Mt Allison Beacons

10 GHz + Linear Translator
24 GHz

Gary K6MG
Brian WA6QDP
Joel KD6W
Pete K6TJ
Oliver KB6BA
10 GHz Beacon

10,369.000 MHz
CW IDer at 10 wpm alternating 20 wpm
K6MG CM97BL
114 mW
10 dB gain omni slot antenna
Linear Translator

Output is a range 11-55 kHz above the beacon
10,369.011 to 10,369.055 MHz

Input is 600 kHz below the output:
10,368.411 to 10,368.455 MHz

USB comes out as USB, FM as FM, CW as CW

No-signal bandwidth power = 42 mW

Large input signal bandwidth power = 825 mW

AD6FP 2002

http://www.ceitron.com/mvus/translator.html
Brick Locker

Milliren OCXO
LMX2571
Arduino Mini
5V regulator
Passband

50 MHz and up
July, 2019
No Spurious Transmission > -40 dBc
S-meter

S value is largest receive signal since last “S”

~20s listening periods, sampled every 10 ms

Measures total power in linear translator bandwidth

20 wpm
K6MG/R CM97BL S ##

Carrier 20s

10 wpm
K6MG/R CM97BL S ##

Records maximum signal during this time

Reset
Max
Benefits of Linear Translator

Facilitates home-to-home, allowing everyone to hear the conversation and more distant stations to participate

Check radio prior to contests, develop operating skills

Steadily improve RX and TX performance on your schedule, even for large dishes
Using the Linear Translator

Reduce transmit power if you have line of sight

In the FT-817, set up USB 600 kHz split TX/RX

2m IF? FM? use repeater setting

Coordinate on Baynet (145.390; 443.225; 927.8625) or NC9RS Sunol

Home-to-home 7pm the week before a meeting
S meter response

\[ f(x) = 0.87x + 101.58 \]
Using the Beacon

Set receiver frequency

Have line-of-sight path? Sets compass rose. CM97BL

Add 50 dB attenuation at feedhorn, don't cross inversion layer, you can measure sensitivity and ERP

For a 4' dish, test at ~4x Far Field = 384 m!

Compare to last years' readings or friend's radio nearby

Near Field, gain not realized

Far Field & contest performance
24 GHz beacon

CW IDer N6NU
24,192.010
Power ~20 mW, ERP ~1W
Built by Frank, W6QI
10G Changes

Power-on mode is “active” rather than “standby”

10 GHz beacon now at 10,369.000

The brick is locked to a Milliren series 220 OCXO

10^-8 stability -54C to 85C

LMX2571 synthesizer

S-meter, & dual morse code speed

Removed these modes: non-translate, low/high power, low/high gain. Now always translates high power.

Beacon control changed from PIC to Arduino; ID changed to K6MG

New Power Harness

Waveguide extensions for easier maintenance

Power amp changed to 0.5W
24G Changes

Beacon control changed from PIC to Arduino

ID changed to N6NU
Next Steps

Burnin 10G complete 8-June
Meet to work out hardware, Kapton, Paint
  June 15, Pete's house
Install on Mt Allison
  June 29 or 30