

SYRTE

LPNHE

ROOF

GNSS Splitter

5ème

LPN1

LPN2

OP71

PPS

10MHZ

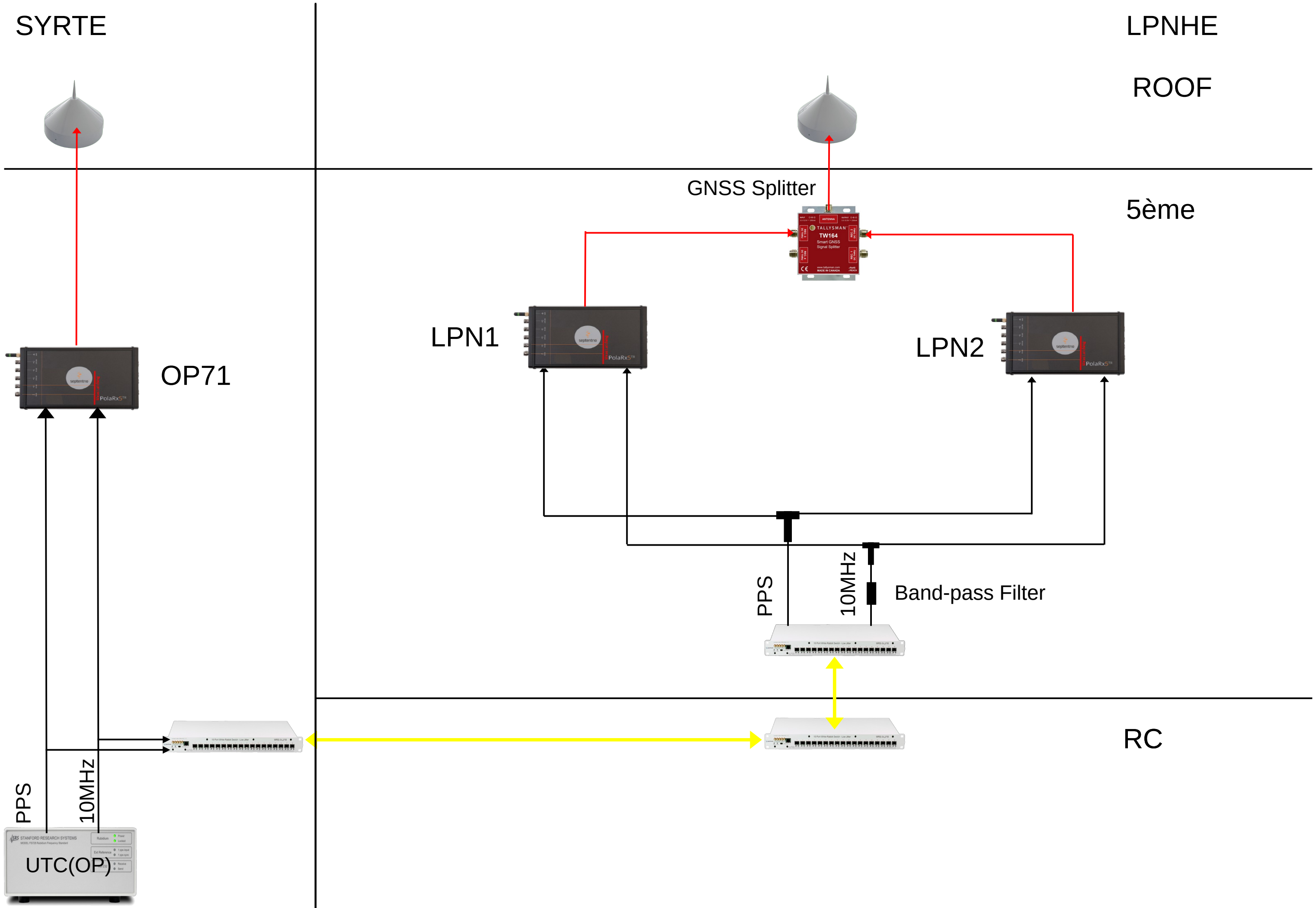
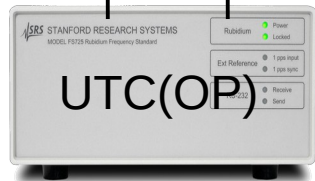
Band-pass Filter

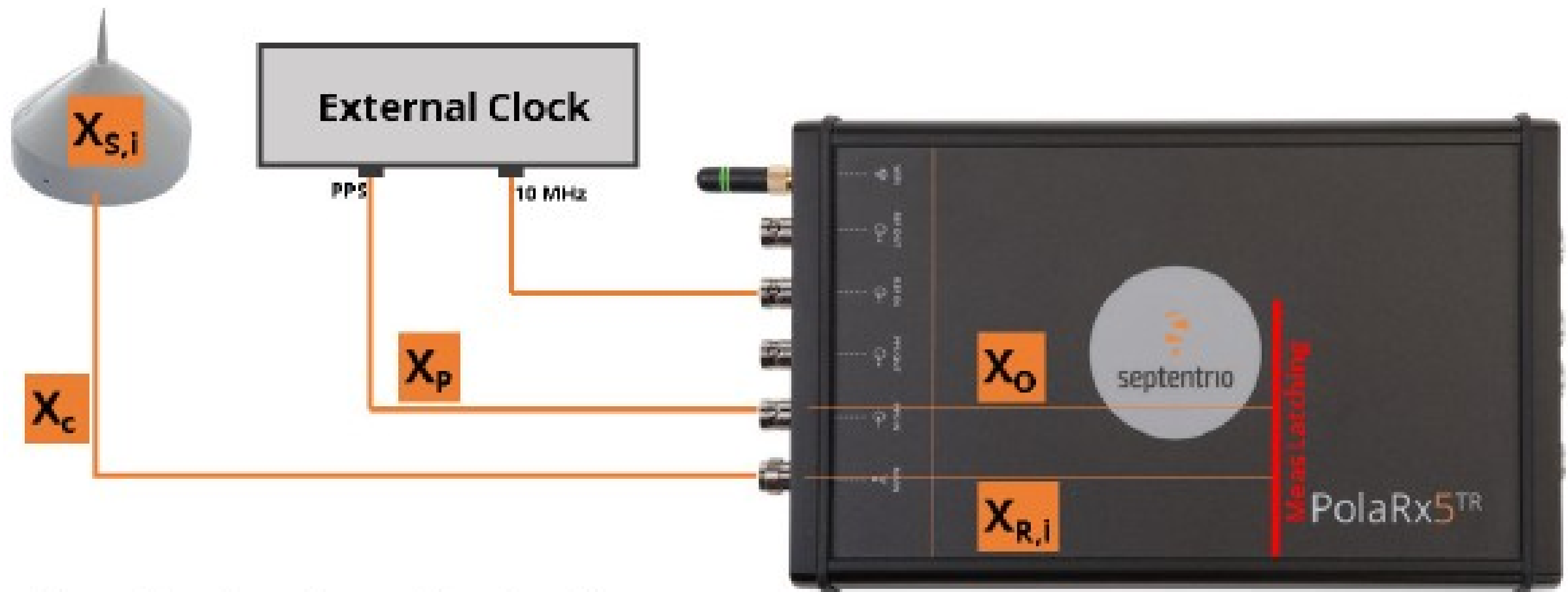
RC

PPS

10MHZ

UTC(OP)





$X_{S,i}$: delay in antenna for signal i

$X_{R,i}$: delay in RF section of receiver for signal i

X_C : delay in RF cable (including amplifier and splitter)

X_P : delay in PPS cable

X_O : delay between PPS IN connector and internal receiver time reference ($X_O = 0$ on PolaRx5TR when auto-calibration is enabled)

SYRTE

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$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

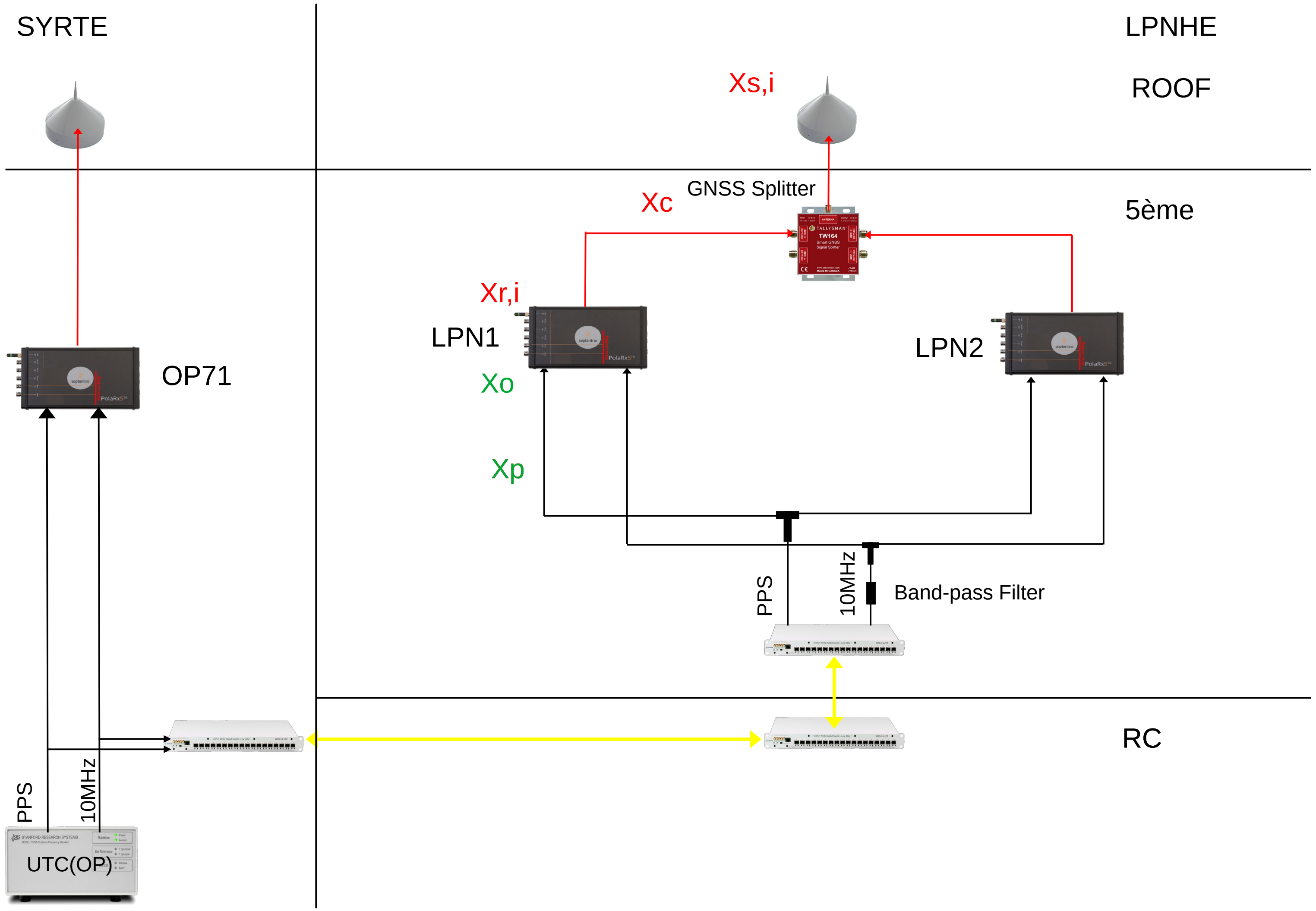
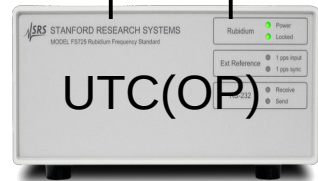
10MHZ

