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April 1st, 2010
Renesas Electronics Corporation

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

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Evaluation Board Information

EC- μ PC8226TK Evaluation Board 1.575 GHz LNA of GPS Application for Reference

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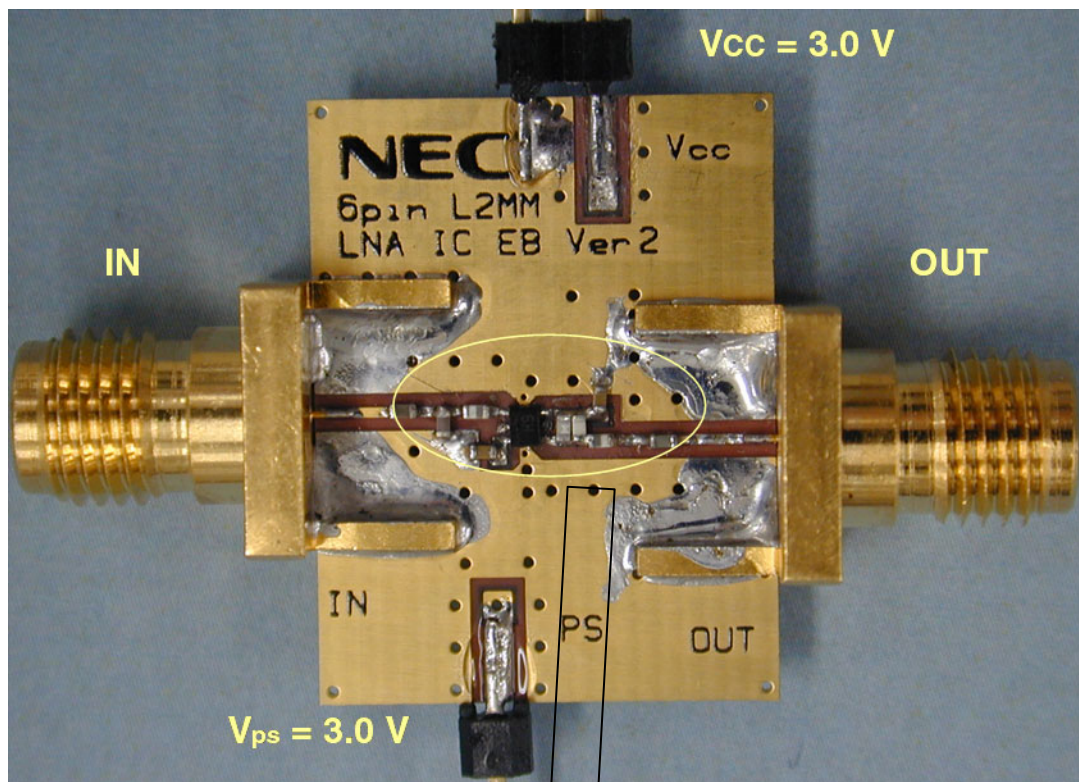
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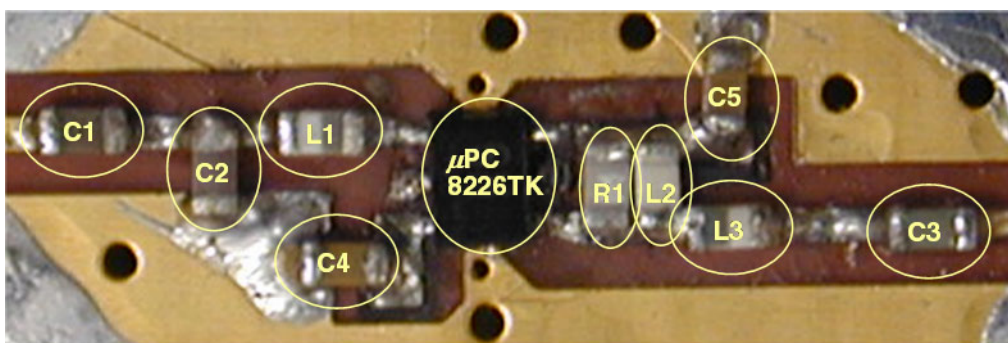
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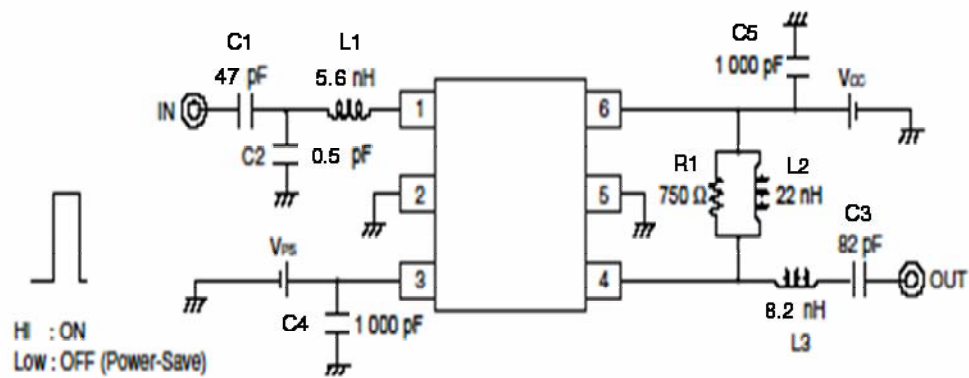
Evaluation Board Pattern Layout



