

Solid State Personal Communication Power Amplifier

7016 - PCM3Q4AFQ
869 – 894 MHz / 30 Watts CDMA

The PCM3Q4AFQ (SKU 7016) is suitable for single and Multi-Channel CDMA base station and repeaters applications in the Cellular frequency range. Also suitable for GSM and TDMA applications, this amplifier utilizes linear LD MOS power devices that provide excellent linearity and low distortions, high gain, and wide dynamic range. Exceptional performance, long term reliability, and high efficiency are achieved by employing advanced matching networks and combining techniques, EMI/RFI filters, machined housing, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state Pre-D linear design
- Small and lightweight
- Suitable for Multi-Carrier CDMA, GSM, and TDMA Applications
- Built-in control monitoring & protection circuits
- 50 ohm input/output impedance
- Built-in Output Isolator
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ +27V_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	869		894	MHz
Power Output CDMA per IS-95 standard	P _{WCDMA}	30			Watt
Small Signal Gain	G _{SS}	53	54	55	dB
Small Signal Gain Flatness, P _{IN} = -20 dBm	ΔG _{SS}			±0.75	dB
Input/Output Return Loss	S ₁₁ /S ₂₂			-20	dB
ACPR, P _{OUT} = 46dBm 1-Tone CDMA, 9FA, IS-95, BW= 1.25MHz Settings: RBW= 30kHz, VBW= 100Hz	±885kHz ±1.98MHz			-30 -45	dBc
Inter-modulation Distortion 2-Tone @ 42dBm/tone, Spacing 25-500kHz	IMD			-56	dBc
Harmonics @ P _{OUT} = 30W, 1FA, CDMA	2 ND / 3 RD			-40 / -60	dBc
Spurious Signals @ P _{OUT} = 30W	Spur			-36	dBm
Noise Figure @ Max Gain	NF		7	10	dB
Operating Voltage	V _{DD}	26	27	28	Volt
Current Consumption @ P _{OUT} = 30W 1FA	I _{DD}		8	10.5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.7" x 8.1" x 1.1"	Max
Weight	3.5lb.	Max
RF Connectors Input / Output	Input: Type-SMA, Female Output: Type-N, Female	
DC Interface Connectors	Control: D-sub 9-pin, Male DC Power: Hybrid, D-sub 3-pin, Male	
Cooling	External Heatsink (not supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	-20		+60	°C
Storage Temperature	T _{STG}	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration / Shock MIL-STD-810F - Method 514.5/516.5 – Proc I	VI / SH		Airborne		

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LIMITS

Input RF drive level without damage	+6 dBm	Max
Load VSWR @ P _{OUT} = 50W	∞:1 VSWR, all phases & magnitude (Built-in Isolator)	-
Thermal Overload	85°C shutdown	Max

