

**PRESIDENT**

**JOHNSON II**

**SERVICE MANUAL**

# - TECHNICAL CHARACTERISTICS

## 1 - GENERAL:

- **Multiconfiguration (E, d, EU, EC, U, PL)**
- E ⇒ 40 channels AM/FM 4W (from 26,965Mhz to 27,405Mhz)
- d ⇒ 80 channels FM 4W (from 26,565Mhz to 27,405Mhz)  
40 channels AM 1W (from 26,965Mhz to 27,405Mhz)
- EU ⇒ 40 channels FM 4W/AM 1W (from 26,965Mhz to 27,405Mhz)
- EC ⇒ 40 channels FM 4W (from 26,965Mhz to 27,405Mhz)
- U ⇒ 40 channels FM 4W (from 26,965Mhz to 27,405Mhz)  
40 channels FM 4W (from 27,60125Mhz to 27,99125Mhz)
- PL ⇒ 40 channels AM/FM 4W (from 26,960Mhz to 27,400Mhz)
- **Channel step**
- 10KHz
- **Class of emission**
- AM(A3E)/FM(F3E)
- **Power supply**
- 13,2V (from 10,8V to 15,6V)
- **Antenna impedance**
- 50Ω
- **Dimensions(in mm)**
- 170(W)x150(D)x52(H)
- **Weight**
- 1Kg

## 2 - TRANSMISSION:

- **Frequency allowance**
- ±300Hz
- **Transmission interference**
- Inferior to 4nW(-54dBm)
- **Audio frequency response**
- From 300Hz to 3kHz in AM/FM
- **Emitted power in the adjacent channel**
- Inferior to 20μW
- **Microphone sensitivity**
- Inferior to 10mV
- **Current drain**
- 2A(in transmission mode with modulation)
- **Modulated signal distortion**
- Inferior to 2%

### **3 - RECEPTION:**

**-Maximum sensitivity at 20dB sinad**

-0,5 $\mu$ V(-113dBm) AM/FM

**-Audio frequency response**

-From 300Hz to 3kHz in AM/FM

**-Adjacent channel selectivity**

-Superior to 60dB

**-Frequency image rejection**

-Superior to 60dB

**-Intermodulation response**

-Superior to 54dB

**-Maximum audio power**

-5W

**-Squelch sensitivity**

-Threshold 0,2 $\mu$ V(-120dBm)/Tight 1mV(-47dBm)

**-Current drain**

-400mA nominal/1000mA maximum

# ALIGNMENT PROCEDURE (JOHNSON II)

## \* VCO/PLL PORTION

- Alignment procedure
  - Test points
  - Frequencies chart

## \* TRANSMITTER

- Alignment procedure
  - Test points

## \* RECEIVER

- Alignment procedure
  - Test points

## Test equipment required

Frequency counter 200 Mhz	HF Generator
DC Voltmeter	BF Voltmeter
Distortimeter	HF Voltmeter
Wattmeter - Dummy load	Osilloscope
FM linear detector	Load 8 $\Omega$
AF generator	Sinad meter

## Conditions of Measurements on HF Generator

### Reception

AM mode: Level - 107 dBm Frequency 1 KHz with 60% of modulation.

FM mode: Level - 107 dBm Frequency 1 KHz with 1,2KHz of deviation.

### Transmission

Frequency 1 KHz 30mV.

# ALIGNMENT VCO/PLL

## 1 - Alignment procedure(13,2V;configuration"EU,E,d")

STEP	CONDITION	ADJUSTMENT	REMARKS OF ADJUSTMENT
1	FM(EU,E) TX mode Channel 40	L302	Connect a voltmeter to TP 301, adjust L302 to reach $2V \pm 0,2V$ .
2	FM(EU,E) RX mode Channel 40	L301	Connect a voltmeter to TP 301, adjust L301 to reach $2,3V \pm 0,2V$ .
3	FM(EU,E) TX/RX mode Channel 1		Connect a voltmeter to TP 301,and check: Rx Channel 1= $2V \pm 0,2V$ Tx Channel 1= $1,7V \pm 0,2V$
4	FM(EU,E) RX mode Channel 20	CT301	Connect a frequency counter to TP302,and adjust CT301 to reach 37,900MHz.
5	FM(EU,E) TX/RX mode Channel 1 to 40 or 1 to 80(d)		Connect a frequency counter to TP302,and check frequencies.

