



PRODUCT SPECIFICATION

MODEL
RF-V2170MUP2

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DESCRIPTION
PLL RF MODULATOR
WITH ANT BOOSTER

RF-V2170MUP2

PLL RF MODULATOR WITH ANT BOOSTER

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| | | | |
| A | Original Release | | |
| REVISIONS | DESCRIPTION | DATE | DESIGN |
| MANUFACTORY: WUXI BIG ELECTRONIC CO.,LTD | | APPROVAL | DESIGN |
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1.0 General Description

- 1) Transmission system : Europe standard and USA System
- 2) Color system : PAL-B/G,D/K and NTSC M
- 3) Output channel : 21~69 CH and 14~83 CH (471.25~885.25MHz)
- 4) Output impedance : 75 Ω unbalanced

2.0 Rating

- | | | |
|-----|-----------------------------|--|
| 2.1 | Supply voltage | +B(MOD) : DC 5V \pm 0.2V +B(BST) : DC 5V \pm 0.5V VT : 30 \pm 2V |
| 2.2 | Current consumption | MOD 90mA max./ 65mA type BST 55mA max./38mA type |
| 2.3 | Video input signal voltage | Staircase step 1Vp-p \pm 1%, V/S : 7/3 , APL= 50% |
| 2.4 | Audio input signal voltage | Sine wave of 1 kHz \pm 5%: -5dBs (1.24Vp-p \pm 2%) |
| 2.5 | Operating temperature range | 0~60dec-C |
| 2.6 | Operating humidity range | less than 85% |
| 2.7 | External shape | As per product specification drawing |
| 2.8 | Weight | 24 \pm 3 g |
| 2.9 | Storage humidity range | less than 90% |

3.0 Electrical specifications

3-1 Video Characteristics

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|-------|---|-------------------|--|
| 3-1-1 | Video input impedance | 0.5~1.3k Ω | Measurement: 0 to 5 MHz |
| 3-1-2 | Video Modulation Factor | 75 \pm 10% | Input Signal: 1Vp-p White |
| 3-1-3 | V/S Ratio | 7/3 | |
| 3-1-4 | Video Amplitude Frequency Characteristics | \pm 5dB | Measurement Range:0.5 to 5MHz Base on 1MHz |
| 3-1-5 | Differential Gain | \pm 10% | Input Signal:1Vp-p Stair Step APL 10 to 90% |
| 3-1-6 | Differential Phase | \pm 10 deg | Input Signal:1Vp-p Stair Step APL 10 to 90% |

| | | |
|---|---|--|
| 3-1-7 Video S/N | >42 dB | Measure by video Noise Meter at the output of standard Demodulator Video Band Width :10KHz to 5MHz 4.43MHZ Trap:ON |
| 3-2 Audio Characteristics | | |
| 3-2-1 Audio Input Impedance | >100 k Ω | Measurement Range:20Hz to 20KHz |
| 3-2-2 Audio Modulation Factor | 100 \pm 20%(G) 100 \pm 20%(I) 100 \pm 20%(D) 90 \pm 20%(M) | Input Signal:-5dBs(1.23Vp-p) 1KHz sin Wave Modulation 100%= \pm 50KHz Condition of Spectrum Analyzer Frequency SPAN/D/V:10KHz Restoration BW :10KHz |
| 3-2-3 Audio Amplitude Frequency Characteristics | \pm 5dB | Measurement Range:20HZ to 20KHz The Value Difference From the Theoretical Curve of the Pre-emphasis(50u sec) is Measure Base on the Level of 1KHz |
| 3-2-4 Audio S/N | >42 dB | Input Color Bar:CCIR(486-2) Filter |
| 3-2-5 Audio Distortion | <3% | Input Signal:-5dBs,1KHz Sine Ware |
| 3-3 Output Signal Characteristics | | |
| 3-3-1 Video carrier Frequency accuracy | fp \pm 50KHz | Measure the deviated frequency from specified channel |
| 3-3-2 Audio Carrier Frequency Accuracy | fs \pm 10KHz | Measure the difference between the video carrier and the audio carrier frequencies. The measurement is taken after 0.5 Minutes after the power |
| 3-3-3 Video Carrier output level | > 72dBu | On Modulating |
| 3-3-4 P/S Ratio | \pm 3dB(36CH) \pm 4dB(other CH) | Measure the difference between the video carrier peak level and sound carrier level |

