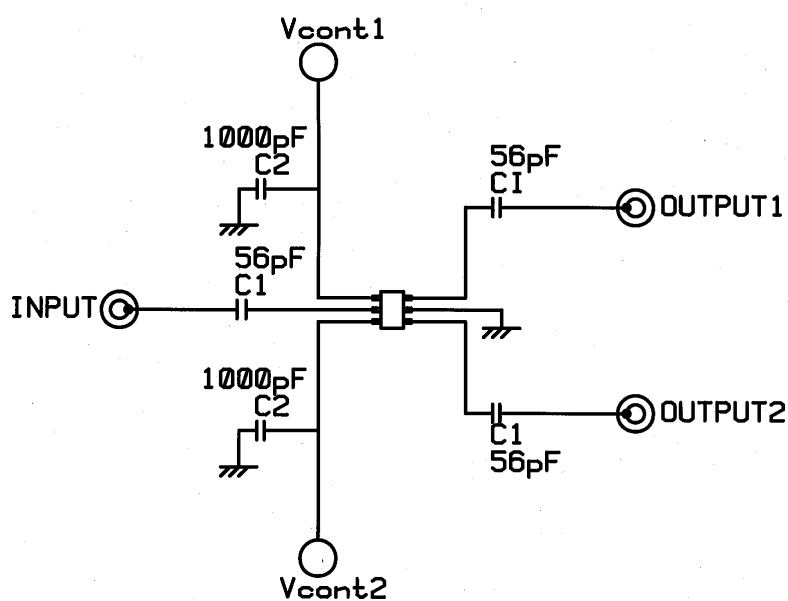
M8E 00.4-0110

Evaluation Board Pattern Layout



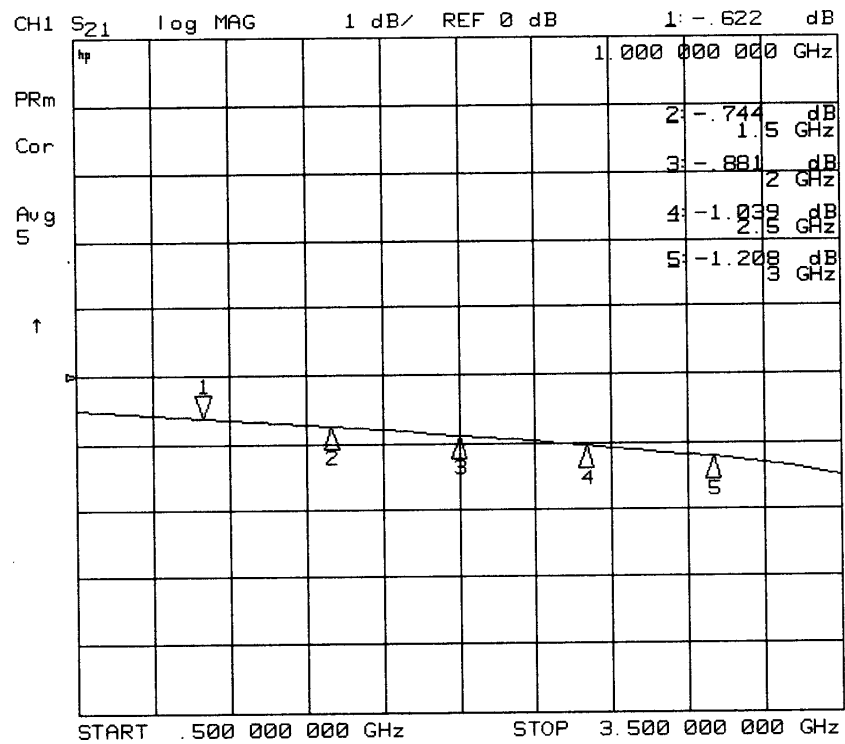
scale 1 : 1
size 38 mm × 38 mm
material FR4 (ELC4756/Sumitomo)
 $h = 0.4 \text{ mm}$, $\epsilon r = 4.6$