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**- FREQUENCY LIST (EU,E,EC)**

CH	Channels Frequencies (MHz)	VCO Frequencies (MHz)
1	26,965	37,660
2	26,975	37,670
3	26,985	37,680
4	27,005	37,700
5	27,015	37,710
6	27,025	37,720
7	27,035	37,730
8	27,055	37,750
9	27,065	37,760
10	27,075	37,770
11	27,085	37,780
12	27,105	37,800
13	27,115	37,810
14	27,125	37,820
15	27,135	37,830
16	27,155	37,850
17	27,165	37,860
18	27,175	37,870
19	27,185	37,880
20	27,205	37,900
21	27,215	37,910
22	27,225	37,930
23	27,255	37,950
24	27,235	37,930
25	27,245	37,940
26	27,265	37,960
27	27,275	37,970
28	27,285	37,980
29	27,295	37,990
30	27,305	38,000
31	27,315	38,010
32	27,325	38,020
33	27,335	38,030
34	27,345	38,040
35	27,355	38,050
36	27,365	38,060
37	27,375	38,070
38	27,385	38,080
39	27,395	38,090
40	27,405	38,100



**- FREQUENCY LIST (PL)**

CH	Channels Frequencies (MHz)	VCO Frequencies (MHz)
1	26,960	37,655
2	26,970	37,665
3	26,980	37,675
4	27,000	37,695
5	27,010	37,705
6	27,020	37,715
7	27,030	37,725
8	27,050	37,745
9	27,060	37,755
10	27,070	37,765
11	27,080	37,775
12	27,100	37,795
13	27,110	37,805
14	27,120	37,815
15	27,130	37,825
16	27,150	37,845
17	27,160	37,855
18	27,170	37,865
19	27,180	37,875
20	27,200	37,895
21	27,210	37,905
22	27,220	37,915
23	27,250	37,945
24	27,230	37,925
25	27,240	37,935
26	27,260	37,955
27	27,270	37,965
28	27,280	37,975
29	27,290	37,985
30	27,300	37,995
31	27,310	38,005
32	27,320	38,015
33	27,330	38,025
34	27,340	38,035
35	27,350	38,045
36	27,360	38,055
37	27,370	38,065
38	27,380	38,075
39	27,390	38,085
40	27,400	38,095

**- FREQUENCY LIST (U)**

CH CEPT	Channels Frequencies (MHz)	VCO Frequencies (MHz)
1	26,965	37,660
2	26,975	37,670
3	26,985	37,680
4	27,005	37,700
5	27,015	37,710
6	27,025	37,720
7	27,035	37,730
8	27,055	37,750
9	27,065	37,760
10	27,075	37,770
11	27,085	37,780
12	27,105	37,800
13	27,115	37,810
14	27,125	37,820
15	27,135	37,830
16	27,155	37,850
17	27,165	37,860
18	27,175	37,870
19	27,185	37,880
20	27,205	37,900
21	27,215	37,910
22	27,225	37,930
23	27,255	37,950
24	27,235	37,930
25	27,245	37,940
26	27,265	37,960
27	27,275	37,970
28	27,285	37,980
29	27,295	37,990
30	27,305	38,000
31	27,315	38,010
32	27,325	38,020
33	27,335	38,030
34	27,345	38,040
35	27,355	38,050
36	27,365	38,060
37	27,375	38,070
38	27,385	38,080
39	27,395	38,090
40	27,405	38,100

**- FREQUENCY LIST (U)**

CH ENG	Channels Frequencies (MHz)	VCO Frequencies (MHz)
1	27,60125	38,29625
2	27,61125	38,30625
3	27,62125	38,31625
4	27,63125	38,32625
5	27,64125	38,33625
6	27,65125	38,34625
7	27,66125	38,35625
8	27,67125	38,36625
9	27,68125	38,37625
10	27,69125	38,38625
11	27,70125	38,39625
12	27,71125	38,40625
13	27,72125	38,41625
14	27,73125	38,42625
15	27,74125	38,43625
16	27,75125	38,44625
17	27,76125	38,45625
18	27,77125	38,46625
19	27,78125	38,47625
20	27,79125	38,48625
21	27,80125	38,49625
22	27,81125	38,50625
23	27,82125	38,51625
24	27,83125	38,52625
25	27,84125	38,53625
26	27,85125	38,54625
27	27,86125	38,55625
28	27,87125	38,56625
29	27,88125	38,57625
30	27,89125	38,58625
31	27,90125	38,59625
32	27,91125	38,60625
33	27,92125	38,61625
34	27,93125	38,62625
35	27,94125	38,63625
36	27,95125	38,64625
37	27,96125	38,65625
38	27,97125	38,66625
39	27,98125	38,67625
40	27,99125	38,68625

