Mesures /sur préampli SP-13 SSB-Electronic
Réparation résultante

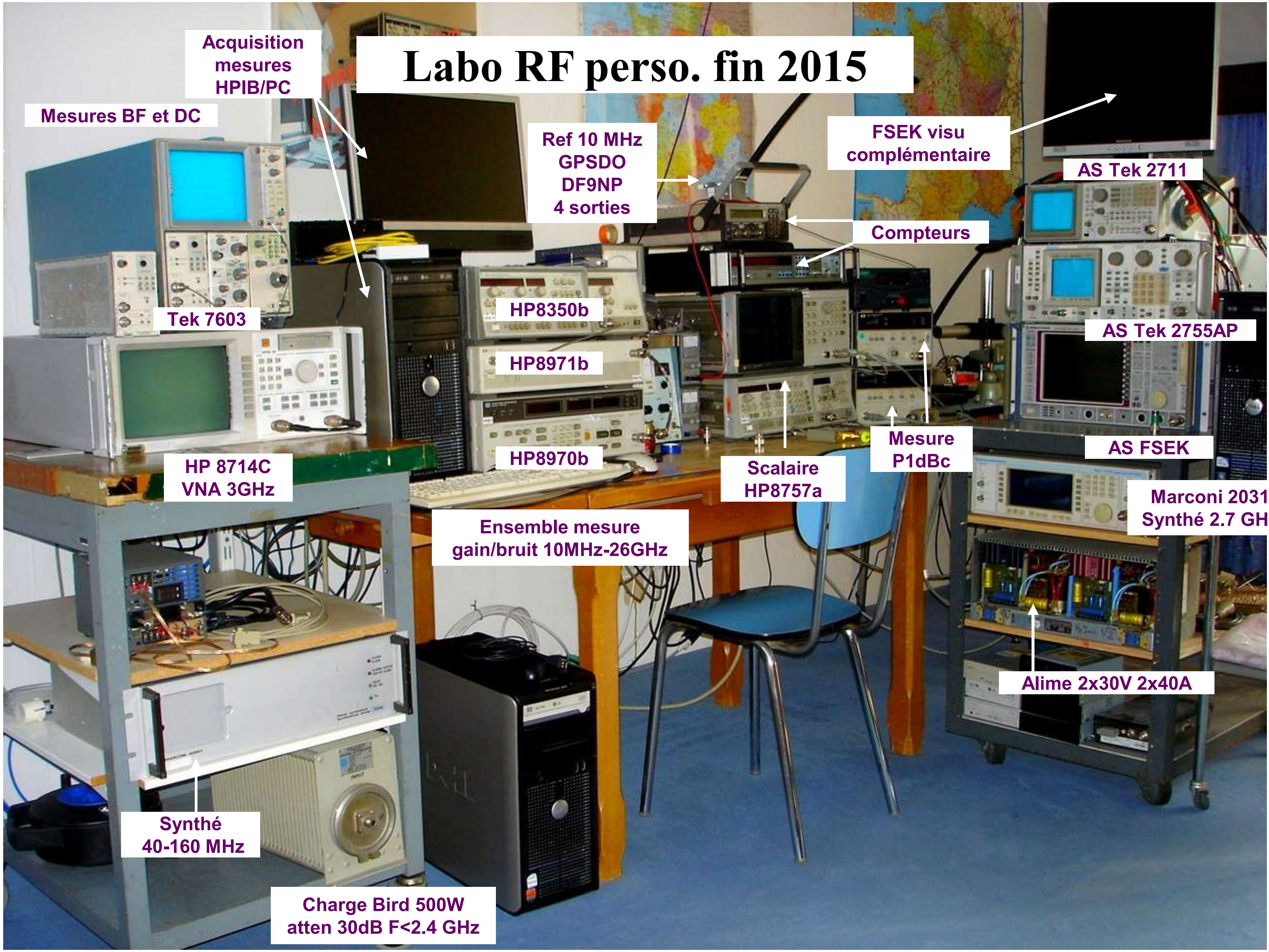
After purchase of this SSB Electronic SP-13 mast preamp ending february 2017 to Haro-Electronics, RF meases were immediately done on it, that's to say :

