

24 Jul 2017

Chris Fallen - H3206
O-mode

(1)

~12:00 CW with SRS 5.125 MHz @ -2 dBm. ~350kw Total

~12:15 Agilent 33522A ch1 5.125 MHz @ -2 dBm sine
ch1 AM modulation with → ch2 square 1s period @ 1% DC

12:22 phase shifter 60s ON / 60s OFF - auto toggle.

(348, 10.5, 3.5)
→ azimuth. log → line

ix	dBFS
1	-5.5
2	-8.7
3	-6.7
4	-10.7
5	-2.7
6	-7.1

Total power: 350KW

13:00 430 Start working.

14:40 HF off. Site power down

Herb Carlson 5.095 MHz. / O-mode

15:30 Tx1 not amplifying after broadband.

1	RF	Tx	Power
		Tx 1	down
		Tx 2	8.5
		Tx 3	6.1
		Tx 4	10.1
		Tx 5	2.90
		Tx 6	6.4

Q

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(2)

LHCP Tx dBfs. PWR

1	--	--
2	9.2	
3	6.5	
4	10.3	
5	3.5	
6	7.0	

Q

350kw

350kw ~~kw~~ (Tx 1 is down)

RHCP

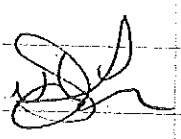
Tx	dBfs	
1	off	
2	8.7	
3	6.1	
4	10.1	390 kw
5	2.9	
6	6.4	

16:00 → Start experi / (See attached table)

17:30 Tx 1 ON, RCP PWR ADJ 75kW ea.

18:40 LCP " " "

18:50 Auto toggle 180/180s starting in ON



19:50 modulate off and on error.

20:00 modulate off. 0 li

T2567 Instructions

HF Campaign 21-31 Jul 2017

Rev. 1 → 2

24 Jul 17

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Agilent 33522A Config:

- Source 1, Sine wave, freq 5.095MHz, ampl -2.00dBm

- Source 2, Pulse, ~~5s ON, 25s OFF~~ period 30s, pulse width 5s (HF-HC file on Sig. Gen)

602

~ 370kw

Time	To do	Done?
16:00	Load O-mode - RCP file, auto toggle 180s ON and 180s OFF	✓
16:30	Signal Generator modulation ON	✓
17:00	Signal Generator modulation OFF	✓
	Load X-mode - LCP file, auto toggle 180s ON and 180s OFF	✓
17:30	Load O-mode - RCP file, auto toggle 180s ON and 180s OFF	✓
18:00	Signal Generator modulation ON	✓
18:30	Signal Generator modulation OFF	✓
	Load X-mode - LCP file, auto toggle 180s ON and 180s OFF	✓
19:00	Load O-mode - RCP file, auto toggle 180s ON and 180s OFF	✓
19:30	Signal Generator modulation ON	✓
20:00	Signal Generator modulation OFF	✓
	Load X-mode - LCP file, auto toggle 180s ON and 180s OFF	✓
20:30	Load O-mode - RCP file, auto toggle 180s ON and 180s OFF	✓
21:00	Signal Generator modulation ON	✓
21:30	Signal Generator modulation OFF	✓
	Load X-mode - LCP file, auto toggle 180s ON and 180s OFF	✓
22:00	Load O-mode - RCP file, auto toggle 180s ON and 180s OFF	✓
22:30	Load O-mode - RCP file, auto toggle 360s ON and 360s OFF	✓
00:00	Experiment DONE, next H3207	

July 25/17. Khushboo's experiment.

(4)

00:00 (348, 1.2, 11) → 430 MHz.

6 min ON / 6 min OFF

$f_H = 5.095$ MHz
5.125

08:00 Chris Fallen 5.125 MHz 60s on 60s off 10ms pulses.

AP modul. IPP = 1s, pulse width = 10ms.

Elicias modulation
Set up on sig. gen

~4:30 430 card started to fail

0:43 RF OFF (~~and~~ ^{start.} of maintenance) → 430 is off

2:18 Dual tone

Afternoon → different RF tests & dual tone

6:00 430 still off. We call the ISR Summer School OFF. To use backup night on July 26/17.

17:21 Paul's mode increase pwr by using a 5.125 MHz tone

O-mode

Tx	dB	PW
1	-5.4	56.3
2	-9	53.6
3	-6.8	52.2
4	-11.4	52.9
5	-3.3	58.3
6	-7.7	56.1

17:41 Paul's → 5s chirping, 5s CVT
5s FMCW 5s CW 5.090

5.1 MHz Center
200 Hz WRF
20 kHz BW

July 26/17. Anthea's single beam

(5)

~13:00 430 ON.

Gregorian l.l.

13:57 RF ON.

power ~700KW.

