

# PS-3000 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

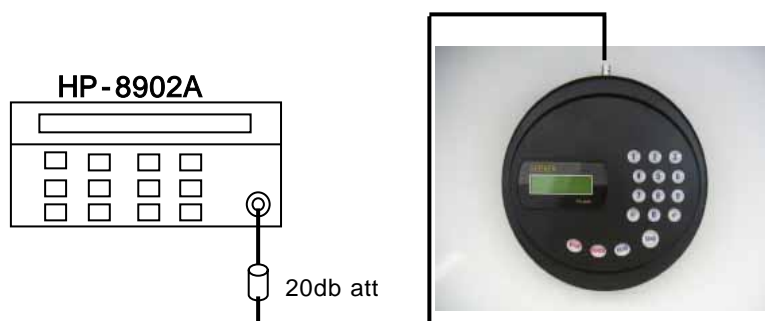
Description	Minimum specification	Model
Power meter	+ / - 0.2dB, - 60 to -20dBm. 100 KHz to 1GHz	HP-436A/8481D
Spectrum analyzer	100KHz to 3GHz, up to -120 dBm	HP-8591E
Measuring receiver	0.2 to 1300MHz, 0 to -125dBm, Freq Counter	HP-8902A
Oscilloscope	DC to 100MHz, 5mV to 1V/div, Rise Time capability	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. PS-3000 TRANSMITTER

1) Connect 20dB Attenuators

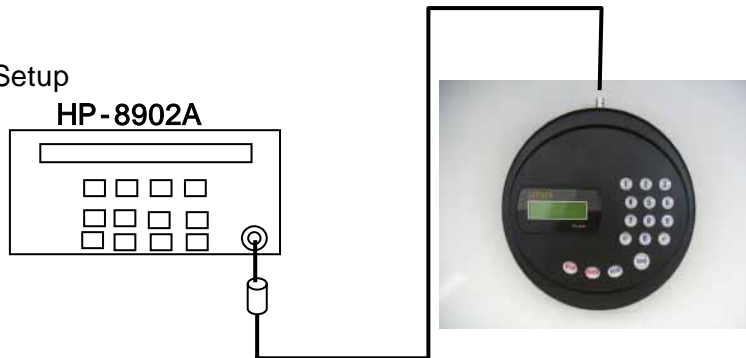
2) Power On

3) Setup key, enter, password 238 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. PS-3000 TRANSMITTER

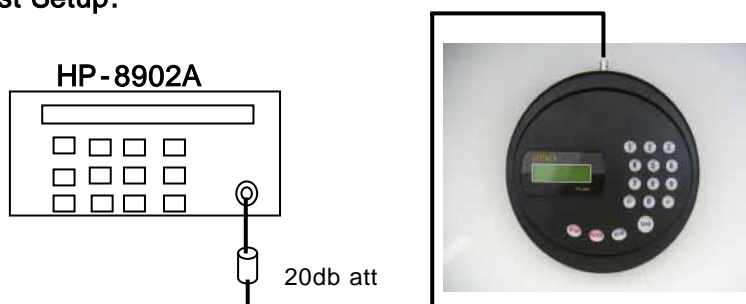
- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 238 key enter, Use # key to select " SYNC OFF, RF ON

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. PS-3000 TRANSMITTER:

- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 238 key enter, Use # key to select " SYNC OFF, RF ON

TC-1950A Signal Generator Residual FM

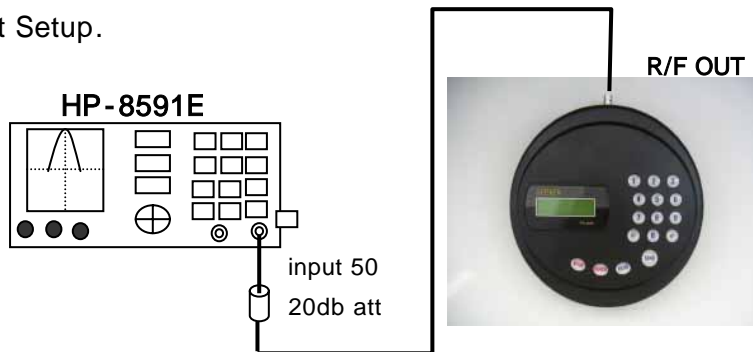
8902 Filter BW		Actual	Limit (Hz)	Remark
HPF	LPF			

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. PS-3000 TRANSMITTER :

- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 238 key enter, Use # key to select " SYNC OFF, RF ON

#### PS-3000 TRANSMITTER Harmonic Spurious

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

#### 4. Modulation

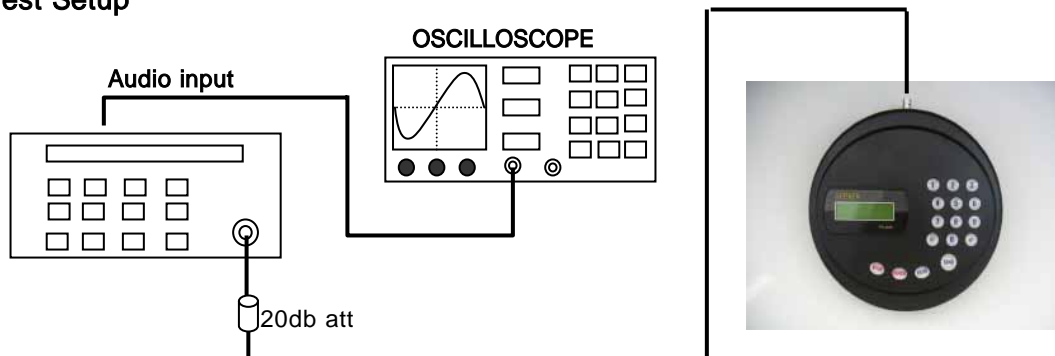
##### 4.1. FM(RECT) (Internal FSK Test Patterns)

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. PS-3000 TRANSMITTER

- 1) Connect 20dB Attenuators
- 2) Power On
- 3) Setup key, enter, password 238 key enter, Use # key to select " SYNC OFF, RF ON

### 4. Read FM Deviation in RMS.

<u>DEV</u> (PS-3000)	<u>Limit</u>
4.5KHz	4.5KHz + - 5%

**Table : FSK Deviation Accuracy**

Item	Lower	Actual	Upper	Remark
Deviation (AVG)	4.275		4.725	