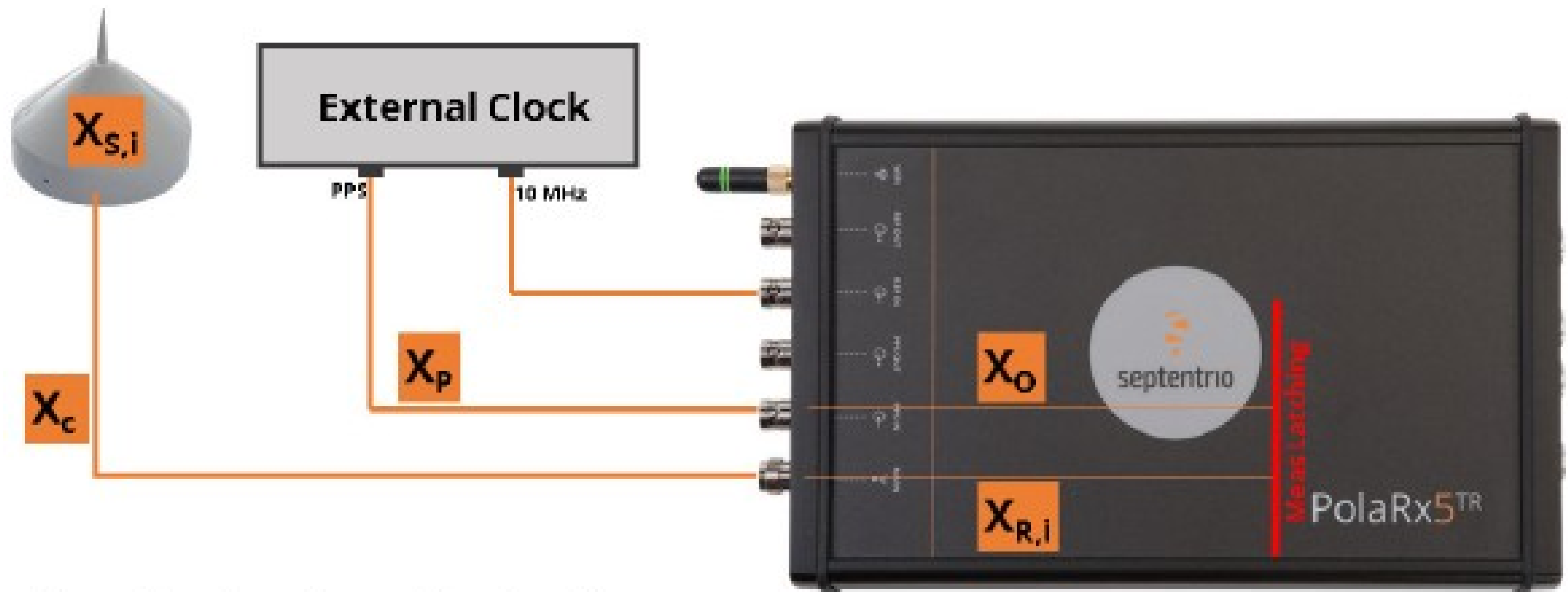
Band-pass Filter

RC

PPS

10MHZ





$X_{S,i}$: delay in antenna for signal i

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X_P : delay in PPS cable

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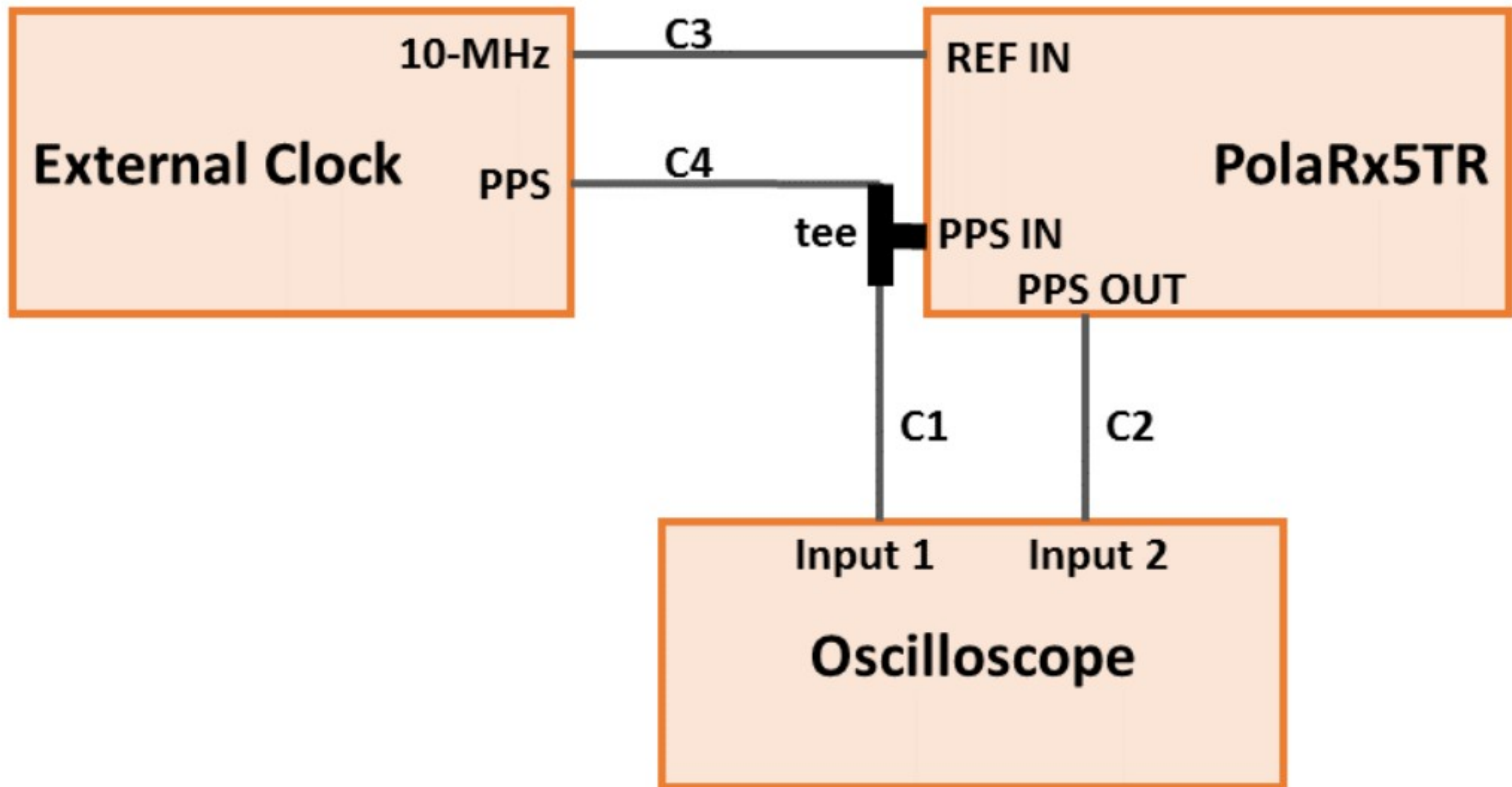


Figure 4-3: Manual calibration of the PPS IN to internal reference delay

SYRTE

LPNHE

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$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