- -Preamp NF / gain meases
- -Preamp scalar meases : preamp and in thruline

2300–2400 MHz
SP 13

Préampli mat SP-13 acheté chez Haro Electronic

Labo RF perso. fin 2015



Acquisition mesures HPIB/PC

Mesures BF et DC

Ref 10 MHz GPSDO DF9NP 4 sorties

FSEK visu complémentaire

AS Tek 2711

Compteurs

Tek 7603

HP8350b

HP8971b

AS Tek 2755AP

HP8970b

HP 8714C VNA 3GHz

Scalaire HP8757a

Mesure P1dBc

AS FSEK

Marconi 2031 Synthé 2.7 GHz

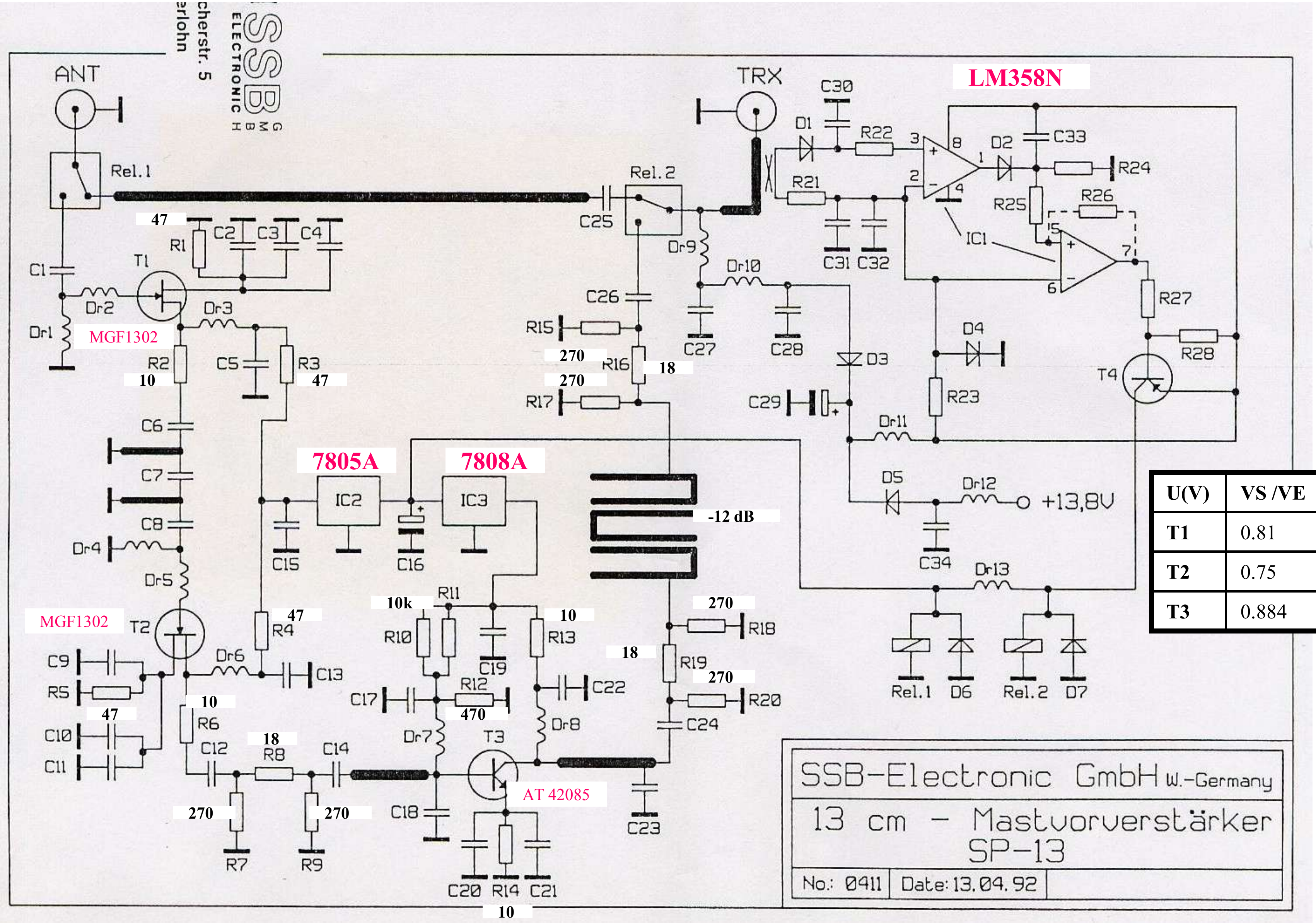
Ensemble mesure gain/bruit 10MHz-26GHz

Alime 2x30V 2x40A

Synthé 40-160 MHz

Charge Bird 500W atten 30dB F<2.4 GHz

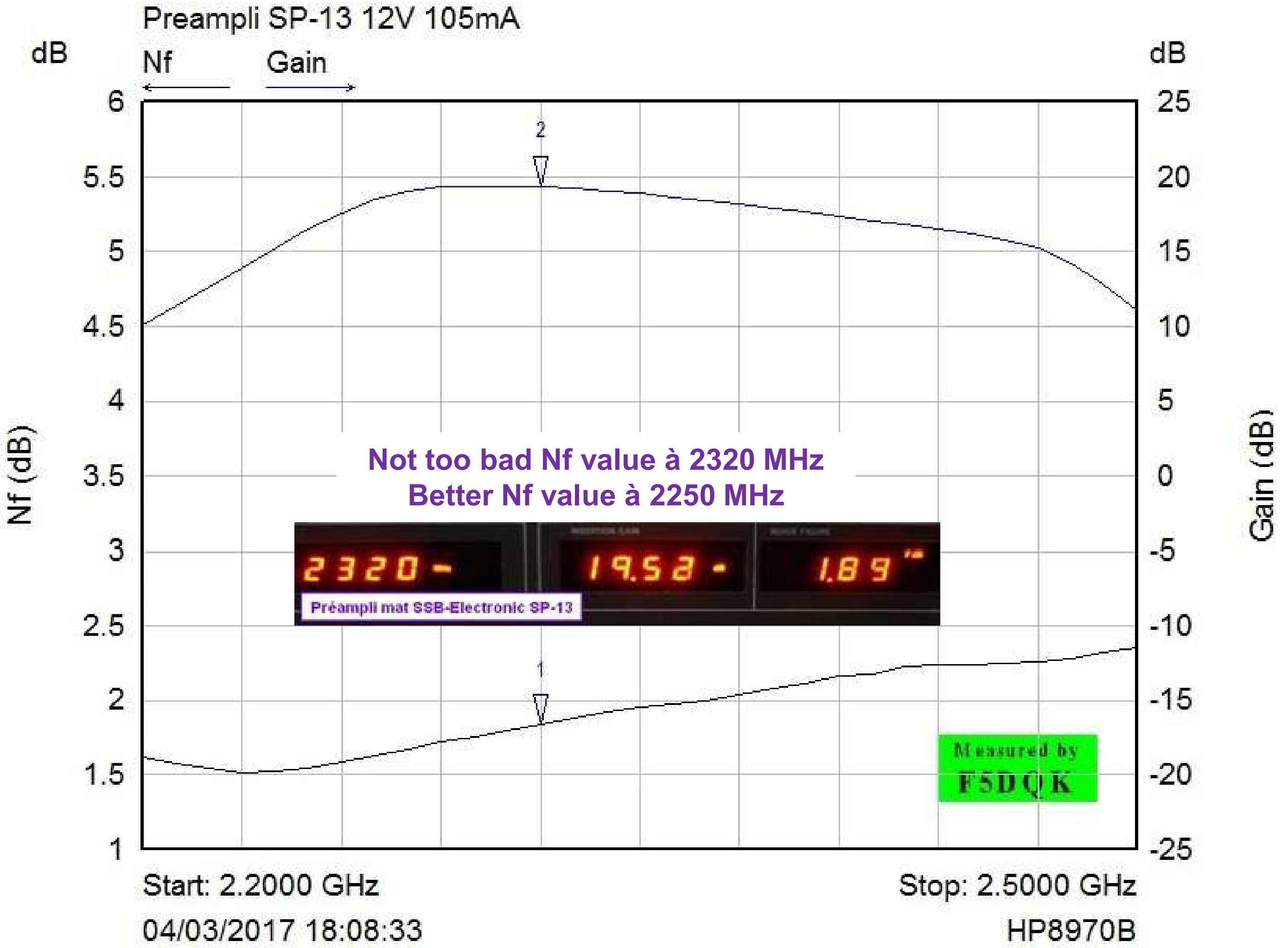
Schéma théorique


SSB ELECTRONIC GMBH
cherstr. 5
erlohn
ANT
TRX
Rel.1
Rel.2
C1
Dr1
Dr2
T1
MGF1302
R1
47
C2
C3
C4
Dr3
R2
10
C5
R3
47
C6
C7
C8
Dr4
Dr5
T2
MGF1302
C9
R5
47
C10
C11
R6
10
Dr6
C12
R8
18
C14
R7
270
R9
270
R4
47
C13
7805A
IC2
C15
C16
7808A
IC3
10k
R10
R11
C19
R13
10
C17
R12
470
Dr7
T3
AT 42085
C18
C20
R14
10
C21
Dr8
C22
C23
C25
Dr9
C26
R15
270
R16
18
270
R17
C27
Dr10
C28
C29
-12 dB
270
R18
18
R19
270
R20
C24
C30
D1
R22
R21
C31
C32
LM358N
D2
C33
R24
R25
R26
IC1
R27
R28
T4
D3
D4
R23
Dr11
D5
Dr12
+13,8V
C34
Dr13
Rel.1
D6
Rel.2
D7
SSB-Electronic GmbH W.-Germany
13 cm - Mastvorverstärker SP-13
No.: 0411
Date: 13.04.92

