Keywords: rf, rf ic, pa, power amplifiers, wireless ics, gsm, edge, rf circuit, rf ics, PAs, rfics, power amplifier

APPLICATION NOTE 1829

The MAX2265 Is Ideal for EDGE Base-Station Pre-Driver Applications

Jan 09, 2003

Abstract: This application note presents measured performance data for the MAX2265 power amplifier (PA) when used for EDGE 8PSK modulation. +18.5dBm power was obtained in the 925MHz to 960MHz band. With a 5V power supply, 340mA were used to provide EVM better than 1%.

Additional Information:

- Wireless Product Line Page
- Quick View Data Sheet for the MAX2265
- Applications Technical Support

Click here for an overview of the wireless components used in a typical radio transceiver.

Introduction

Many GSM operators are beginning to install 2G networks to support higher data rates, addressing the expected demands of mobile-phone users. EDGE, which stands for "Enhanced Data Rates for GSM Evolution," essentially triples the existing GSM data rate from 1-bit/symbol GMSK (gaussian minimum shift key) modulation to 3 bits/symbol 8PSK (phase shift key) while operating in the same occupied channel bandwidth.

The newly adopted modulation scheme of 8PSK requires a highly linear amplifier to minimize spectral regrowth and phase distortion. Power amplifiers for base station applications impose even more stringent requirements for its pre-driver to present a pristine signal with minimum non-linearity. As usual, the pre-driver must be electrically and thermally stable with good reliability for this application.

The MAX2265 is an excellent low-cost bipolar solution for GSM/EDGE base station down link pre-driver applications. Performance specifications are presented in this application note. Measured data indicates that the MAX2265 meets or exceeds requirements with margin.

Table 1. EDGE Pre-Driver Specification and MAX2265 Measured Data

Parameter	Customer Spec	Measured Data	Units	Reference/Notes
Supply Voltage	5.0	5.0	V	-
Supply Current	-	340	mA	P_{OUT} = +18.5dBm
Frequency Range	925 - 960	925 - 960	MHz	-

P_{OUT}	+17.5	+18.5	dBm	EDGE Mode
Gain	20	24.5	dB	-
Spurious at 400kHz offset	-70	-71	dBc	Measured in 30kHz BW
Spurious at 600kHz offset	-80	-83	dBc	Measured in 30kHz BW
EVM (average)	1	0.98	%	-

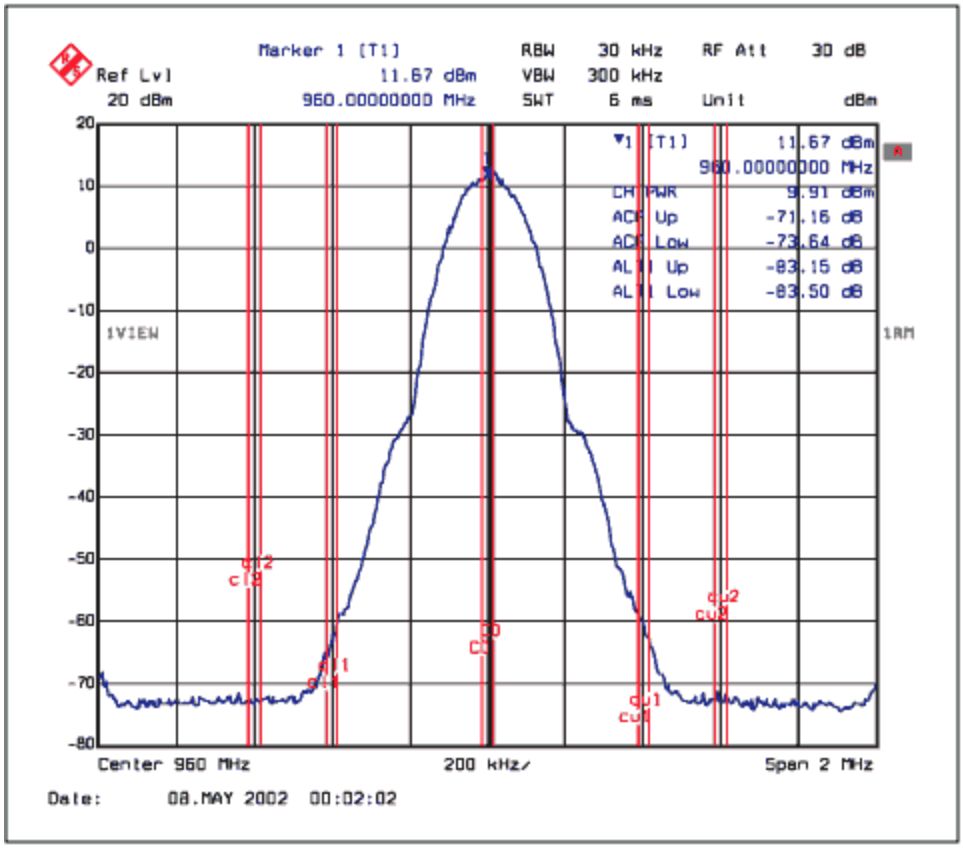

Figure 1. EDGE modulation spectrum plot at 960MHz and +18.5dBm P_{OUT}.

