



LES SONDES INTERPLANÉTAIRES

BERTRAND PINEL F5PL 16 MARS 2019

MJC ANNEMASSE – F8KCF

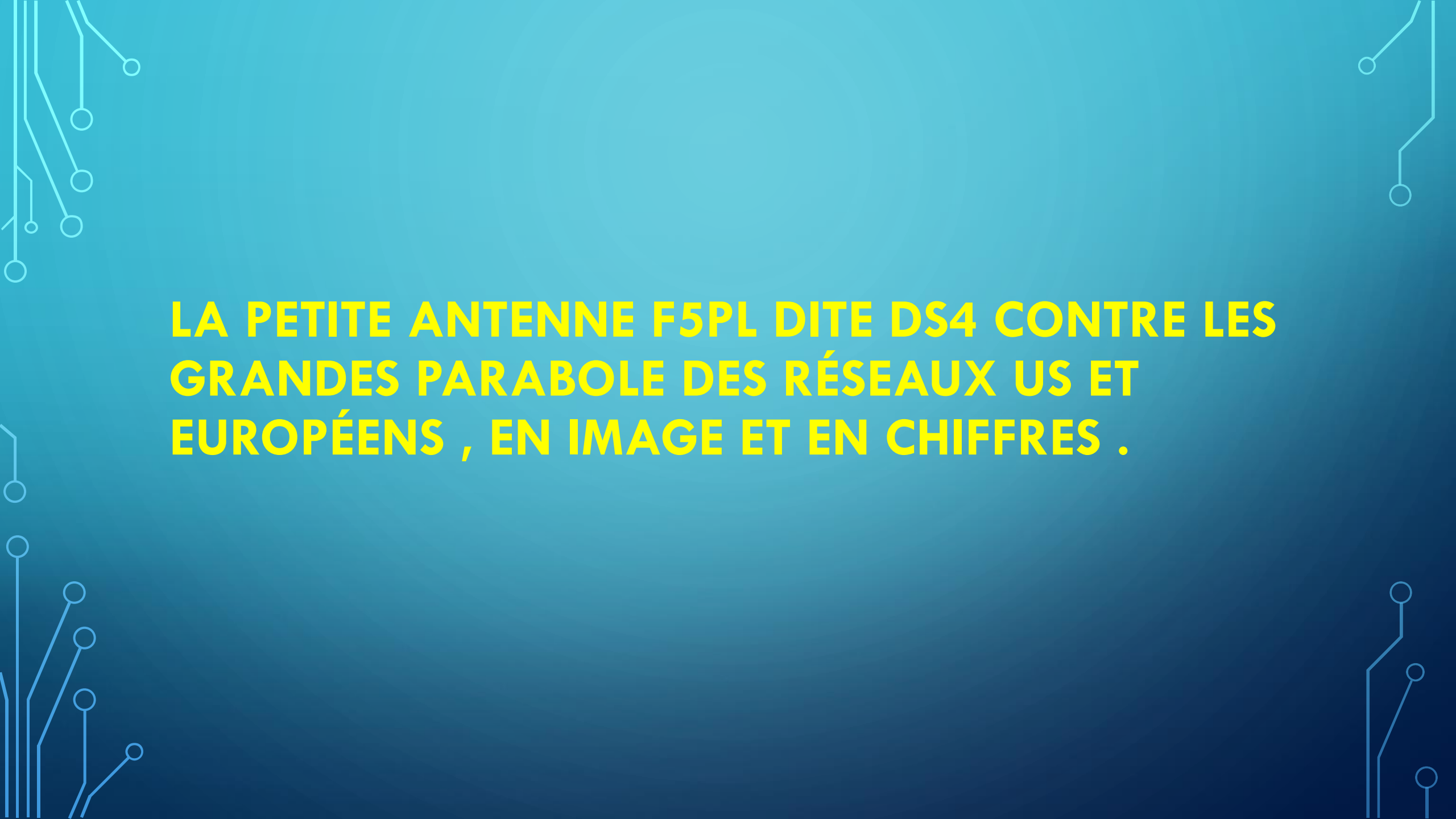
DETECTION DES SONDES INTERPLANETAIRES DE NASA & ESA

BANDE KA 32-32.5 GHZ

I - La petite antenne F5PL dite DS4 contre les grandes paraboles des réseaux US et Européens , en image et en chiffres .

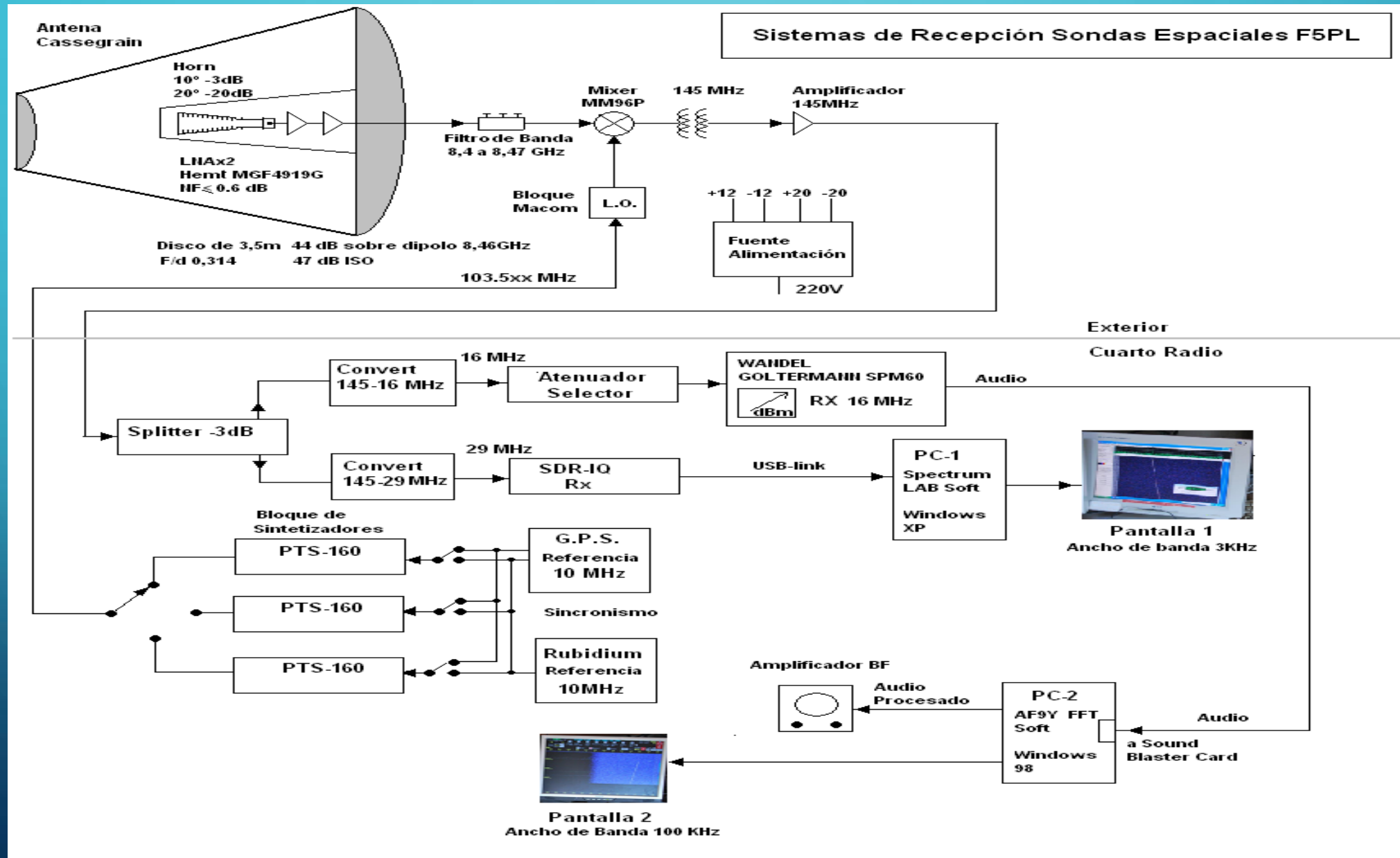
II - Hardware 32 Giga à F5PL/DSA4.

