23.2396
96
1394376
2091564
22310016
5
2281.0016

2282.50
2231.00
51.50
20
31.50

AOS. 0234 Voice.
0241 lowpassen
Camen 30.107

LOS 0245
123
36.5

30.107
1.250
19.857

AOS 0423. Camen

LOS 0426

AOS 0428.
[illegible]

0459 Voice
rec. index
245
280

0512 perf
voice

0514.

0517 LOS

245
379
419
429
432
438
463

96 | 2232.5000
23.33
192
310
298
325
288
370
288

22825

Dec 10, 1972

GMT

AOS 18.52: el. 33°

LOS 1853 az. 137°

Carrier at. 10.036 MHz

AOS 2221 GMT el. 44°

az. 202

29.~~981~~ MHz

~~17.25.00~~ ~~979.9~~ MHz.

EST → 17.28.0 983.7

17.30.0 982.8

17.32.30 981.5

17.35.00 980.3

17.36.45 979.2

17.38.10 978.0

az. el.

209. 41°

17.41 Voice carrier ach spot on visk.

17.42.10	974.8
17.43.0	974.2
17.43.30	973.7
17.44.0	973.2
17.44.30	972.8
17.45.00	972.1
17.45.30	971.6
17.46.30	970.7
17.47.00	970.1
17.47.30	969.5
17.48.00	968.9
17.48.30	968.4
17.49.00	967.9
17.49.30	967.5
17.50.00	966.9
17.51.00	966.0
17.52.00	965.0
17.53.00	964.0
17.54.00	963.0

21
0.45
0.9
2.7
0.45
5.15

83.7
3.2
86.9

2101.6
2287.5
4389,1 : 2 = 2194,5

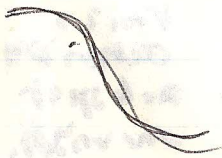
986.9
940.0
46.9

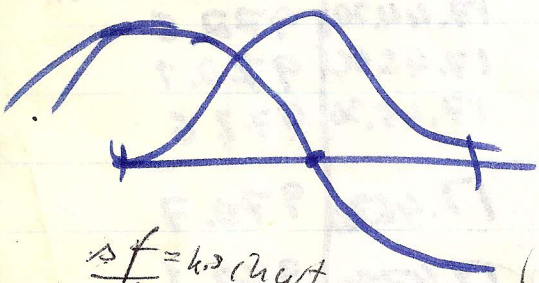
469 = 4 = 11,725

4
5
2
18
18
9
8
11

4
6
4
29
28
10
8
20

17.55.00	962.0		18.11.00	945.3
17.56.00	960.8		18.12.00	944.5
17.57.00	959.8		18.13.00	943.6
17.58.00	958.6		18.14.00	942.8
17.59.00	957.6		18.15.00	942.0
18.00.00	956.6	37.5° 218°	18.16.00	941.1
18.02.00	954.5		18.17.00	940.5
18.03.00	953.4		18.18.00	938.?
18.04.00	952.2	LOS	18.18 - 2.5c	
18.05.00	951.4			
18.06.00	950.4			
18.07.00	949.3			
18.07.00	948.4			
18.08.00	947.5			
~~18.10.~~	946.2	28.696 voice sub.		

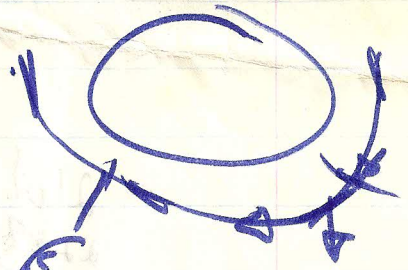




$\frac{\Delta f}{f} = k \cdot \sin \omega t$

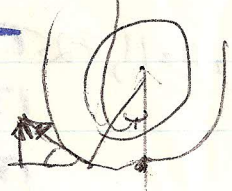
$\frac{2 \cdot \pi \cdot 1700}{7200} =$

$=$

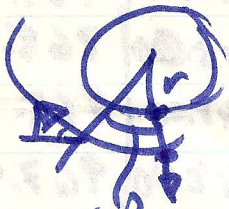


$\Omega = \omega \cdot t$

$\Delta f = \frac{v}{c} \cdot f_0$



$\frac{d\Delta f}{dt} \propto \frac{dv}{dt}$



$v_r = v_0 \cdot \sin \omega t$

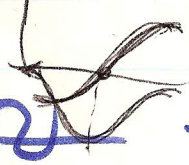
$\Delta f = \frac{v_r}{c} f_0$ $\Delta f \approx -\sin \omega t$