U(V)	VS /VE	VD
T1	0.81	4.33
T2	0.75	4.39
T3	0.884	7.89

1- Mesures à réception

Gain/Nf meases

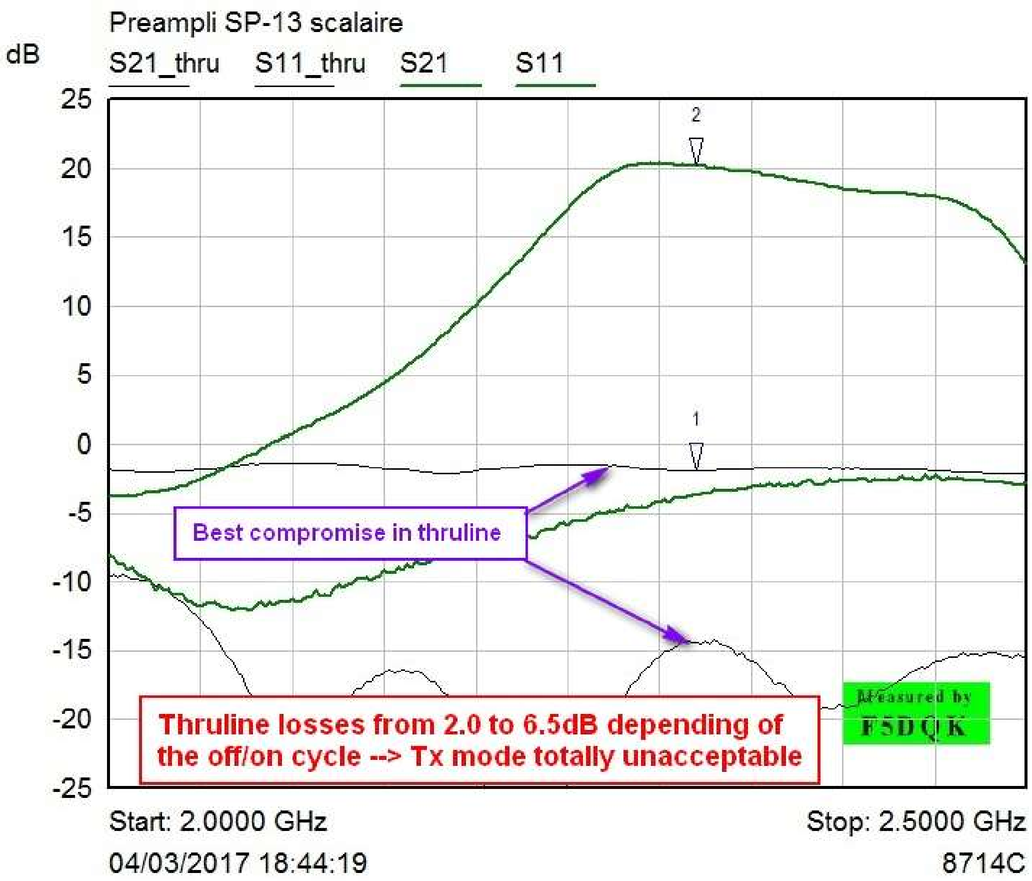


Not too bad Nf value à 2320 MHz
Better Nf value à 2250 MHz

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Nf	2.3200 GHz	1.83 dB	Nf meas largely better than the joined printed measurement (NF=2.0dB)
2 ▽	Gain	2.3200 GHz	19.42 dB	

Scalar meases with LNA on

Preamp alone : similar meas as with the NGA
Thruline meas : **absolutely catastrophic** : every on/off sequence do give a different loss value → problem with the relays



Best compromise in thruline

Thruline losses from 2.0 to 6.5dB depending of the off/on cycle --> Tx mode totally unacceptable

Mkr	Trace	X-Axis	Value	Notes
1 ∇	S21_thru	2.3200 GHz	-1.95 dB	Pertes en thru
2 ∇	S21	2.3200 GHz	20.18 dB	Gain total