III - Détection du satellite BEPI COLOMBO (ESA) en route vers la planète MERCURE en novembre et décembre 2018 . Comparaison du signal bande Ka avec les sondes JUMO & KEPLER

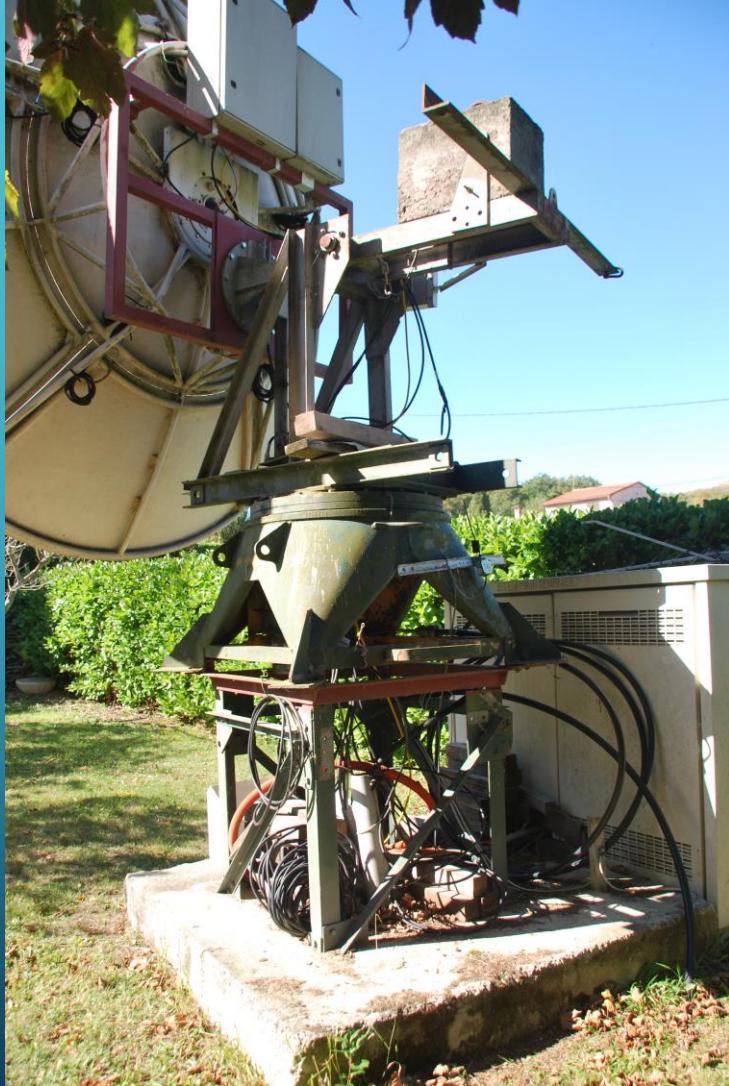
The background is a blue gradient with decorative white circuit-like lines in the corners. The text is centered in a bold, yellow, sans-serif font.

LA PETITE ANTENNE F5PL DITE DS4 CONTRE LES GRANDES PARABOLE DES RÉSEAUX US ET EUROPÉENS , EN IMAGE ET EN CHIFFRES .

