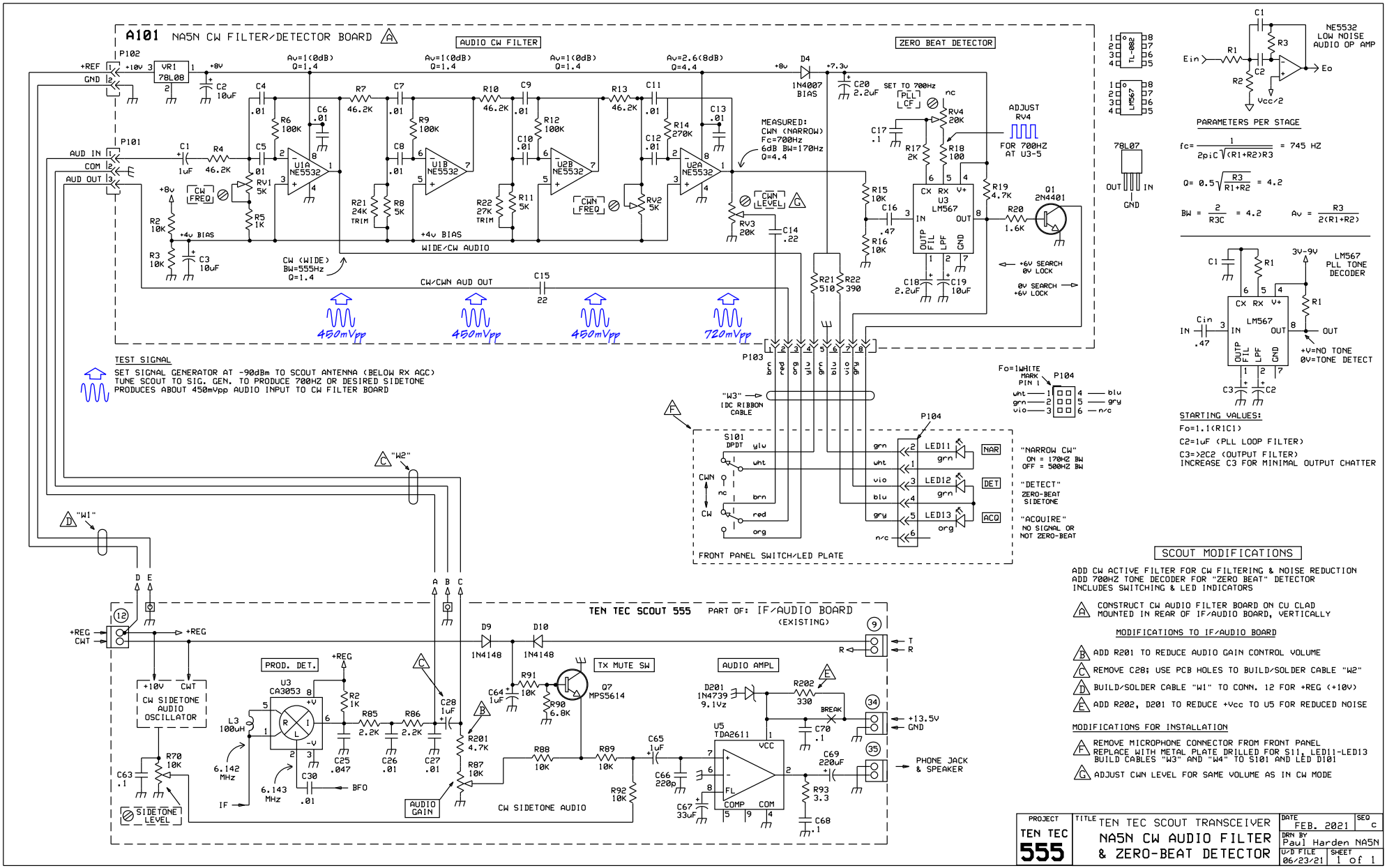
A101 NA5N CW FILTER/DETECTOR BOARD
AUDIO CW FILTER
ZERO BEAT DETECTOR
P102
+REF
GND
VR1 78L08
C2 10uF
P101
AUD IN
COM
AUD OUT
C1 1uF
R4 46.2K
RV1 5K
R5 1K
R2 10K
R3 10K
C3 10uF
+4v BIAS
CW FREQ
U1A NE5532
U1B NE5532
U2B NE5532
U2A NE5532
Av=1(0dB) Q=1.4
Av=1(0dB) Q=1.4
Av=1(0dB) Q=1.4
Av=2.6(8dB) Q=4.4
R21 24K TRIM
R22 27K TRIM
R8 5K
R11 5K
RV2 5K
RV3 20K
CWN FREQ
CWN LEVEL
MEASURED: CWN (NARROW) Fc=700Hz 6dB BW=170Hz Q=4.4
WIDE/CW AUDIO
CW (WIDE) BW=555Hz Q=1.4
CW/CWN AUD OUT
C15 22
450mVpp
450mVpp
450mVpp
720mVpp
D4 1N4007 BIAS
C20 2.2uF
SET TO 700Hz
PLL LF
ADJUST RV4
FOR 700HZ AT U3-5
RV4 20K
R17 2K
R18 100
R19 4.7K
R20 1.6K
Q1 2N4401
R15 10K
R16 10K
C16 .47
C17 .1
C18 2.2uF
C19 10uF
U3 LM567
+6V SEARCH 0V LOCK
0V SEARCH +6V LOCK
R21 510
R22 390
P103
"W3" IDC RIBBON CABLE
P104
Fo=1 WHITE MARK PIN 1
wht grn vio blu gry n/c
TEST SIGNAL
SET SIGNAL GENERATOR AT -90dBm TO SCOUT ANTENNA (BELOW RX AGC)
TUNE SCOUT TO SIG. GEN. TO PRODUCE 700HZ OR DESIRED SIDETONE
PRODUCES ABOUT 450mVpp AUDIO INPUT TO CW FILTER BOARD
S101 DPDT
CWN
CW
LED11
LED12
LED13
NAR
DET
ACQ
"NARROW CW" ON = 170HZ BW OFF = 500HZ BW
"DETECT" ZERO-BEAT SIDETONE
"ACQUIRE" NO SIGNAL OR NOT ZERO-BEAT
FRONT PANEL SWITCH/LED PLATE
"W1"
"W2"
TEN TEC SCOUT 555 PART OF: IF/AUDIO BOARD (EXISTING)
+REG
CWT
+10V CWT
CW SIDETONE AUDIO OSCILLATOR
PROD. DET.
U3 CA3053
L3 100uH
6.142 MHz
6.143 MHz
IF
BFO
C30 .01
C25 .047
C26 .01
C27 .01
R85 2.2K
R86 2.2K
R2 1K
C28 1uF
R201 4.7K
R87 10K
AUDIO GAIN
SIDETONE LEVEL
R70 10K
C63 .1
CW SIDETONE AUDIO
