

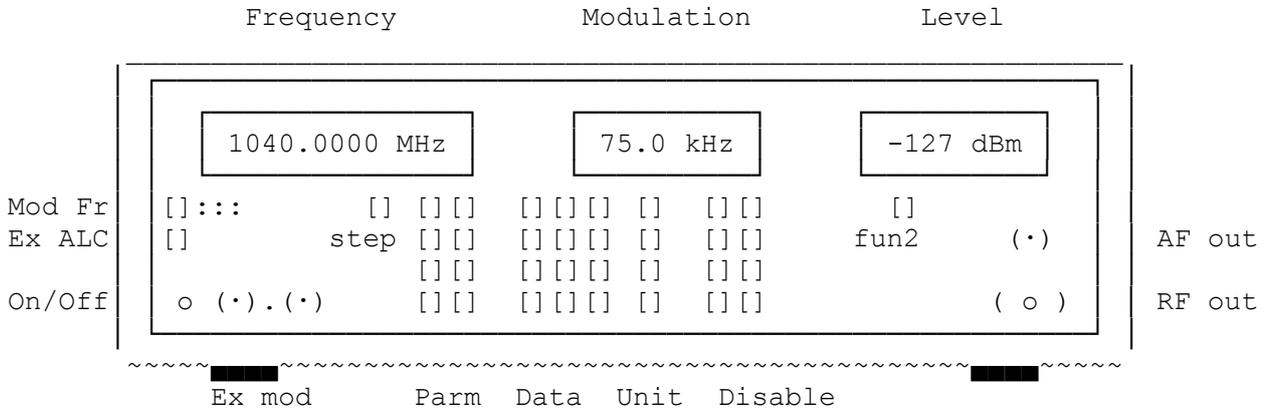
Marconi 2019A Sig Gen

By G8MNY

(Update Jun 17)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I aquired this old large 19" 3U rack unit, a digital entry controlled PLL signal generator. The very simular 2018 model only goes to half the frequency.



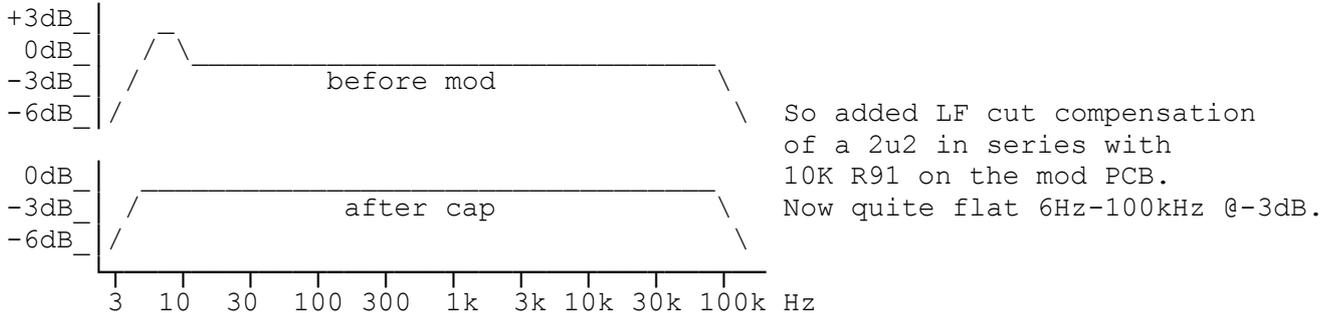
FAULTS

1/ Its front pannel was falling off, a few screws sorted that, but I had to also replace missing side cheek strips (no front handles) & provide a mains lead. It seems to work OK, & I was able to fully test it.

2/ The 6 fixed AF Osc frequencies were all a bit LF, so I changed the 2 Wayne bridge Osc's 10nF for 9.75nF as I had some, spot on now.

3/ FM Deviation calibration using 1st Bessel null @ 2.405kHz Dev & 1kHz was out of cal range, so I added a tweak R, feeding the preset. But exact calibration was variable especially when cold "by many times" the wrong level! With aid of a down loaded .pdf service manual, this varability 1st proved to the AB2 PCB relays & ops amp for FM mod high level AF attenuators. But on a 2nd look, to a R1 50R link through in the Osc Board, that was not it either! Then the 3rd look I found a nickle (gold for RF) AF SMC plug lead had a poor braid earth, & that was used as the relay atten reference earth. (Mod board has software controlled digital attenuators too). Some contact cleaner & a retighten sorted it OK, so I now have an accurate reliable calibrated FM signal at last.

