



## Application Note

Using the ACA0861D  
at +8 V and +5 V Supply Voltages  
Rev 0

Although the ACA0861D Line Amplifier IC is designed for optimum operation with a +12 VDC supply, it is possible to operate the part at reduced supply voltages, with some performance reduction.

For such an operation, a slight change in external bias conditions has to be implemented, depending on the voltage level chosen.

**Table 1: Summary of Typical Single Part Performance <sup>(1)</sup>**

SUPPLY VOLTAGE	+12	+8	+5	V
Current	470	420	230	mA
Gain	12	11.5	11	dB
CTB				
128 ch flat +36 dBmV	-71	-68	-	dBc
128 ch flat +32 dBmV	-	-	-62	
CSO				
128 ch flat +36 dBmV	-73	-70	-	dBc
128 ch flat +32 dBmV	-	-	-62	
Xmod				
128 ch flat +36 dBmV	-67	-65	-	dBc
128 ch flat +32 dBmV	-	-	-57	

*(1) Two devices can be cascaded together for higher gain applications. See ACA0861 Data Sheet for details.*

**Table 2: Connections for Proper Bias**

SUPPLY VOLTAGE	(Normal Operation) 12 VOLTS	8 VOLTS	5 VOLTS
Pin 2	No Connection (Open)	3.9 K $\Omega$ to GND	2 K $\Omega$ to V <sub>DD</sub> (+5 V)
Pin 7	No Connection (Open)	5.1 K $\Omega$ to V <sub>DD</sub> (+8 V) 1.5 K $\Omega$ to GND	470 $\Omega$ to GND