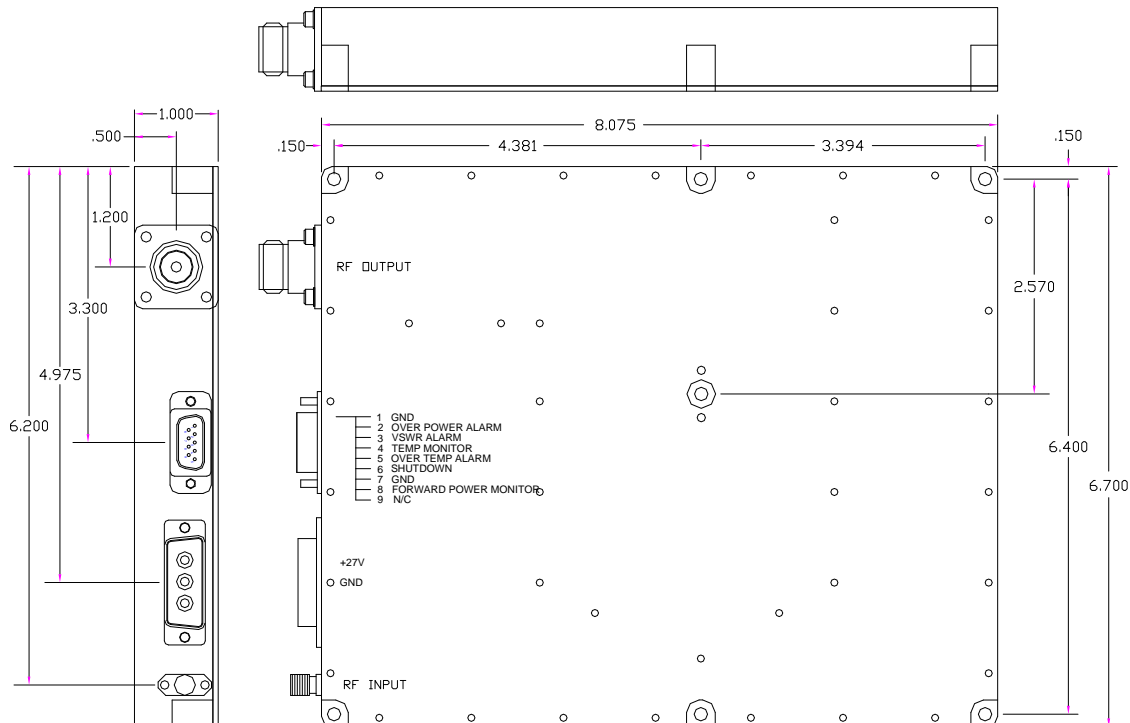
CONTROL INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specifications
1	GND	Ground
2	Over Power Alarm	TTL Logic High: 46dBm±0.5dB
3	VSWR Alarm	VSWR Alarm: TTL Logic High @ 3:1 Load
4	Temperature Monitor	Analog voltage relative to unit temperature @ 10mV/°C (0.5V _{OFFSET}) Formula: (V _{MEASURED} - 0.5)/0.01= °C, Example: (0.75V - 0.5)/0.01= 25°C
5	Over Temp Alarm	Alarm: TTL Logic High (5V) @ 85°C, unit shutdown, resume operation @ 75°C
6	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
7	GND	Ground
8	Forward Power Monitor	Analog voltage relative to forward power level: 44.8dBm = 4.0V @ 0.1V/dB
9	N/C	No Connection

DC POWER CONNECTOR – Hybrid, D-sub 3-pin, Male

Pin #	Description	Specifications
A1	VDD	+26.0-28.0V _{DC}
A2	GND	Ground
A3	N/C	No Connection