4/ FM Mod was also not flat < 20Hz as the PLL gave a +3dB lift @ 7Hz (a common PLL fighting the Mod issue).



5/ Any mains spikes cause the signal generator to crash. A CPU reset occurs when 5V drops to 4.5V (to protect the memory from corruption!) So I added 2x 4,700uF to raw 5V rail (+10V) to aid the main 15,000uF resivour C to nearly "double the bad mains OK hang in time".

NEW SPECIFICATION

Frequency : Range 80kHz (Usable to 30kHz) to 1040.0000MHz in 100Hz steps.
PLL Frequency has 7.5 digit readout.

Mod AF : 300, 400, 500, 1k, 3k, & 6k Hz 2%, for AM FM PM & AF out.
Ext Mod : BNC, 6Hz-100kHz, Cal Level warning LEDs/ALC for level calibration.
Ext FM Mod: 2nd Mod input allows pilot tones etc. to be added.

Mod Level : AM 0-99%, FM 0-1MHz (10%) Dev, PM [0M] 0-999 Radian. 3 dig readout.
Distortion: AM <5%, >-30dBc higher order sidebands @ 99% mod.

AF Output : BNC. 100uV to 5V RMS. -77.8 to +16.2dBm max. 3.5 dig readout.
RF Output : N 50Ω. 0.1uV to 1V RMS, -127.0 to +13.0dBm max. (6dB less on AM)

Memories : Store & recall of 100 freq, 0-20 has full params, non volatile.

Key Colour: Orange start data entry, Black Data, Grey Unit end. Blue 2nd mode.

Accuracy : <1/10⁷ after 5 min. Temperature controlled Xtal oven reference.
In out Ref: Rear 10MHz (1MHz Programmable) BNC for ref Out/In.

Spurious : Harmonics -30dBc typically -50dBc, & spuri better than -65dBc.

Protection: Accidental Tx RF OK to 50W Max!

Power : 55W 230V Adjustable. IEC socket RT angle plug to stand up on end.

Weight : 17kg.

CALIBRATION

Hole on RHS cover for the very accurate Ref Osc tweak (thin driver). Inside the top cover there are PSU for voltages +24 +15 +5 & -15V. Behind the front pannel is the plug in Modulation PCB & its row of presets (left to right) for..
Ext Gain, Ext ALC, Ext Threshold (hi/low leds), AF Level, PM, AM, & FM.
Marconi software maps the AF Gain changes for the 4 FM oscillators at 82 frequencies points, to keep calibration. Simular maped changes for AM, Phase, & RF Level.

OPERATION

Power up gives software version 003 for a few seconds, then default setting 1040MHz @ -127dBm, 0 mod. (Memory 10 for other power up parms, see user manual)

- 1/ Press Orange Freq key, enter freq, & end with Grey MHz/kHz/Hz key.
- 2/ Press Orange RF Level key, enter level, & end with Grey dBm/V/mV/uV key.
- 3/ Press Orange AM/FM/PM if needed, enter mod level & its Grey unit key.
- 4/ Select a Black Disable key, eg. RF/Int/Ex/AF/Mod off/on etc. as needed.

/_ Delta, shows unit steps for the ^ up & v down keys. & allows changes.
2nd Function key, for additional set-ups see handbook. Any Orange key reset.
External key, can give error code ---15--- if no Ext Ref. Orange key reset.

USES

Although far more complex to use than my older Systron Donner Sig gen, it is lighter, & lends itself for FM & AM demos on Ham training courses, etc. Rx alignment & sensitivity tests, as it has a well screened RF output with 140dB range in 0.01dB steps. Also its wide FM modulation of 1MHz deviation (>100MHz) with up to 100kHz of External AF, is useful for accurate calibration of broadcast deviation meters, measuring & compensating frequency response etc.

See my tech Buls on "Syston Donner Sig Gen", "Analyser Takeda Riken TR4122B"
"RTT Comms Test Set", "198kHz Off Air Standard", "Comparing Off Air Freq
Standards", "Off Air Lock for Ref Osc" & "Scope RF Trick".

Why don't U send an interesting bul?

73 de John, G8MNY @ GB7CIP