# Using the ACA0861D at +8 V and +5 V Supply Voltages

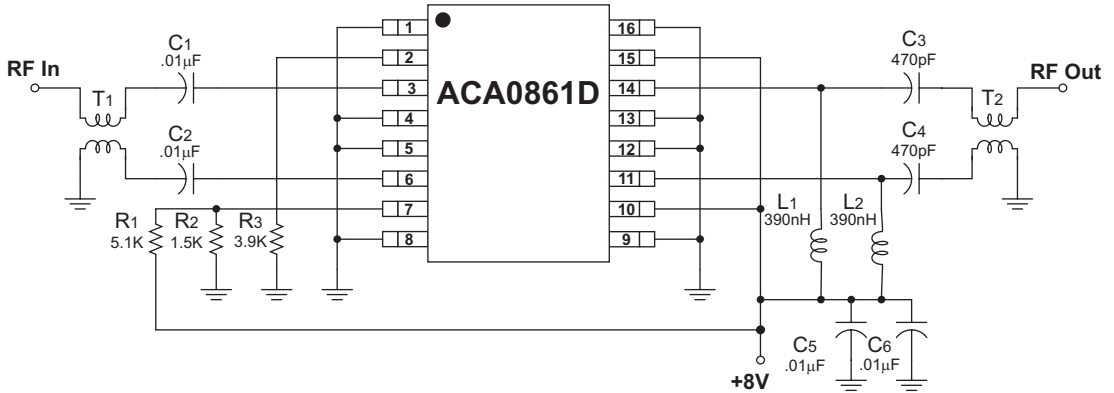
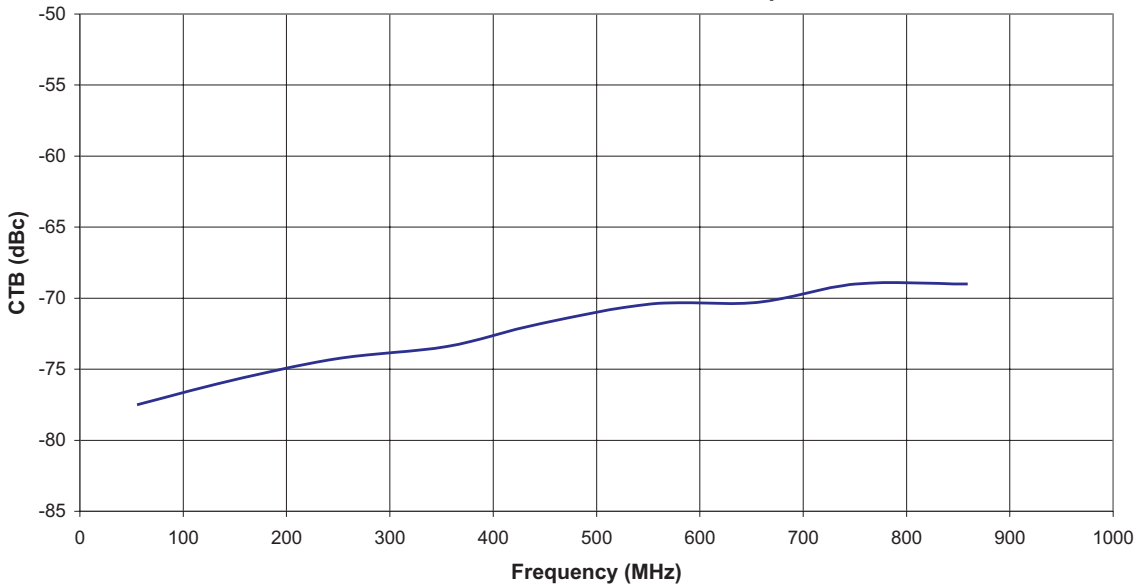
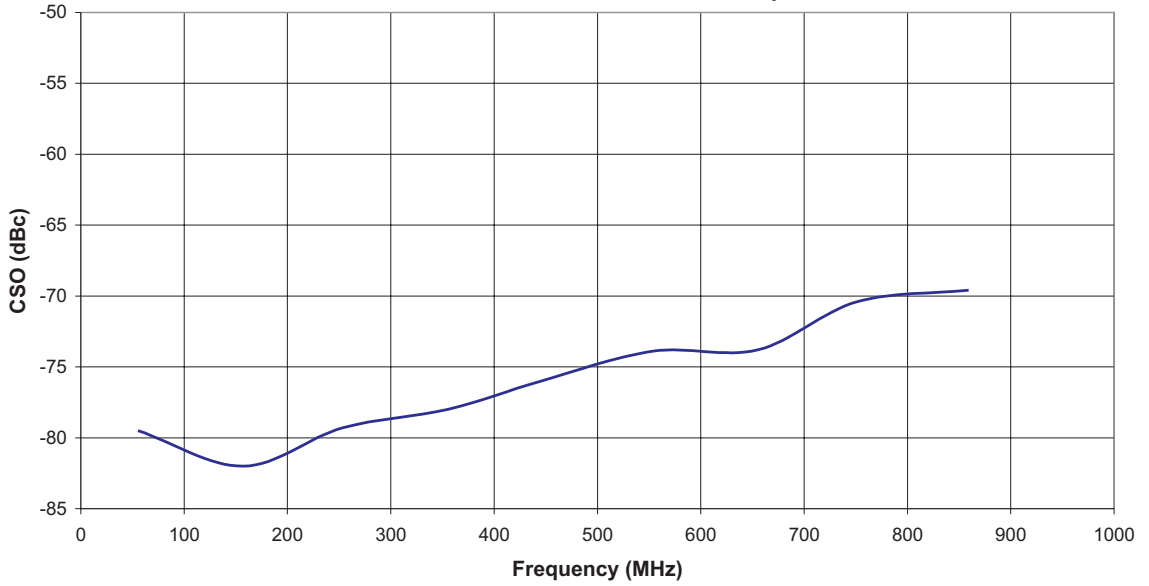