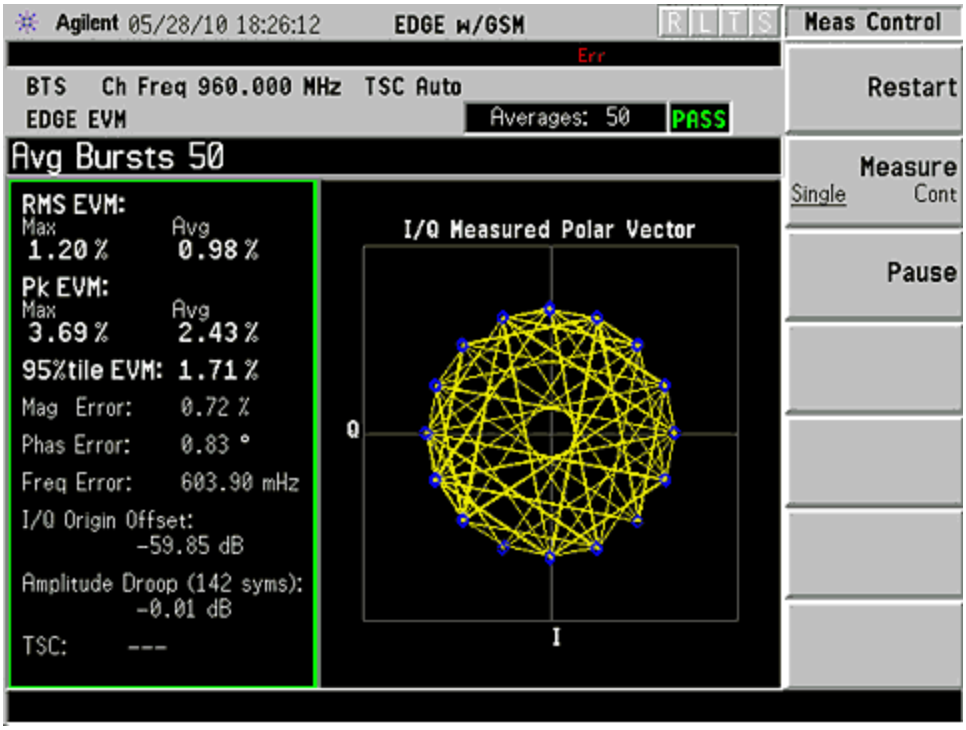

Figure 2. EDGE EVM at 960MHz and +18.5dBm output power.

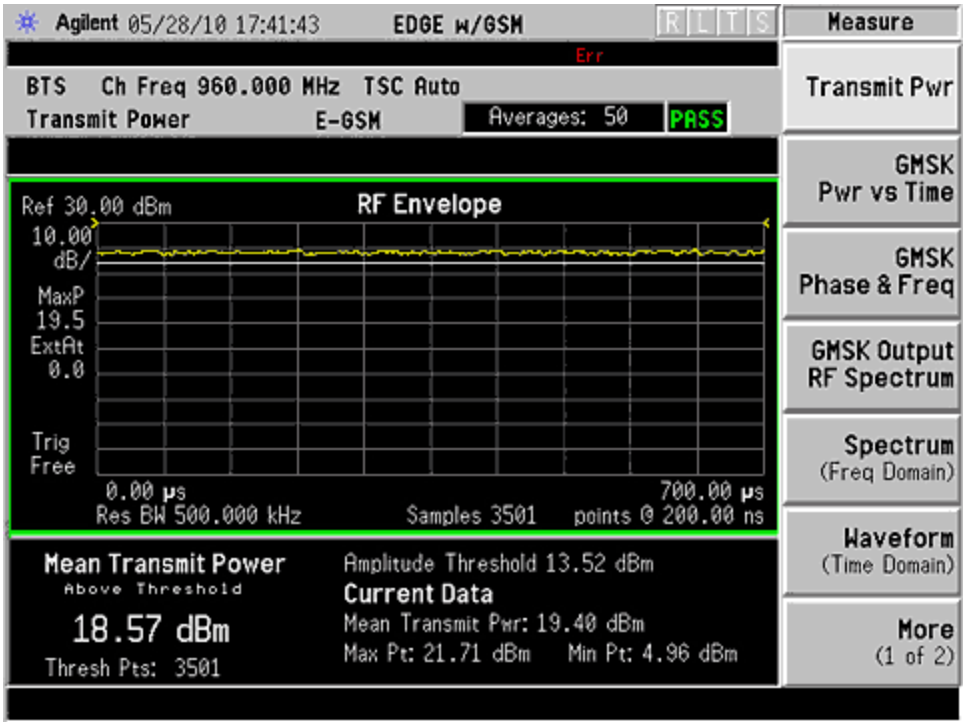

Figure 3. EDGE mode transmit output power plot.

