ALIGNMENT PROCEDURE

MODEL: 18WX ST II

REVISION: 00

DATE : AUGUST 09, 2000

PREPARED BY:_____

CHECKED BY: _____

APPROVED BY: _____

TOTAL PAGES:

18WS2 ALIGNMENT INSTRUCTION

1.0 TEST CONDITION:

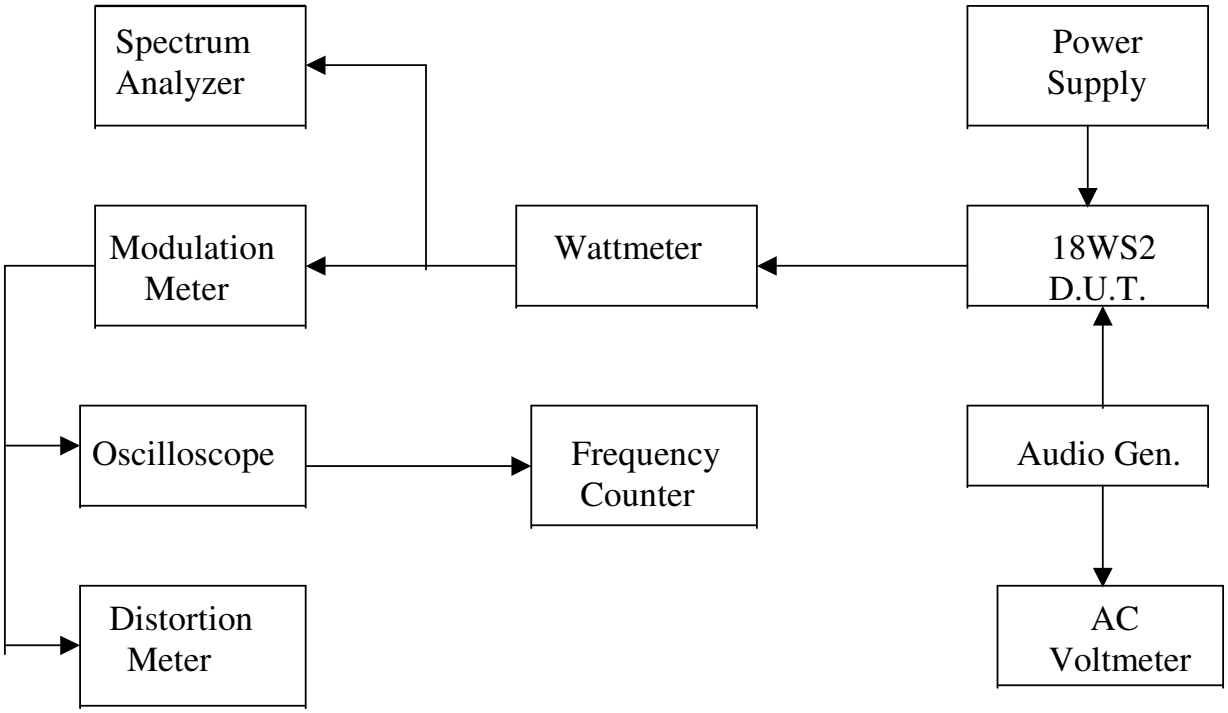
1.1. STANDARD DC POWER:	EXT.DC	13.8VDC
1.2. MEASUREMENT CHANNEL:	CB	CH19 (27.185MHz)
	WX	CH3 (162.475MHz)
1.3. STANDARD AUDIO LOADING:	CB/WX	8 Ω
1.4. ANTENNA IMPEDANCE:	CB/WX	50 Ω
1.5. STANDARD REF. MODULATION:	CB	30% (AM)
	WX	± 3KHz (FM)
1.6. STANDARD REF. AUDIO OUTPUT:	CB/WX	0.5W