Figure 1: Test Circuit for +8 Volt V<sub>DD</sub>

Figure 2: CTB at +8 V, 420 mA  
128 Channels Flat, +36 dBmV Output



**Figure 3: CSO at +8 V, 420 mA**  
**128 Channels Flat, +36 dBmV Output**



**Figure 4: Xmod +8 V, 420 mA**  
**128 Channels Flat, +36 dBmV Output**

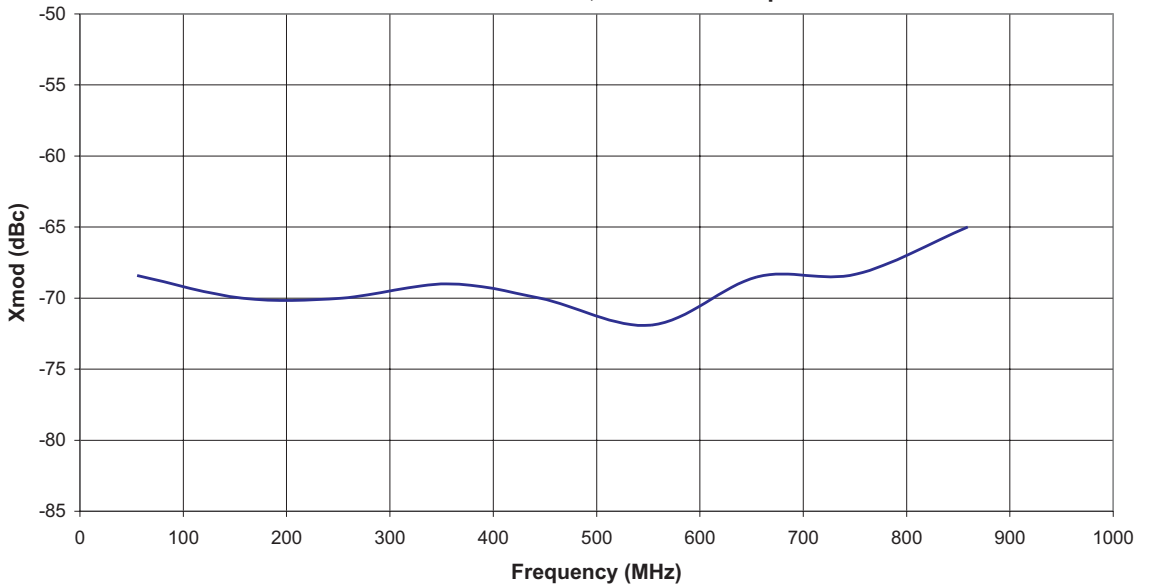