Synoptique de ma station



PARABOLE F5PL DSA4

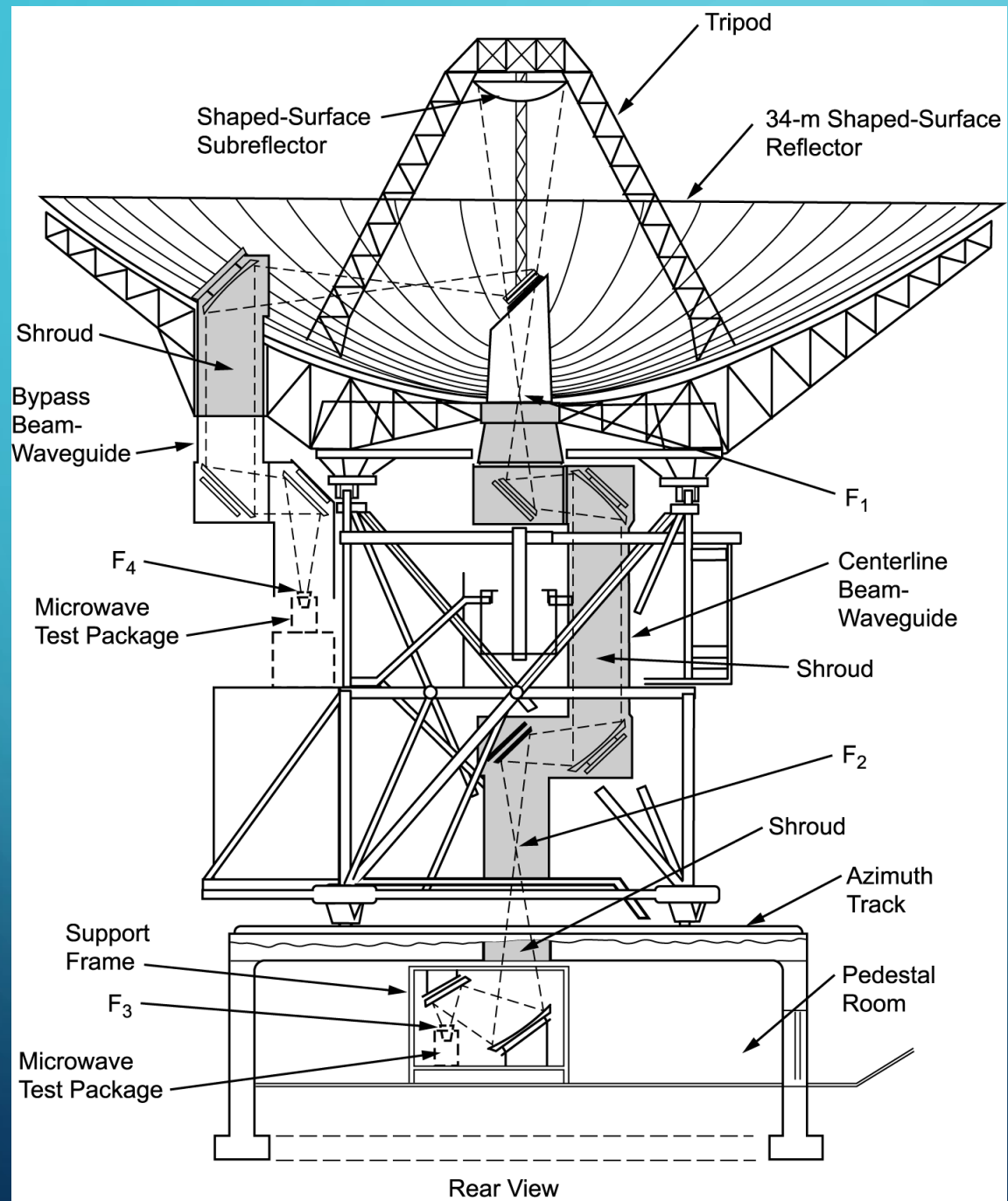


1 - Cassegrain sur reflector

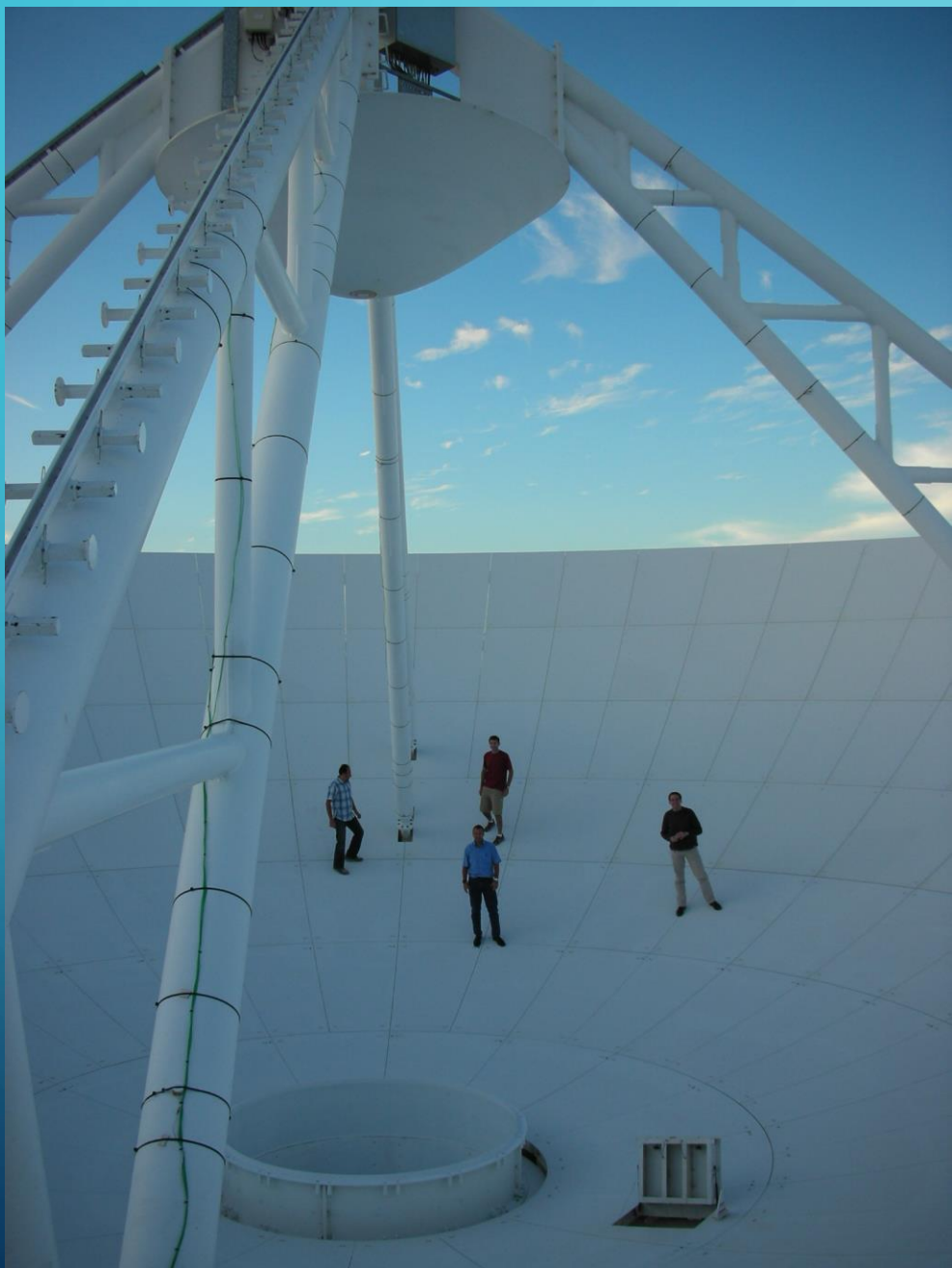


2 - Cassegrain sur reflector





BEAM WAVEGUIDE ANTENNA



Cassegrain sub reflector New Norcia

First Mirror – New Norcia



Dewar New Norcia



Cryogenic Super Charger – New Norcia



PARABOLE 1 M

**PARABOLE 3,5 M
F5 PL**

**PARABOLE 34 m
NASA-JPL**

GAIN 8,4 GIGA 34 dBi

47,5 dBi

68 dBi

GAIN 32 GIGA 47,5 dBi

58 dBi

78 dBi

**JUNO 32 Giga
F5PL station
2011 / 12 / 14
22 H 53 UTC**

Puissance Signal : 20 dB[Hz]

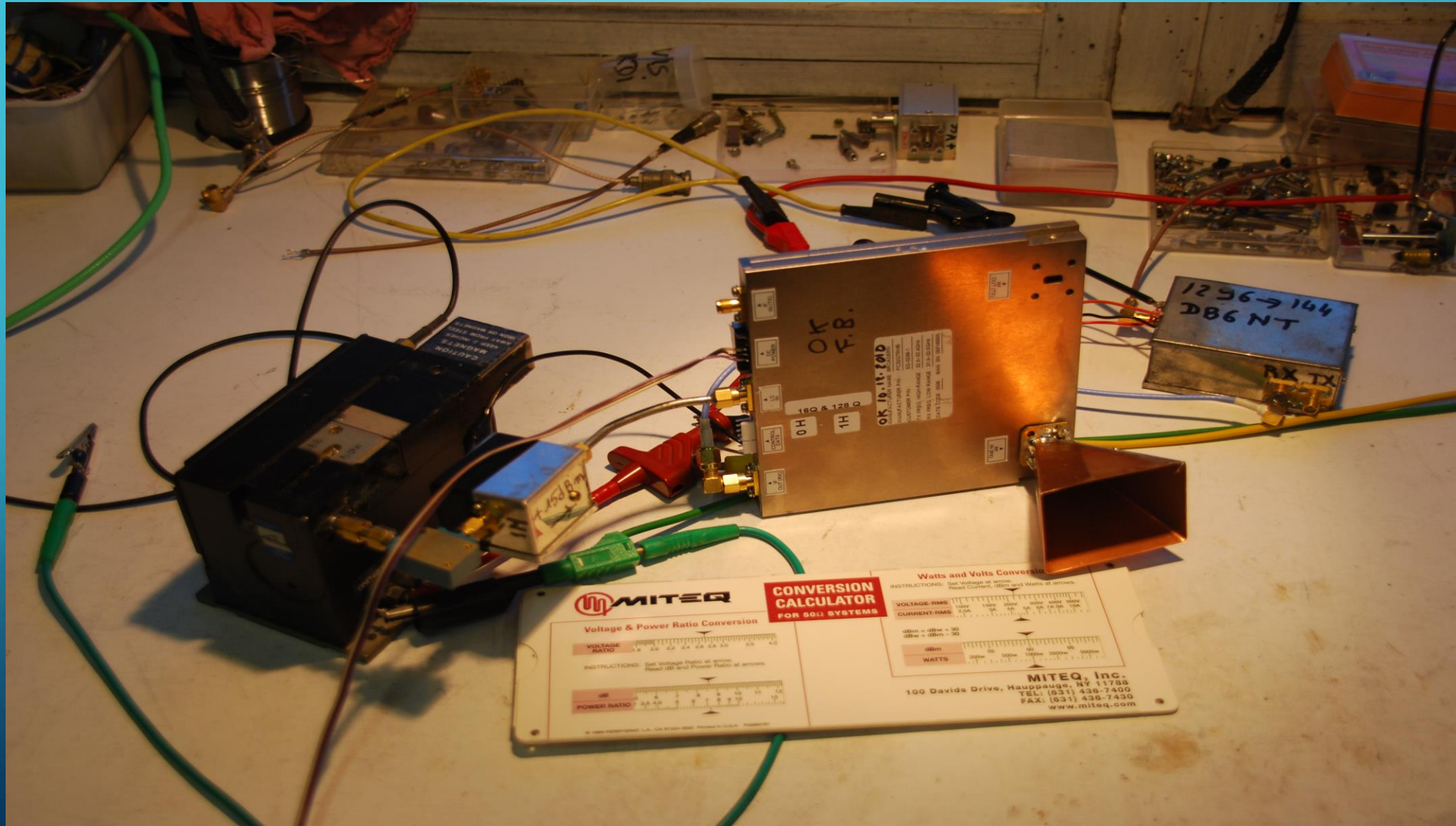
**50 dB[1 Hz]
Source Jim Lux
W6RMK JPL
Goldstone Station**

