

LTK - 1400AH TRANSMITTER TUNE UP PROCEDURE

PERFORMANCE TEST

The procedure in this chapter allows the verification of the electrical performance of transmitter. These tests do not require access to the interior of the instrument.

Recommended test equipment

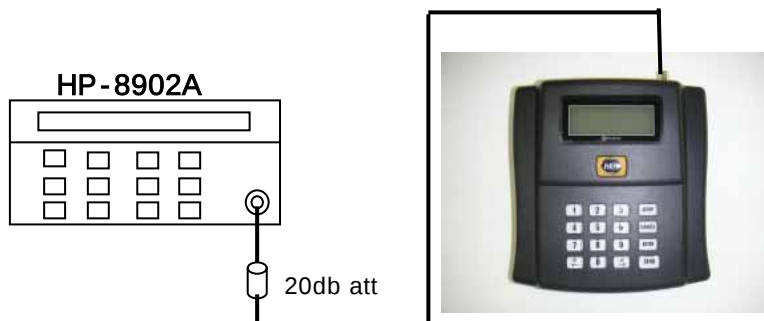
Description	Minimum specification	Model
Power meter	+ / - 0.2dB, - 60 to -20dBm. 100 KHz to 1GHz	HP -436A/8481D
Spectrum analyzer	100KHz to 3GHz, up to -120 dBm	HP -8591E
Measuring receiver	0.2 to 1300MHz, 0 to -125dBm, Freq Counter	HP -8902A
Oscilloscope	DC to 100MHz, 5mV to 1V/div, Rise Time capavity	TEK TDS360
Frequency Counter	+ / - 0.1ppm, 10Hz ~ 1GHz, 9digit	HP -53181A
Attenuator	10W, 20dB Att, DC to 1GHz	Tescom 99910

1. Frequency Accuracy

Frequency : 457.5750MHz

Stability : Same as reference oscillator accuracy. Internal 1ppm 0 to 50degC

1.Test Setup



Carrier frequency accuracy test

2. HP-8902A : auto tuning, frequency display

3. LTK-1400AH TRANSMITTER

1) Connect 20dB Attenuators

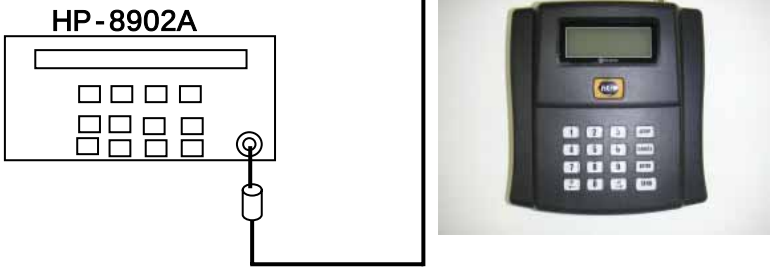
2) Power On

3) Setup key, enter, password 2386 key enter, Use # key to select " SYNC OFF, RF ON

TC - 1950A FREQ	Lower Limit	Actual	Upper Limit	Remarks
457.5750MHz	457.5748		457.5752	

2. RF Output Level Accuracy
- RF level : 30dBm
- Accuracy : +/- 1dB

1.Test Setup

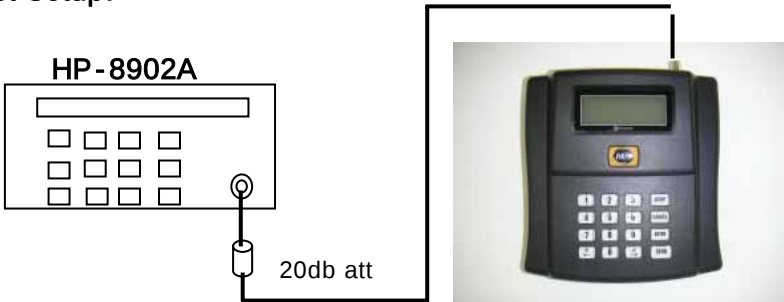


- 2.HP-8902A : Auto-tuning, RF Power
- 3.LTK-1400A TRANSMITTER
- 1) Connect 20dB Attenuators
 - 2) Power On
 - 3) Setup key, enter, password 2386 key enter, Use # key to select " SYNC OFF, RF ON

3. Spectral Purity

- 3.1. Residual FM Noise
- RMS Noise : <10Hz Typ, 300Hz ~ 3KHz
- <70Hz Typ, 50Hz ~ 3KHz

1. Test Setup.



2. HP 8902A : FM, RMS, Filter BW 300Hz ~ 3KHz
- 3.LTK-1400A TRANSMITTER:
- 1) Connect 20dB Attenuators
 - 2) Power On
 - 3) Setup key, enter, password 2386 key enter, Use # key to select " SYNC OFF, RF ON