Figure 5: S11 at +8 V

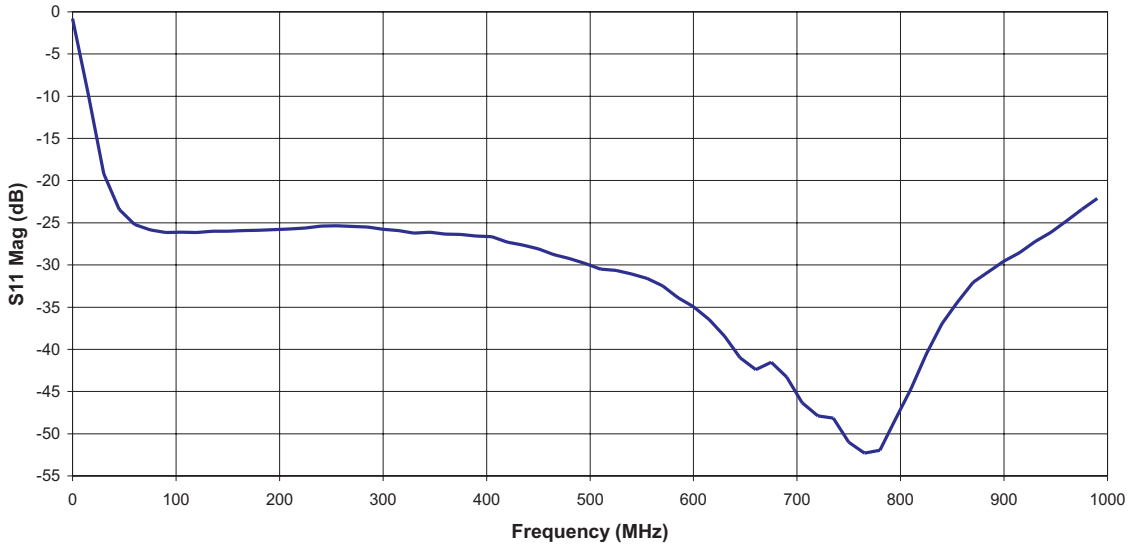


Figure 6: S21 at +8 V

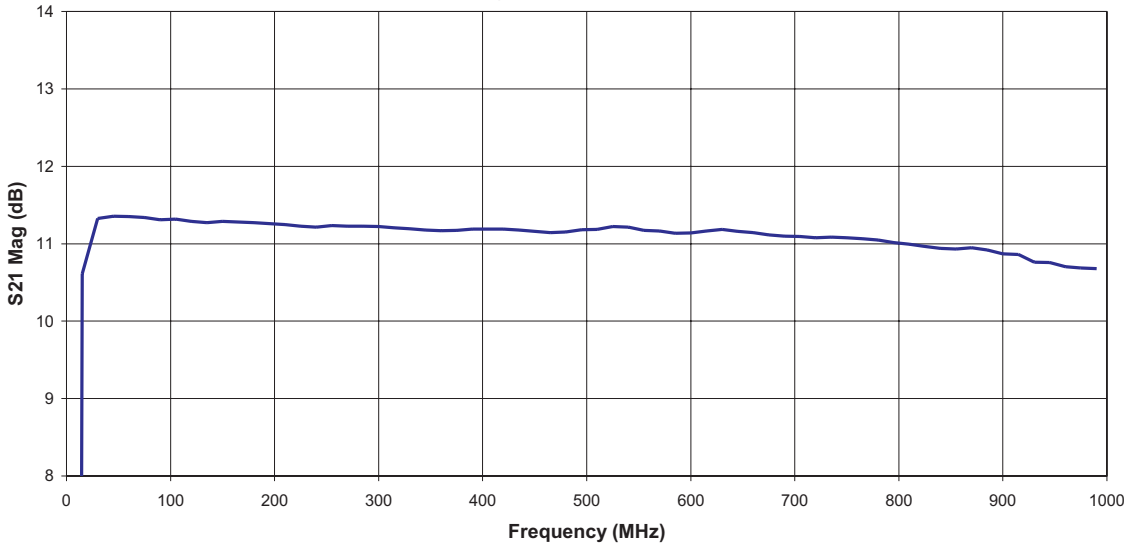


Figure 7: S12 at +8 V

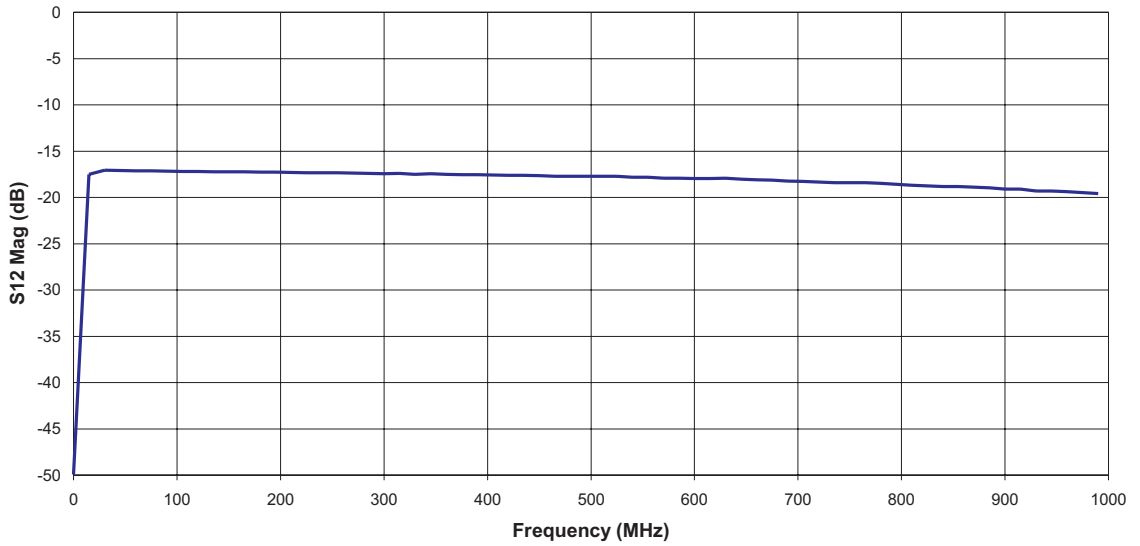
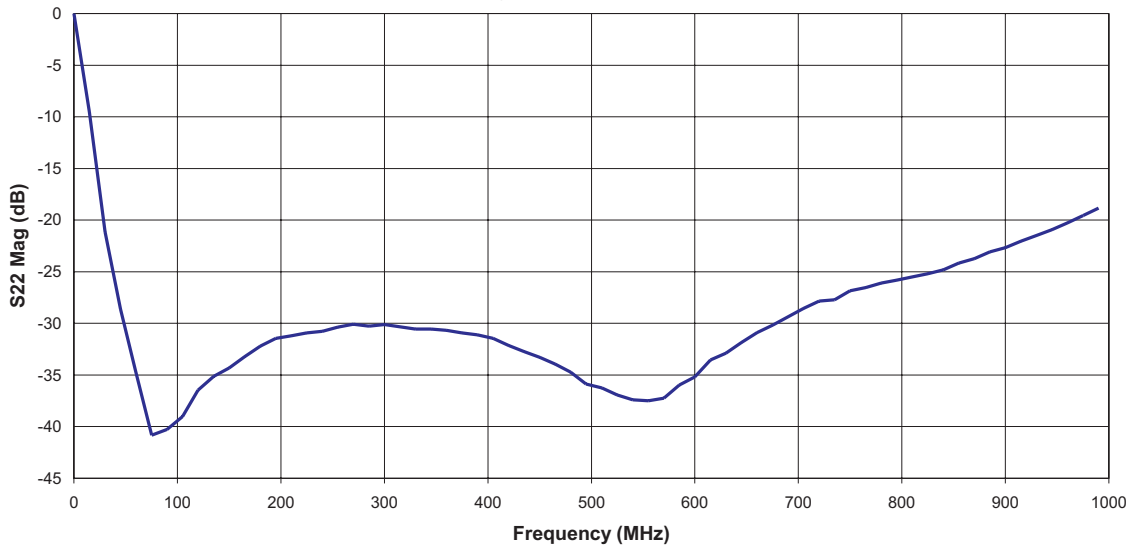