**Gain DSS 14 / 70 mètres calculé à 84,4 dB / 32 Giga
Estimé (à 50% de rendement)**

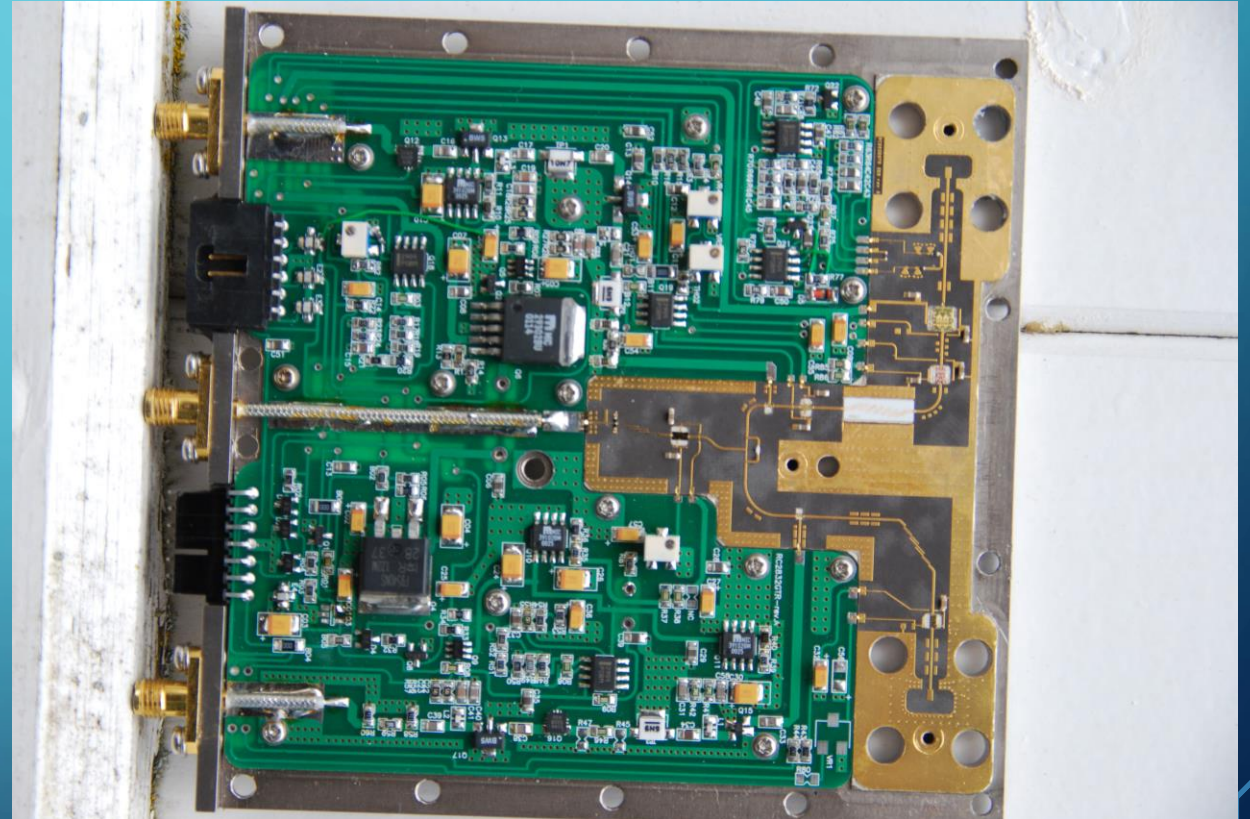
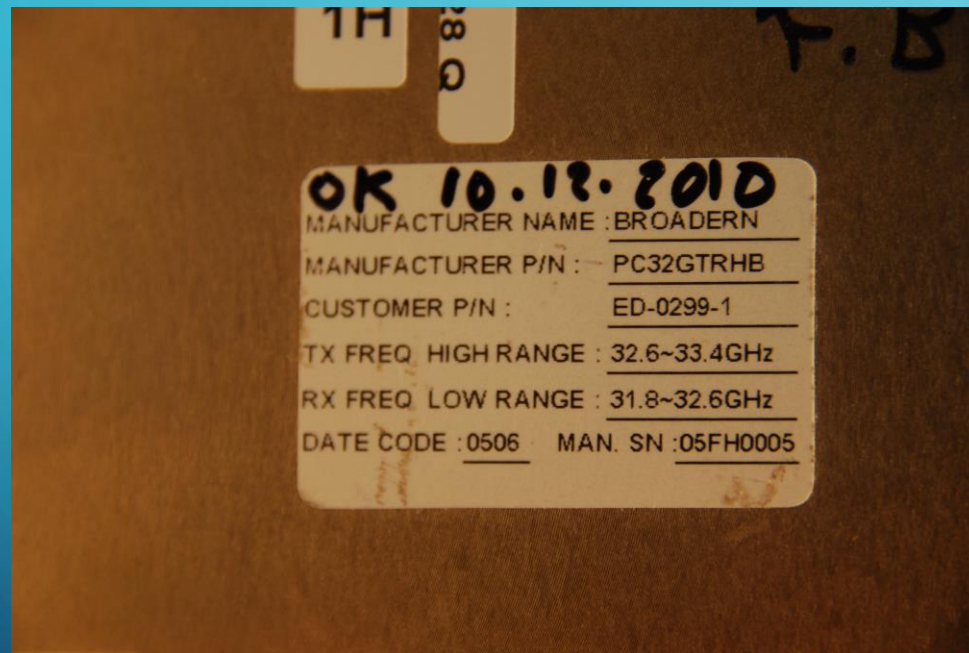
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Hardware 32 GHz à F5PL/DSA4.