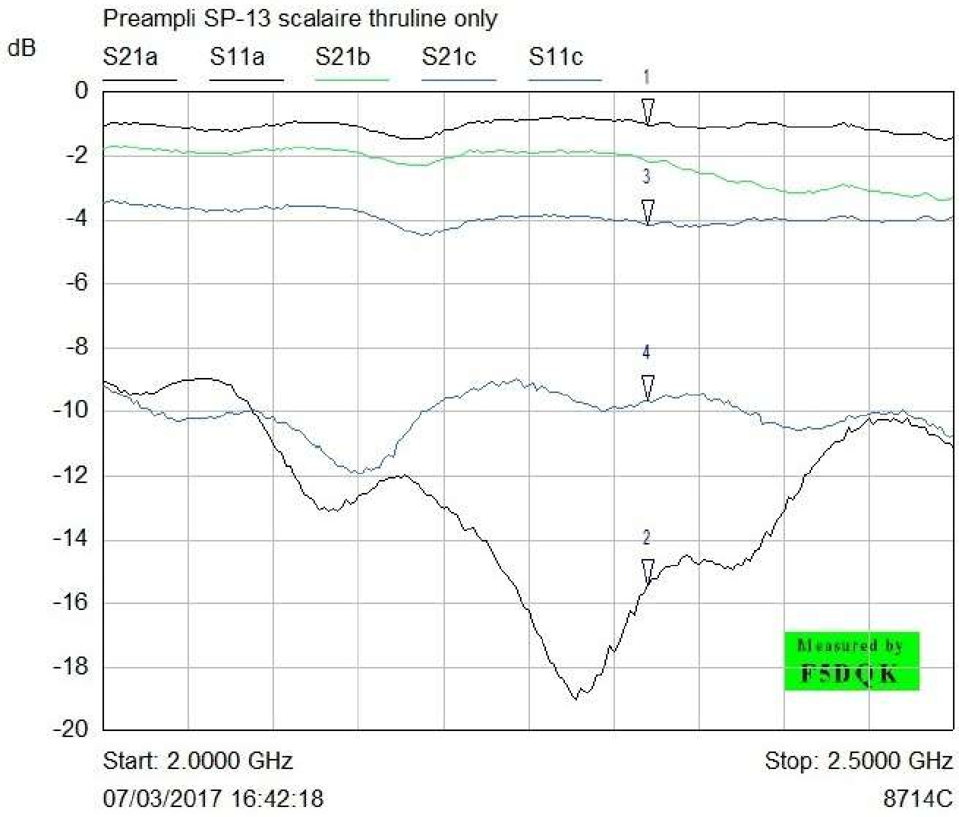
CONCLUSION : unacceptable because of thruline unstable losses between 2 and 6dB

So this SP-13 past-preamp preamp is absolutely unable to work in Tx mode !

Reason involved : too much power previously injected in this mast-preamp, contrasting with the factory recommandings saying :
-max10W with VOX
-Max 20W if externally sequenced

Scalar meases, only in thruline mode (LNA off)

Great thruline losses and also, totally no reproductible between every on/off switching ! ! !