Figure 8: S22 at +8 V



## Using the ACA0861D at +8 V and +5 V Supply Voltages

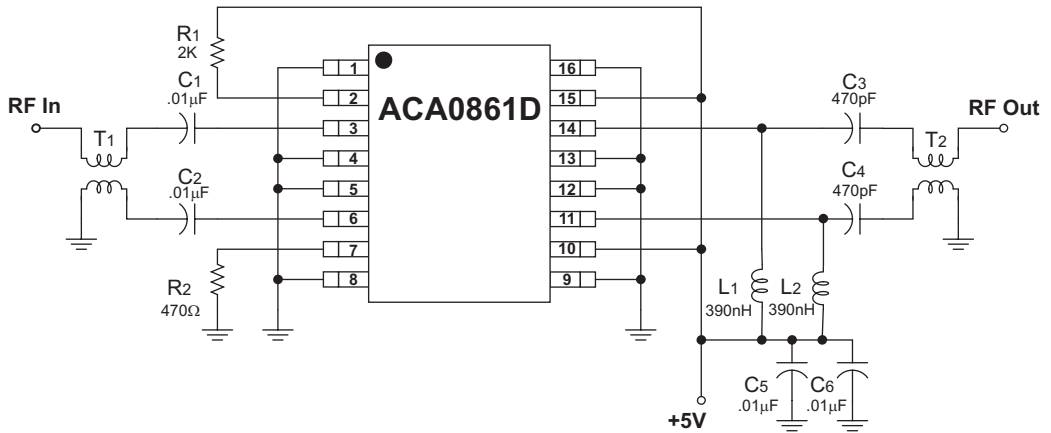
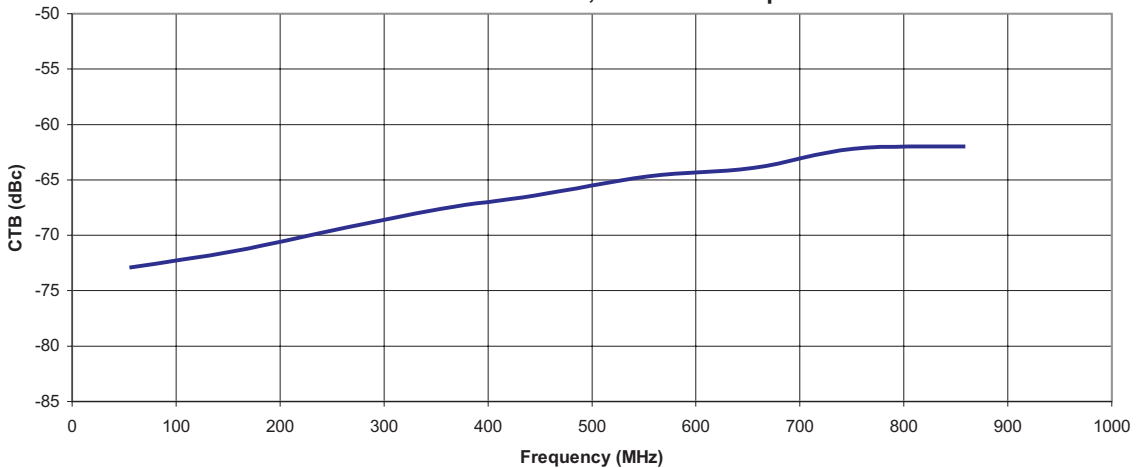
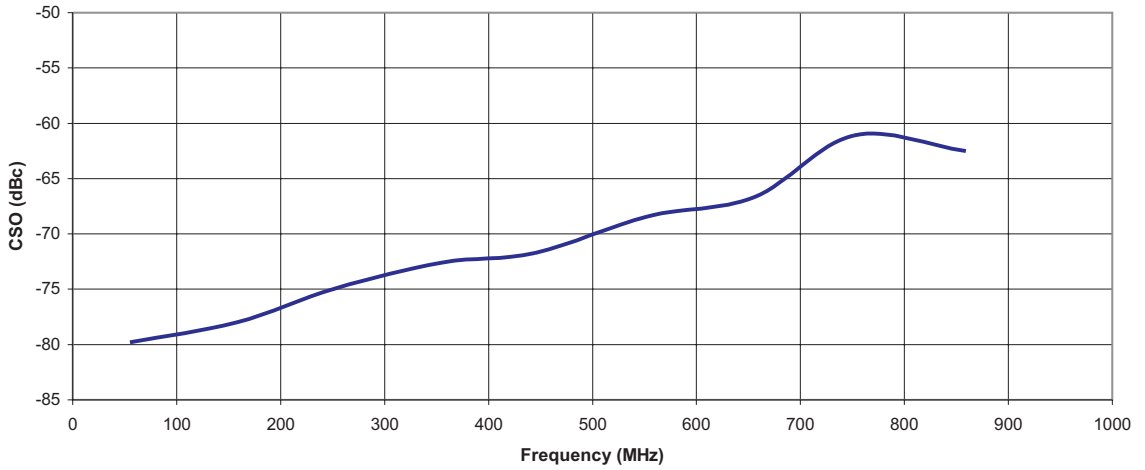


Figure 9: Test Circuit for +5 Volt  $V_{DD}$

Figure 10: CTB at +5 V, 230 mA  
128 Channels Flat, +32 dBmV Output



**Figure 11: CSO at +5 V, 230 mA**  
**128 Channels Flat, +32 dBmV Output**



**Figure 12: Xmod at +5 V, 230 mA**  
**128 Channels Flat, +32 dBmV Output**

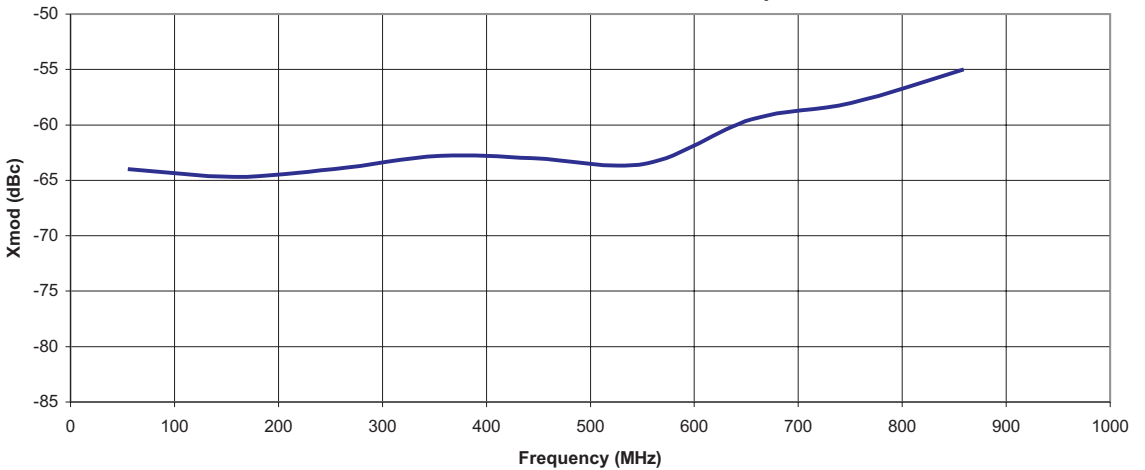


Figure 13: S11 at +5 V

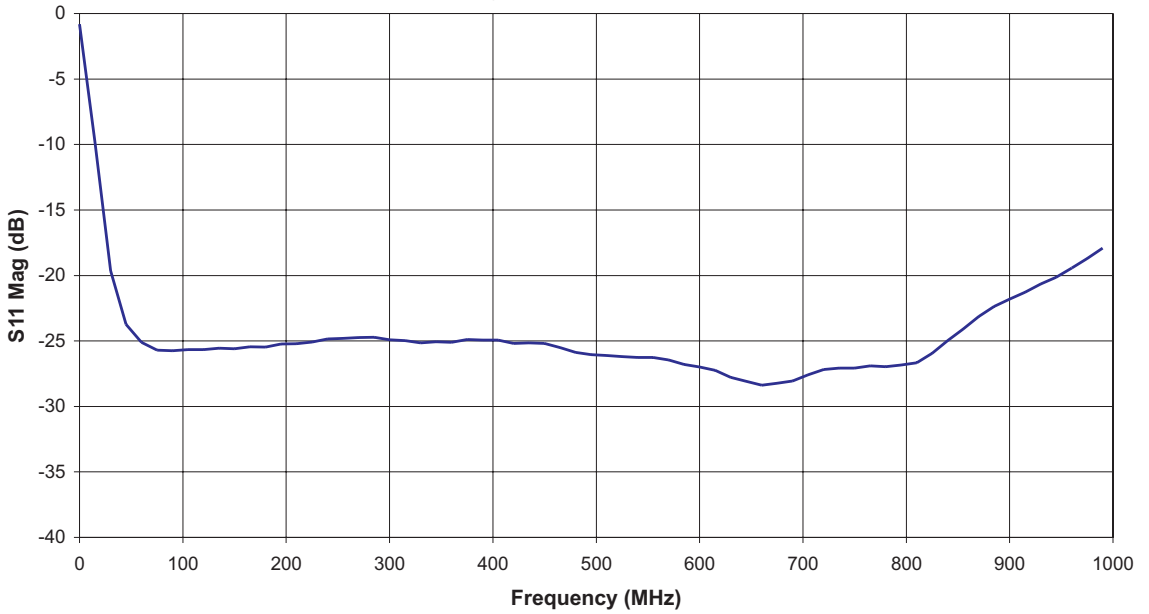