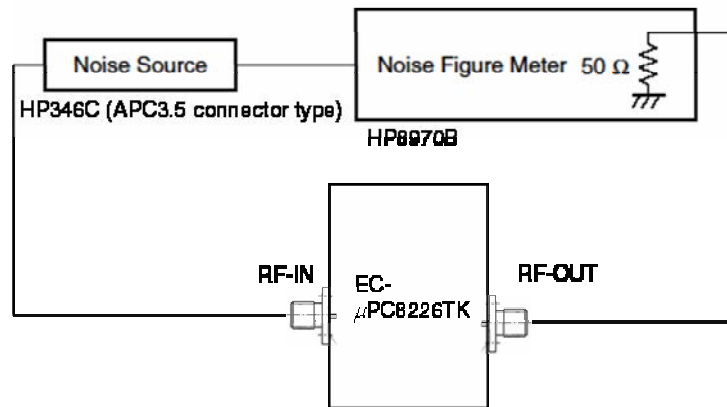
To be magnified



Circuit Description and Application Circuit

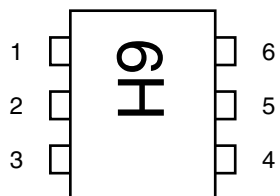


Note) NF measurement circuit

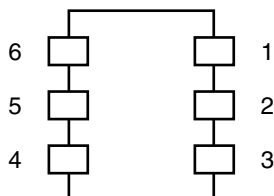


Pin Connection and Internal Block Diagram

(Top View)



(Bottom View)