14:12 Tx dBfs RW CER 5.125

1 -4.1 76.7

2 -7.6 79.9

3 -5.7 74.9

4 -9.2 74.6

5 -2.2 79.8

6 -5.7 80.0

465.9 kW.

14:20 RF OFF

14:35 RF ON Auto toggle 4min ON / 4min OFF

15:15 Autotoggle 8min ON / 8min OFF (-0.1dB to Tx6)

16:35 Auto toggle 2min ON / 2min OFF

16:55 OFF

16:56 Chris Fallen 5.125 MHz.

60s ON / 60s OFF

10ms with 1s IPP (1s with 1% DC)

17:15 OFF.

ISR Summer School.

27 Jul ISR is off.

16:28: Pauls cw chop chirp

- Rep FREQ 199.99 Hz

- SWPTIME 5ms

CFR = 5.099795 MHz

SPAN = ~~20 kHz~~

19.999 kHz

INT to
gen.

16:32 chirp chop cw on 450 Hz.

- gives 5 sec on 5 sec ~~of~~ cw

17:31 Disable HF

8:19 HF Back back on still chirp chop cw

19:17 HF ~~di~~ disable RF

5:51 5.1 MHz cw prepare for chirp

5:56 - chirp chop cw on

28 Jul 17

13:30

Bring up HF at 5.125 MHz for
warm up Paul will run
CW.

(7)

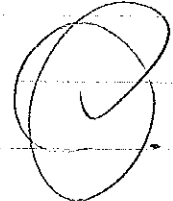
SAT Pass @ 18:10 AST

15:51

5.1 MHz CW prepare for Paul

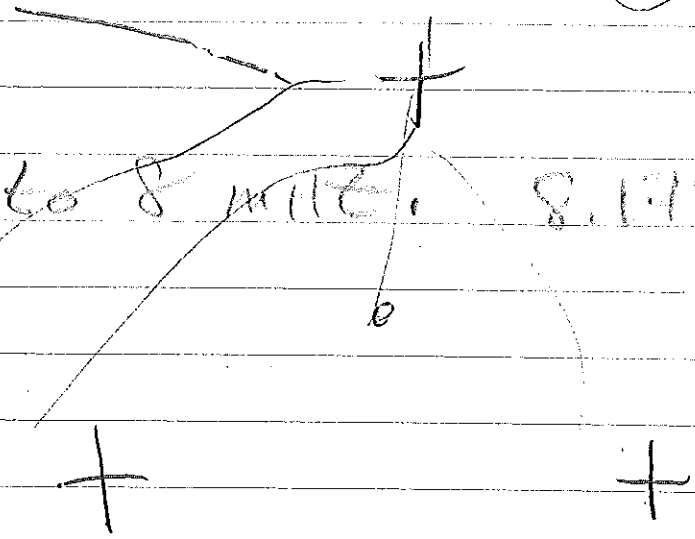
15:56

chirp chop CW on
same parameters as
27 Jul 17



18:31

- RF off
switch to 8 MHz
for Paul.



8.175 MHz

9:00

~~8.1749925 MHz~~

31.25% of

~~29.985 KHz B3~~

8.1749925 MHz

8.1749925 CFR

29.9985 KHz B3

load of 8 MHz file

28 Jul 17 evening

⑧

- 19:07 chirp chop CW L paras on
previous Page
- 19:08 TX 6 tripped reset
lower TX 5 .2 db. PA cathode was 20 Amp
- 19:23 TX +.2 db after victor adjusted Bias
TX 6 power still low 23 kW.
- 20:30 HF off, shutdown
Emissionless Runs Till 21:00
- lower TX 1 by 1
- 20:36:32 air off

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12:22 Bring up HF at 5.125 MHz TX 4 Down. (9)

12:26 FREQ NOW 5.1 MHz

12:30 3 sec on 1 sec off from signal
[sync'd to 1 sec tick]

12:55 2 min on 2 min off out of signal
[FROM auto toggle]

$$75 \text{ kW} \times 5 \text{ TX} = 375 \text{ kW}$$

12:57 off 2 min
bat pass ~~13:30~~ ~~13:30~~ 13:56

13:30 switched to 3 sec on 1 sec off
continuous. [no 2 min on, off cycle]

14:17 add 3 min on 3 min off [autotoggle]
[along with the 3 sec on 1 sec off]

14:48 TX 4 START To come up.

14:54 STOP auto toggle
STOP 3/1 Bring up TX

14:58 455 kW 6 TX Run
3 sec on 1 sec off

15:00 START 3 min on 3 min off Autotoggle
[with the 3 sec on 1 sec off]

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15:17 - HF to setup ionosonde
- will start autotoggle manually.