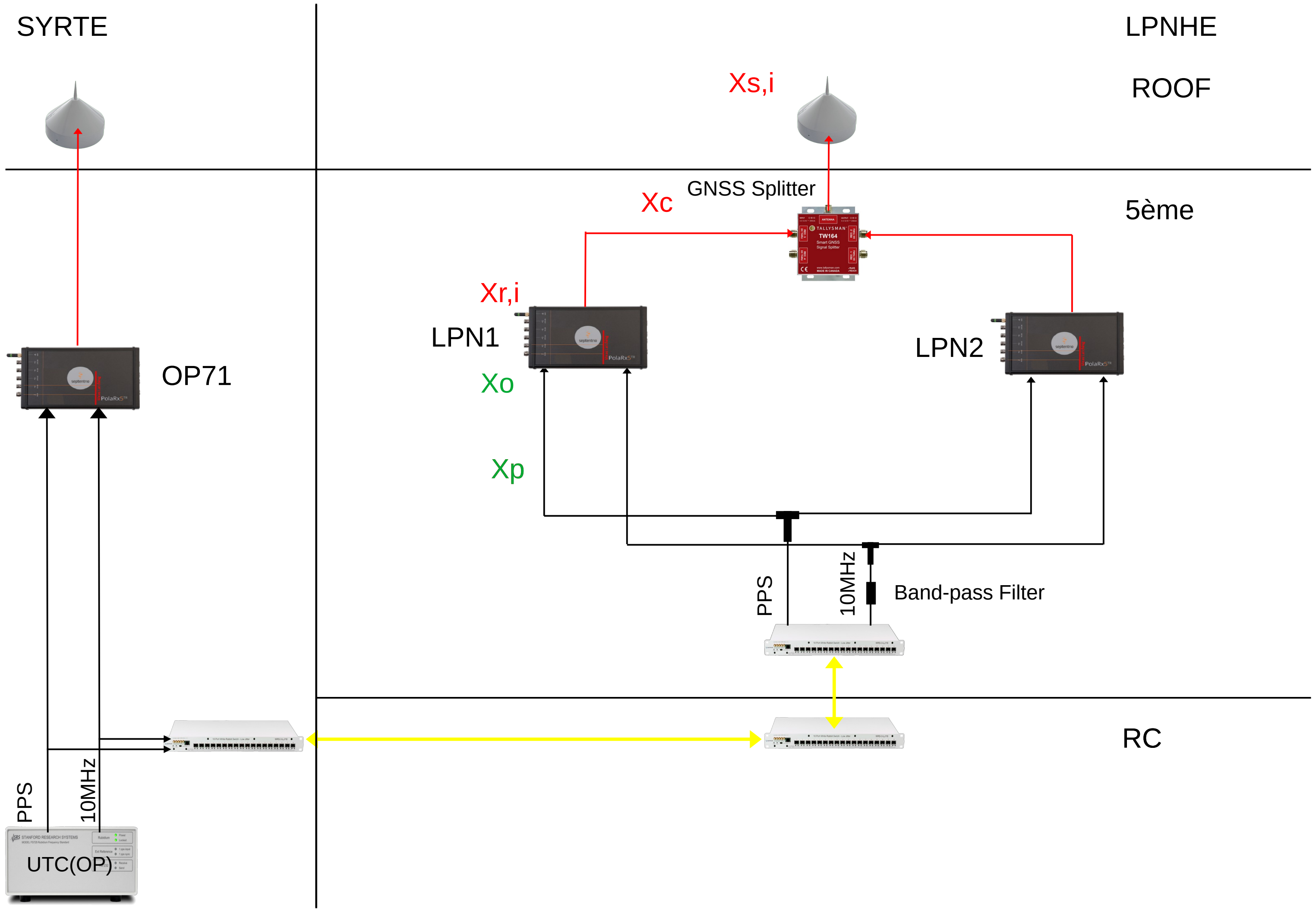
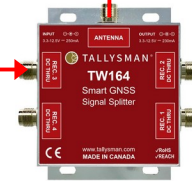
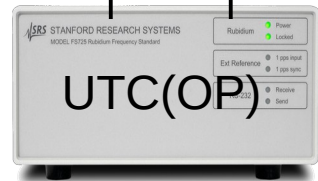
10MHZ

Band-pass Filter

RC

PPS

10MHZ



Receiver	Position	Status
PolaRx5TR-3222543 (LPN1)	Lat: N48°50'53.9588" 0.000m	Tracked Sats: 46
IP Address (Eth): 134.158.152.105	Lon: E2°21'19.4225" 0.000m	Time: 2024-12-11 10:57:22
Uptime: 0d 18:51:18	Hgt: 110.016m 0.000m	Temp: 49.00 °C — V: 11.98 volts

- Fixed
- Status
- Overall Quality
- Int. Logging
- Corrections
- Ext. Logging
- Wifi
- ExtFreq+ExtTime
- Spectrum clean

- Overview
- GNSS
- Timing
- Station
- Communication
- Corrections
- Data Output
- Logging
- Admin

Timing > CGGTTS

Antenna Phase Center Coordinates
Parameters
Delays

$X_{S,i}$: delay in antenna for signal i
 $X_{R,i}$: delay in RF section of receiver for signal i
 X_C : delay in RF cable (including amplifier and splitter)
 X_P : delay in PPS cable
 X_O : delay between PPS IN connector and internal receiver time reference ($X_O = 0$ on PolaRx5TR when auto-calibration is enabled)

Internal Delays

	GPSL1	GPSL2	GL0L1	GL0L2	GALE1	GALE5a	BDSB1I	BDSB2I
INTDLY (X_S+X_R)	25.832 ns	22.871 ns	0.000 ns	0.000 ns	28.242 ns	25.431 ns	0.000 ns	0.000 ns

Cable Delay

CABDLY (X_C)

Reference Delay

REFDLY (X_P+X_O)

PPS IN Parameters

Enable compensation of PPSIN internal delay: off auto

To enable CGGTTS logging, go to the [Log Sessions page](#).

Default Ok

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$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

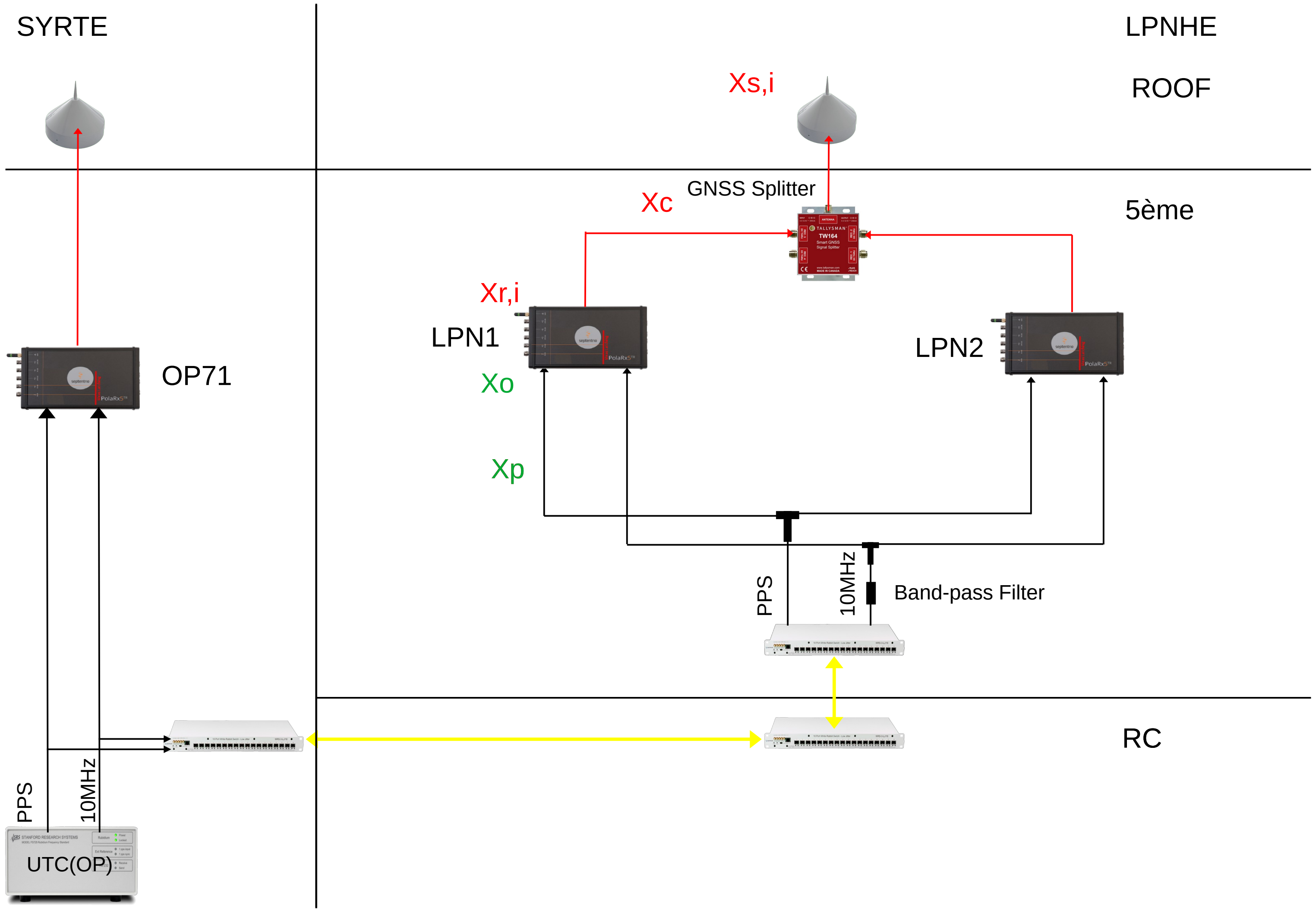
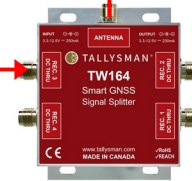
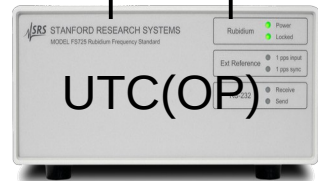
10MHZ

