

# Power Analysis

	<b>Antenna Model:</b> 1082-8CP-DA	ASRN: 1033691		
		<i>Analog</i>		<i>Digital (-10 dBc)</i>
<b>Combined power into each antenna input:</b>	29.587 kW	4,139 volts	2.959 kW	2,618 volts
<b>Total combined power into each antenna input:</b>	32.546 kW	6,757 volts		
<b>Combined power into antenna by type:</b>	59.174 kW	5,854 volts	5.917 kW	3,703 volts
<b>Total combined power into antenna:</b>	65.091 kW	9,557 volts		
<b>Combined power into each transmission line:</b>	30.080 kW	4,173 volts	3.008 kW	2,639 volts
<b>Total combined power into each transmission line:</b>	33.088 kW	6,813 volts		
<b>Combined power at combined output by type:</b>	60.160 kW	5,903 volts	6.016 kW	3,733 volts
<b>Total combined power at combined output:</b>	66.176 kW	9,636 volts		
<b>Power at Band Pass Filter Outputs:</b>	33.088 kW	6,813 volts		
<b>Call Letters:</b>	KTCL (FM)	(Main)		
<b>Frequency:</b>	93.3 MHz			
<b>ERP:</b>	71.000 kW	18.513 dBk	7.100 kW	8.513 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	6.745 Numeric	8.290 dB	6.745 Numeric	8.290 dB
<b>Antenna Input Power:</b>	10.526 kW	10.223 dBk	1.053 kW	0.223 dBk
<b>Peak Voltage:</b>	1,026 volts		649 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.047 dB/100-feet		0.047 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.047 dB/100-feet		0.047 dB/100-feet	
<b>Line Loss:</b>	-0.169 kW	0.069 dB	-0.017 kW	0.069 dB
<b>Line Efficiency:</b>	98.419%		98.419%	
<b>Power Output from Combiner:</b>	10.695 kW	10.292 dBk	1.070 kW	0.292 dBk
<b>Peak Voltage:</b>	1,034 volts		654 volts	
<b>Combiner Losses:</b>	-0.545 kW	0.216 dB	-0.055 kW	0.216 dB
<b>Transmitter Power Output:</b>	11.241 kW	10.508 dBk	1.124 kW	0.508 dBk
<b>Combined power into wideband input by type:</b>	49.464 kW	4,869 volts	4.946 kW	3,079 volts
<b>Total combined power into wideband input:</b>	54.411 kW	7,948 volts		
<b>Power at Band Pass Filter Outputs:</b>	27.205 kW	5,619 volts		

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*Analog*

*Digital (-10 dBc)*

<b>Call Letters:</b>	KPTT (FM)	(Main)		
<b>Frequency:</b>	95.7 MHz			
<b>ERP:</b>	100.000 kW	20.000 dBk	10.000 kW	10.000 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	6.889 Numeric	8.382 dB	6.889 Numeric	8.382 dB
<b>Antenna Input Power:</b>	14.516 kW	11.618 dBk	1.452 kW	1.618 dBk
<b>Peak Voltage:</b>	1,205 volts		762 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.047 dB/100-feet		0.047 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.047 dB/100-feet		0.047 dB/100-feet	
<b>Line Loss:</b>	-0.236 kW	0.070 dB	-0.024 kW	0.070 dB
<b>Line Efficiency:</b>	98.399%		98.399%	
<b>Power Output from Combiner:</b>	14.752 kW	11.689 dBk	1.475 kW	1.689 dBk
<b>Peak Voltage:</b>	1,215 volts		768 volts	
<b>Combiner Losses:</b>	-1.041 kW	0.296 dB	-0.104 kW	0.296 dB
<b>Transmitter Power Output:</b>	15.793 kW	11.985 dBk	1.579 kW	1.985 dBk
<b>Combined power into wideband input by type:</b>	34.712 kW	3,654 volts	3.471 kW	2,311 volts
<b>Total combined power into wideband input:</b>	38.183 kW	5,965 volts		
<b>Power at Band Pass Filter Outputs:</b>	19.092 kW	4,217 volts		