(10)

⇒ 15:28:09 start autotoggle

Andreas / Paul

Complimentary Pair
Ionosonde is
working every
3 min.

16:02 2s/1s + 3min / 3min
ON/OFF ON/OFF

16:31 OFF

~~16:44~~

17:44:04 3min ON / 3min OFF (By mistake 2s/1s)

17:45 OFF

~~17:44~~

17:47:04 3min ON / 3min OFF

~~18:17:04~~

18:23:04 3min ON / 3min OFF + 3/1s ON/OFF

18:36 CW

8:44 off to SW.Fok to chirp-chop/CW

8:46 chirp chop on 5.1 MHz.

same Parameters as Page (A)

18:48:30 had to Restart about 9ms instead
of 5ms per

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18:51 - had 1 sec tick switcher to 10 sec tick. (11)

19:05:04 3min ON/OFF auto toggle
+ chirp chop as before. (see page A)

19:39 CxX 3min ON / 9min OFF.

19:40 + 3min ON / 9min OFF auto toggle

19:42 → OFF auto toggle

19:47:04 / 3min ON / 9min OFF

19:59 X-mode Ashanthi

increasing power

LHCP	Tx	dBc	P _W	Ph
	1	-4.8		287.7
	2	-8.3		0.0
	3	-5.9		48.0
	4	-9.6		292.0
	5	-2.9		16.0
	6	-5.9		60.0

20:08:30 Start Ashanthi's mode

20:10 decrease 0.5 dB

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Format 1A askant1 file with (12)
config.
6 sec dwell of FREQ (XMODE)
FS± Ammodulated with 5.125 MHz

Am^{MSR} stepping every 6 secs.

20:25 NOTE: levels set with max hold.

20:39:09 Add 5 dB, gain aborted, restarted.

21:00 OFF end experiment

21:00 [Poorya's experiment.]

21:11 modulation on Am MOD. 2.125 KHz

21:11:30 autotoggle 5 sec on 5 sec off
CFR = 5.125 MHz

22:00 [Andrea's experiment.]

22:08 O-mode

Power ~ 430 kW

22:15 OFF (5 min)

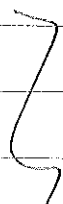
22:20 autotoggle 5 min ON / 5 min OFF

22:56 OFF

23:00 X-mode Power ~ 415 kW [Jackson Mc.C.]

T

23:12 Autotoggle 2 min ON / 2 min OFF



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(13)

X-mode	Tx	dBfs	PW	Ph
[LHCP]	1	-5.1	72.8	287.7
CW	2	-9	70	0.0
	3	-6.4	72.7	48
	4	-10.2	67.4	292
	5	-3.6	67.2	16
	6	-6.5	66.4	60
			414.6	

23:59 OFF.

00:00 Jackson H.C. experiment.

00:02 auto toggle O-mode 2min/2min
(RHCP) ON/OFF
Power = 420kW.

0:24 Experiment ended by mistake

0:28 Experiment restarted.

0:00 Quincy Flint Experiment X-Mode.
File: VF 9.B.txt
Sb-state: state_120.sta

1:55 Averaging

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02:02 Jackson X-Mode
M-COHEN. 4. txt, SG state: STATE-18. sta

05:03 Ashanti X-Mode
Format 2A - Ashan.Hdr.txt
SG state: state.6.sta
500kHz → 4.9 KHz

3:00 OFF.

	Tx	dBf	PW	Phases
LHCP	1	-4.7	78.68	287.7
Cond of	2	-8.4	62.5	0
experim.	3	-6.1	64.4	48
	4	-9.6	60	292
	5	-3.7	63	16
	6	-6.0	64	60
			<u>385</u>	

:00 Setting power O-Mode

	Tx	dBf	PW	Phase
O-Mode RHCP	1	-4.4	72	106
	2	-8.0	72	0
	3	-5.7	70.5	345.5
	4	-9.3	68.8	57
	5	-2.5	74.4	72.5
	6	-5.8	69.0	297.0
			<u>478.5</u>	

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(15)

8:14:50 Start Jamie's experil
FORMAT 2A - Jamie.txt
state - 60. sta
full power

✓ 8:21:40 start cycle
-2dB down. Tx1 = -6.4

✓ 8:25:40 -4dB Tx1 = -8.4

✓ 8:29:40 -6dB Tx1 = -10.4

✓ 8:33:40 0dB Tx1 = -4.4

✓ 8:37:40 -2dB -6.4

✓ 8:41:40 -4dB -8.4

✓ 8:45:40 -6dB -10.4

✓ 8:49:40 0dB -4.4

✓ 8:53:40 -2dB -6.4

✓ 8:57:40 -4dB -8.4

✓ 9:01:40 -6dB -10.4

✓ 9:05:40 0dB -4.4

✓ 9:09:40 -2dB -6.4

✓ 9:13:40 -4dB -8.4

✓ 9:17:40 -6dB -10.4

✓ 9:21:40 → OFF. - - -

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(16)

9:40 9:40: Delay levels CW

- All modulation on 5.125 MHz carrier
- 5 sec linear freq sweep from 500 - 5 kHz on modulating signal followed by 5 sec OFF (as in) ~~the~~ no power going to antennas)

nu

9:52:00 START Pulsing/modulation

10:55 OFF.

