

## 2.985 RF Power Output

Power output is measured and set at the RF antenna port of the transmitter using an HP-436A Power Meter with an HP-8481B High Power Sensor.

The transmit power is set at the desired level by adjusting the Power Amplifier Gain Adjust at the front of this module. The Power Amplifier has the following characteristics.

Alcatel Part Number	644-0327-xxx
Type Design	Solid State
DC Power Requirement	+10.5 Vdc @ 7.3A -12 Vdc @ 100mA -5 Vdc @ 100mA
Gain	46 dB typical
Output Power	+31 dBm transmit power at the antenna port.

## **DVR-6707-19 Broadcast Auxiliary Digital Radio FCC Type Notification**

### **Radio Characteristics**

FCC Identification	JF6-9801
Frequency Range	6875 – 7125 HHZ
RF Channel Bandwidth	5 MHz
Emission Designation	5M00D7W
Modulation Type	128 TCM
Data Rate	25.25 Mb/s
Baud Rate	4.6 Mbaud/s
Data Efficiency	5.6 Bits/Hz
Transmit Power	+37 dBm (5 Watts)
Transmit Frequency Stability	0.001% (-20 to +50 Degrees C)
Primary Voltage Range	24 – 48 Vdc (positive or negative) 120/240 Vac
Operating Temperature Range	0 to 45 Degrees C

### **Attached Support Documents**

Equipment Photograph  
FCC ID Label  
FCC ID Label Position Drawing  
2.985 RF Power Out  
2.987 Modulation Characteristics  
2.989 Occupied Bandwidth  
2.993 Field Strength of Spurious Radiation  
2.995 Frequency Stability

## 2.987 MODULATION CHARACTERISTICS

The modulation employed in this equipment is 128 TCM (Trellis Coded Modulation). This modulation was selected to achieve a good BER (bit error rate) performance while maintaining a high spectral efficiency.

The 128 TCM signal is similar to a QAM signal, but has been digitally encoded to allow the receiver to correct small noise perturbations. It is generated by direct modulation of the RF carrier and its quadrature frequency component using the I and Q baseband signals. The I and Q baseband signals are fed to RF mixers in the modulator. The output of the transmit local oscillator is also fed to the RF mixers through a 90 degree hybrid coupler. Each baseband signal (I and Q) is applied to a double balanced mixer where it is translated to RF using the in-phase and quadrature components from the hybrid coupler. The translated I and Q spectrums are fed to a Wilkinson Combiner to form the suppressed carrier RF spectrum which is subsequently fed into the linear solid state power amplifier.

Overhead data is added to the traffic data to carry the framing and service channel information. The service channels are used to carry alarm reporting and voice order-wire data. They also provide a channel for microprocessor communication between radio transmitters and receivers.