Pin No.	Pin Name
1	INPUT
2	GND
3	PS
4	OUTPUT
5	GND
6	V _{CC}

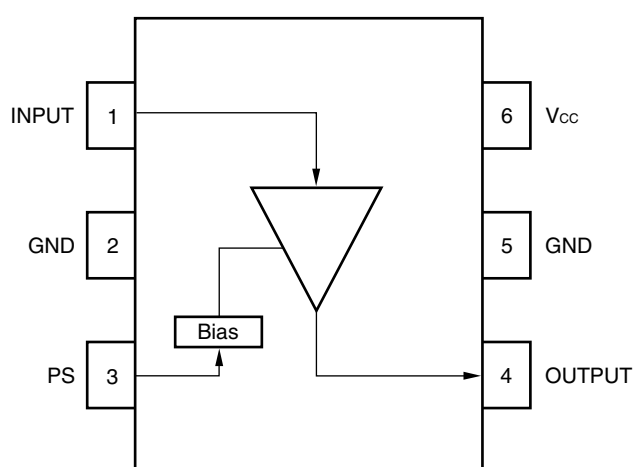
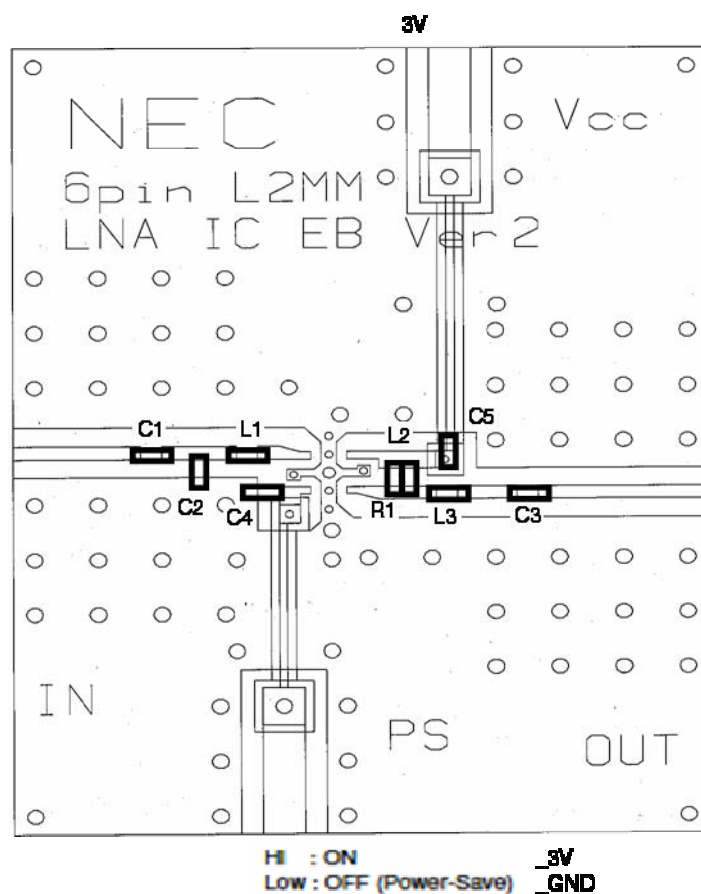


Illustration of the Assembled Application Board



<u>SIZE</u>	16.36 mm × 21.46 mm
<u>MATERIAL</u>	FR4 (ELC4756UV/Sumitomo), double side copper clad t = 0.2 mm (total t = 1.0 mm), $\epsilon_r = 4.6$, Au flash plated on pattern
<u>PC TERMINAL</u>	A2-2PA-2.54DSA (HIROSE)
<u>RF CONECTOR</u>	WK72475 (WAKA)
<u>THROUGH HOLES</u>	○

Components List

Symbol	Form	Rating	Part Number	Maker
C1	Chip Capacitor	47 pF	GRM1552C1H470JZ01	Murata
C2	Chip Capacitor	0.5 pF	GRM1554C1HR50CZ01	Murata
C3	Chip Capacitor	82 pF	GRM1552C1H820JZ01	Murata
C4, C5	Chip Capacitor	1 000 pF	GRM1552C1H102JA01	Murata
R1	Chip Resistor	750 Ω	RR-0510P-751D	Susumu
L1	Chip Inductor	5.6 nH	AML1005H5N6ST	FDK
L2	Chip Inductor	22 nH	AML1005H22NST	FDK
L3	Chip Inductor	8.2 nH	AML1005H8N2ST	FDK