Circuit Description

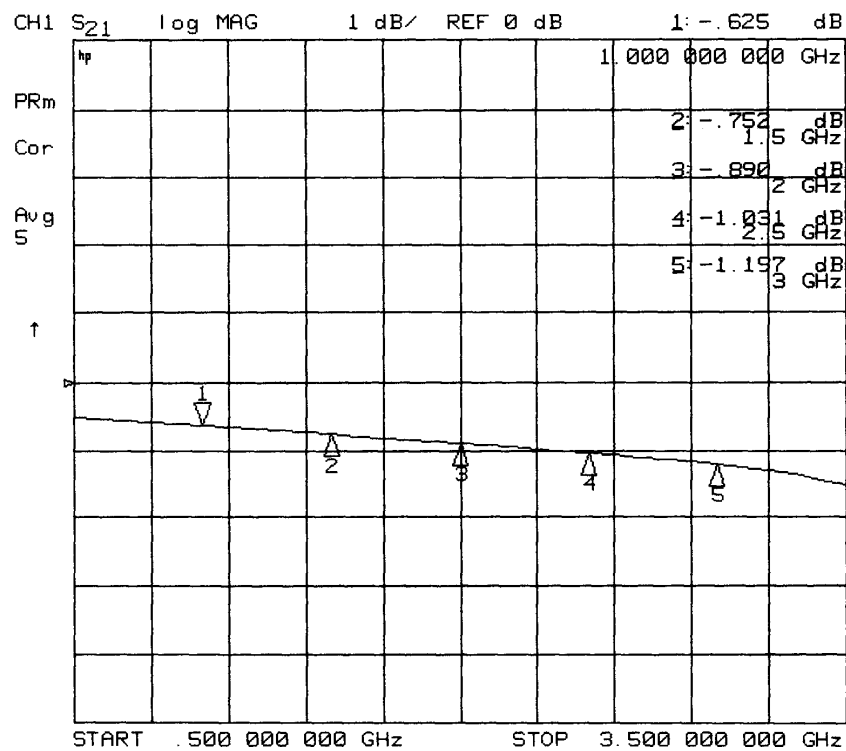


Parts	Model No.	Value	Maker	Symbol
Chip Capacitance	GRM36CH560K50	56 pF	Murata	C1
	GRM36B102K50	1000 pF	Murata	C2
PC Terminal	A2-2PA-2.54DSA	—	Hirose	—
RF Connector	142-0721-821	—	Jhonson	—
Substrate	FR4 (t = 0.8 mm)	—	Sumitomo	—