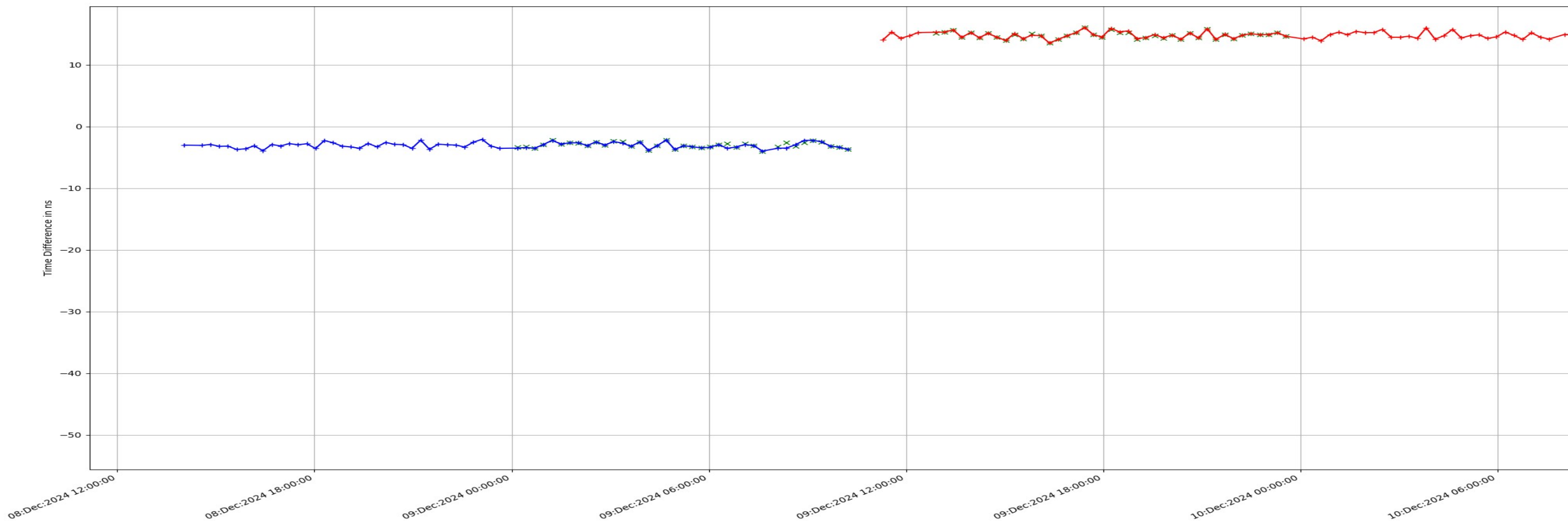
Band-pass Filter

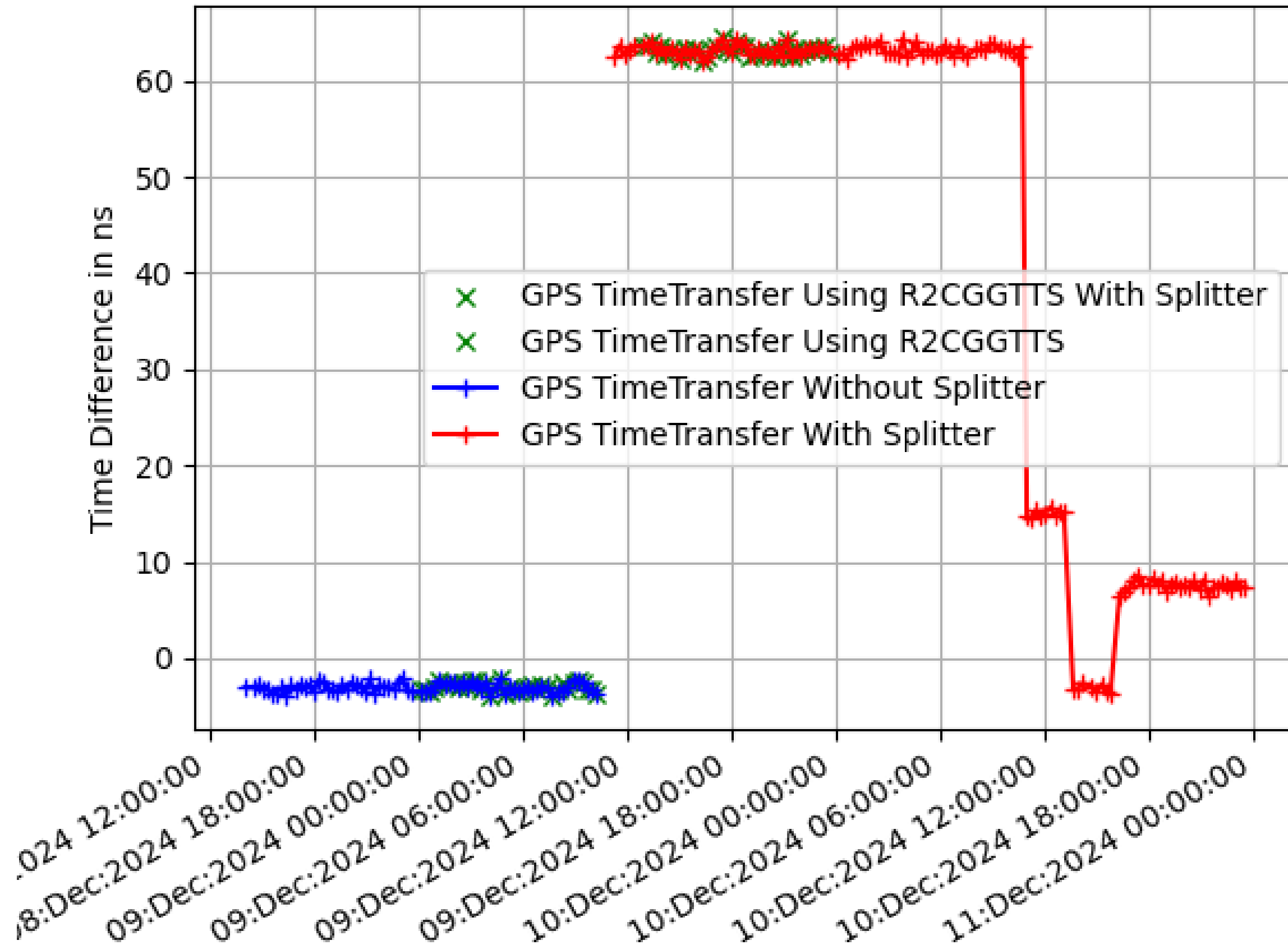
RC

PPS

10MHZ







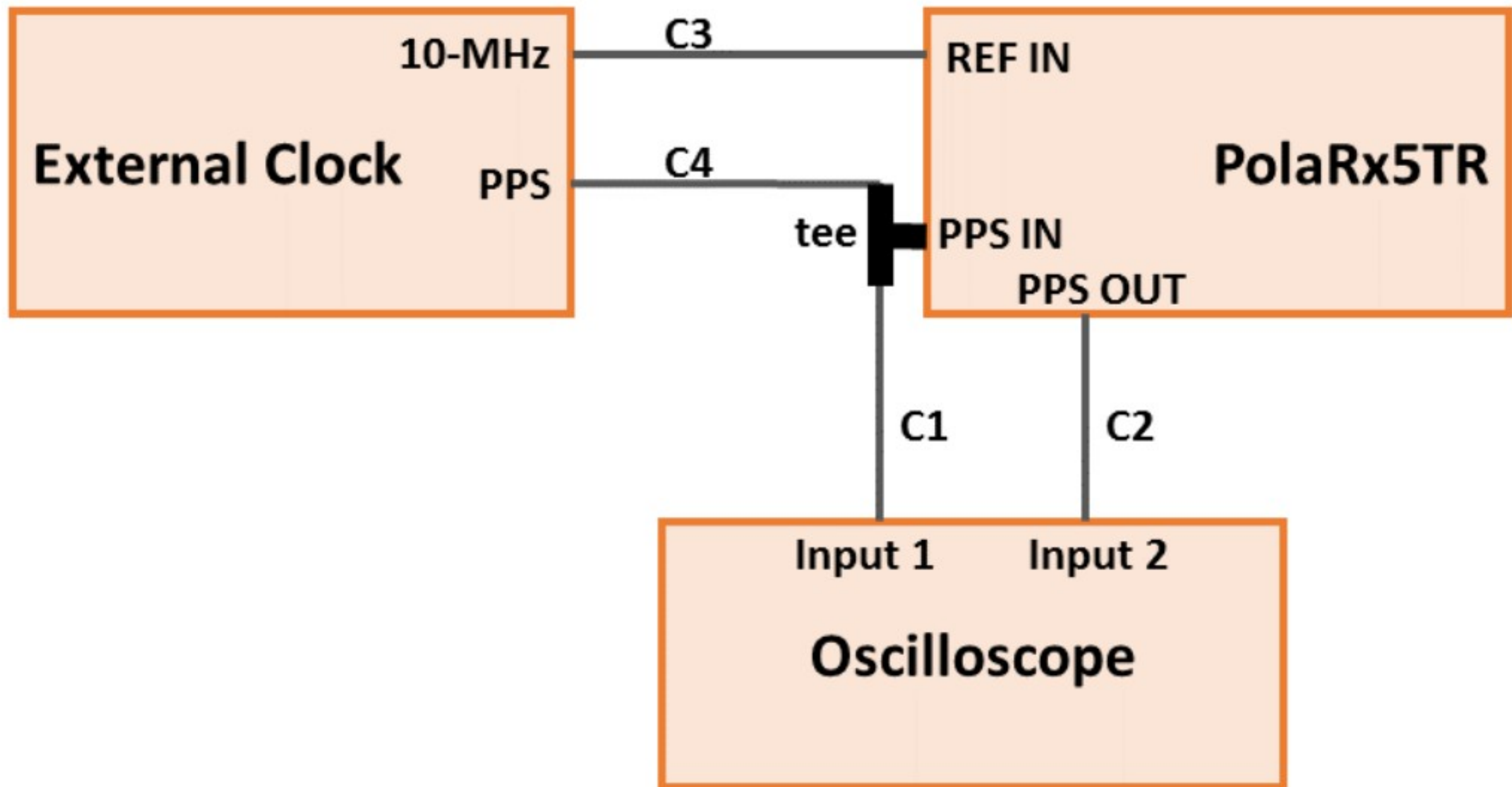


Figure 4-3: Manual calibration of the PPS IN to internal reference delay

SYRTE

LPNHE

ROOF

$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

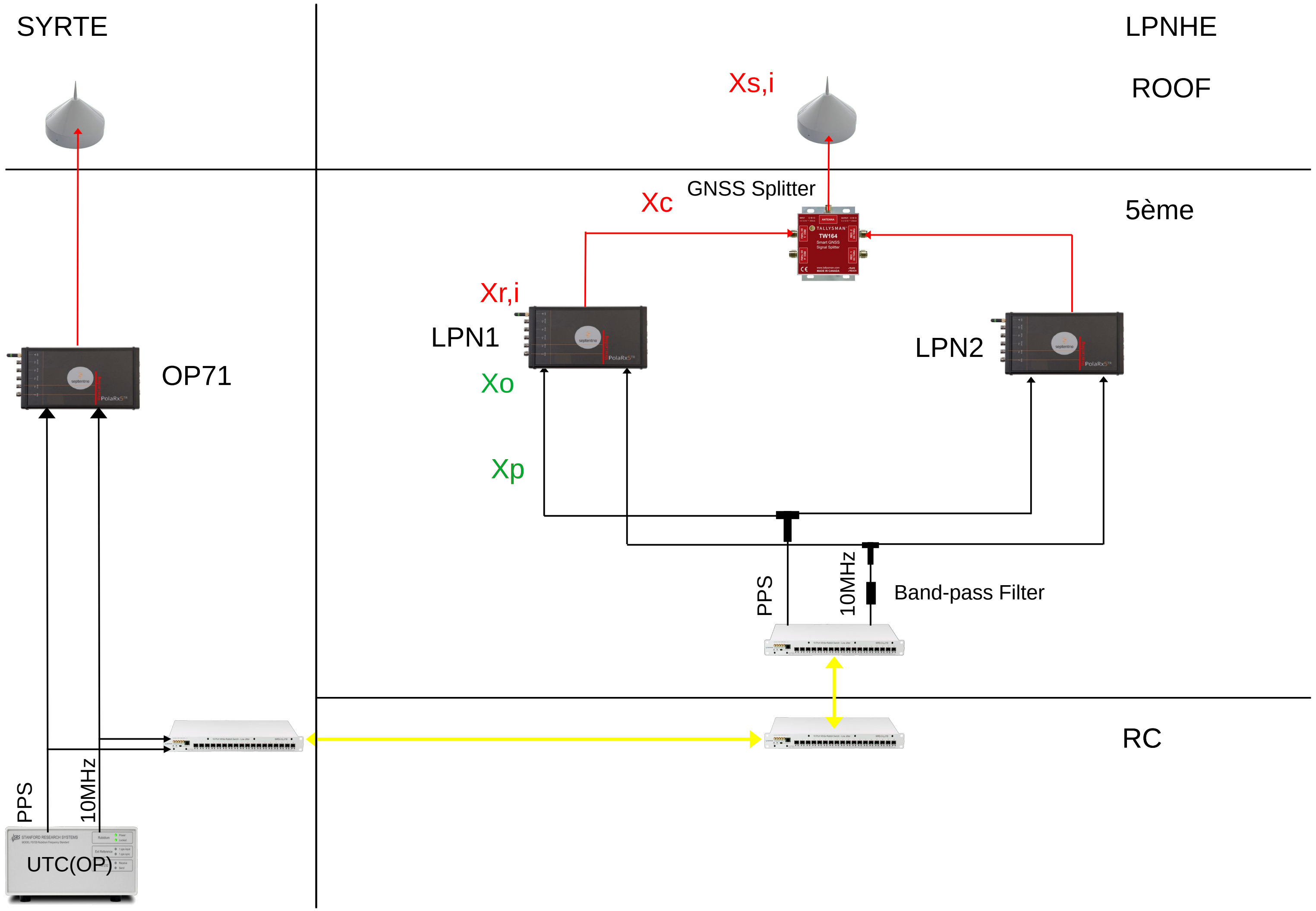
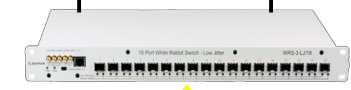
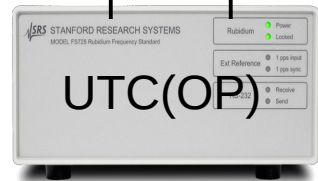
10MHZ

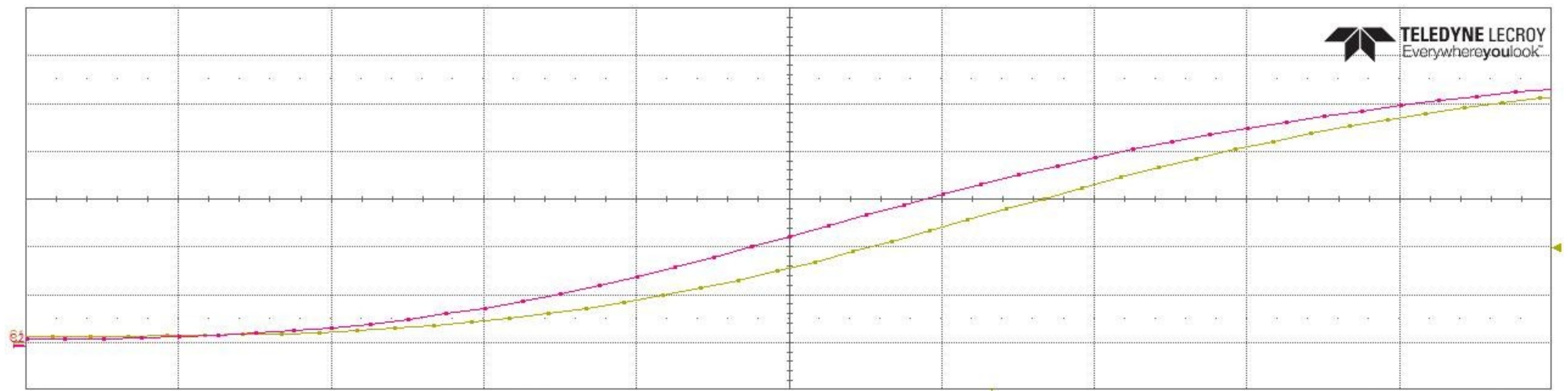
Band-pass Filter

RC

PPS

10MHZ

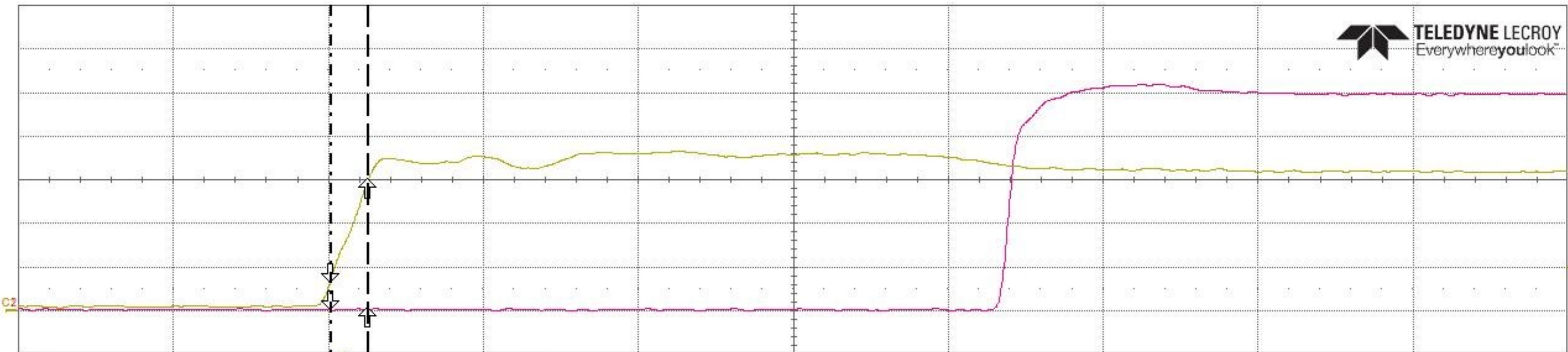




Measure	P1:dt@lv(C1,C2)	P2:freq(C1)	P3:---	P4:dt@lv(C1,C2)	P5:---	P6:---	P7:---	P8:---	P9:---	P10:---	P11:---	P12:---
value	-175.5 ps											
mean	-143.49 ps											
min	-278.1 ps											
max	-32.6 ps											
sdev	40.65 ps											
num	699											
status	✓											

C1	DC1M	C2	DC1M
500 mV/div		500 mV/div	
-1.500 V ofst		-1.540 V ofst	

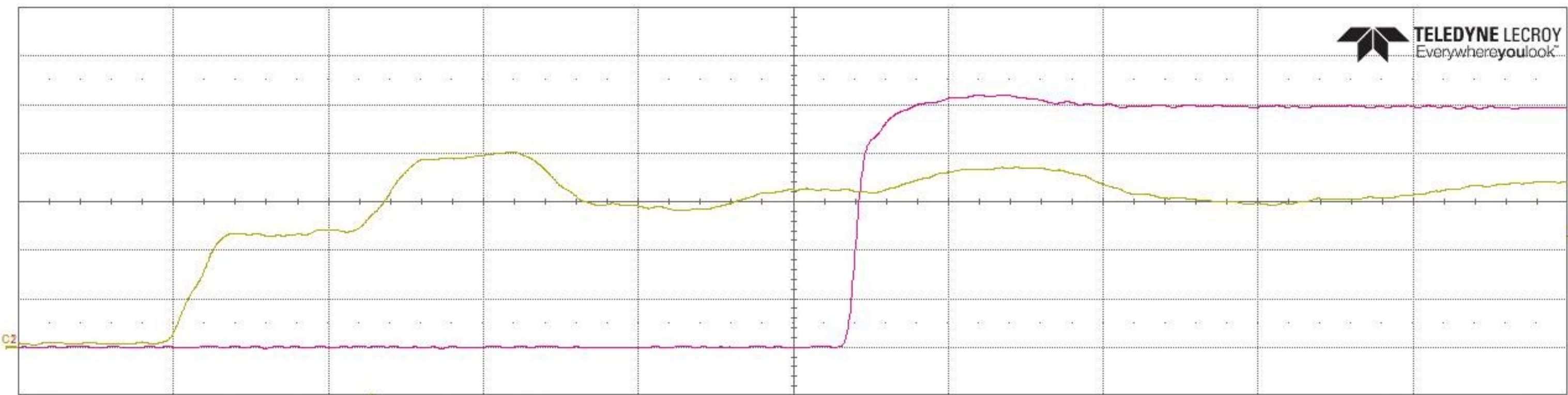
Timebase	264 ps	Trigger	C1 DC
	200 ps/div	Normal	1.000 V
40.0 S	20 GS/s	Edge	Positive



Measure	P1:dt@lv(C1,C2)	P2:freq(C1)	P3:---	P4:dt@lv(C1,C2)	P5:---	P6:---	P7:---	P8:---	P9:---	P10:---	P11:---	P12:---
value	43.1784 ns											
mean	43.20377 ns											
min	43.1011 ns											
max	43.4138 ns											
sdev	60.29 ps											
num	51											
status	✓											

