

## **Type Acceptance Test Report**

### **Wideband FM Audio/Video Transmit Module**

**FCC ID: QN41500**

**FCC Rule Part: 90**

**ACS Report Number: 03-0091-90TA**

Manufacturer: Datawave

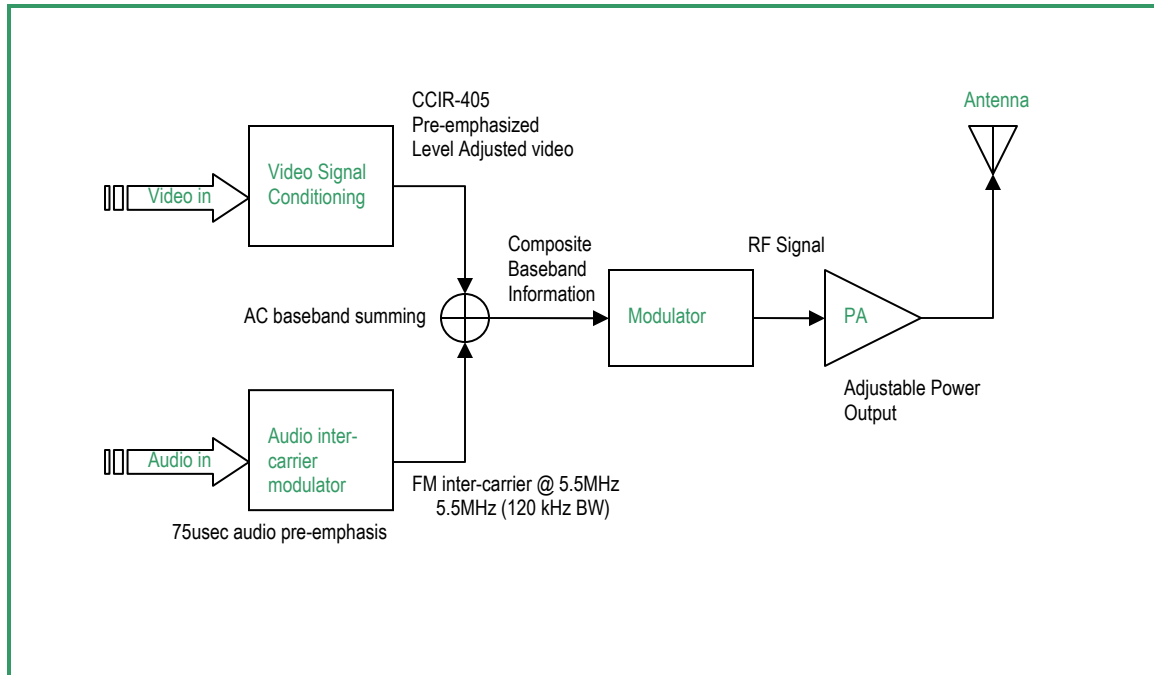
Model: Datawave1500

## **Theory of Operation**

## Theory of Operation

This module transmits NTSC/PAL video and 1Vp-p audio signals using a standard wideband frequency modulation method.

The module consists of 4 blocks for the transmission of audio/video at 2.4GHz:



**Figure 1 Transmitter Block Diagram**

## Block Diagram Description

The *Video Signal Conditioning* portion of the transmitter is used to add video pre-emphasis and divide down the incoming video level to provide an adjustable deviation constant for a desired bandwidth. The *Audio Inter-Carrier Modulator* block takes a 1Vp-p audio signal and adds pre-emphasis before it is applied to a 5.5MHz voltage controlled oscillator (VCO). The result of the circuit is a 5.5MHz inter-carrier signal with a deviation of  $\pm 60\text{KHz}$ . The two conditioned signals are then AC summed together and applied to the modulation input of the *Modulator* block. The *Modulator* block consists of an RF VCO, synthesizer and reference crystal. The synthesizer is programmed by a microcontroller which controls which carrier frequency is selected by the user. The output of the *Modulator* is a frequency modulated carrier that consists of the video information and the audio inter-carrier sidebands, which are 5.5MHz away from the carrier. The FM signal is then sent to the *PA* block which consists of a pre-amplifier and a power amplifier whose power output can be adjusted from 1mW to 300mW. The output of the *PA* block is fed to a frequency trap to reduce the 1<sup>st</sup> and 2<sup>nd</sup> harmonics of the carrier and then routed to the antenna port.