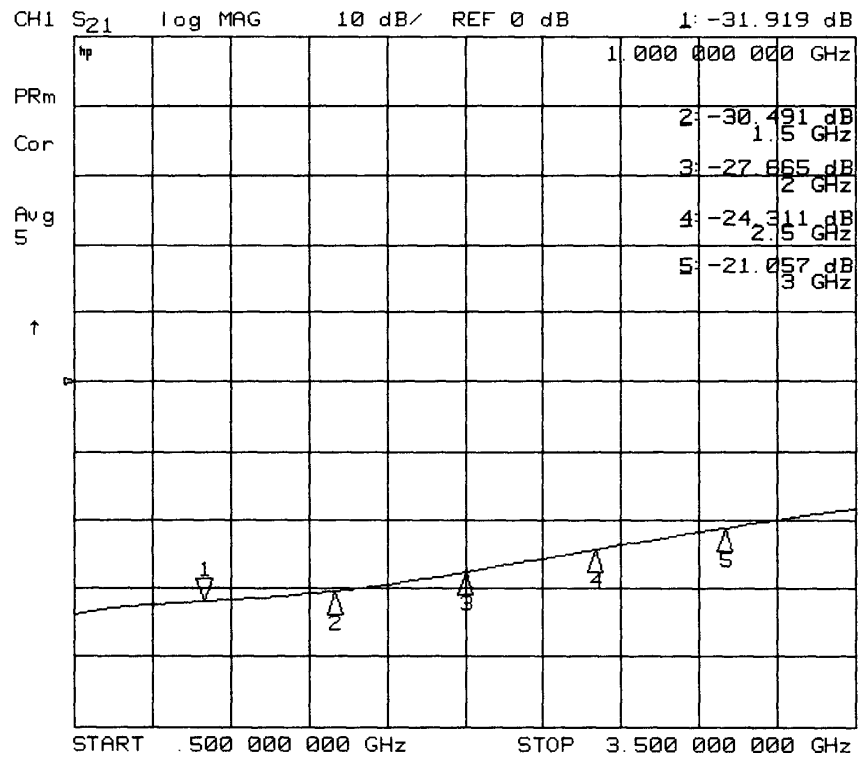
OUT1 Insertion Loss



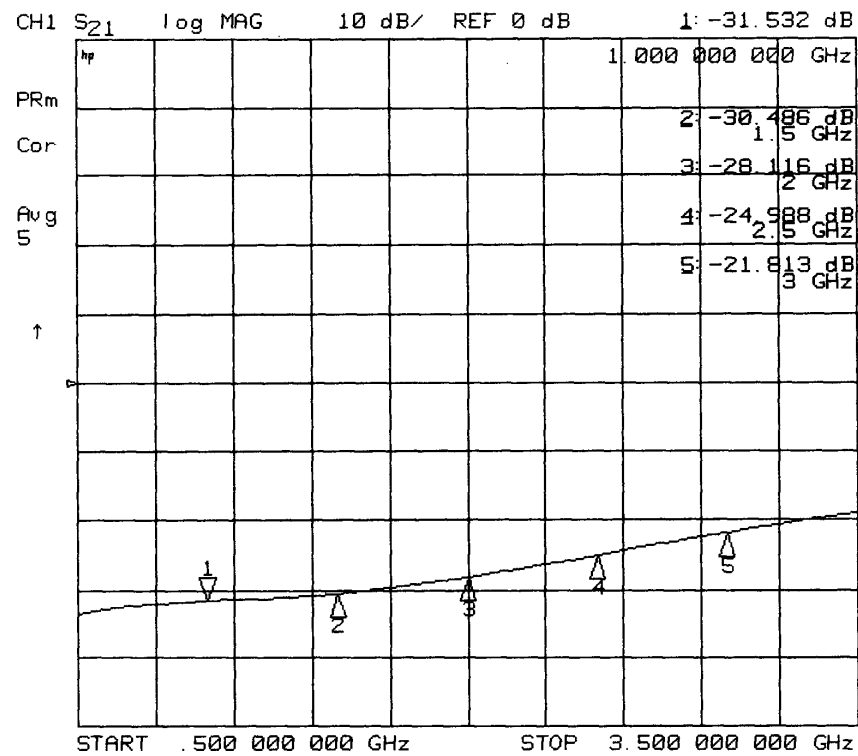
OUT2 Insertion Loss



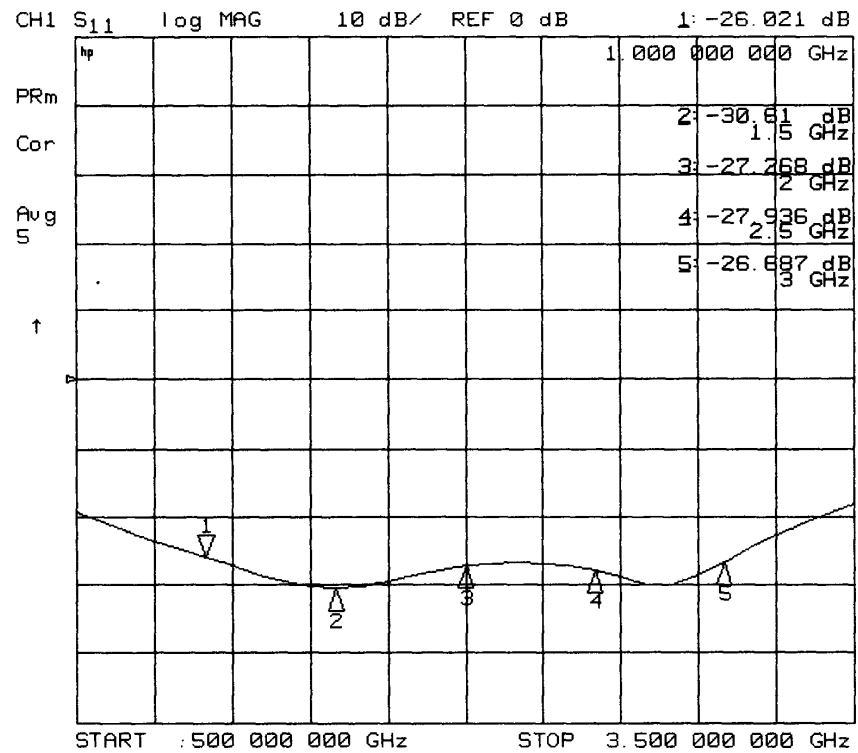
OUT1 Isolation



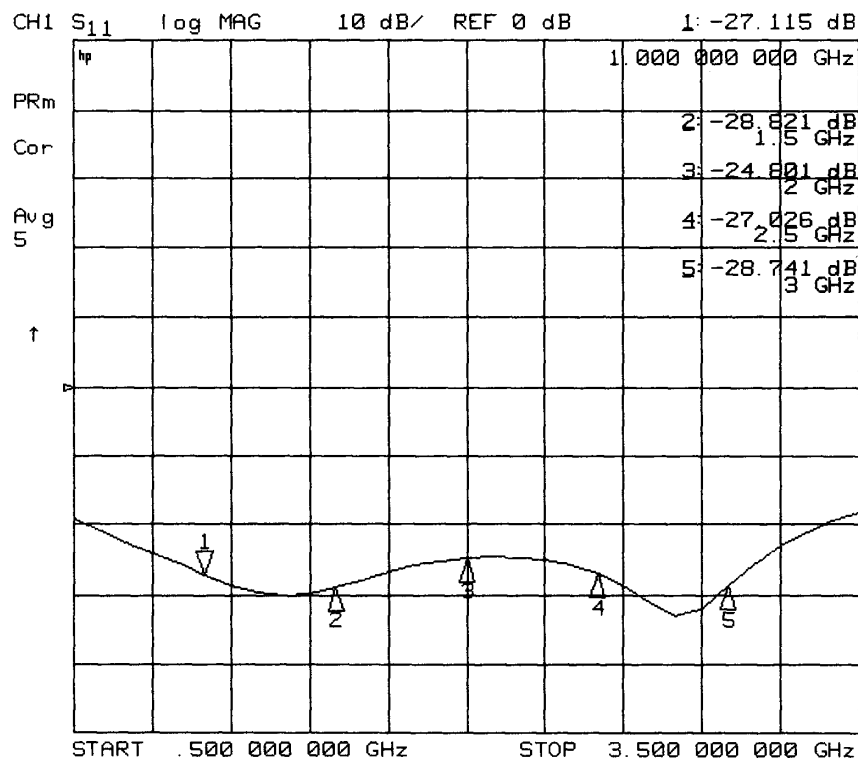
OUT2 Isolation



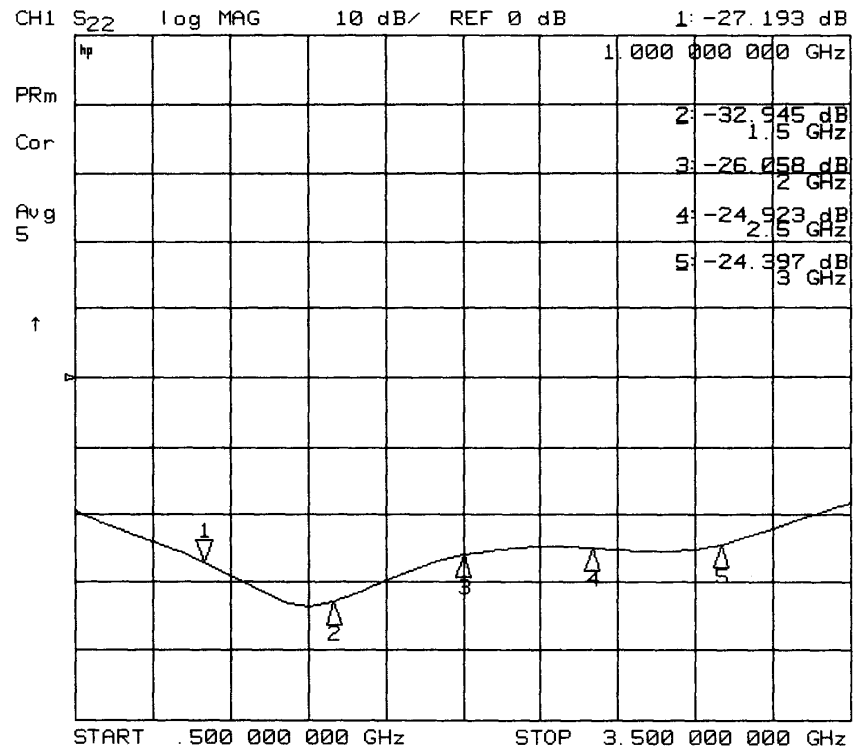
OUT1 Input Return Loss



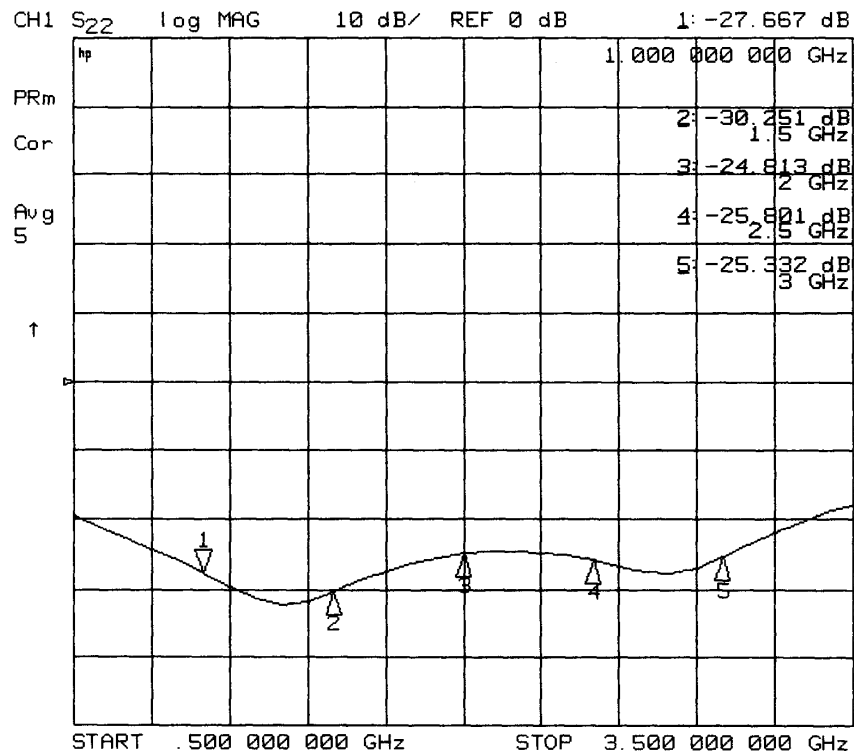
OUT2 Input Return Loss



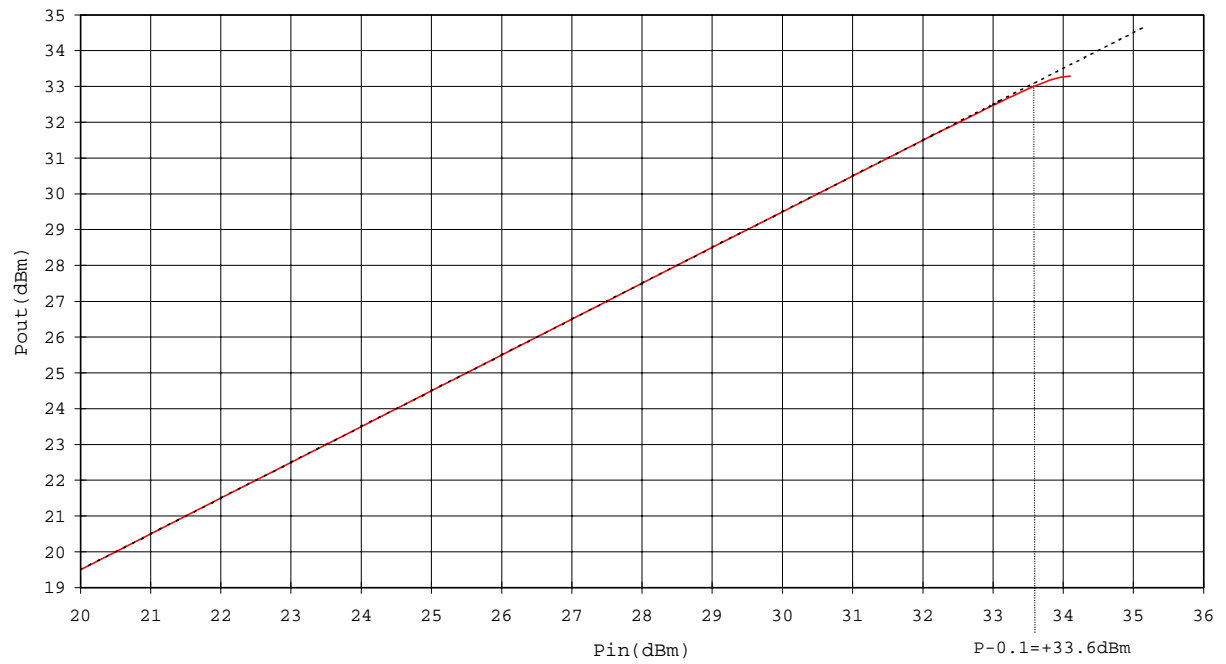
OUT1 Output Return Loss



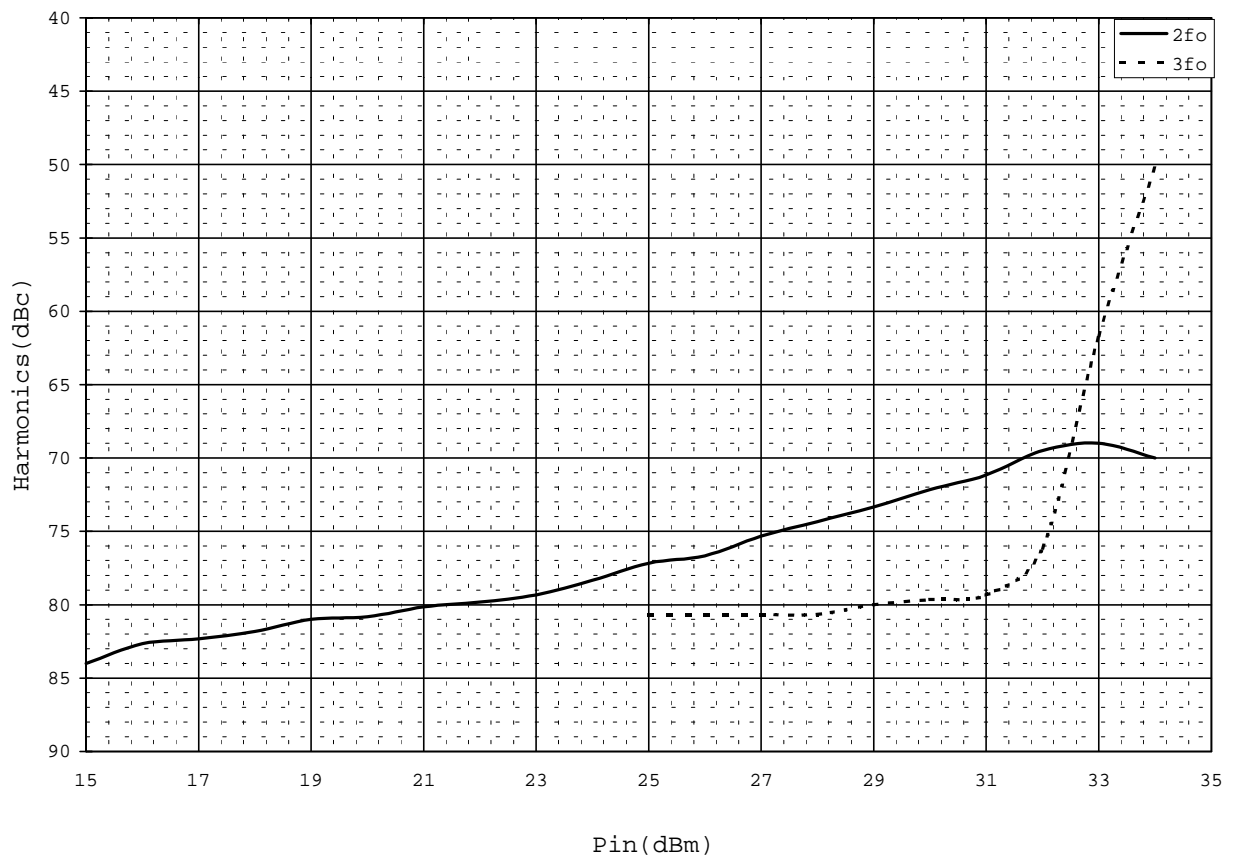
OUT2 Output Return Loss



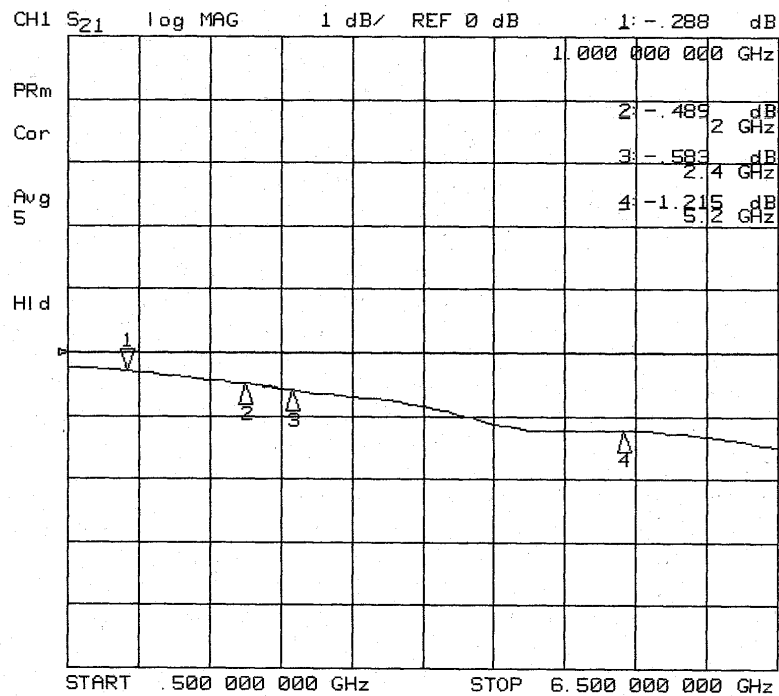
1 GHz P_{in} vs. P_{out}



P_{in} vs. Harmonics