<b>Call Letters:</b>	KVOQ-FM	(Main)		
<b>Frequency:</b>	102.3 MHz			
<b>ERP:</b>	1.500 kW	1.761 dBk	0.150 kW	-8.239 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	7.422 Numeric	8.705 dB	7.422 Numeric	8.705 dB
<b>Antenna Input Power:</b>	0.202 kW	-6.944 dBk	0.020 kW	-16.944 dBk
<b>Peak Voltage:</b>	142 volts		90 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.049 dB/100-feet		0.049 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.049 dB/100-feet		0.049 dB/100-feet	

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Digital (-10 dBc)

Line Loss:	-0.003 kW	0.072 dB	0.000 kW	0.072 dB
Line Efficiency:	98.345%		98.345%	
Power Output from Combiner:	0.206 kW	-6.872 dBk	0.021 kW	-16.872 dBk
Peak Voltage:	143 volts		91 volts	
Combiner Losses:	-0.015 kW	0.309 dB	-0.002 kW	0.309 dB
Transmitter Power Output:	0.221 kW	-6.563 dBk	0.022 kW	-16.563 dBk
Combined power into wideband input by type:	34.507 kW	3,511 volts	3.451 kW	2,220 volts
Total combined power into wideband input:	37.957 kW	5,731 volts		
Power at Band Pass Filter Outputs:	18.979 kW	4,052 volts		
Call Letters:	KRFX (FM)	(Main)		
Frequency:	103.5 MHz			
ERP:	100.000 kW	20.000 dBk	10.000 kW	10.000 dBk
Polarization:	Circular		Circular	
Antenna RMS Gain:	7.162 Numeric	8.550 dB	7.162 Numeric	8.550 dB
Antenna Input Power:	13.963 kW	11.450 dBk	1.396 kW	1.450 dBk
Peak Voltage:	1,182 volts		747 volts	
Transmission Line Type - Tower Vertical Run:	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
Tower Vertical Run Length:	128 feet	39.0 meters	128 feet	39.0 meters
Tower Vertical Run Attenuation:	0.049 dB/100-feet		0.049 dB/100-feet	
Transmission Line Type - Horizontal Run:	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
Horizontal Run Length:	20 feet	6.1 meters	20 feet	6.1 meters
Horizontal Run Attenuation:	0.049 dB/100-feet		0.049 dB/100-feet	
Line Loss:	-0.236 kW	0.073 dB	-0.024 kW	0.073 dB
Line Efficiency:	98.335%		98.335%	
Power Output from Combiner:	14.199 kW	11.523 dBk	1.420 kW	1.523 dBk
Peak Voltage:	1,192 volts		754 volts	
Combiner Losses:	-1.206 kW	0.354 dB	-0.121 kW	0.354 dB
Transmitter Power Output:	15.405 kW	11.877 dBk	1.540 kW	1.877 dBk
Combined power into wideband input by type:	20.308 kW	2,319 volts	2.031 kW	1,467 volts
Total combined power into wideband input:	22.339 kW	3,786 volts		
Power at Band Pass Filter Outputs:	11.169 kW	2,677 volts		

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*Digital (-10 dBc)*

<b>Call Letters:</b>	KWBL (FM)	(Auxiliary)		
<b>Frequency:</b>	106.7 MHz			
<b>ERP:</b>	100.000 kW	20.000 dBk	10.000 kW	10.000 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	7.428 Numeric	8.709 dB	7.428 Numeric	8.709 dB
<b>Antenna Input Power:</b>	13.463 kW	11.291 dBk	1.346 kW	1.291 dBk
<b>Peak Voltage:</b>	1,160 volts		734 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.050 dB/100-feet		0.050 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.050 dB/100-feet		0.050 dB/100-feet	
<b>Line Loss:</b>	-0.231 kW	0.074 dB	-0.023 kW	0.074 dB
<b>Line Efficiency:</b>	98.310%		98.310%	
<b>Power Output from Combiner:</b>	13.694 kW	11.365 dBk	1.369 kW	1.365 dBk
<b>Peak Voltage:</b>	1,170 volts		740 volts	
<b>Combiner Losses:</b>	-1.763 kW	0.526 dB	-0.176 kW	0.526 dB
<b>Transmitter Power Output:</b>	15.457 kW	11.891 dBk	1.546 kW	1.891 dBk
<b>Combined power into wideband input by type:</b>	6.614 kW	1,149 volts	0.661 kW	727 volts
<b>Total combined power into wideband input:</b>	7.275 kW	1,876 volts		
<b>Power at Band Pass Filter Outputs:</b>	3.638 kW	1,326 volts		

<b>Call Letters:</b>	KBCO (FM)	(Auxiliary)		
<b>Frequency:</b>	97.3 MHz			
<b>ERP:</b>	20.500 kW	13.118 dBk	2.050 kW	3.118 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	6.926 Numeric	8.405 dB	6.926 Numeric	8.405 dB
<b>Antenna Input Power:</b>	2.960 kW	4.713 dBk	0.296 kW	-5.287 dBk
<b>Peak Voltage:</b>	544 volts		344 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.048 dB/100-feet		0.048 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.048 dB/100-feet		0.048 dB/100-feet	