TC -1950A Signal Generator Residual FM			
8902 Filter BW	Actual	Limit (Hz)	Remark

HPF	LPF	Actual	Limit (Hz)	Remark
300Hz	3KHz		10Hz	
50Hz	3KHz		70Hz	

3.2. Harmonic Spurious :

Harmonic Level at 2xFOUT : < -60dBc

1. Test Setup.



Harmonice test

2. HP 8591E : Span = 500KHz, RBW = 10KHz, VBW = 30KHz.

3.LTK-1400A TRANSMITTER :

- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 2386 key enter, Use # key to select " SYNC OFF, RF ON

LTK-1400A TRANSMITTER Harmonic Spurious

Fout(MHz)	Spurious(MHz)	Level(dBm)	Fout- 2*Fout	Limit	Remark
457,.575	915.15			- 60dbc	

4. Modulation

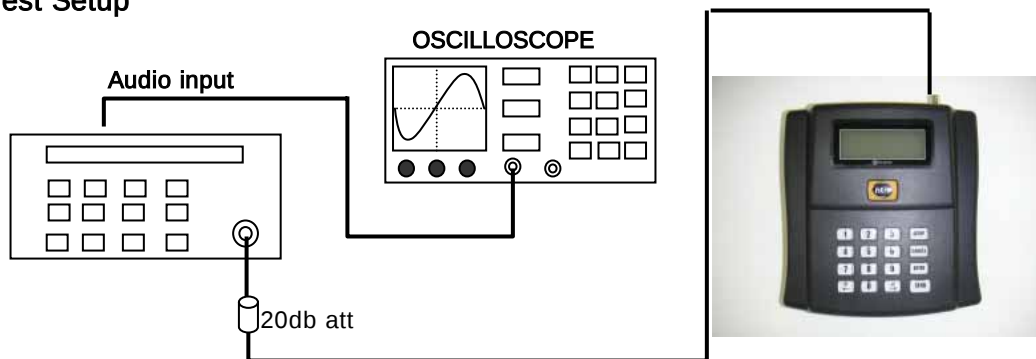
4.1. FM(RECT) (Internal FSK Test Patterns)

Deviation Accuracy

Deviation : 4.5KHz,

Accuracy : +/- 5% (4.275 < FM < 4.725)@4.5KHz

1.Test Setup



FSK Deviation and Noise Test

2.Equipment

HP -8902A : FM, AVG, HPF=OFF, LPF=15KHz

TDS360 : 250us/div, 500mV/div Average : 16

3. LTK-1400A TRANSMITTER

- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 2386 key enter, Use # key to select " SYNC OFF, RF ON

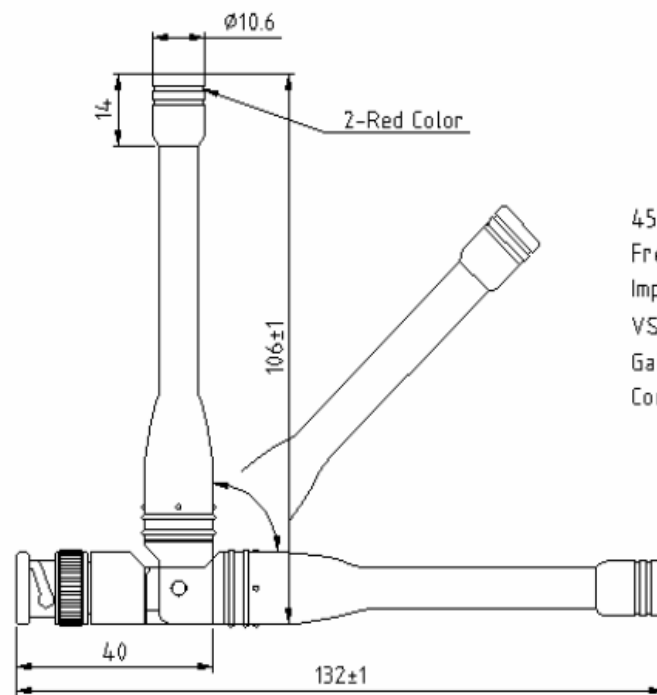
4. Read FM Deviation in RMS.

<u>DEV</u> (LTK-1400AH)	<u>Limit</u>
4.5KHz	4.5KHz + - 5%

Table : FSK Deviation Accuracy

Item	Lower	Actual	Upper	Remark
Deviation (AVG)	4.275		4.725	

LTK-1400AH ANTENNA



457 Mhz Helical Antenna
Frequency Range : 455 - 460 Mhz
Impedance : 50 Ohms (Nominal)
VSWR : Better than 1.5:1
Gain : 0 ± 0.5 dBi
Connector : BNC (Male)