OUTLINE DRAWING

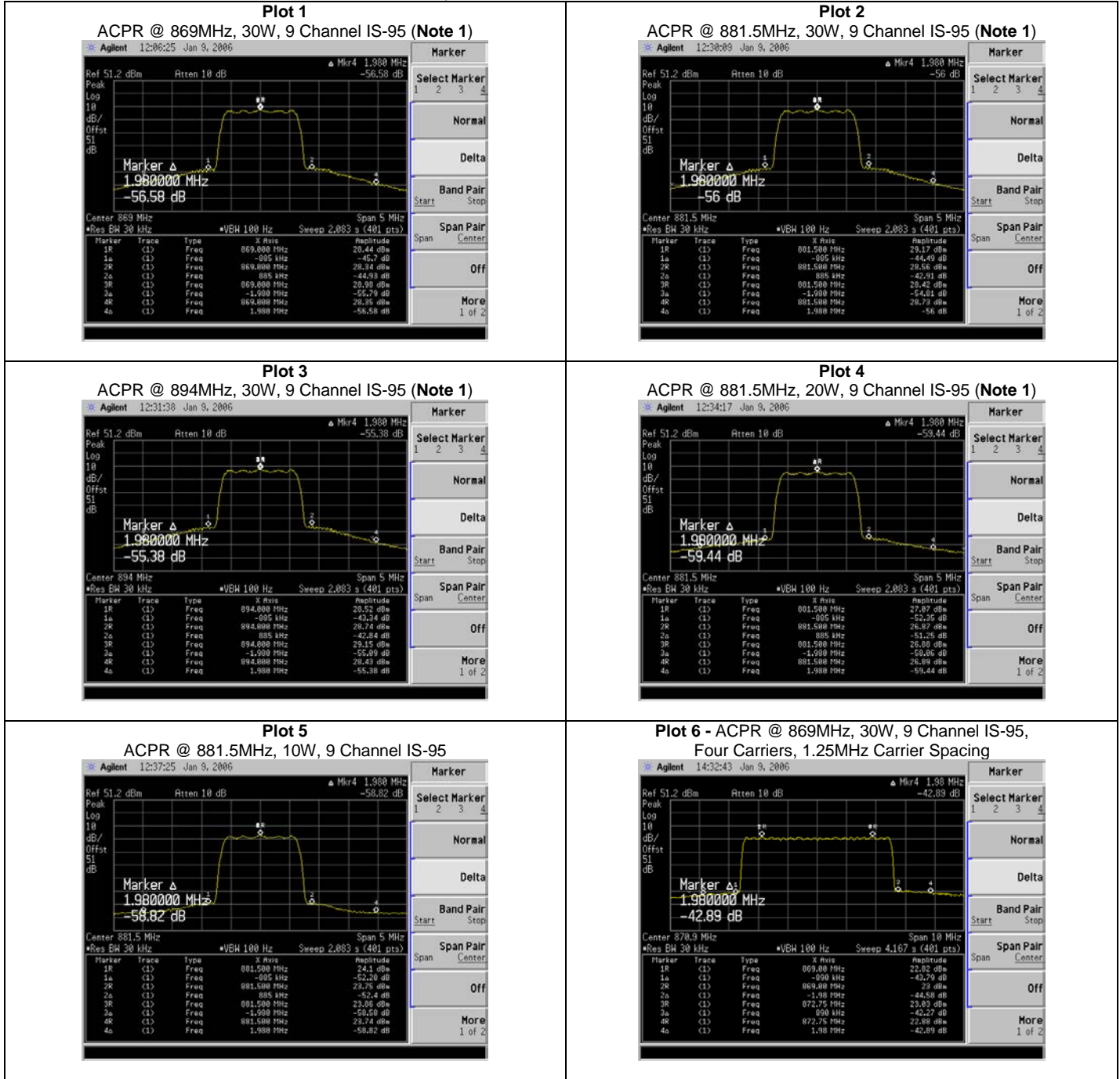


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PERFORMANCE PLOTS: NOTE 1: CCDF 9-CH IS-95 is 10dB, 0.001%

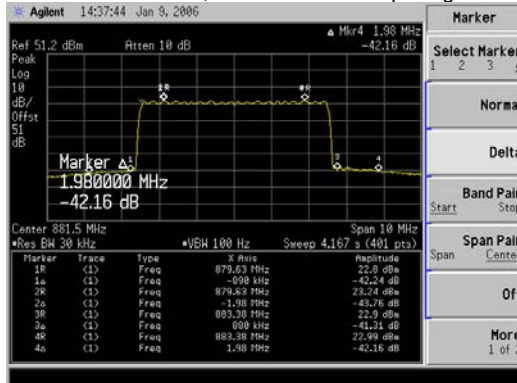


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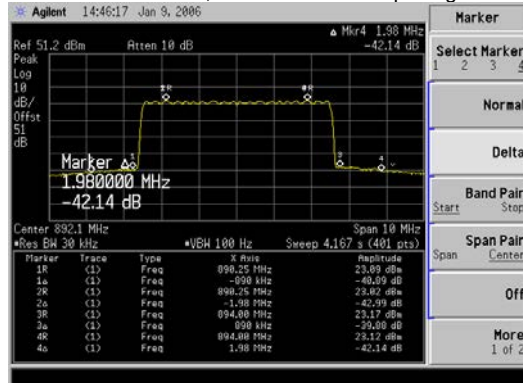
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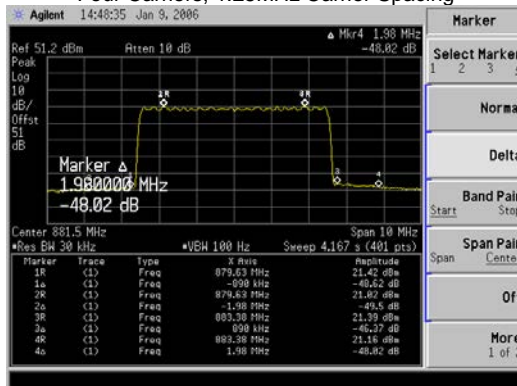
Plot 7 - ACPR @ 881.5MHz, 30W, 9 Channel IS-95
 Four Carriers, 1.25MHz Carrier Spacing