11:08 AM Tx 5 & Tx 6 tipped. ~~Reset~~

~~"Interlock open"~~

Tx 5 "PA Ad"

Tx 6 "DRVR SCR N"

Tx 6 "Interlock Open"

11:45 Commercial Energy down & ~ 12:00 C.E. came back

12:00 X-mode increasing power

Tx	dBf	PW
1	-4.9	69
2	-8.3	67
3	-6.1	68
4	-9.5	72
5	-2.9	68
6	-6.2	68
		<u>415</u>

12:10:15 [Quincy Flint] mode X-mode.

305417

(17)

13:10:15 OFF.

13:20 Paul Bernhardt.

O-Mode 5.1 MHz.

Power \approx 450KW.

14:00 stop.

14:01 X-mode Jackson H.C.C.

adjust levels (PW)

14:09 start program HCOHEU. 4.txt. X-mode.
5.125 MHz CFR.

14:50 Stop. / Disable RF.

Ashanthi's setup. X-mode

Format 1A. Ashanthi.txt

state 6. sta.

LHCP.	T ₁	dB _F	PW \approx 450KW
	1	-4.9	
	2	-8.8	
	3	-6.4	
	4	-9.8	
	5	-3.4	
	6	-6.2	

14:51:20 starts Ashanthi's mode.

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15:28

~~15:30~~ OFF to set up Jamie's experim.

(18)

~~30:07~~

15:29:30 Start experiment format 2A - Jamie.txt
State_60.sta

Tr1

✓ 15:34:07 -2dB -6.9

✓ 15:38:07 -4dB -8.9

✓ 15:42:07 -6dB -10.9

✓ 15:46:07 0dB -4.9

✓ 15:50:07 -2dB -6.9

✓ 15:54:07 -4dB -8.9

✓ 16:00:07 -6dB -10.9

✓ 16:02:07 0dB -4.9

✓ 16:06:07 -2dB -6.9

✓ 16:10:07 -4dB -8.9

✓ 16:14:07 -6dB -10.9

✓ 16:18:07 0dB -4.9

✓ 16:22:07 -2dB -6.9

✓ 16:26:07 -4dB -8.9

✓ 16:30:07 RF Disable

16:32:10 Poorya's experiment starts.

↳ running 2 generators: State_P.

17:00 OFF.

17:04:05 Quincy Flint's experiment starts.

UF_1B.txt.

State_120.sta

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18:00 Stop

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18:01:25 Starts Robbie Wilkies / X-mode
UF-3B-42.txt
state_60_sta

19:00 Stop

19:01:10 Starts Hunter Burch's. / X-mode
UF-2B.txt
state_60_sta

19:04:50 Stop

19:05:27 CW for power check.

19:10:00 Back to modulation

19:22:48 Starts again.

20:25 Stop.

Setting Poorya's experiment state_P_sta
@ 2 generators

20:30 Starts Poorya's.

21:25 Stop.

O/Mode increasing power CV

21:44:04 / 4 min ON / 4 min OFF
Power ~ 485kW

Andreas + Paul
experiment

30-31 July

(20)

22:12:04 Stop to change to x-mode

22:15:04 Start x-mode 3min on 3min off

22:30:04 off

Tx1 4.6

Tx2 7.9

Tx3 5.7

Tx4 9.0

Tx5 2.8

Tx6 5.8

22:30:54 Starts Quincy Flint UF-1B. tx+
state - 120. sta

23:00 Stop.

23:31:01 [Jackson Mc.C.]

CW, X-mode, 2min ON / 2min OFF
autotoggle

July 31/17,

10:41 → Commercial power off
Site goes to generators.

10:56:10 Stop auto toggle to lower power 0.5dB.

10:56:30 Start auto toggle again 2min ON / 2min OFF

01:00 Stop to +0.5dB & -0.1 Tx6. Power = 375 kW

11:00:30 Start auto toggle again Tx1 -0.1

Tx2 -0.2

11:00 Stop. End experiment

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22:01 0-mode / [Andrea's experiment] (21)
increasing power 5.125 MHz

22:08:00 Start auto toggle 4 min ON / 4 min OFF
power \approx 380 kW

24:00 Stop

END of EXPERIMENTS