C1	DC1M	C2	DC1M
1.00 V/div	1.00 V/div	1.00 V/div	1.00 V/div
-3.000 V ofst	-3.000 V ofst	-3.000 V ofst	-3.000 V ofst
638 mV	-6 mV	-6 mV	-6 mV
2.947 V	-5 mV	-5 mV	-5 mV

Timebase	-29.0 ns	Trigger	C1 DC
	10.0 ns/div	Normal	1.00 V
	2.00 kS	Edge	Positive
	20 GS/s		
X1=	-850 ps	ΔX=	2.40 ns
X2=	1.55 ns	1/ΔX=	417 MHz



Measure	P1:dt@lv(C1,C2)	P2:freq(C1)	P3:---	P4:dt@lv(C1,C2)	P5:---	P6:---	P7:---	P8:---	P9:---	P10:---	P11:---	P12:---
value	43.2873 ns											
mean	43.23383 ns											
min	43.1154 ns											
max	43.3298 ns											
sdev	58.03 ps											
num	32											
status	✓											

C1	DC1M	C2	DC1M
1.00 V/div	1.00 V/div	1.00 V/div	1.00 V/div
-3.000 V ofst	-3.000 V ofst	-3.000 V ofst	-3.000 V ofst

Timebase	-27.2 ns	Trigger	C1 DC
	10.0 ns/div	Normal	2.30 V
	2.00 kS	Edge	Positive

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$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

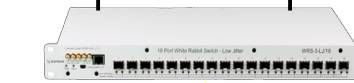
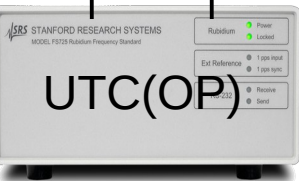
10MHZ

Band-pass Filter

RC

PPS

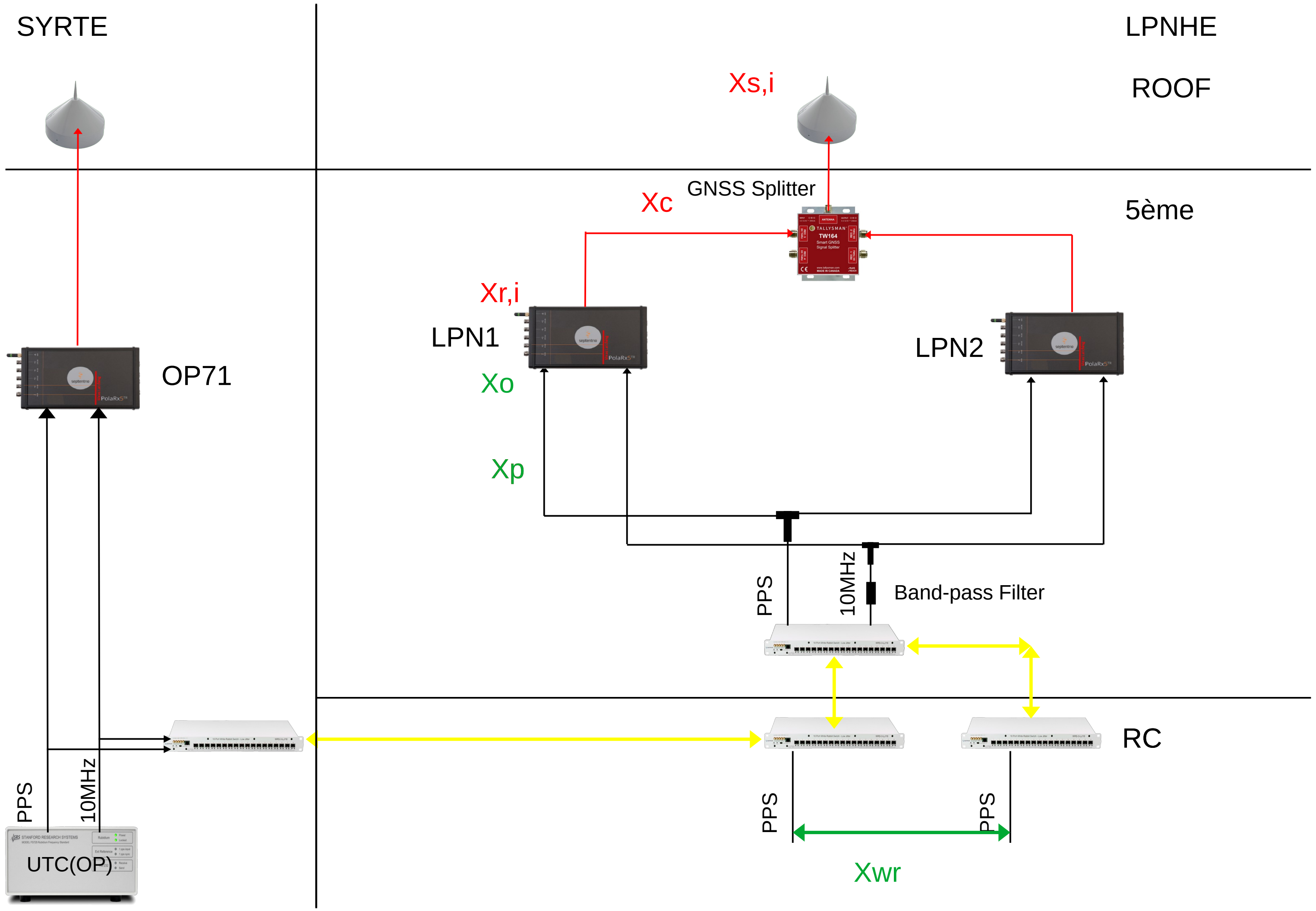
10MHZ



PPS

PPS

X_{wr}



SYRTE

LPNHE

ROOF

GNSS Splitter

5ème

LPN1

LPN2

OP71

PPS1

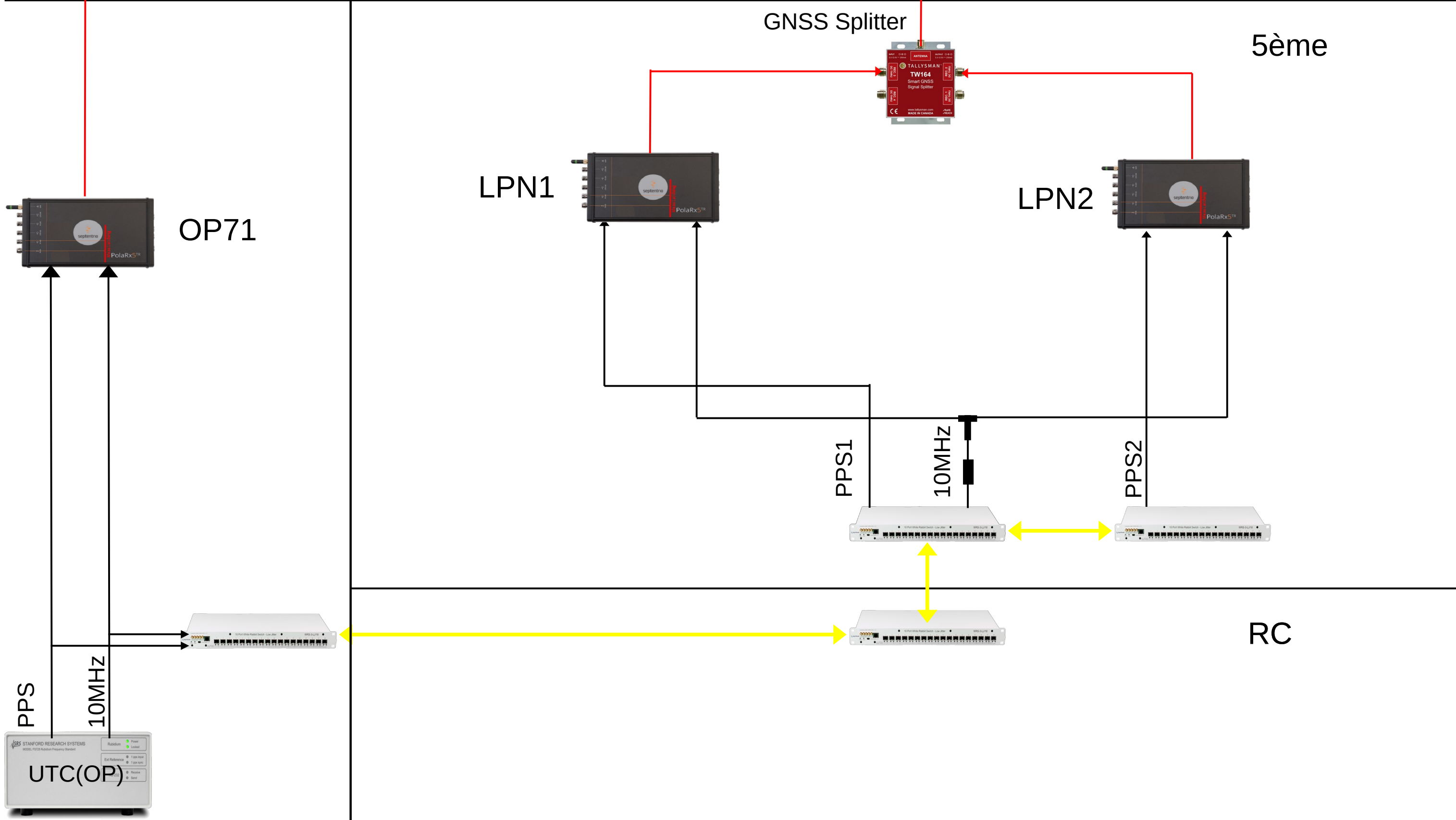
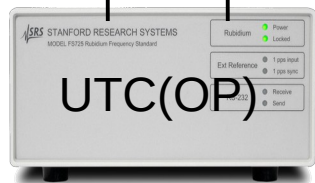
10MHZ