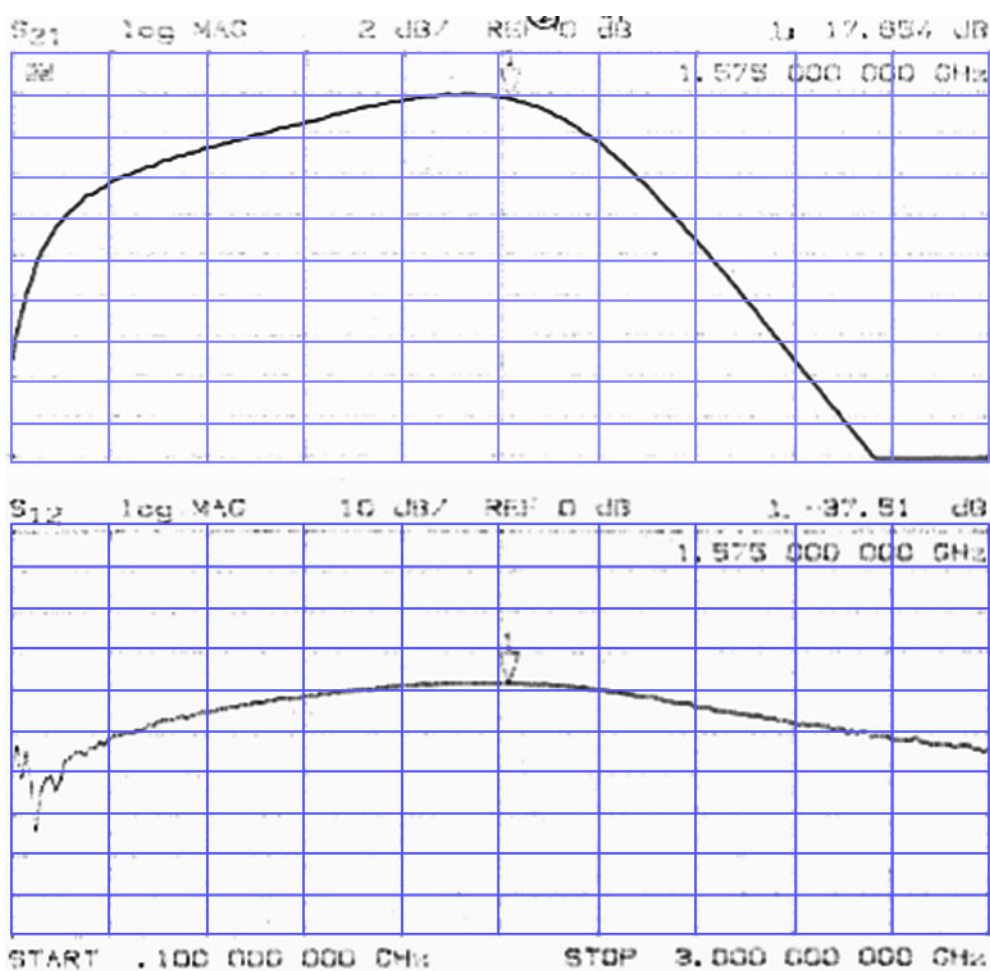
Standard Electric Characteristics on Application Board

Standard Electric Characteristics

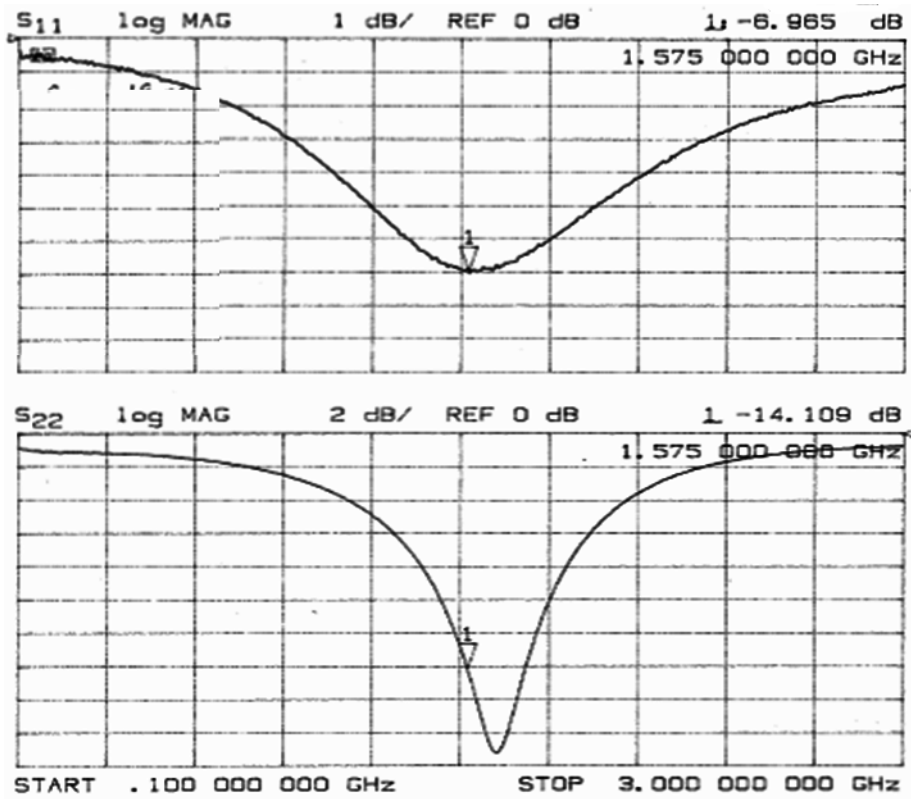
($T_A = +25^\circ\text{C}$, $V_{CC} = 3.0\text{ V}$, $V_{PS} = 3.0\text{ V}$, $f_{in} = 1\,575\text{ MHz}$, unless otherwise specified)