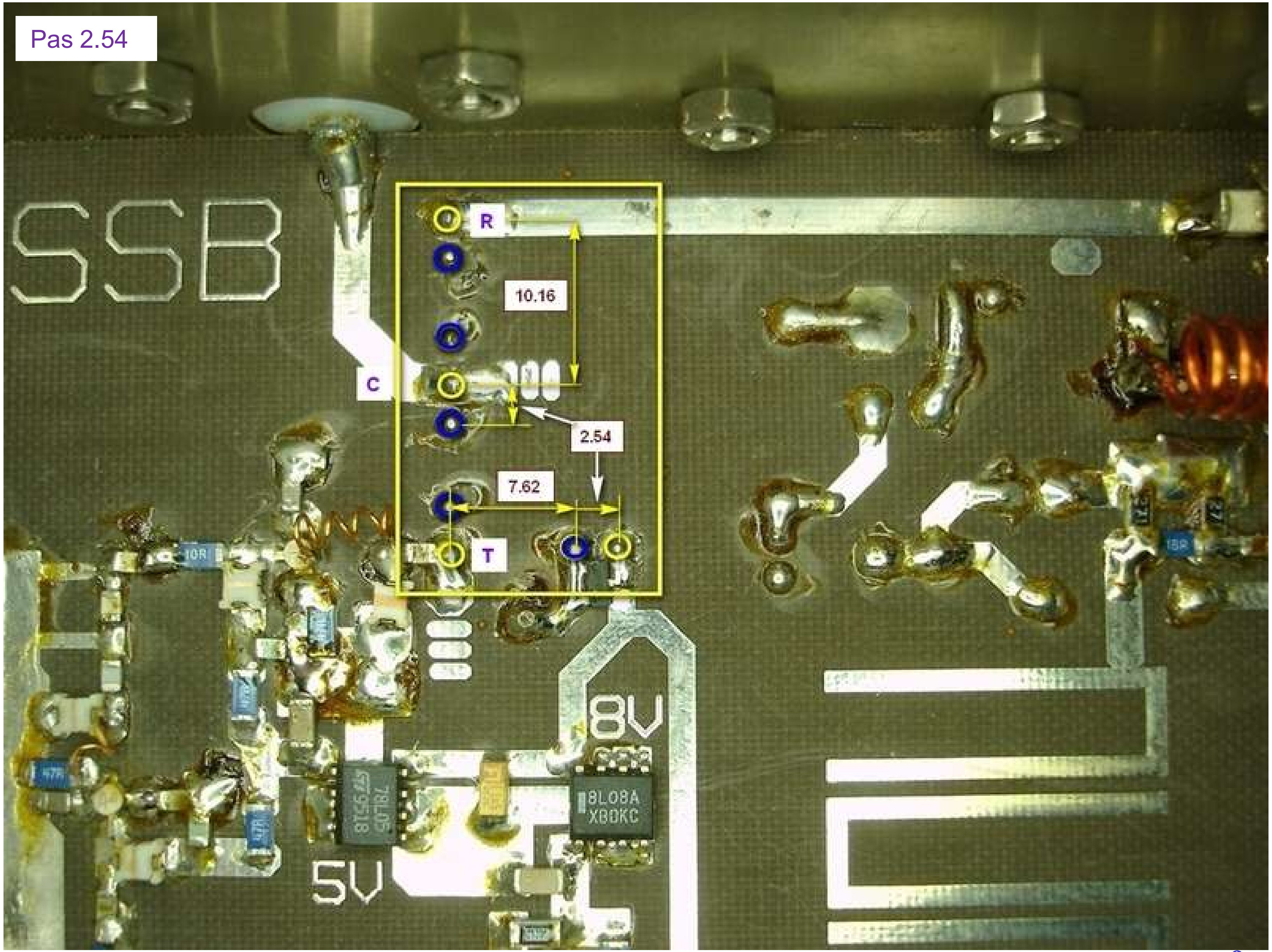


Mkr	Trace	X-Axis	Value	Notes
1 ▽	S21a	2.3200 GHz	-1.04 dB	Best meas
2 ▽	S11a	2.3200 GHz	-15.42 dB	
3 ▽	S21c	2.3200 GHz	-4.16 dB	Worst meas
4 ▽	S11c	2.3200 GHz	-9.66 dB	

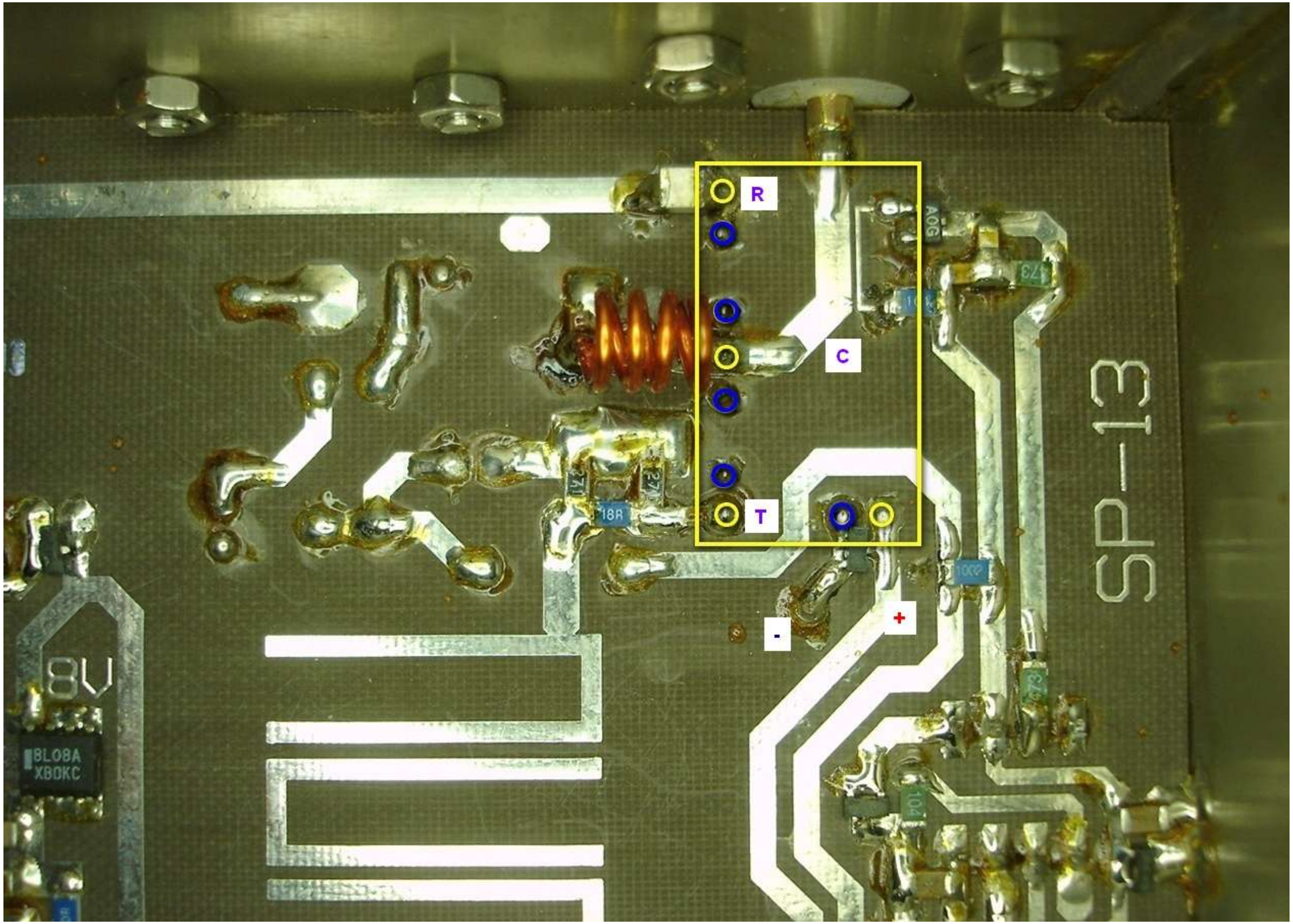
2- Empreinte originelle des relais Matsushita RG-1T, en vue de substitution