$\Omega = \omega \cdot R$

$v_r = \boxed{\omega \cdot R} \sin \omega t$

v_0

Ω



$v_r = v_0 \sin \Omega$

ωt

$\frac{dv_r}{dt} = v_0 \, \omega \cos \Omega$

~~$v_r = \Omega \sin \Omega$~~

~~$\frac{dv_r}{d\Omega} = \sin \Omega + \Omega \cos \Omega = 0$~~

~~$\tan \Omega + \Omega = 0$~~

951.4
6.0
29.945.4
28.696.0
1.229,4

$\frac{\pi \cdot 1.7}{3.6} =$

1.5 km/s

0.5

$\frac{1.5}{3 \cdot 10^5} \cdot 2.3 \cdot 10^8$

23 kc

~~23~~ 11.5

Dec. 11, 1972

CSM
- AOS 0100 29.957
  117° Az
  22° El
- 0110 Voice
- LOS 0122.30 LOS 120° (135°)

LM
- AOS 0318 31.529 Mc
  147
  43.5 Antenna steering on LM
- LOS 0405 Low power? Mesh
- AOS 0424
- 0430 1 [illegible] 5° 5.0
- 0430 Camera 31.556 40 db
  TM 30.572
  Voice sub 30.305 S+N/N 25 db

CSM
- AOS 0452 CSM 30.912
  30.177 TM
  Main 30.107
  Power down
- 1.22
  4.
  522.
- LOS 05.08
- AOS 0512 0520 Power up Voice
- LOS 0522.30
- 2322
  2321 min blocks

GMT

DATE Dec. 10, 72 | OBJECT Apollo 17 CSM | LOG #

RECORDER: CHANNEL (A) _____ CHANNEL (B) _____

TAPE _____ HEAD SET _____ SPEED _____

PASS PREDICTION 2217 AOS, 2317 LOS

RECEIVING SYSTEM 30'-dish, 3 db loss coax, TD preamp, 7 db loss coax, S-band rcvr, Vanguard 50-30 MHz conv, R390 at 30 MHz, 2kHz BW

TIME	FREQ	ON DUTY	AOS	RCDR ON	TURNS COUNT	RCDR OFF	LOS	OFF DUTY	REMARKS
2210		✓							
2222	29.988 MHz		✓						EL. 44° Carrier Az. 202°
2228.13	29.979								EL. 41° Az 209°
2242	29.976								Tuned quickly to voice carrier and heard signs of voice transm.
2246.13	29.972.1								Carrier
2250.13	29.966,9								" $\left(\frac{S+N}{N}\right)_{max}$ = 25 db
2256.13	29.962,0								"
2300.13	29.957,6								"
2306.13	29.951,4								"
2310.13	28.696								Voice subcarrier and signs of voice at 28.696 ±10kHz
2316.13	29.942.0								
2317	29.941.0								EL. 37.5° Az 218°
2319.10 ~~2318 2.5s~~	29.939?						✓		Very rapid LOS

42-361 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

DATE Dec. 11, 1972 OBJECT Apollo 17, CSM LM

RECORDER: CHANNEL (A) _____ CHANNEL (B) _____

TAPE _____ HEAD SET _____ SPEED _____

PASS PREDICTION _____

RECEIVING SYSTEM _____

GMT TIME	FREQ	ON DUTY	AOS	RCDR ON	TURNS COUNT	RCDR OFF	LOS	OFF DUTY	REMARKS
0800	29.957		V						117° Az, 22° El CSM
0811	(2287.5 MHz + dopplershift)								signs of voice
0823.30							V		spacecraft behind moon
1955									

42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

local time

296.8
258.5
259.7.

00.33 – 00.41
0208 – 0214.30
0243 – 0245.30

296.8.

0533