1.7. FREQUENCY TABLE

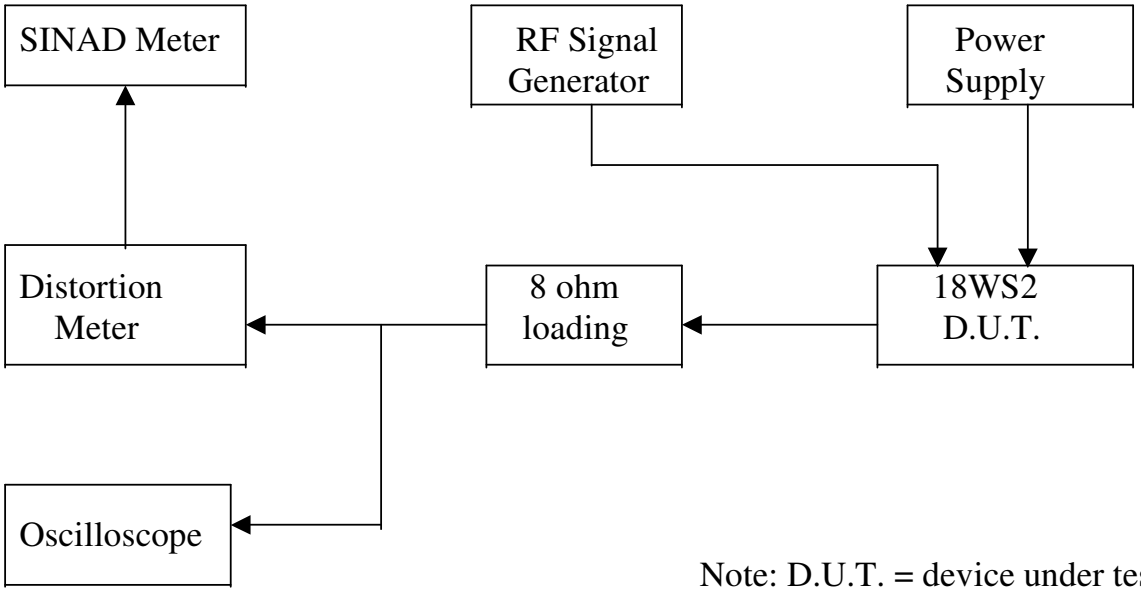
CB BAND		WX BAND	
CH NO.	FREQ. (MHz)	CH NO.	FREQ. (MHz)
01	26.965	1	162.550
02	26.975	2	162.400
03	26.985	3	162.475
04	27.005	4	162.425
05	27.015	5	162.450
06	27.025	6	162.500
07	27.035	7	162.525
08	27.055	8	161.650
09	27.065	9	161.775
10	27.075	10	163.275
11	27.085		
12	27.105		
13	27.115		
14	27.125		
15	27.135		
16	27.155		
17	27.165		
18	27.175		
19	27.185		
20	27.205		
21	27.215		
22	27.225		
23	27.255		
24	27.235		
25	27.245		
26	27.265		
27	27.275		
28	27.285		
29	27.295		
30	27.305		
31	27.315		
32	27.325		
33	27.335		
34	27.345		
35	27.355		
36	27.365		
37	27.375		
38	27.385		
39	27.395		
40	27.405		

1.8. TEST EQUIPMENT SETUP AS BELOW:

A. TX test equipment setup:



B. RX test equipment setup:



Note: D.U.T. = device under test

2.0 ALIGNMENT

2.1 LOCAL FREQ. ALIGNMENT

TEST ITEM	TEST CONDITION & PROCEDURE	PURPOSE
1. VCO Frequency	Connect a 5pf capacitor to TP7. Set CB mode RX CH19.	Adjust **VC1** FOR 16.485 MHz at the frequency counter.
2. 10.245MHz frequency	Connect a 5pf capacitor to TP8. Set CB mode RX CH19.	Adjust **VC2** FOR 10.245 MHz at the frequency counter.

2.2 VCO ALIGNMENT

TEST ITEM	TEST CONDITION & PROCEDURE	PURPOSE
1. CB VCO Voltage	1. Connect a digital multi-meter to TP1 2. Set CB RX mode: CH1.	Adjust **L11** for 1.0 ± 0.1 V.
	3. Set CB TX mode	Check CH40 ≤ 4.5V.
2. WX VCO Voltage	1. Connect a digital multi-meter to TP1 2. Set WX mode CH08.	Adjust **L1** FOR 1.5 ± 0.1V. Check CH1 0 ≤ 3.0V.

2.3 WX RECEIVER

TEST ITEM	TEST CONDITION & PROCEDURE	PURPOSE
1. Audio output level	1.Set WX mode, CH3. 2.Output of signal generator thru a 0.01μF to TP3. 3.RF Gen. set 10.7MHz, Fmod= 1KHz, Dev.= ± 3KHz, RF level: 1mV. 4.Set volume control to middle position.	1. Adjust **L9** for maximum audio output & minimum distortion at the distortion meter.(Distortion less than 8%) 2. Set volume control to maximum position, audio power output shall be more than 3 Watts.
2. WX sensitivity	1.Output of signal generator to antenna input terminal. 2. RF Gen. set 162.475MHz, Fmod= 1KHz, Dev.= ± 3KHz, RF level: 1μV. 3. WX set CH3.	1.Adjust **L4** and **L3** for more than 12dB at the SINAD meter. 2.Repeat as needed. Check all channels sens. must met D.T.S.