Etude des relais RF compatibles neufs existants sur le marché

SP-13 dessous, empreinte relais originel RG-1T en entrée


Pas 2.54
SSB
R
10.16
C
2.54
7.62
T
10R
47R
8V
5V
8L08A
X8DKC

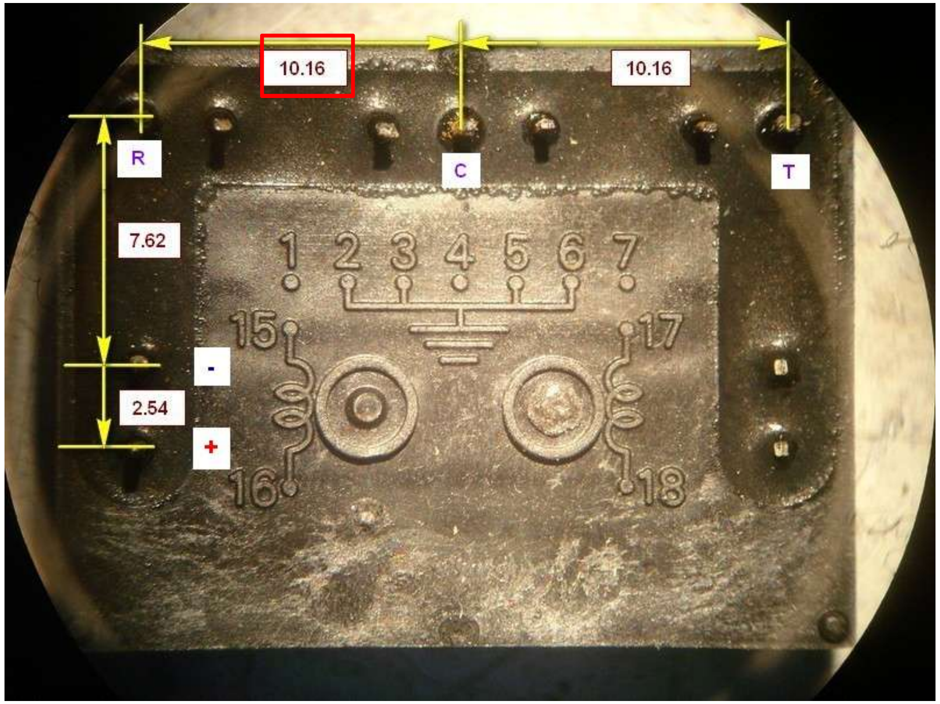
SP-13 dessous, empreinte relais originel RG-1T en sortie