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| 3-3-5 Out-Band Spurious I | >-50dB | Video input:None Measurement Range:0 to 1GHz Except of Fs,Fp+/-Fs,2Fp |
| 3-3-6 Out-Band Spurious II | <55dBu | Video Input:None Measurement Range:900~1750MHz |
| 3-3-8 Chroma Best | >55dB | Video Input Signal:0.4Vp-p 4.43MHz Sine wave The value is relative to the level of Fp On video modulation |
| 3-4 Antenna Booster Characteristics | If it is not specified, measurement range is 50~900MHz,and unused RF terminals Should be terminated by nominal impedance terminator. | |
| 3-4-1 power Gain | -4~+5dB | ANT IN~TV OUT |
| 3-4-2 Noise Figure | <11dB | ANT IN~TV OUT Post Amp NF:3dB MAX |
| 3-4-3 V.S.W.R | <3 | ANT IN TV OUT |
| 3-4-4 Inter-Modulation (1M1) | >55dB | ANT IN~TV OUT F1=200MHz,F2=500MHz F(1M1)=F1+F2 Input level=80dBu |
| 3-4-5 Inter-Modulation (1M2) | >55dB | ANT IN~TV OUT F1=200MHz,F2=500MHz F(1M1)=F1+F2 Input level=80dBu |
| 3-4-6 ANT IN Leakage | <55dB | |
| 3-5 Thermal Stability | Unless otherwise specified, thermal stability test shall be performed under the following conditions. Measurement Range:0~60°C Humidity Range should be within 45 to 65% RH. Test and Measurement order and time. 25°C(1H)~0°C(1H)~25°C(1H)~60°C(1H) | |
| 3-5-1 Video Modulation Factor | ±12% | Base on the value of 25c |
| 3-5-2 Audio Carrier Factor | ±250KHz | Base on the value of 25c |
| 3-5-3 Audio Carrier Frequency | ±10KHz | Base on the value of 25c |
| 3-5-4 Audio Carrier Output Level | ±5dB | Base on the value of 25c |
| 3-5-5 V/S Ratio | <8/2 | Base on the value of 25c |
| 3-5-6 Differential Gain | <15% | Base on the value of 25c |
| 3-5-7 Differential Phase | <15deg | Base on the value of 25c |
| 3-5-8 P/S Ratio | ±5dB | Base on the value of 25c |
| 3-5-9 Audio Modulation Factor | ±10% | Base on the value of 25c |
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3-6 Software Information

I²C-BUS Data Format

| Byte | Msb | | | | Lsb | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Address Byte Adr | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | Ack |
| Control Byte C1 | 1 | * | * | * | Ps2 | Ps1 | Ps0 | Ps0 | Ack |
| Control Byte Pd1 | 0 | Psa | 0 | Fa1 | Fa0 | * | * | * | Ack |
| Prog. Data Byte Pd1 | 0 | Tsg | N10 | N9 | N8 | N7 | N6 | N5 | Ack |
| Prog. Data Byte Pd2 | N4 | N3 | N2 | N1 | 0 | 1 | 0 | 0 | Ack |

(*) Don't Care

Bus Data Transmission: Adr+C1+C2+Pd1+Pd2 or
 Adr+Pd1+Pd2+C1+C2 or
 Adr+C1+C2
 Adr+Pd1+Pd2

3-6-1 Ps2~Ps0:Picture to Sound Ratio Setting.

| P/S Ratio | Ps2 | Ps1 | Ps0 |
|-----------|-----|-----|-----|
| -10dB | 0 | 0 | 0 |
| -11dB | 0 | 0 | 1 |
| -12dB | 0 | 1 | 0 |
| -13dB | 0 | 1 | 1 |
| -14dB | 1 | 0 | 0 |
| -15dB | 1 | 0 | 1 |
| -16dB | 1 | 1 | 1 |
| -17dB | 1 | 1 | 1 |

3-6-2 Psa:Control of Power save

- 1 Power save Off.(Normal operation)
- 0 Power save On.Becomes waiting for the Bus Data.

And power supplies other than the bus decode are turned Off.

The data of the decoder is main timed while Vcc is added.

When Vcc is turned Off..Power on reset changes the data of the decode by turning on Vcc again.

3-6-3 .Fa1~Fa0:Sound inter carrier frequencies setting.

| Fa1 | Fa0 | Sound inter carrier frequency |
|-----|-----|-------------------------------|
| 0 | 0 | 4.500MHz |
| 0 | 1 | 5.500MHz |
| 1 | 0 | 6.000MHz |
| 1 | 1 | 6.500MHz |

3-6-4 TPSG:Control of test pattern signal Generator

| | |
|---|------------------------|
| 1 | On |
| 0 | Off (Normal Operation) |

3-6-5 N10~N1:Programmable Divider Data Setting

The frequency of VCO is calculated by the next expression.

$$F_{vco}=31.25\text{KHz}\cdot 32\cdot N+250\text{KHz}$$

$$N=512\cdot N_{10}+256\cdot N_9+128\cdot N_8+64\cdot N_7+32\cdot N_6+16\cdot N_5+8\cdot N_4+4\cdot N_3+2\cdot N_2+N_1$$

The frequency step is 1MHz,and 250KHz is given in the 1C.

The divider data is made frequency-250KHz of the set channel.

Outline Dimensions:

