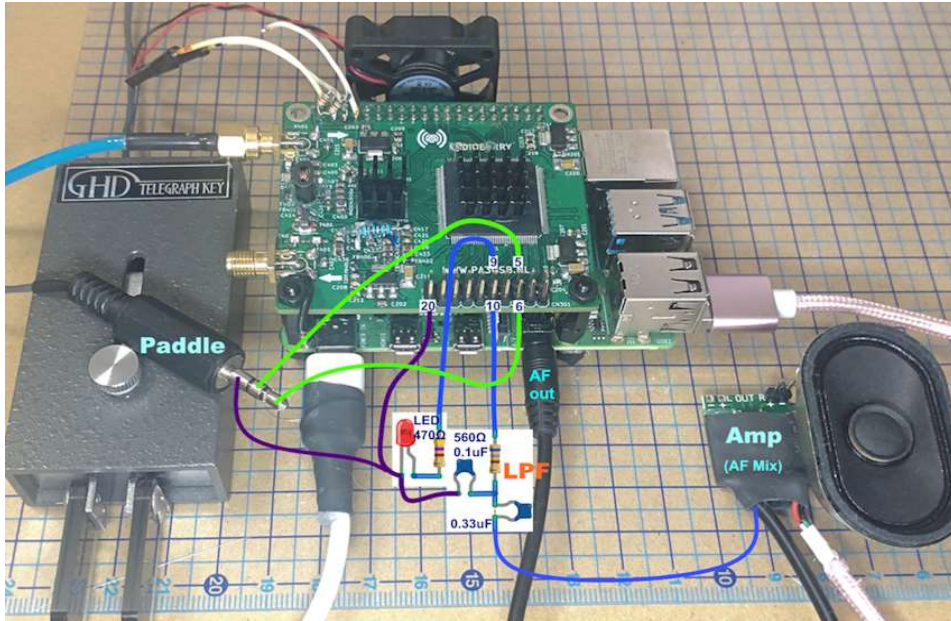# Radioberry-2 Experiment results with built-in CW sidetone.

Radioberry connection drawing.

CN301-Pin10 : **Sidetone output** PWM
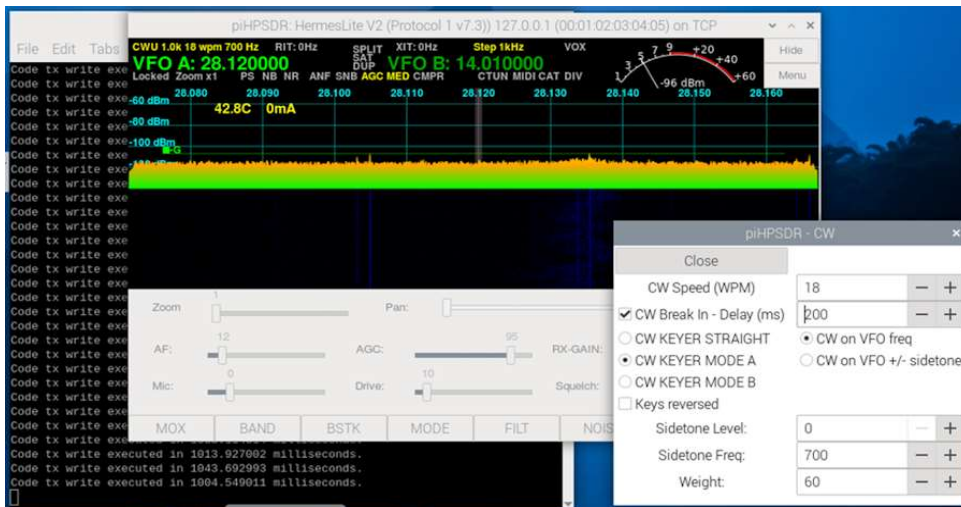
CN301-Pin9 : LED shows Key-down（Not Needed）
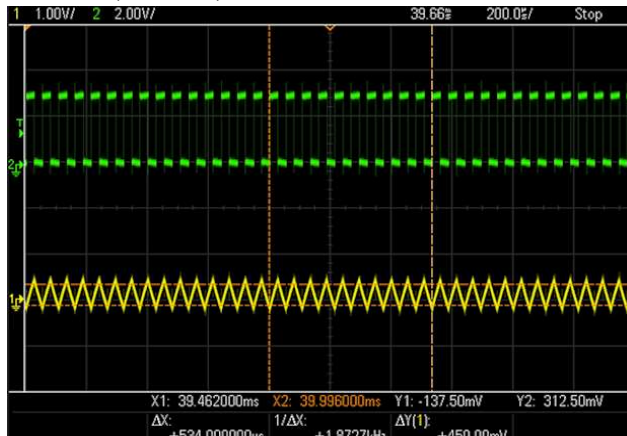
CN301-Pin5 : **Puddle（Dash）or Straight key**

CN301-Pin6 : **Pudlle（Dot）**

CN301-Pin20 : GND

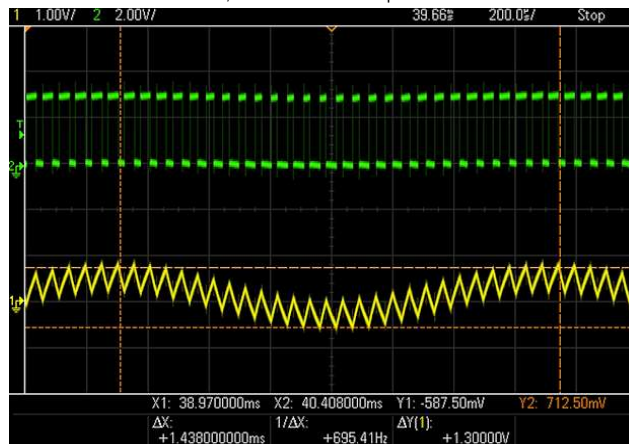(1) Sidetone Level = 0, Sidetone Freq. = 700Hz

Sidetone（pwm）output

Sidetone output

fpwm= 1/(534us/10) =18.73kHz

duty = 50%

LPF(CR) output

(2) Sidetone Level = 63, Sidetone Freq. = 700Hz
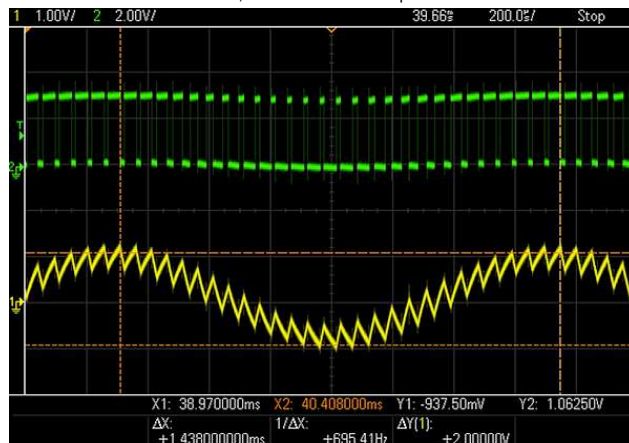
Sidetone output

LPF(CR) output
sidetone freq = 695Hz
amplitude abt. 1.3V

(3) Sidetone Level = 127, Sidetone Freq. = 700Hz

Sidetone output

LPF(CR) output
sidetone freq = 695Hz
amplitude abt. 2.0V

(4) Sidetone Level = 127, Sidetone Freq. = 1000Hz
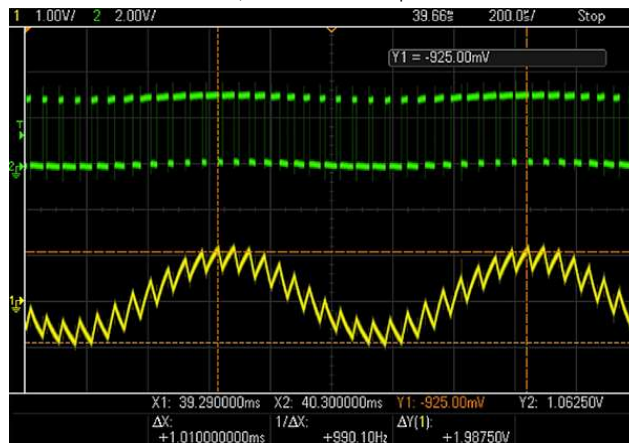
Sidetone output

LPF(CR) output
sidetone freq = 990Hz
amplitude abt. 2.0V

(5) Sidetone output delay
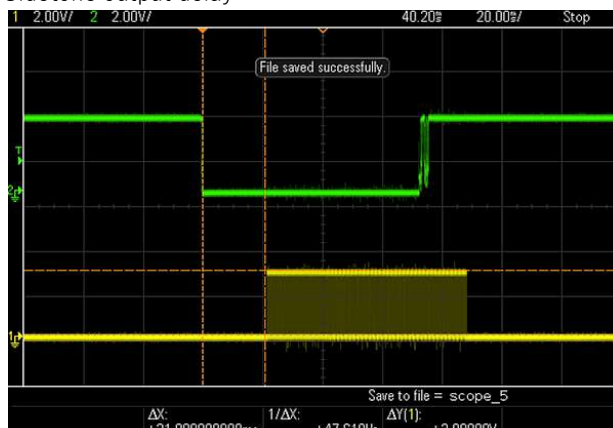
Puddle input ↓＿↑

Sidetone output
delay = 21ms
Dot period abt. 66ms (@ 18WPM)

P   A   R   I   S

1   10   20   30   40   50

1W = 5char = 50dot

CW Speed vs. Dot period

WPM	dot[ms]
10	120
18	67
26	46
34	35
42	29
50	24

Radioberry-2 IO Pin connections (CN301)

function	fpga	Pin	Pin	fpga	function
5V	-	1	2	-	3V3
ptt_out / preamp exttr	144	3	4	143	preamp inttr
Keyer-dash or Straight key	142	5	6	141	Keyer-dot
preamp enbias	137	7	8	136	preamp envpa
cw keyon (out)	135	9	10	133	sidetone pwm output
no use	132	11	12	125	no use
push-to-talk (in)	121	13	14	120	key input
reserved for fpga SDA	119	15	16	115	reserved for fpga SCL
SDA from J8 RPI	pi	17	18	pi	SCL from J8 RPI
Ground	-	19	20	-	Ground

Yado-san, Jul. 15, 2024