I_{CC}	: 3.1 mA	IIP_3	: -12 dBm
NF	: 1.14 dB	RL_{in}	: 7.0 dB
G_P	: 17.6 dB	RL_{out}	: 14.1 dB
PO (1 dB)	: -5.5 dBm	ISL	: -37.5 dB
PO	: +1.2 dBm @ $P_{in} = -10\text{ dBm}$		

Gain and Isolation



Input and Output Return Loss



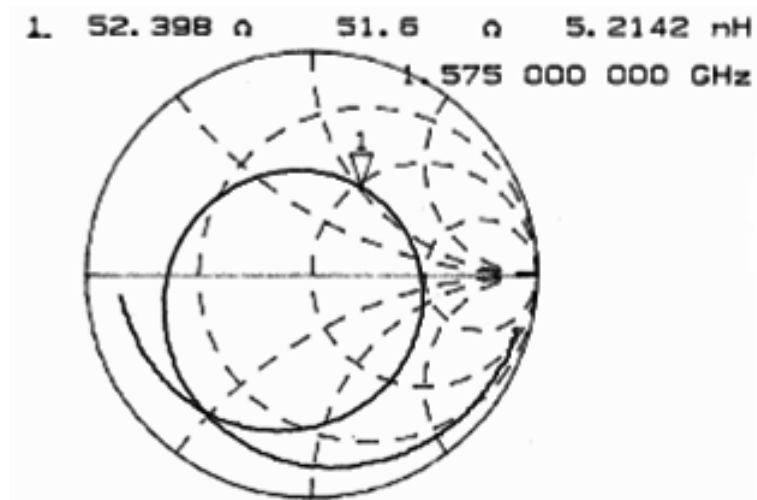
S-parameters

S₁₁

Start 0.1 GHz

Stop 3.0 GHz

(Measured at
connector on
application board)