2.4 CB Receiver Alignment

TEST ITEM	TEST CONDITION & PROCEDURE	PURPOSE
1. Audio output level	1. CB RX mode. 2. ST to OFF 3. Output of signal generator thru 0.01uF to TP3. 4. RF Gen. set 10.7MHz, Fmod= 1KHz, AM= 30%, level: 1mV. 5. Set Volume control to middle position. 6. Set Squelch to minimum.	1. Adjust **L8** and **L23** for maximum audio output & minimum distortion at the distortion meter.(Distortion less than 5%) 2. Set volume control to maximum position, audio power output shall be more than 3 Watts.
2. RX sensitivity	1. Set normal band CH19. 2. Output of signal generator to antenna input terminal. 3. RF Gen. set 27.185MHz, fm: 1kHz, AM= 30%, RF level: 1μV.	1. Adjust **L5, L6** and **L10** for more than 10dB S/N ratio. 2. Repeat as needed. Check CH1 and CH40.
3. SQUELCH control (Tight Squelch)	1. Set normal band CH19. 2.Output of signal generator to the antenna input terminal. 3. RF Gen. set 27.185 MHz , Fmod= 1KHz, AM= 30%, RF level: 2500 μV. 4. Rotate the Squelch control to fully clockwise position	1.Slowly turn **VR5** to a position that the audio output waveform at the oscilloscope just appears from no output. 2.Must open at 4000uV. 3.Must not open at 800uV.
4. Signal meter display	1. Set normal band CH19. 2. Output of signal generator to antenna input terminal. RF Gen. set 27.185MHz, no modulation, RF level: 100 μV.	1. Adjust **VR1** for "9" displayed on the signal meter of LED panel. 2. Increase RF level by 30dB. The signal meter should be displayed at "+30" position.
5. Sound Tracker (ST must be on) a) S/N b) Audio Gain	1. Set normal band CH19. 2. RF Gen. set 27.185MHz,30% modulation 3. S/N @ RF level 1.0uV @ RF level 1000uV 4. Audio Gain @ 100uV 50% Mod.	1. S/N: 1.0uV ≥ 15dB. 1000uV ≥ 50dB. 2. ST audio output change 2-8dB from OFF to ON.

2.5 CB Transmitter Alignment

TEST ITEM	TEST CONDITION & PROCEDURE	PURPOSE
1. TP4 Alignment	1. Channel set normal band CH 19. 2. Set TX mode. Connect the TP4 (IC8 pin9) thru a 10pF capacitor to the oscilloscope.	1. Adjust **L7** (double tuned IFT) for maximum RF output waveform at the scope. (Freq. = 27.185MHz) 2. Repeat as needed.
2. TX Carrier output power	1. Channel set normal band CH 19. 2. Set TX mode. 3. Connect an RF wattmeter to the antenna socket.	1. Adjust **L21,L20** and **L17** for 4.0 watts RF output power. 2. Check TX CH1 and CH40 should meet D.T.S.
3.TX Carrier frequency detector.	1. Channel set CH 19. 2. Set TX mode.	TX Frequency for 27.185MHz ± 300Hz at the frequency counter.
4. TX Signal meter	1. Connect an RF wattmeter to the antenna socket. 2. No modulation. 3. Set TX output power for 3watts.	Adjust **VR6** for "4" displayed at the TX signal meter of the LED panel. (red LED)
5. MAXIMUM Modulation (AMC control)	1. Set TX mode. Output of AF generator to MIC jack, @ 1000Hz, 5 mV .	1.Adjust **VR2** for 89-91% modulation. 2.Distortion less than 8.0% at 80% modulation. 3. Check CH1,CH40.
6. TX 2nd harmonics	1. Connect an RF wattmeter to the antenna socket.	Adjust **L14** for less than -60dB at spectrum analyzer.
7. Occupied band width, (OBW)	1. Set TX High power mode 2. Set modulation frequency 2500 Hz.	The frequency spectrum of the harmonics should be at least 2 dB better than the limits of the FCC specification.

Alignment Points