PPS2

RC

PPS

10MHZ





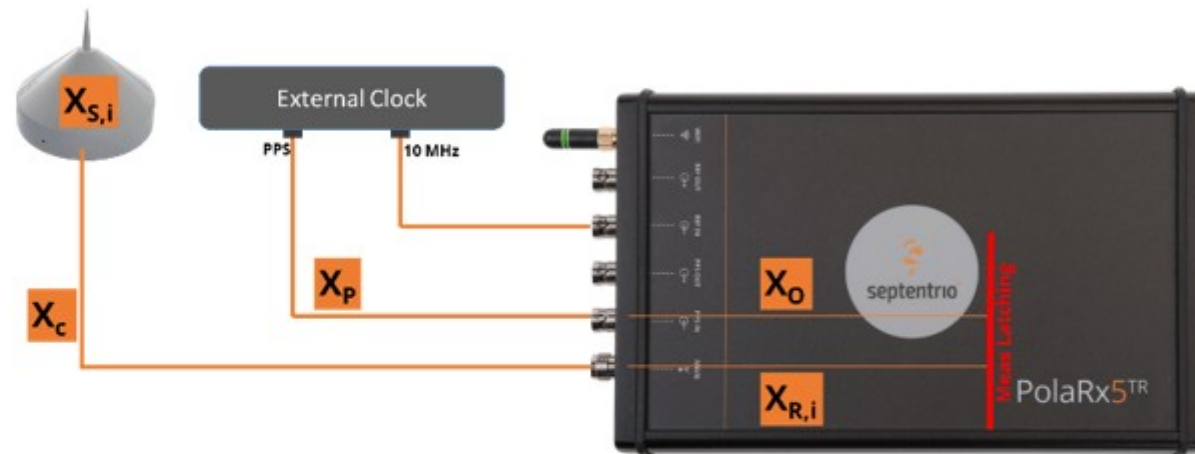
Receiver	Position	Status
PolaRx5TR-4101489 (LPN2)	Lat: N48°50'53.9588" 0.000m	Tracked Sats: 53
IP Address (Eth): 134.158.154.20	Lon: E2°21'19.4225" 0.000m	Time: 2024-12-11 12:13:01
Uptime: 0d 00:07:39	Hgt: 110.016m 0.000m	Temp: 47.00 °C — V: 12.05 volts

- Fixed
- Overall Quality
- Corrections
- Wifi
- Spectrum clean
- Status
- Int. Logging
- Ext. Logging
- ExtFreq+ExtTime
- OSNMA

- Overview
- GNSS
- Timing
- Station
- Communication
- Corrections
- Data Output
- Logging
- Admin

Timing > CGGTTS

- Antenna Phase Center Coordinates
- Parameters
- Delays



- $X_{S,i}$: delay in antenna for signal i
- $X_{R,i}$: delay in RF section of receiver for signal i
- X_c : delay in RF cable (including amplifier and splitter)
- X_p : delay in PPS cable
- X_o : delay between PPS IN connector and internal receiver time reference ($X_o = 0$ on PolaRx5TR when auto-calibration is enabled)

Internal Delays

	GPSL1	GPSL2	GLOL1	GLOL2	GALE1	GALE5a	BDSB1I	BDSB2I
INTDLY (X_S+X_R)	0.000 ns	0.000 ns	0.000 ns	0.000 ns	0.000 ns	0.000 ns	0.000 ns	0.000 ns

Cable Delay

CABDLY (X_C)

Reference Delay

REFDLY (X_p+X_o)

PPS IN Parameters

Enable compensation of PPSIN internal delay: off auto

To enable CGGTTS logging, go to the [Log Sessions page](#).

Default

Ok

SYRTE

LPNHE

ROOF

$X_{s,i}$

X_c

GNSS Splitter

$X_{r,i}$

LPN1

LPN2

OP71

X_o

X_p

PPS

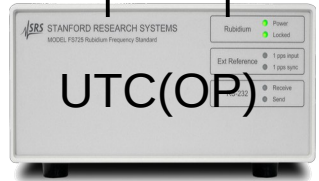
10MHZ

Band-pass Filter

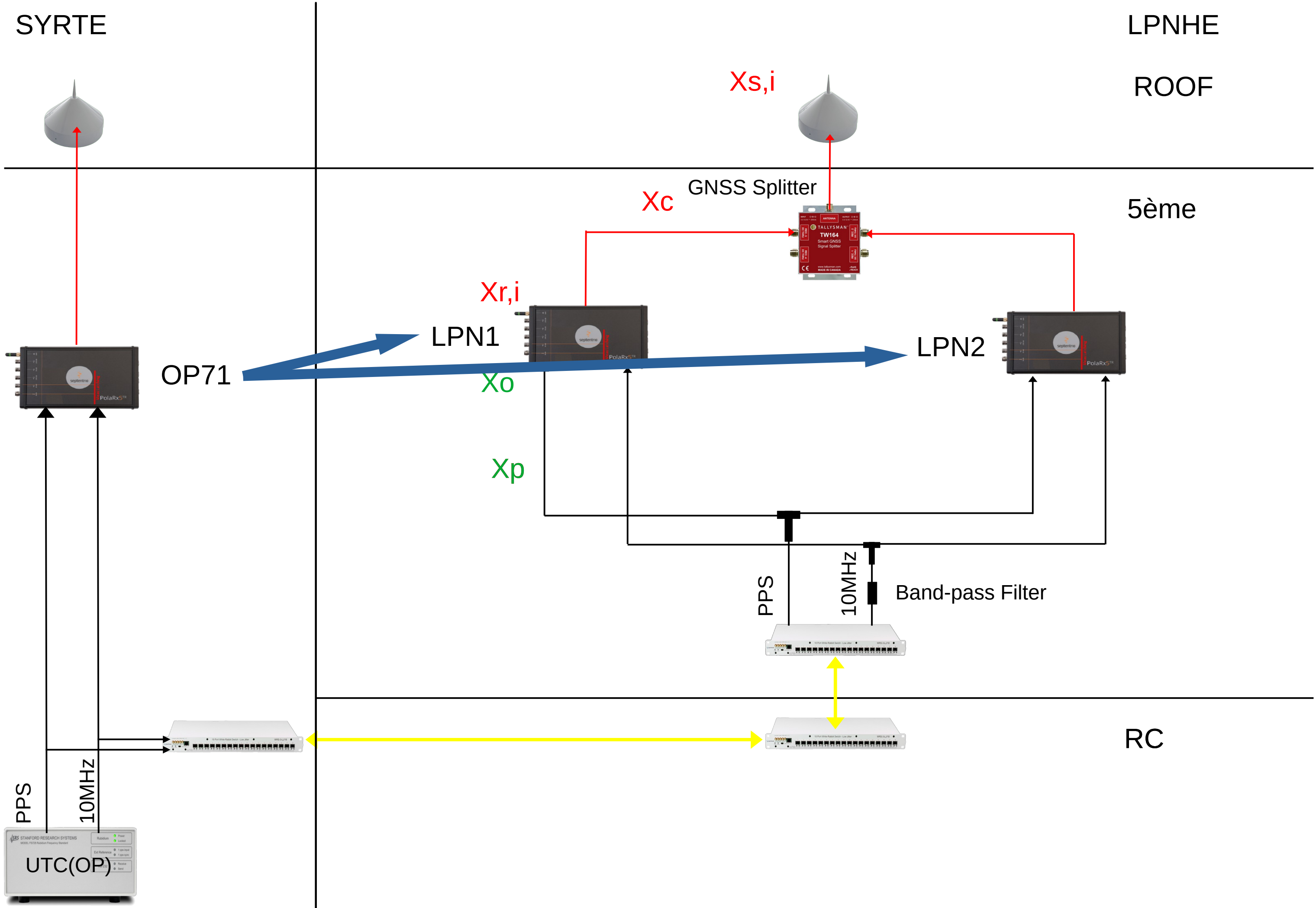
RC

PPS

10MHZ



UTC(OP)



SYRTE

LPNHE

ROOF

$X_{s,i}$

X_c GNSS Splitter

5ème

$X_{r,i}$

LPN1

LPN2

X_o

X_p

PPS

10MHZ

Band-pass Filter

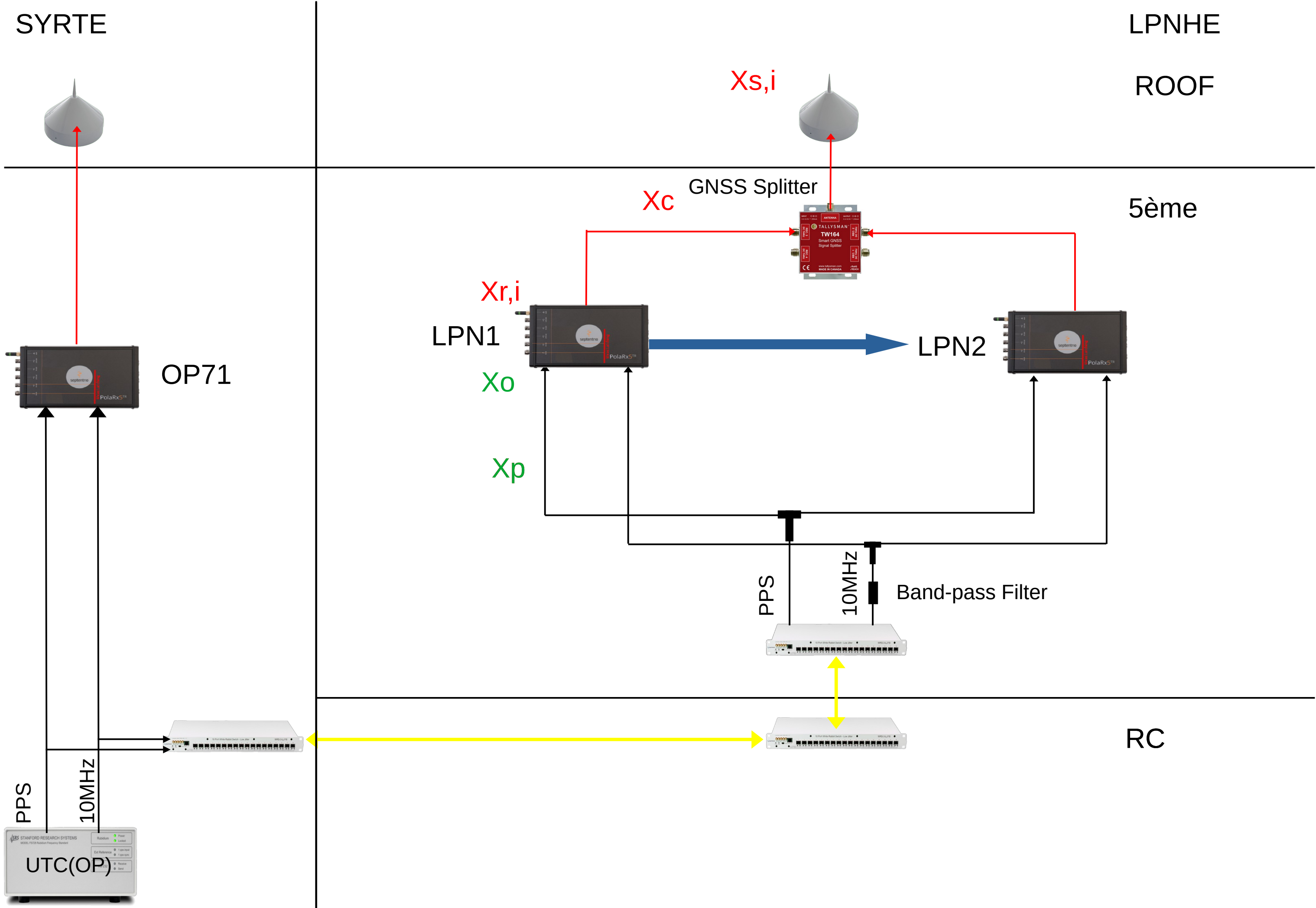
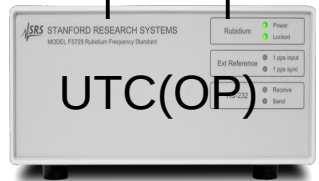
RC