**- FREQUENCY LIST (d)**

CH	Channels	VCO	CH	Channels	VCO
d	Frequencies (MHz)	Frequencies (MHz)	D	Frequencies (MHz)	Frequencies (MHz)
1	26,965	37,660	41	26,565	37,260
2	26,975	37,670	42	26,575	37,270
3	26,985	37,680	43	26,585	37,280
4	27,005	37,70	44	26,595	37,290
5	27,015	37,710	45	26,605	37,300
6	27,025	37,720	46	26,615	37,310
7	27,035	37,730	47	26,625	37,320
8	27,055	37,750	48	26,635	37,330
9	27,065	37,760	49	26,645	37,340
10	27,075	37,770	50	26,655	37,350
11	27,085	37,780	51	26,665	37,360
12	27,105	37,800	52	26,675	37,370
13	27,115	37,810	53	26,685	37,380
14	27,125	37,820	54	26,695	37,390
15	27,135	37,830	55	26,705	37,400
16	27,155	37,850	56	26,715	37,410
17	27,165	37,860	57	26,725	37,420
18	27,175	37,870	58	26,735	37,430
19	27,185	37,880	59	26,745	37,440
20	27,205	37,900	60	26,755	37,450
21	27,215	37,910	61	26,765	37,460
22	27,225	37,930	62	26,775	37,470
23	27,255	37,950	63	26,785	37,480
24	27,235	37,930	64	26,795	37,490
25	27,245	37,940	65	26,805	37,500
26	27,265	37,960	66	26,815	37,510
27	27,275	37,970	67	26,825	37,520
28	27,285	37,980	68	26,835	37,530
29	27,295	37,990	69	26,845	37,540
30	27,305	38,000	70	26,855	37,550
31	27,315	38,010	71	26,865	37,560
32	27,325	38,020	72	26,875	37,570
33	27,335	38,030	73	26,885	37,580
34	27,345	38,040	74	26,895	37,590
35	27,355	38,050	75	26,905	37,600
36	27,365	38,060	76	26,915	37,610
37	27,375	38,070	77	26,925	37,620
38	27,385	38,080	78	26,935	37,630
39	27,395	38,090	79	26,945	37,640
40	27,405	38,100	80	26,955	37,650

# ALIGNMENT TRANSMITTER

## 1 - Alignment procedure(13,2V;configuration"EU,E")

STEP	CONDITION	ADJUSTMENT	REMARKS OF ADJUSTMENT
1	AM(EU) Channel 20	RT202(LOW)	Connect a wattmeter to jack antenna, adjust RT202 to reach 1W on the wattmeter.
2	FM(EU) Channel 20	RT203(HI)	Connect a wattmeter to jack antenna, adjust RT203 to reach 4W on the wattmeter.
3	FM(EU) Mod 30 mV 1 KHz CH 20	RT206(DEV)	Adjust RT206 to reach +/- 1,2KHz of deviation.
4	AM(EU) Mod 30 mV 1 KHz CH 20	RT204(AMC)	Adjust RT204 to reach +/- 90% of modulation.
5	AM(E) Mod 30 mV 1 KHz CH 20	RT205(ALC)	Adjust RT205 to reach +/- 90% of modulation.

# ALIGNMENT RECEIVER

## 1 - Alignment procedure(13,2V;configuration"EU,E,d")

STEP	CONDITION	ADJUSTMENT	REMARKS OF ADJUSTMENT
1	AM(EU,E) Channel 20 Middle volume level. No squelch active	L1-L3-L6 L7-L8-L9-L10	Connect HF generator to jack antenna adjusted at ( -107dBm 1KHz 60%), connect sinad meter to jack EXT speaker and adjust coils for maximum sensitivity( $\geq 20$ dB sinad).
2	FM(EU,E) Channel 20 Middle volume level No squelch active	L 11	Connect HF generator to jack antenna adjusted at ( -107dBm 1KHz 1,2KHz Dev),connect sinad meter to jack EXT speaker and adjust L11 for maximum sensitivity( $\geq 20$ dB sinad).
3	AM(EU,E) Channel 20 Middle volume level No squelch active	RT2(S-METER)	Connect HF generator to jack antenna adjusted at ( -67dBm 1KHz 60%) and adjust RT2 so that S9 on Smeter.
4	AM(EU,E) Channel 20 Middle volume level Squelch maximum clockwise	RT1(SQ)	Connect HF generator to jack antenna adjusted at ( -47dBm 1KHz 60%) and adjust RT1 so that the signal is audible .
5	AM(EU,E) Channel 20 Middle volume level Squelch maximum counterclockwise (ASC)	RT401(ASC)	Connect HF generator to jack antenna . Connect sinad meter to jack EXT speaker, adjust the ouput level of HF generator and adjust RT401 to reach at the opening ASC a sinad of $17\text{dB} \pm 2\text{dB}$ .

# **JOHNSON II**

## **BLOC DIAGRAM**

# **JOHNSON II**

## **SCHEMATIC DIAGRAM**



# **JOHNSON II**

## **COMPONENT LAYOUT**

# **JOHNSON II**

## **COMPONENTS LIST**