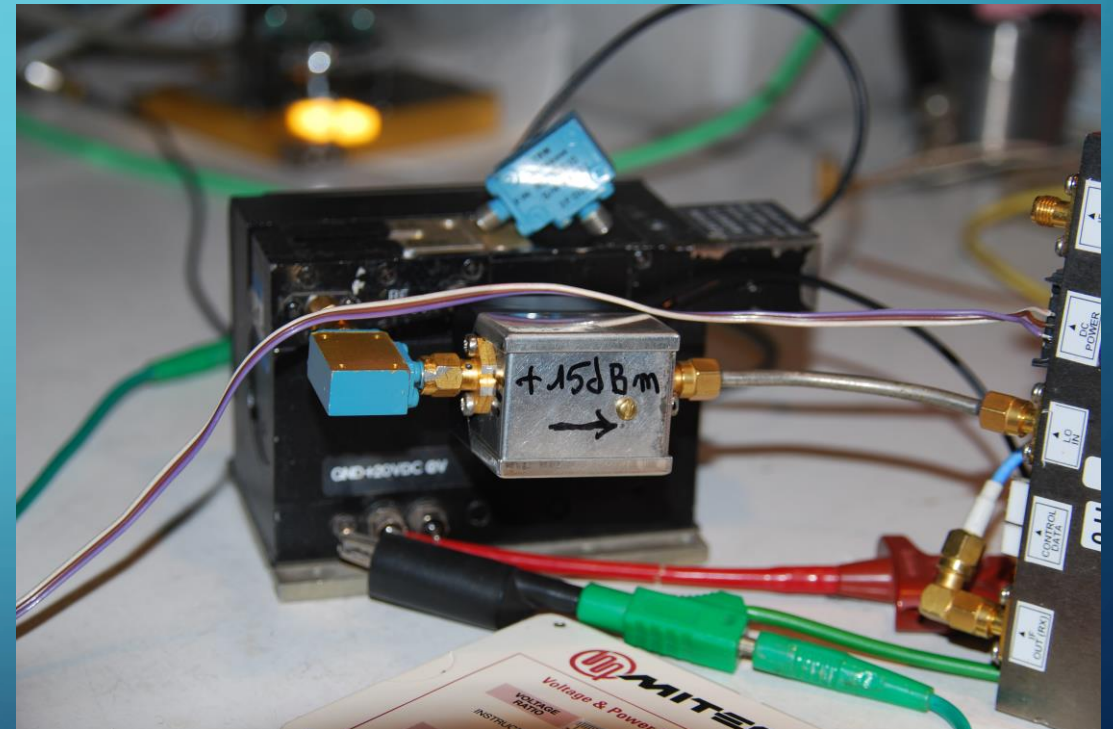
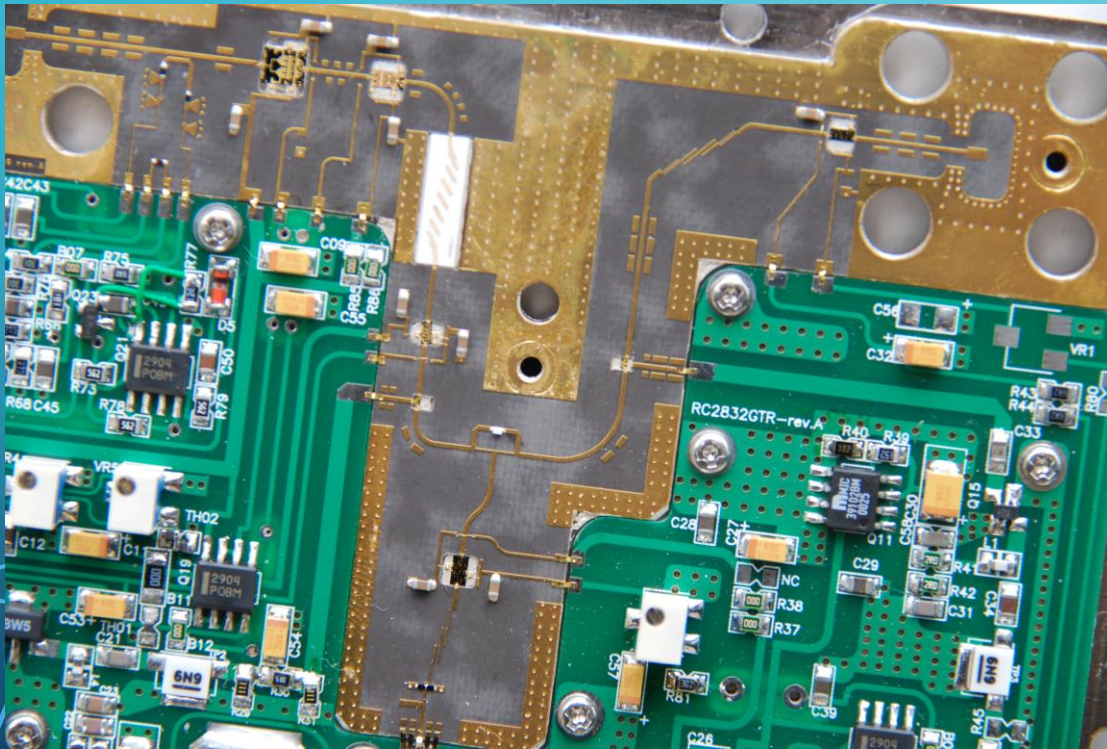
DOWN CONVERTER



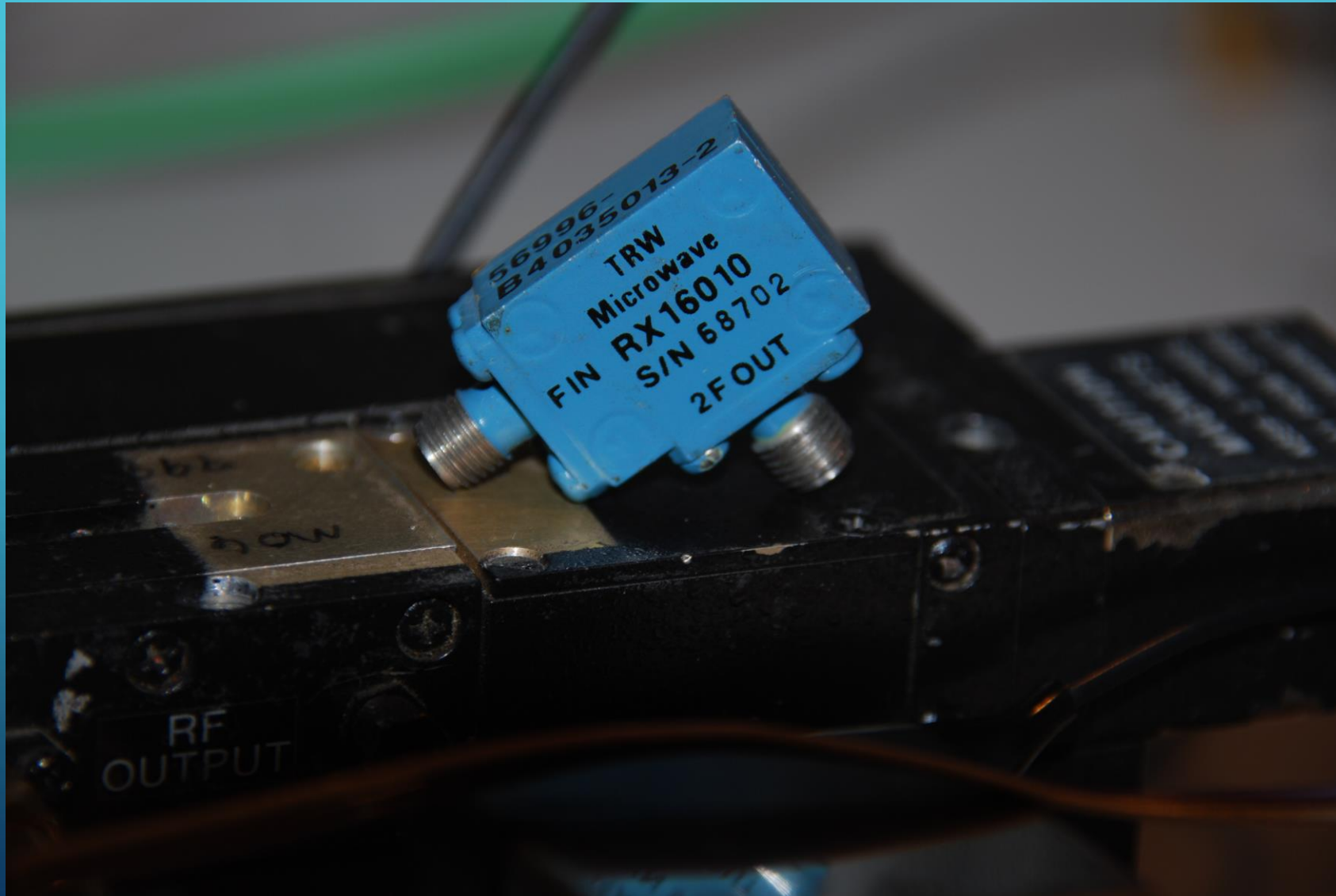
Down converter LAG



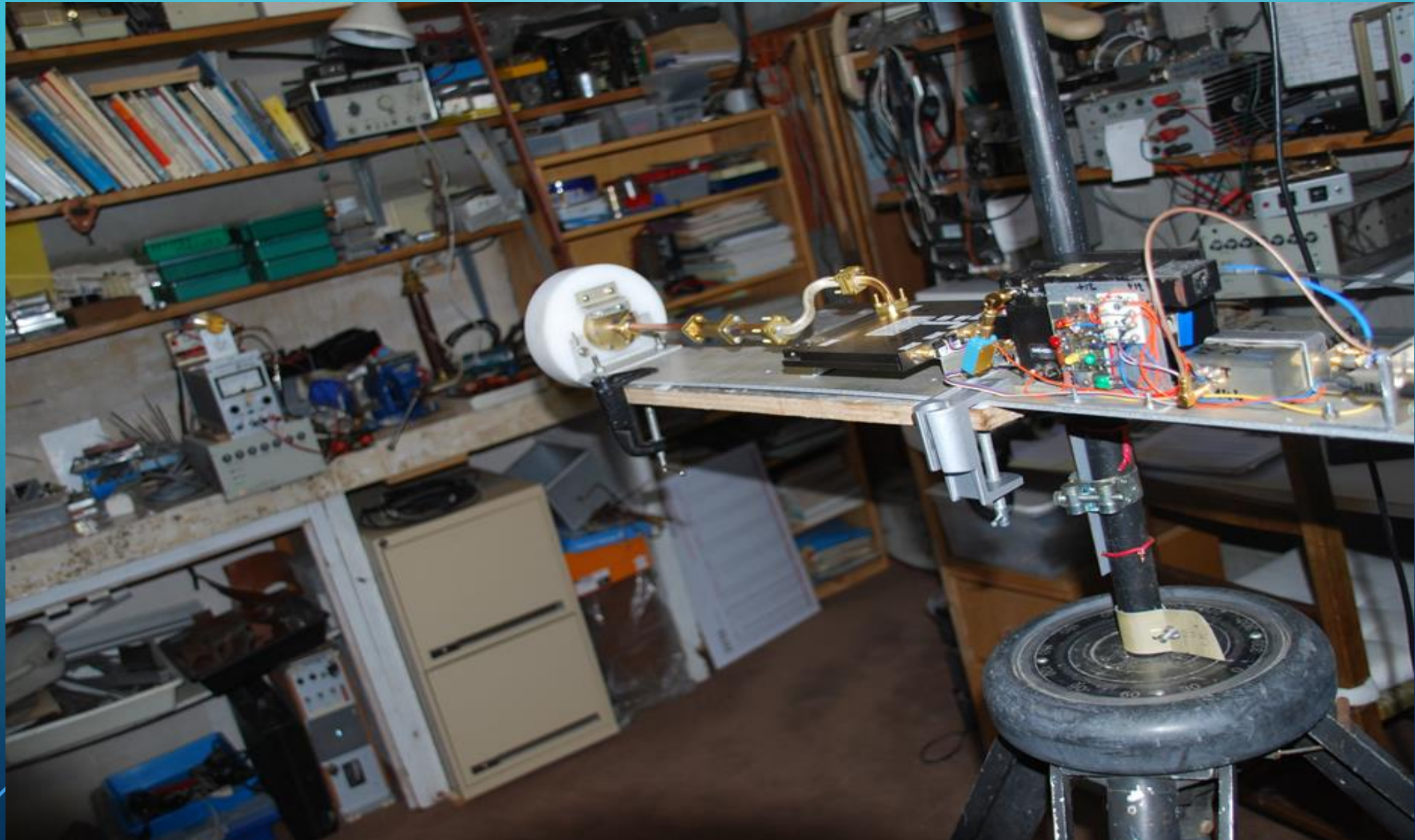
Main 5,5 GHz brick

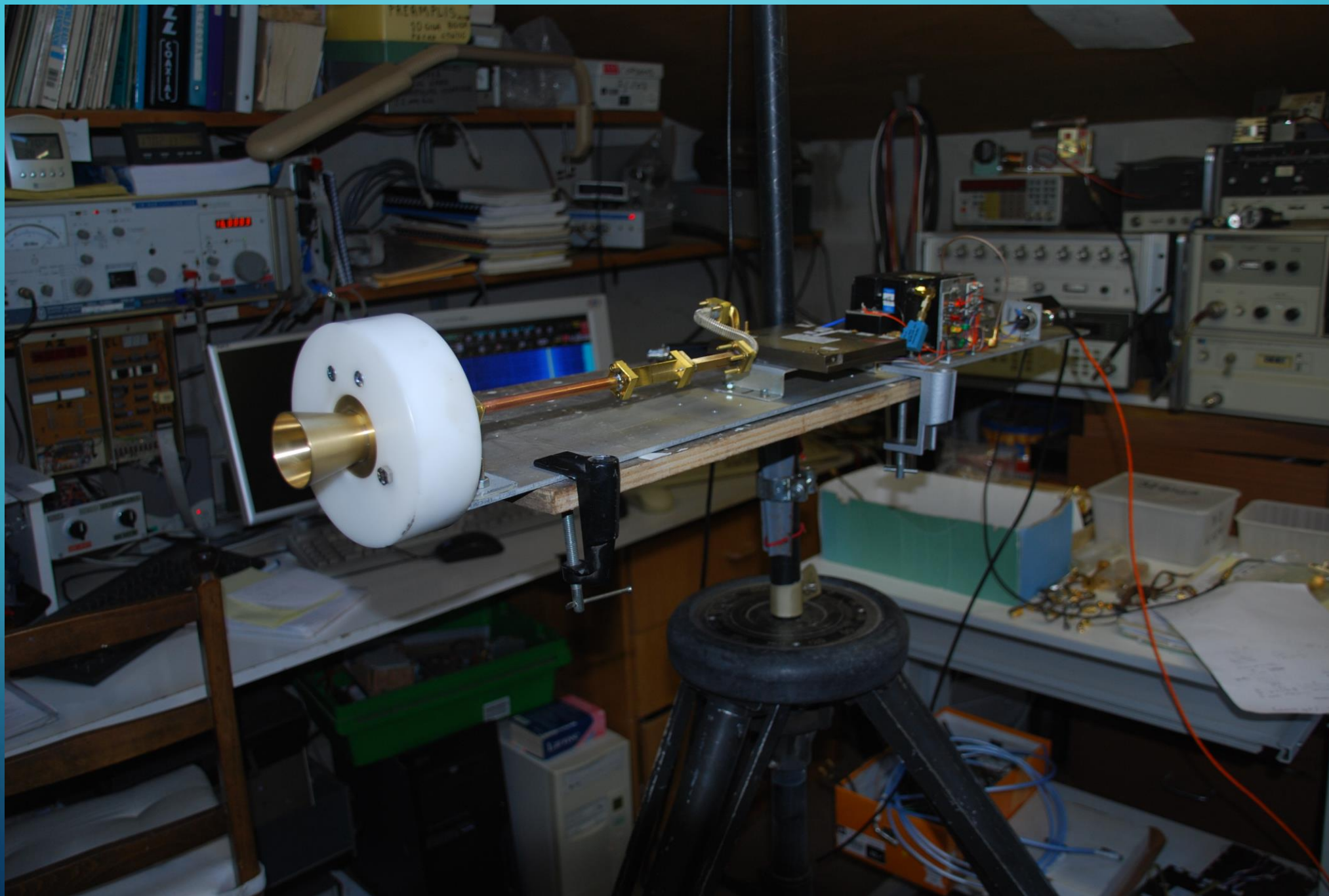


TRW MULTIPLIER



DOWN CONVERTER UNDER TEST





MICRO POWER 32 GHz LOCAL BEACON



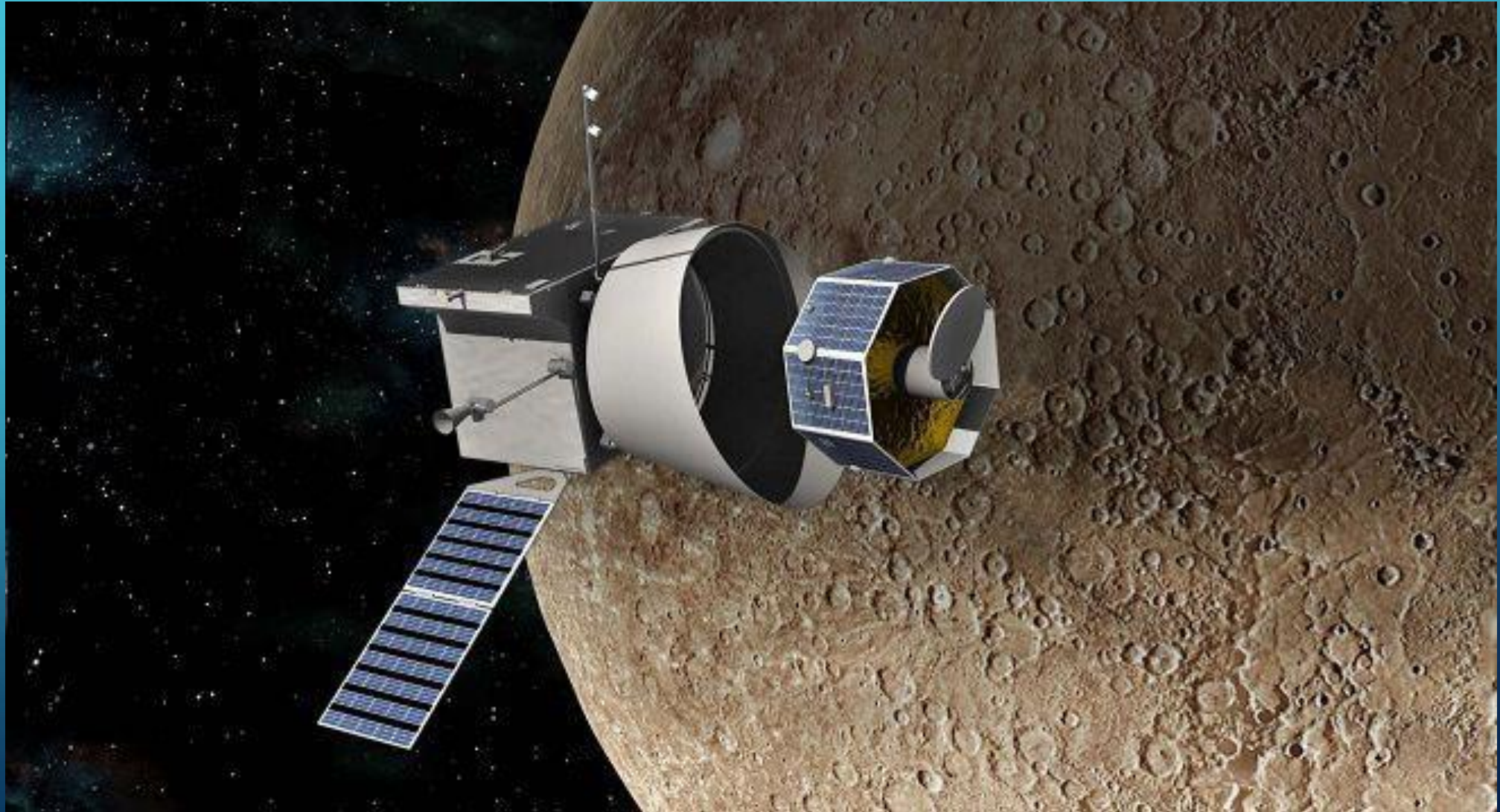
The background is a blue gradient with decorative white circuit-like lines in the corners. The text is centered and reads:

Détection du satellite BEPI COLOMBO
(ESA) en route vers la planète
MERCURE

BEPI Colombo



BEPI COLOMBO