D9 1N4148
D10 1N4148
TX MUTE SW
Q7 MPS5614
R91 10K
R90 6.8K
C64 1uF
R88 10K
R89 10K
R92 10K
AUDIO AMPL
D201 1N4739 9.1Vz
R202 330
C70 .1
C65 1uF
C66 220p
C67 33uF
C68 .1
C69 220uF
R93 3.3
U5 TDA2611
VCC
COMP
FL
COM
+13.5V
GND
PHONE JACK & SPEAKER
TL-082
LM567
78L07
OUT
IN
GND
NE5532 LOW NOISE AUDIO OP AMP
Ein
Eo
R1
R2
R3
C1
C2
Vcc/2
PARAMETERS PER STAGE
fc= 1/(2piC√(R1+R2)R3) = 745 HZ
Q= 0.5√(R3/(R1+R2)) = 4.2
BW = 2/R3C = 4.2
Av = R3/2(R1+R2)
LM567 PLL TONE DECODER
3V-9V
Cin .47
+V=NO TONE 0V=TONE DETECT
C3
C2
STARTING VALUES:
Fo=1.1(R1C1)
C2=1uF (PLL LOOP FILTER)
C3=>2C2 (OUTPUT FILTER)
INCREASE C3 FOR MINIMAL OUTPUT CHATTER
SCOUT MODIFICATIONS
ADD CW ACTIVE FILTER FOR CW FILTERING & NOISE REDUCTION
ADD 700HZ TONE DECODER FOR "ZERO BEAT" DETECTOR
INCLUDES SWITCHING & LED INDICATORS
A CONSTRUCT CW AUDIO FILTER BOARD ON CU CLAD MOUNTED IN REAR OF IF/AUDIO BOARD, VERTICALLY
MODIFICATIONS TO IF/AUDIO BOARD
B ADD R201 TO REDUCE AUDIO GAIN CONTROL VOLUME
C REMOVE C28; USE PCB HOLES TO BUILD/SOLDER CABLE "W2"
D BUILD/SOLDER CABLE "W1" TO CONN. 12 FOR +REG (+10V)
E ADD R202, D201 TO REDUCE +Vcc TO U5 FOR REDUCED NOISE
MODIFICATIONS FOR INSTALLATION
F REMOVE MICROPHONE CONNECTOR FROM FRONT PANEL REPLACE WITH METAL PLATE DRILLED FOR S11, LED11-LED13 BUILD CABLES "W3" AND "W4" TO S101 AND LED D101
G ADJUST CWN LEVEL FOR SAME VOLUME AS IN CW MODE
PROJECT TEN TEC 555
TITLE TEN TEC SCOUT TRANSCEIVER NA5N CW AUDIO FILTER & ZERO-BEAT DETECTOR
DATE FEB. 2021
SEQ C
DRN BY Paul Harden NA5N
U/D FILE 06/23/21
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