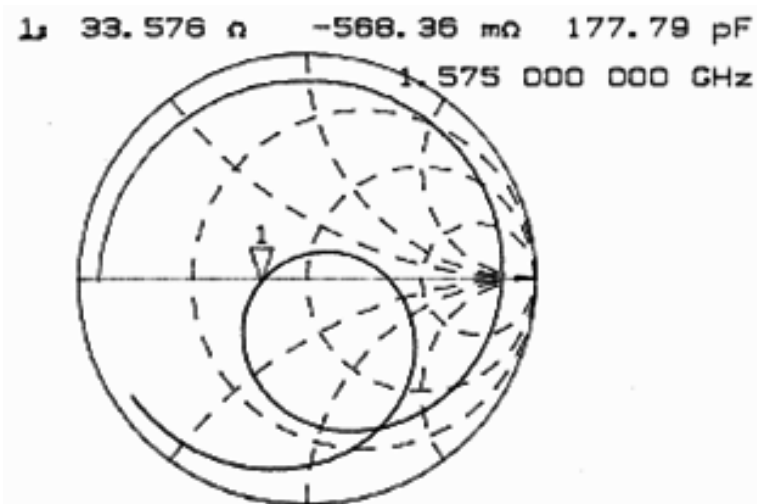


S₂₂

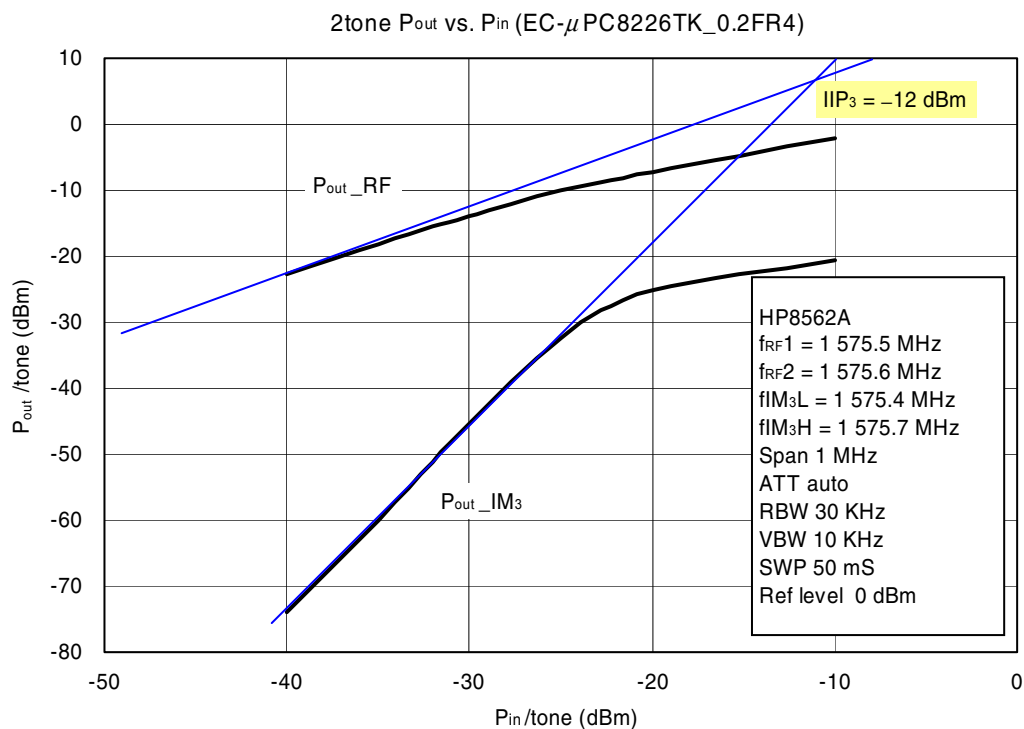
Start 0.1 GHz

Stop 3.0 GHz

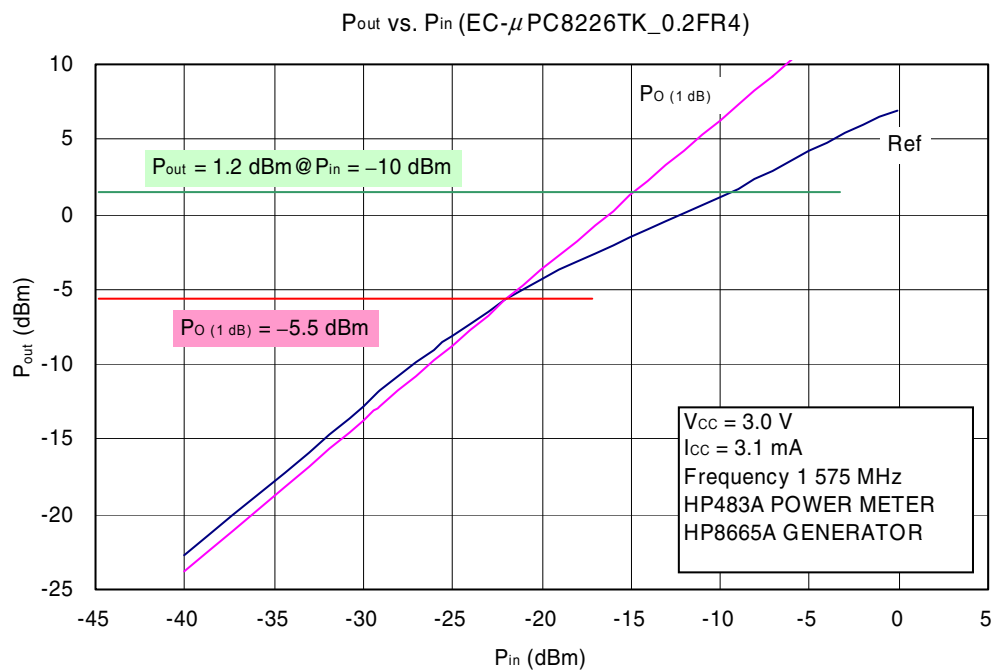
(Measured at
connector on
application board)