OP71

PPS

10MHZ

UTC(OP)



SYRTE

LPNHE

ROOF



GNSS Splitter

5ème

LPN1

LPN2

OP71



PPS

10MHZ

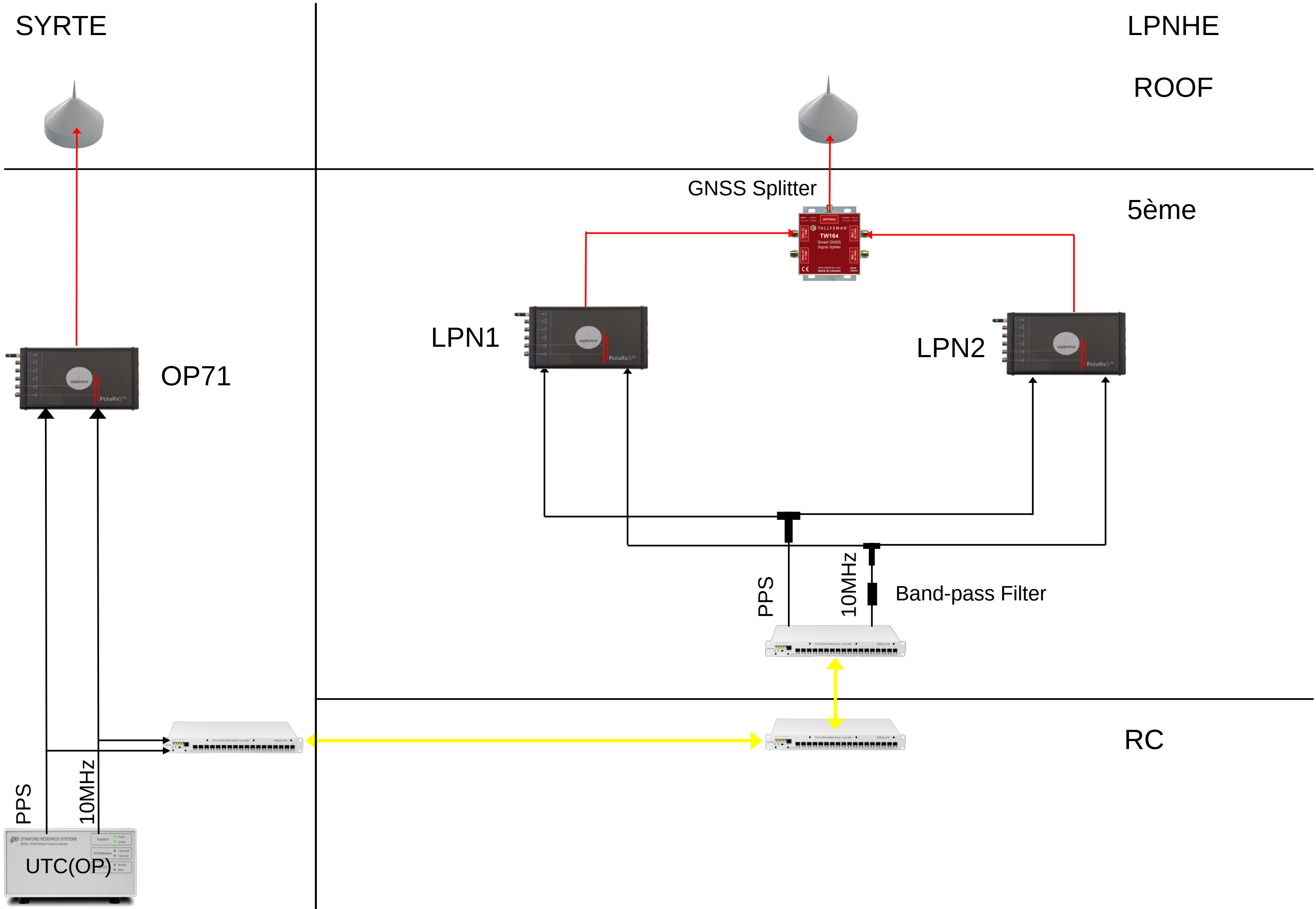
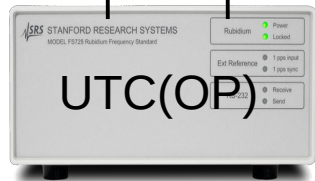
Band-pass Filter

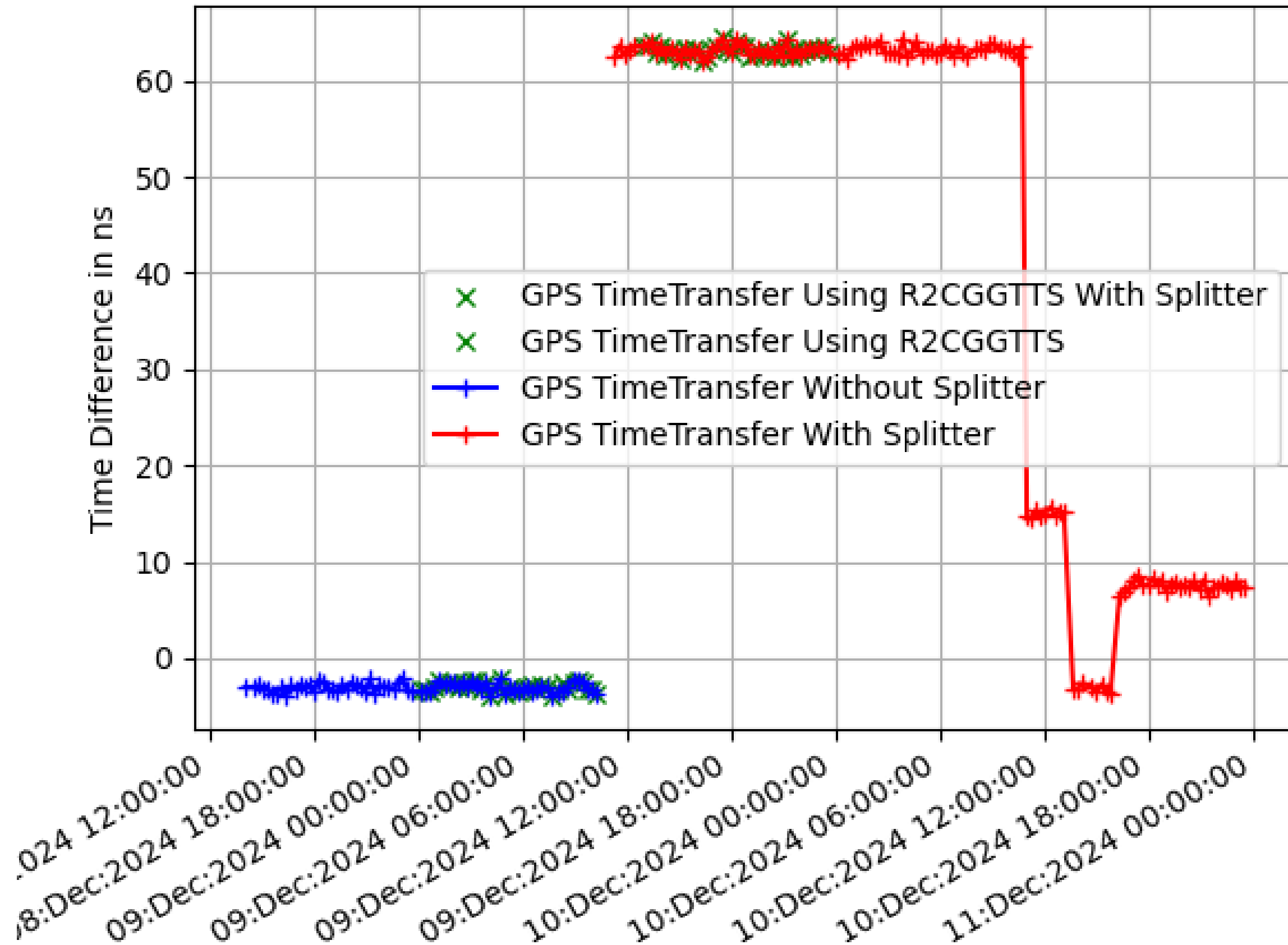


RC

PPS

10MHZ





A ce jour LPN2 n'est pas encore étalonné, mais on a tous les outils nécessaires.

Pour étalonner pour la semaine prochaine:

1- vérifier la calibration de LPN1

- mettre en place le deuxième switch pour avoir un PPS supplémentaire

2- traiter les données RINEX ou SBF avec R2CGGTTS pour générer des fichiers CGGTTS, un par porteur

3- appliquer les paramètres $X_{r,i} + X_{s,i}$ et comparer avec OP71