DUO Lamp Speaker / Maestro Transmitter operating description

The transmitter is a direct up-conversion modulator, which requires four quadrature baseband I/Q signals as inputs. The internal VCO for the transceiver is integrated, and no IF VCO is needed. Simple frequency planning reduces spurious of transmitter.

(1). Oscillator section

Oscillate 44MHz by X100 crystal oscillator

Signal from X100 44MHz to U101 AL2212

U101 AL2212 has PLL synthesizer to decided operating frequency by resistor on this chip .

That resistor is written by U1 from 3-wire control. U1 IA8 base band processor has compatible 8085 single chip microprocessor.

The AL2212 includes an integer-N synthesizer. The integer-N main counter embeds a high frequency bipolar configurable 32/33 dual modulus prescaler P, and counter A and B with dual modulus control logic, allowing accumulator controlled P/P+1 switching. The reference frequency is fed from an external oscillator, followed with a selectable internal divide-by-2 circuit.

(2). Moderation DSSS section

Audio signal in trough the chip U1 IA8 base band processor.

Calculate of DSSS modulation in this chip with digital RF signal from U101 AL2212.

(3). RF DAC

RF DAC means modulated DSSS signal convert digital signal to RF analog signal.

(4). Mixing section

Convert to operational frequency.

(5). PA Section

U101 the internal power amplifier could deliver up to 0dBm of P1dB output power. An on-chip power detector is integrated. A closed loop TX power level control algorithm is recommended to compensate the variations of output power level from process, channels and temperature.

This Section is separated 3 blocks. 2 PA amplifier gain is decided from resistor in this chip.

Another 1PA is controlled by TxAGC analog control voltage is flexible.

(6). Transmit Algorithm

1) Searching of space channel by carrier sensing

2) Space of channel is decided by reading AGC most high level.

3) Reading AGC level is decided measure by AGC DAC value.