BEPI COLOMBO SOM ELSA MONTAGNON





ven. 14/12/2018 17:40

Elsa.Montagnon@esa.int

Re: Fw: (Low priority : BEPI COLOMBO Today F 5PL station in Villeneuve Lacomptal)

À Bertrand PINEL

Cc Nicolas VERDIER; Olivier R.

Dear Mr. Pinel,

congratulations, this is really impressive.

We start electric propulsion thrust next Monday, until mid February, so there will be no more Ka-band activation in that period.

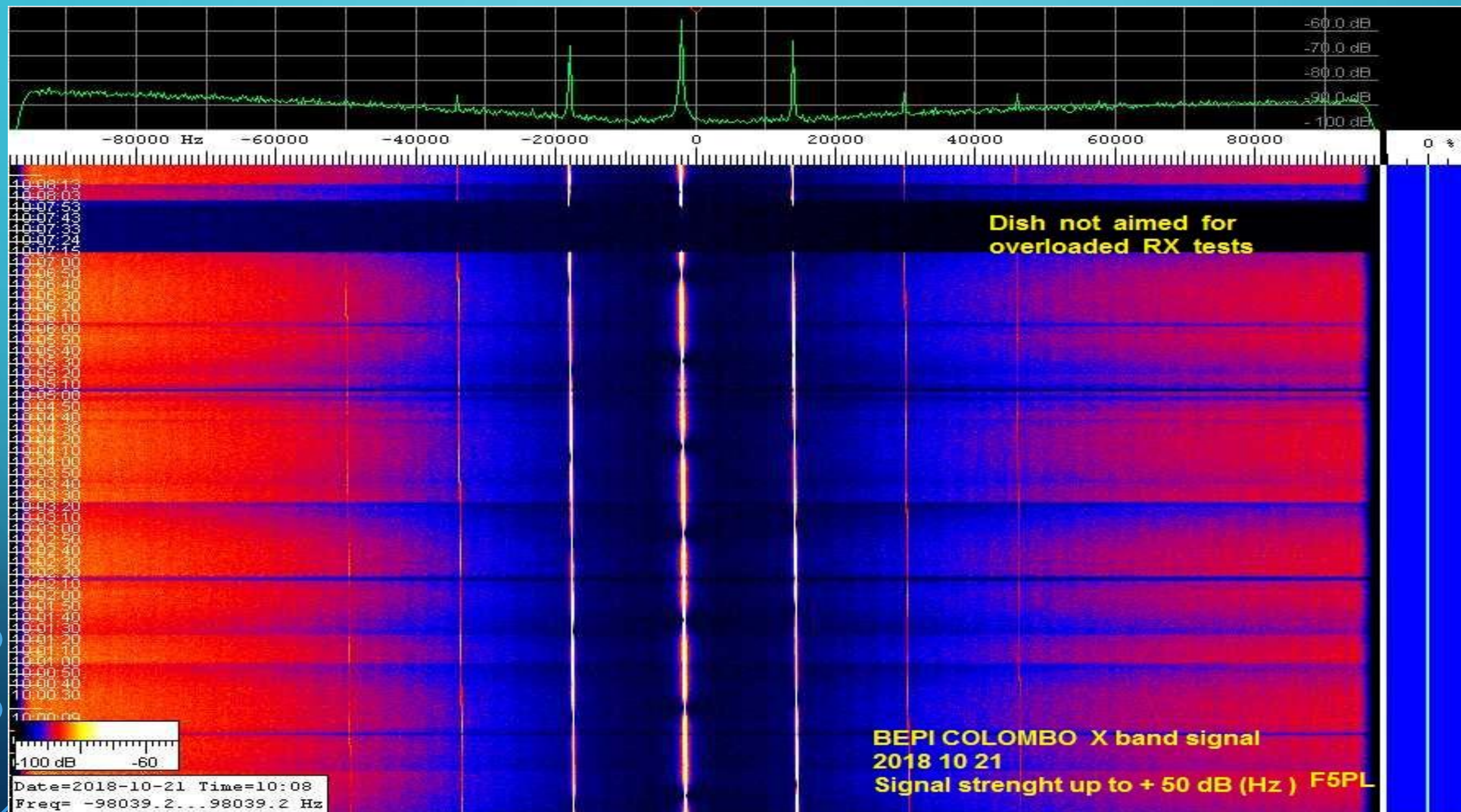
I ll get back to you next year once we have detailed slots for further Ka-band operations.

