LTK-WAITERCALL25 TRANSMITTER TUNE UP PROCEDURE
PERFORMANCE TEST

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

Recommended test equipment

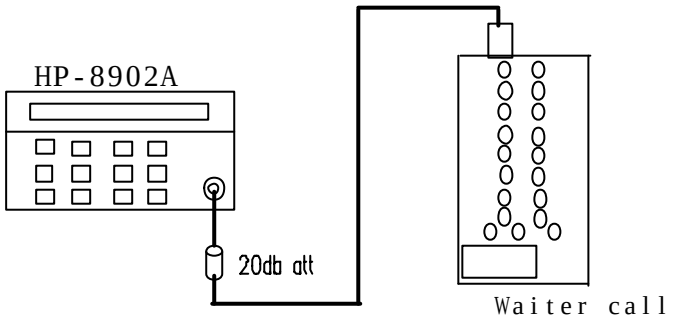
Description	Minimum specification	Model
Power meter	+ / − 0.2dB, − 60 to −20dBm. 100 KHz to 1GHz	HP−436A/8481D
Spectrum analyze	100KHz to 3GHz, up to −120 dBm	HP−8591E
Measuring receive	0.2 to 1300MHz, 0 to −125dBm, Freq Counter	HP−8902A
Oscilloscope	DC to 100MHz, 5mV to 1V/div, Rise Time capavility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

1. Frequency Accuracy

Frequency : 457.5750MHz

Stavility : 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. WAITERCALL

1) Connect 20dB Attenuators
2) Power On
3) X3 Key, enter, #1 key enter, RF ON

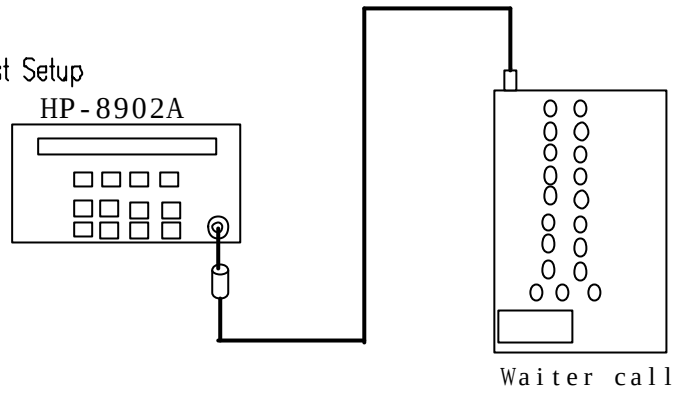
TC−1950A FREQ	Lower Limit	Actual	Upper Limit	Remarks
457.5750MHz	457.5748		457.5752	

2. RF Output Level Accuracy

RF level : 30dBm

Accuracy : +/-1dB

1.Test Setup



2.HP-8902A : Auto-tuning, RF Power

3.WAITERCALL :

1) Connect 20dB Attenuators
2) Power On
3) X3 Key, enter, #1 key enter, RF ON

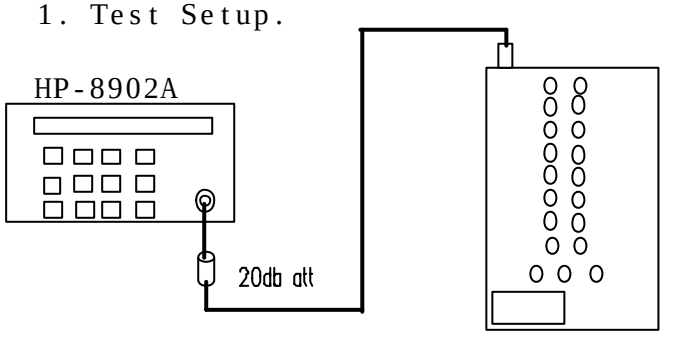
Level	WAITERCALL Output mod on/off (MHz)	Lower Limit	Actual	Upper Limit	Remark
30dBm	Service Off	29		31	

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.WAITERCALL :

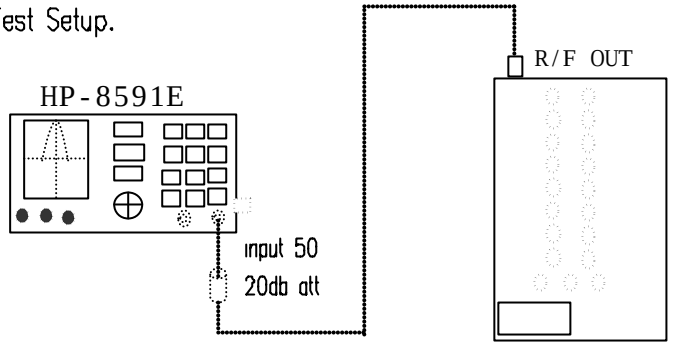
1) Connect 20dB Attenuators
2) Power On
3) X3 Key, enter, #1 key enter, RF ON

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 Waiter call

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

3.WAITERCALL :

1) Connect 20dB Attenuators

2) Power On

3) X3 Key, enter, #1 key enter, RF ON

WAITERCALL Harmonic Spurious

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

4. Modulation

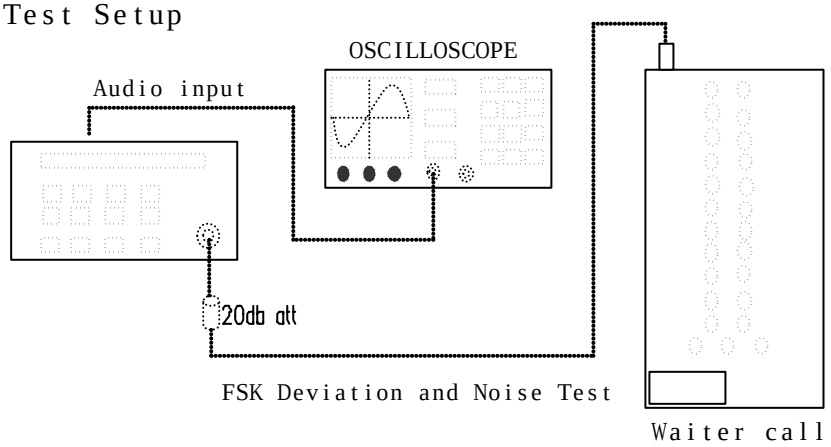
4.1. FM(RECT) (Internal F S K Test Patterns)

Deviation Accuracy

Deviation : 4.5KHz,

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

1.Test Setup



FSK Deviation and Noise Test Waiter call

2.Equipment

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

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

3. WAITERCALL

1) Connect 20dB Attenuators

2) Power On

3) X3 Key, enter, #1 key enter, RF ON

4. Read FM Deviation in RMS.

DEV(WAITERCALL)	Limit
4.5KHz	4.5KHz + − 5%

Table : F S K Deviation Accuracy

Item	Lower	Actual	Upper	Remark
Deviation (AVG)	4.275		4.725	