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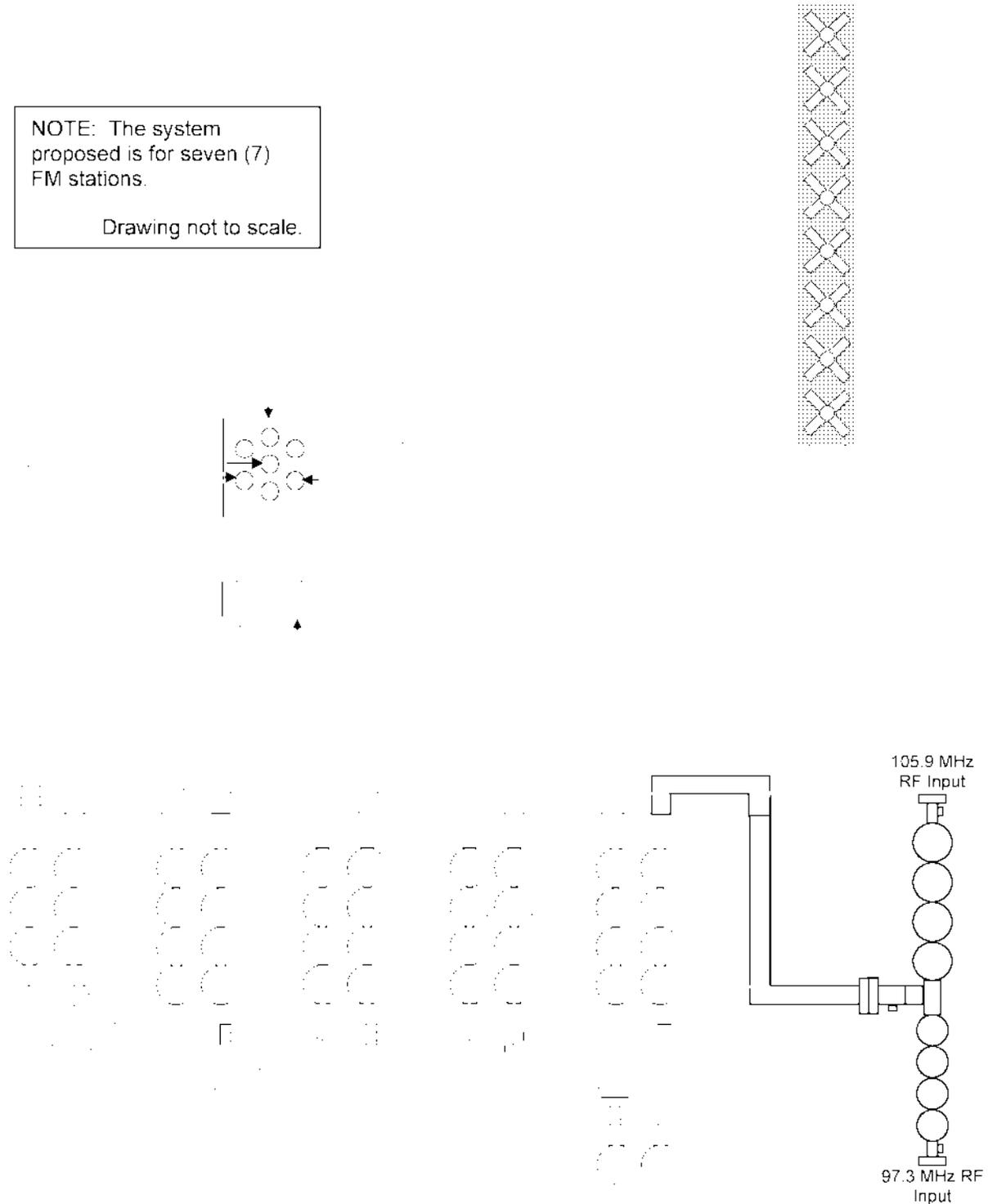
<b>Line Loss:</b>	-0.049 kW	0.071 dB	-0.005 kW	0.071 dB
<b>Line Efficiency:</b>	98.386%		98.386%	
<b>Power Output from Combiner:</b>	3.008 kW	4.783 dBk	0.301 kW	-5.217 dBk
<b>Peak Voltage:</b>	548 volts		347 volts	
<b>Combiner Losses:</b>	-0.295 kW	0.407 dB	-0.030 kW	0.407 dB
<b>Transmitter Power Output:</b>	3.304 kW	5.190 dBk	0.330 kW	-4.810 dBk
<b>Call Letters:</b>	KALC (FM)	(Auxiliary)		
<b>Frequency:</b>	105.9 MHz			
<b>ERP:</b>	25.000 kW	13.979 dBk	2.500 kW	3.979 dBk
<b>Polarization:</b>	Circular		Circular	
<b>Antenna RMS Gain:</b>	7.053 Numeric	8.484 dB	7.053 Numeric	8.484 dB
<b>Antenna Input Power:</b>	3.545 kW	5.496 dBk	0.354 kW	-4.504 dBk
<b>Peak Voltage:</b>	595 volts		377 volts	
<b>Transmission Line Type - Tower Vertical Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Tower Vertical Run Length:</b>	128 feet	39.0 meters	128 feet	39.0 meters
<b>Tower Vertical Run Attenuation:</b>	0.050 dB/100-feet		0.050 dB/100-feet	
<b>Transmission Line Type - Horizontal Run:</b>	6-1/8-inch, 50 ohm, rigid line		6-1/8-inch, 50 ohm, rigid line	
<b>Horizontal Run Length:</b>	20 feet	6.1 meters	20 feet	6.1 meters
<b>Horizontal Run Attenuation:</b>	0.050 dB/100-feet		0.050 dB/100-feet	
<b>Line Loss:</b>	-0.061 kW	0.074 dB	-0.006 kW	0.074 dB
<b>Line Efficiency:</b>	98.316%		98.316%	
<b>Power Output from Combiner:</b>	3.605 kW	5.569 dBk	0.361 kW	-4.431 dBk
<b>Peak Voltage:</b>	600 volts		380 volts	
<b>Combiner Losses:</b>	-0.229 kW	0.268 dB	-0.023 kW	0.268 dB
<b>Transmitter Power Output:</b>	3.835 kW	5.837 dBk	0.383 kW	-4.163 dBk

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# Simplified Block Diagram

NOTE: The system proposed is for seven (7) FM stations.

Drawing not to scale.



**Lookout Mountain Master FM Antenna and Channel Combiner System after modifications made on ERI Sales Order Number 09212G.**

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