All the best, kind regards

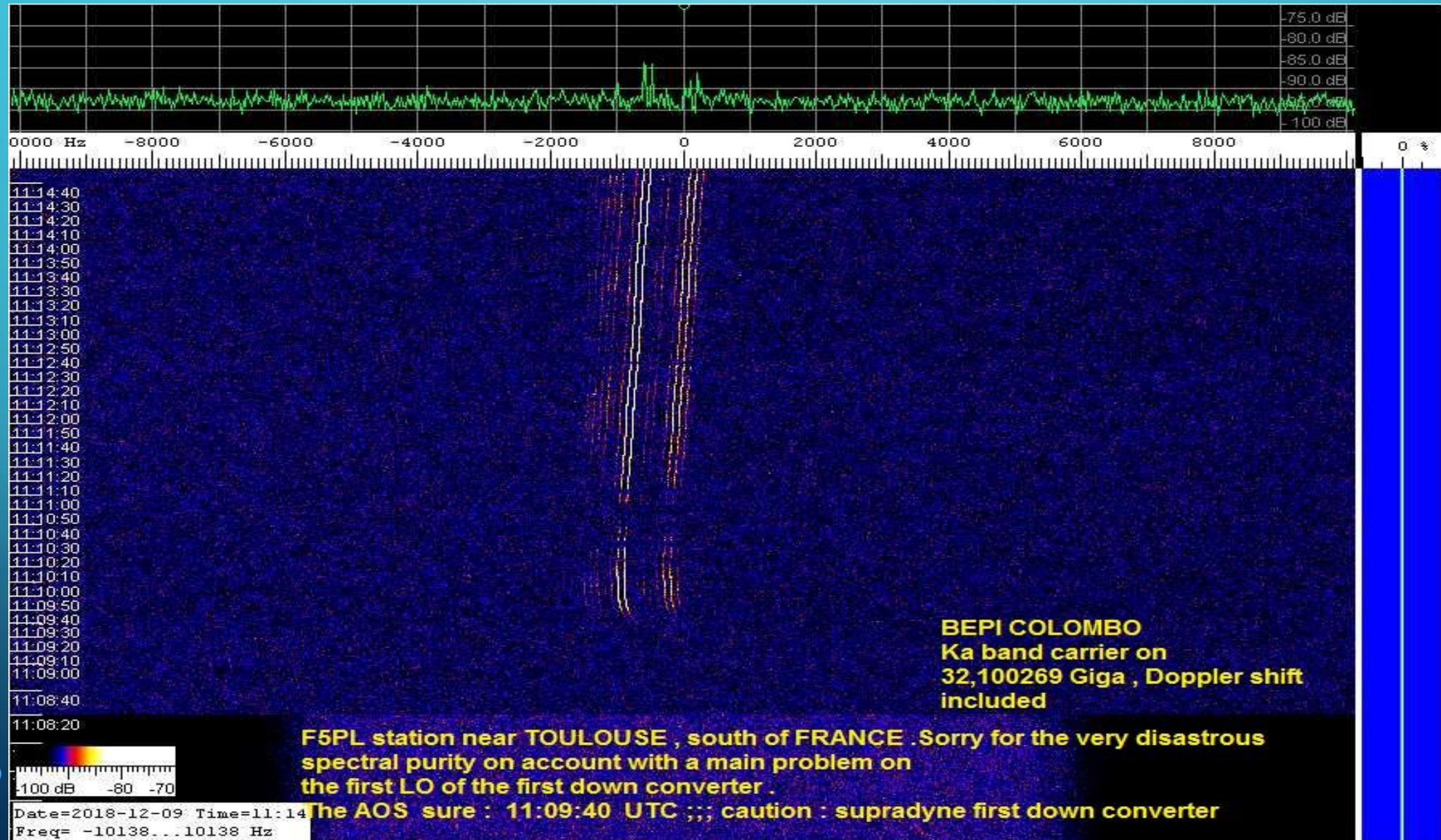
Elsa

KA TRANSPONDEUR JUNO + BEPI

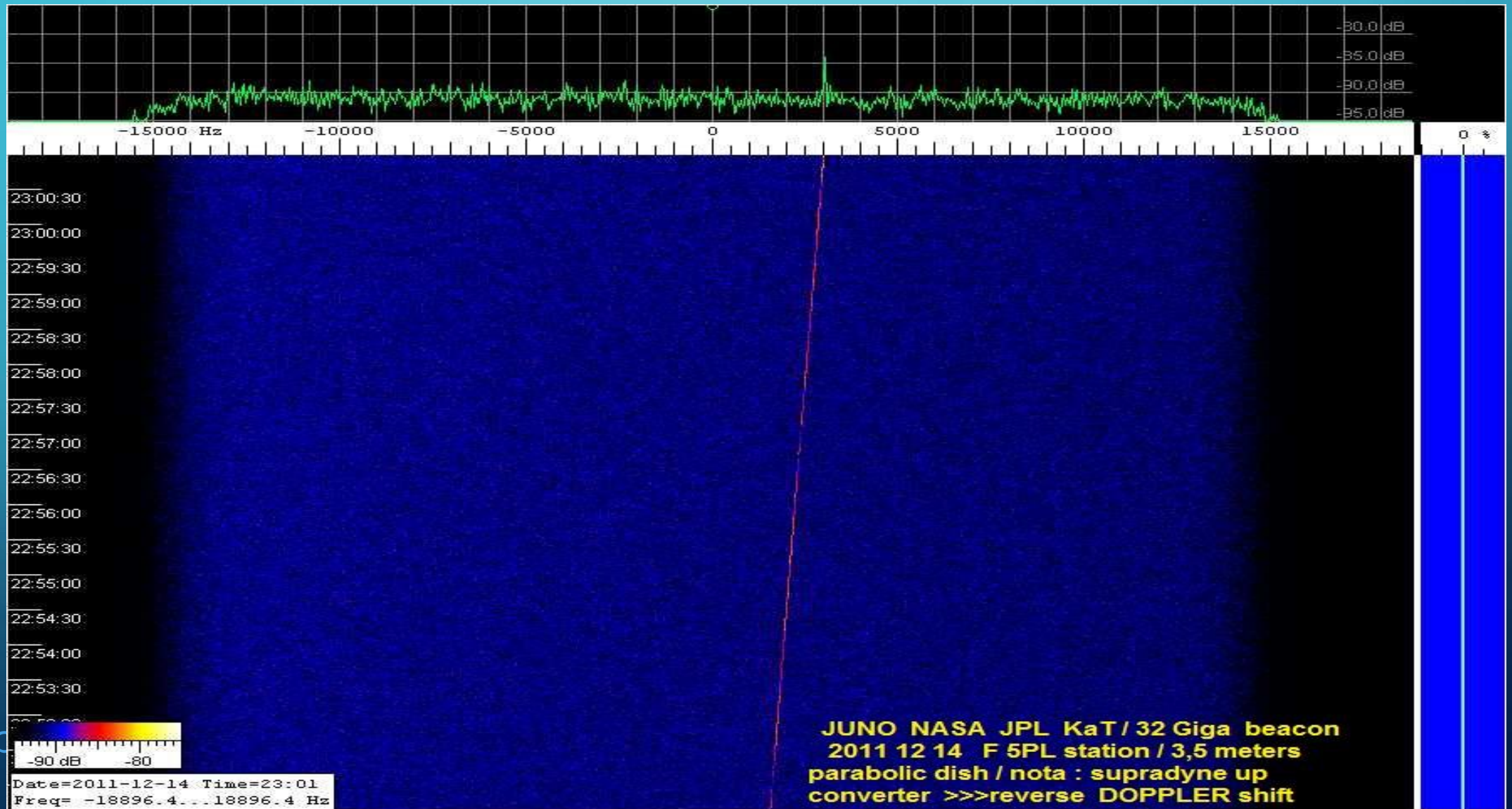




BEPI Colombo Ka band AOS 2018.12.09 à 19M km



JUNO Ka band beacon 2011.12.14 à 93 M km



SPACE PROBES Path Loss Calculator																			
by Charlie Suckling G3WDG																			
						KEPLER													
F/GHz		D/AU		Distance				Path Loss											
32		0,33		4,94E+07 km				276,4 dB											
Rx Dish Dia/m		Efficiency/%		Gain															
3,5		0,5		38,4 dB															
TX Dish Dia/m		Efficiency/%		Gain															
0,8		64		46,6 dB															
RX NF/dB		Tant/K		Tsyst/K		RX BW/Hz		RX Noise power											
2		25		194,6		5		-198,7 dBW											
TX Power/dBW		TX EIRP																	
14		60,6 dBW																	
Modulation loss/dB				Spacecraft Speed/km/s															
10				0,5															
S/N in 1Hz BW				Doppler															
11,3 dB				53,3 kHz															
Notes: Data on MEX dish size and power are not necessarily accurate, but resulting EIRP is believed to be correct.																			
User inputs are in gree shaded boxes																			
Distance to spacecraft is in AU (astronomical units), per the data given in the JPL Ephemeris site																			

BEPI FFT