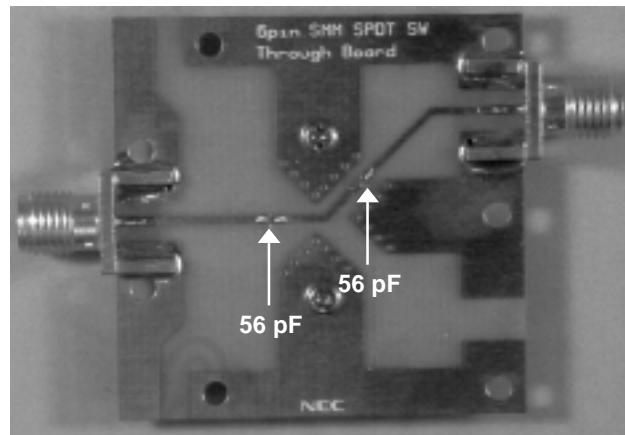


Loss of The Test Fixture vs. Frequency



STIMULUS	CH1 S ₂₁
MHz	
.500 000 000	-.228 dB
.600 000 000	-.230 dB
.700 000 000	-.238 dB
.800 000 000	-.256 dB
.900 000 000	-.268 dB
1.000 000 000	-.288 dB
1.100 000 000	-.307 dB
1.200 000 000	-.320 dB
1.300 000 000	-.350 dB
1.400 000 000	-.362 dB
1.500 000 000	-.384 dB
1.600 000 000	-.404 dB
1.700 000 000	-.426 dB
1.800 000 000	-.440 dB
1.900 000 000	-.469 dB
2.000 000 000	-.489 dB
2.100 000 000	-.513 dB
2.200 000 000	-.535 dB
2.300 000 000	-.566 dB
2.400 000 000	-.583 dB
2.500 000 000	-.611 dB
2.600 000 000	-.636 dB
2.700 000 000	-.645 dB
2.800 000 000	-.671 dB
2.900 000 000	-.689 dB
3.000 000 000	-.710 dB
3.100 000 000	-.722 dB
3.200 000 000	-.746 dB
3.300 000 000	-.773 dB
3.400 000 000	-.815 dB

Through Board (Including DC Block Capacitances)



► For further information, please contact

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