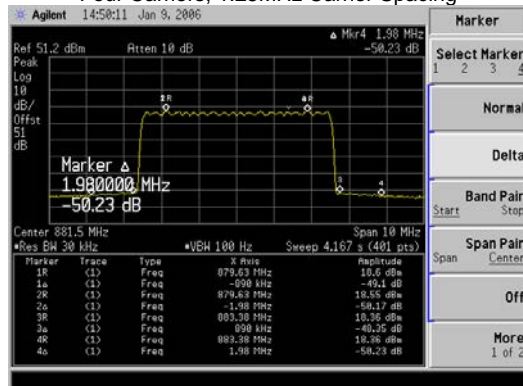
Plot 8 - ACPR @ 894MHz, 30W, 9 Channel IS-95
 Four Carriers, 1.25MHz Carrier Spacing



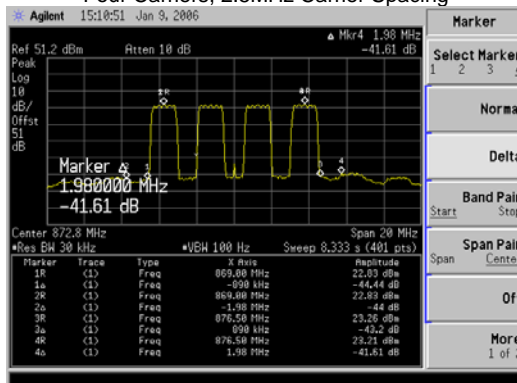
Plot 9 - ACPR @ 881.5MHz, 20W, 9 Channel IS-95
 Four Carriers, 1.25MHz Carrier Spacing



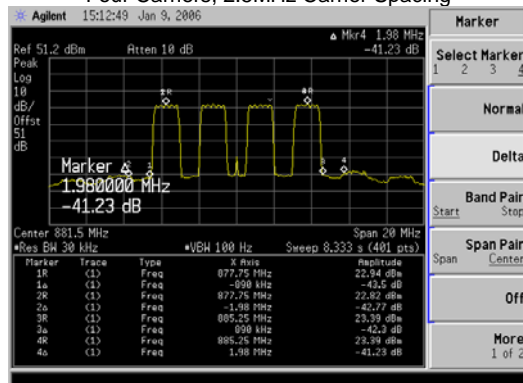
Plot 10 - ACPR @ 881.5MHz, 10W, 9 Channel IS-95
 Four Carriers, 1.25MHz Carrier Spacing



Plot 11 - ACPR @ 869MHz, 30W, 9 Channel IS-95
 Four Carriers, 2.5MHz Carrier Spacing



Plot 12 - ACPR @ 881.5MHz, 30W, 9 Channel IS-95
 Four Carriers, 2.5MHz Carrier Spacing

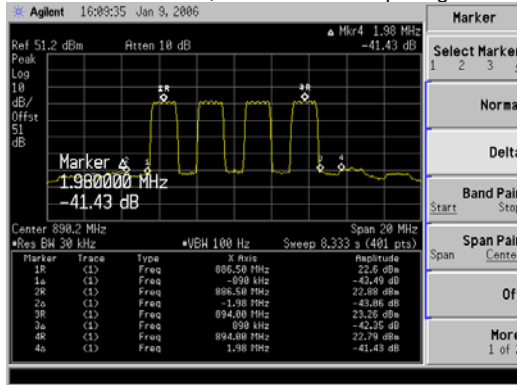


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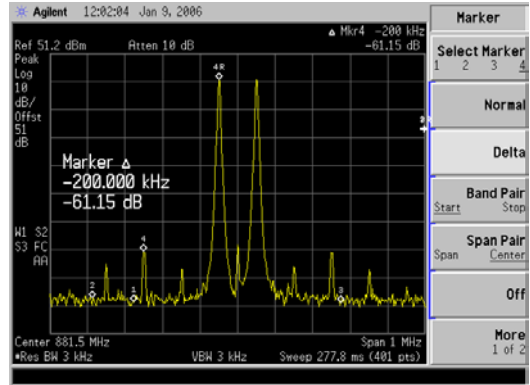
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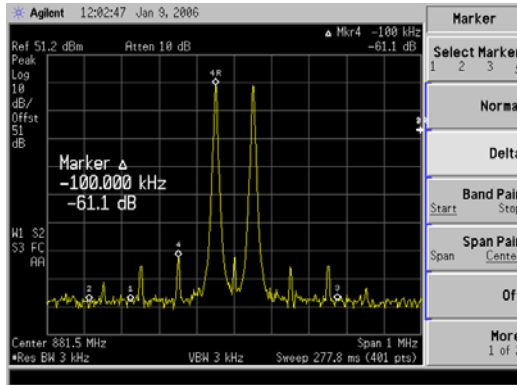
**Plot 13 - ACPR @ 894MHz, 30W, 9 Channel IS-95
Four Carriers, 2.5MHz Carrier Spacing**



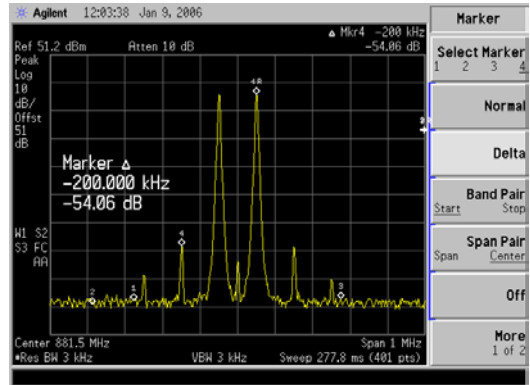
**Plot 14 - 2-Tone, 100kHz Spacing
30W**



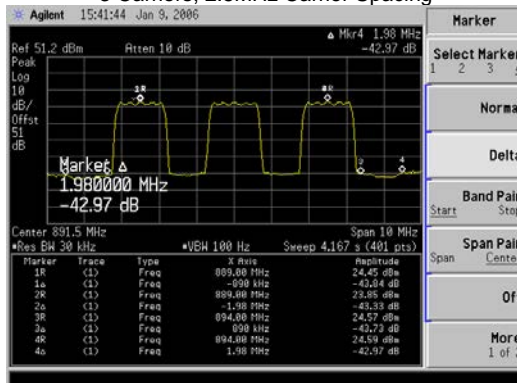
**Plot 15 - 2-Tone, 100kHz Spacing
20W**



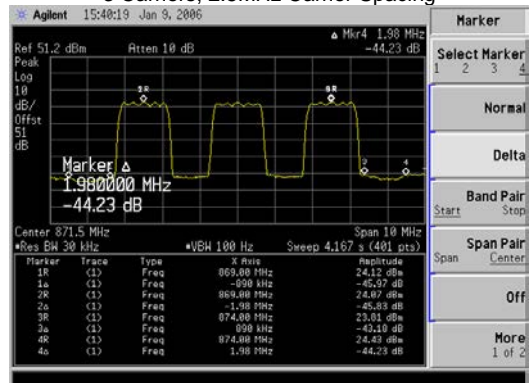
**Plot 16 - 2-Tone, 100kHz Spacing
10W**



**Plot 17 - ACPR @ 891.5MHz, 30W, 9 Channel IS-95
3 Carriers, 2.5MHz Carrier Spacing**



**Plot 18 - ACPR @ 871.5MHz, 30W, 9 Channel IS-95
3 Carriers, 2.5MHz Carrier Spacing**



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**Plot 19 - ACPR @ 881.5MHz, 30W, 9 Channel IS-95
3 Carriers, 2.5MHz Carrier Spacing**