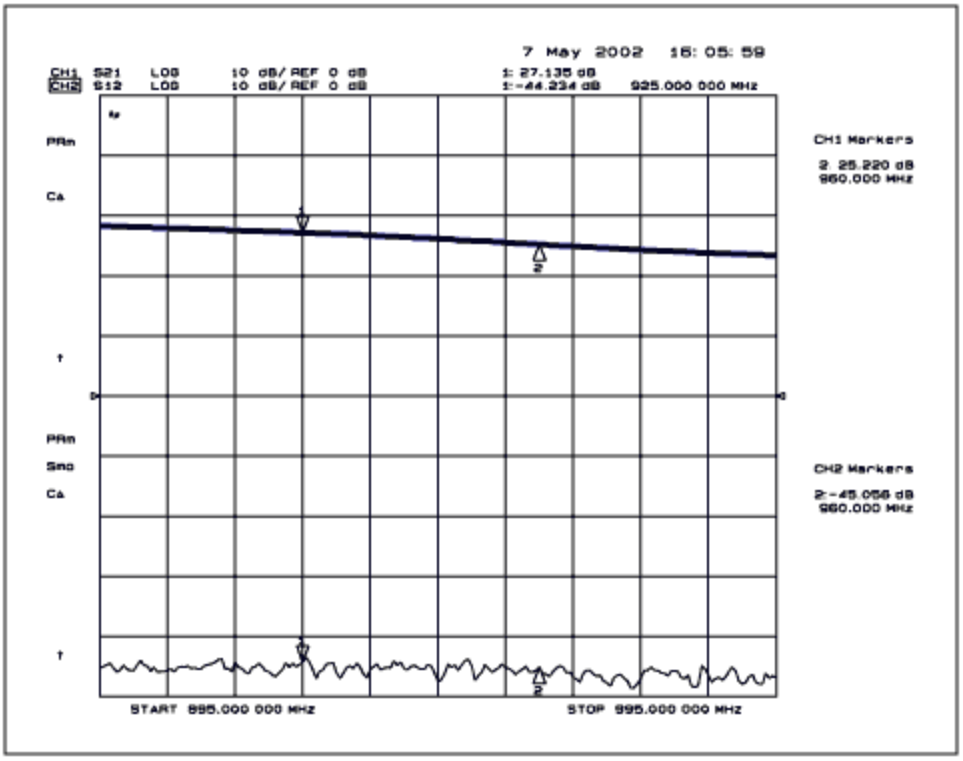

Figure 4. S21 and S12 small signal plots.

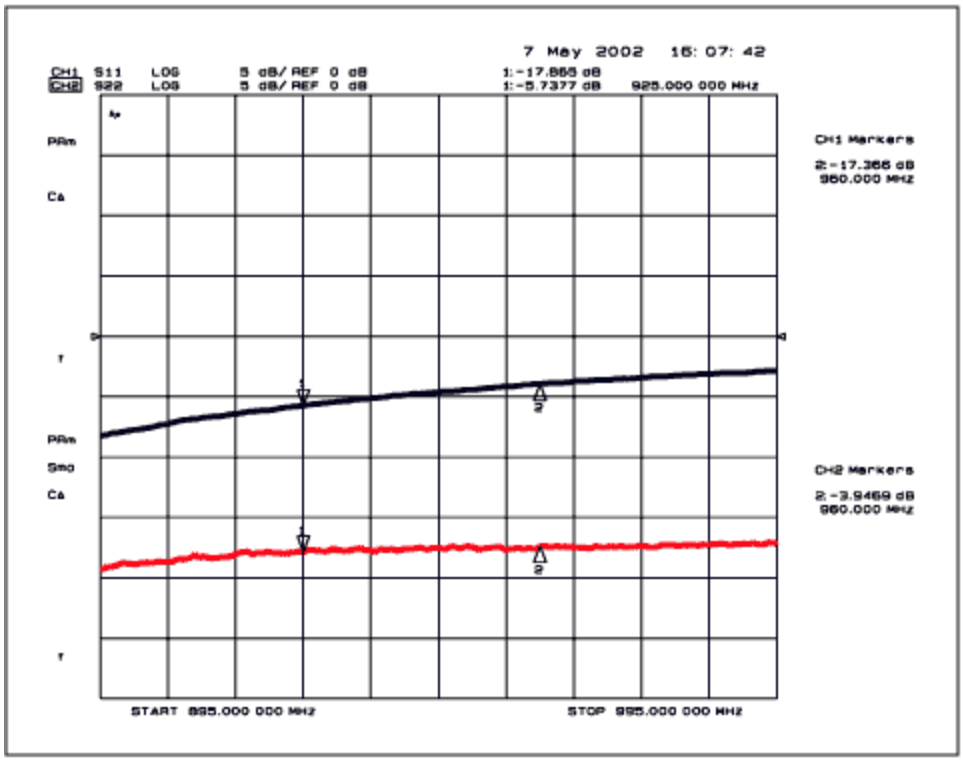

Figure 5. S11 and S22 small signal plots.

Related Parts		
MAX2265	2.7V, Single-Supply, Cellular-Band Linear Power Amplifiers	Free Samples

More Information
For Technical Support: http://www.maximintegrated.com/support
For Samples: http://www.maximintegrated.com/samples
Other Questions and Comments: http://www.maximintegrated.com/contact

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