Figure 14: S21 at +5 V

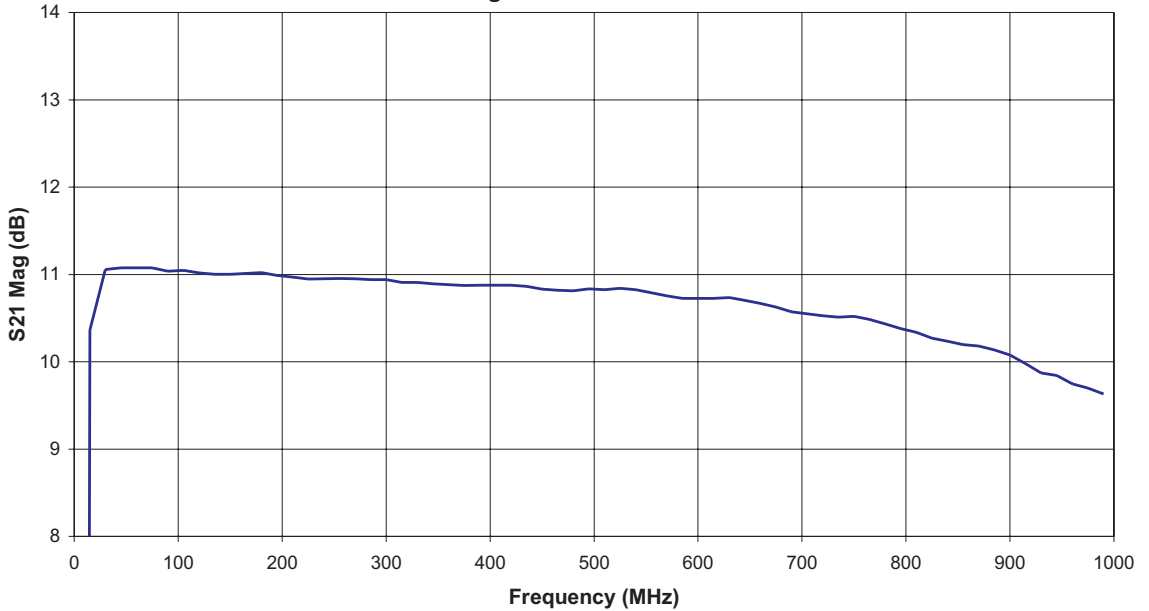




Figure 15: S12 at +5 V

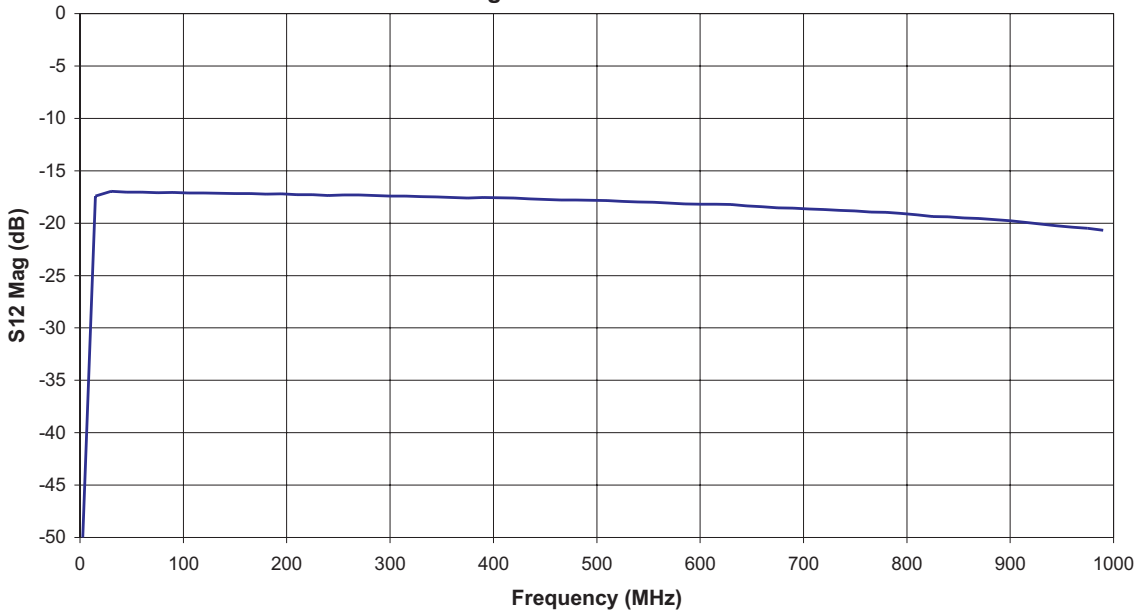
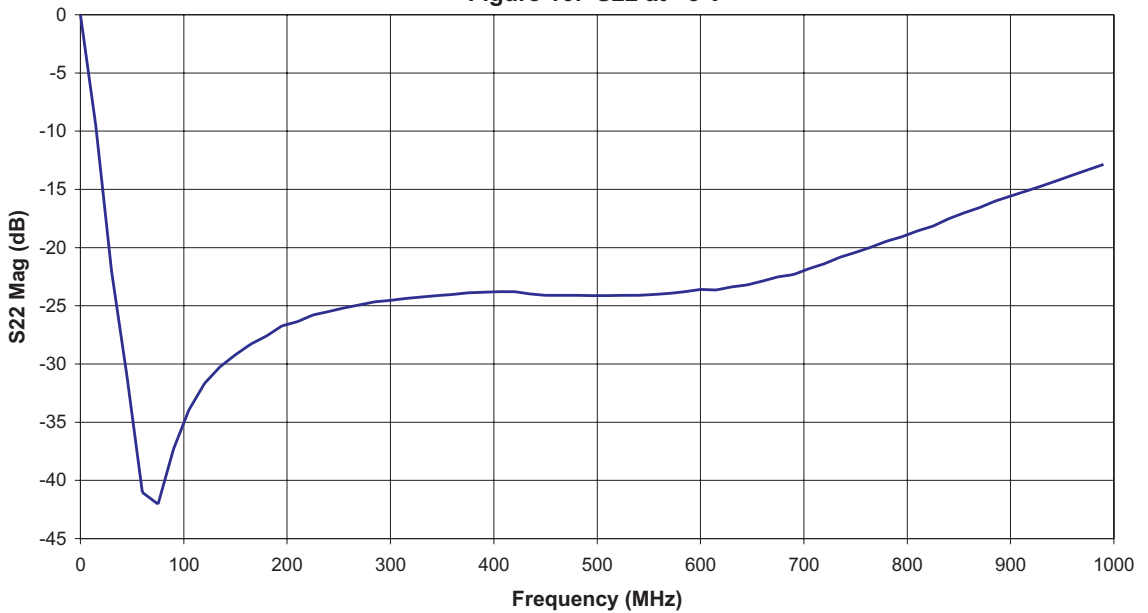


Figure 16: S22 at +5 V



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**ANADIGICS, Inc.**

141 Mount Bethel Road  
Warren, New Jersey 07059, U.S.A.  
Tel: +1 (908) 668-5000  
Fax: +1 (908) 668-5132

URL: <http://www.anadigics.com>  
E-mail: [Mktg@anadigics.com](mailto:Mktg@anadigics.com)

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传真：0755-83376182 (0) 13823648918 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:[szss20@163.com](mailto:szss20@163.com) QQ: 195847376

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