Input 3rd Order Distortion Intercept Point

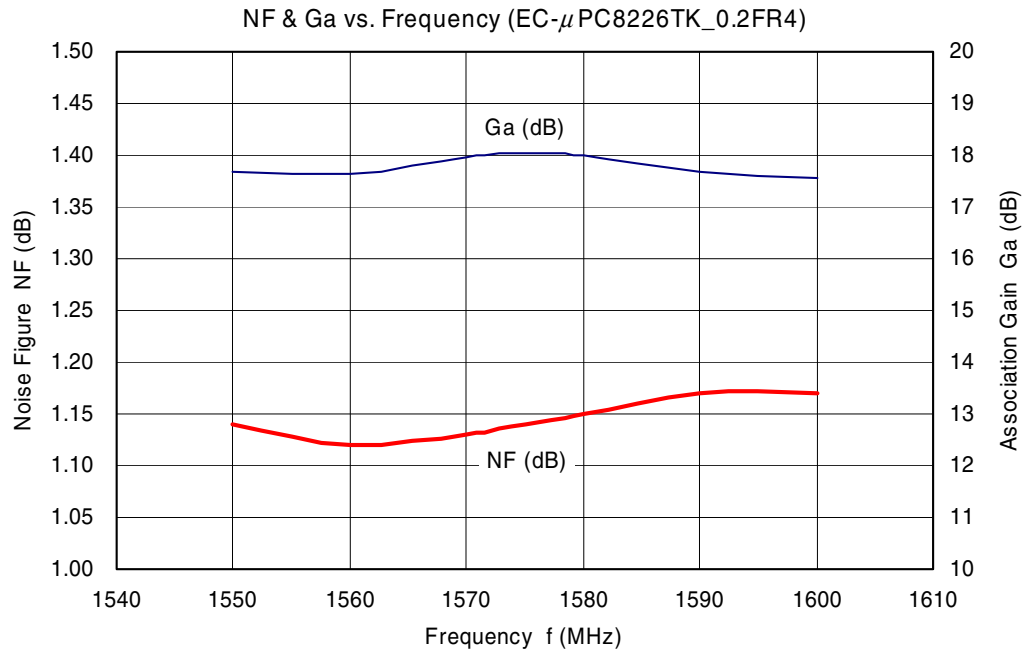


Gain 1 dB Compression Output Power

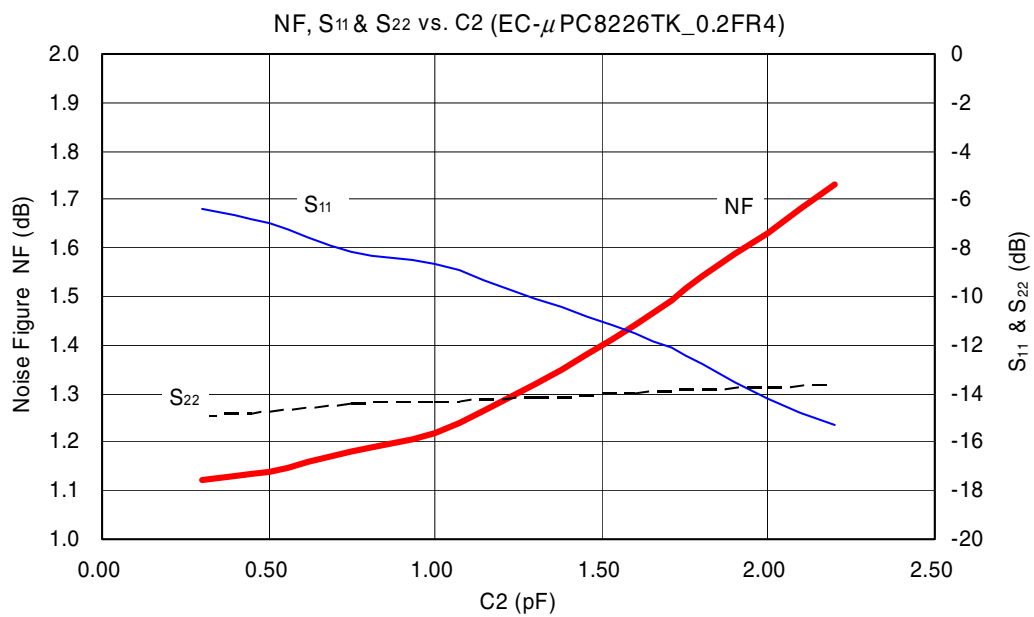


Reference Design Data

Frequency Feature of NF and Ga



Relations of Input Capacitor with NF, S_{11} and S_{22}



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