R
C
T
-
+
SP-13
8V
BL08A
XBDKC
A0G
473
18R
100
104

SP-13 : relais Matsushita RG-1T 12V ARG331

Pas 2.54

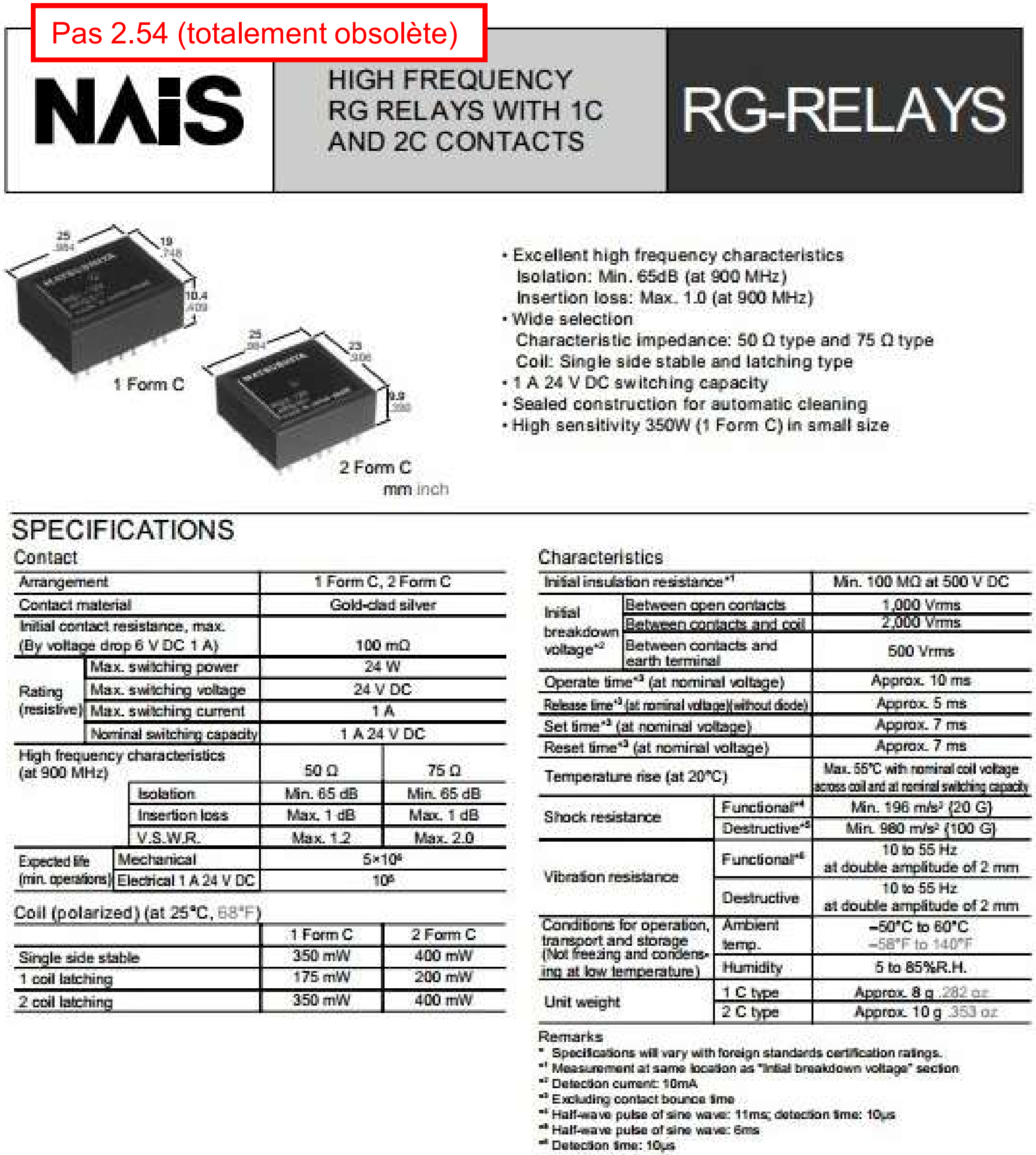
MATSUSHITA
RG1T-12V
ARG331
MADE IN JAPAN 60122V


10.16
10.16
R
C
T
7.62
2.54
-
+
1 2 3 4 5 6 7
15
16
17
18

Perte 0.3dB à 1.0 GHz
Pmax_out = 10W
Max switching 24V DC et 1A

SP-13 : relais NAIS Matsushita RG-1T 12V ARG331

Pas 2.54 (totalement obsolète)



NAiS

HIGH FREQUENCY
RG RELAYS WITH 1C
AND 2C CONTACTS

RG-RELAYS

25
.984
19
.748
10.4
.409
1 Form C
25
.984
23
.906
9.9
.390
2 Form C
mm inch

- Excellent high frequency characteristics
  Isolation: Min. 65dB (at 900 MHz)
  Insertion loss: Max. 1.0 (at 900 MHz)
- Wide selection
  Characteristic impedance: 50 Ω type and 75 Ω type
  Coil: Single side stable and latching type
- 1 A 24 V DC switching capacity
- Sealed construction for automatic cleaning
- High sensitivity 350W (1 Form C) in small size

SPECIFICATIONS

Contact

Arrangement		1 Form C, 2 Form C	
Contact material		Gold-clad silver	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Rating (resistive)	Max. switching power	24 W	
	Max. switching voltage	24 V DC	
	Max. switching current	1 A	
	Nominal switching capacity	1 A 24 V DC	
High frequency characteristics (at 900 MHz)		50 Ω	75 Ω
	Isolation	Min. 65 dB	Min. 65 dB
	Insertion loss	Max. 1 dB	Max. 1 dB
	V.S.W.R.	Max. 1.2	Max. 2.0
Expected life (min. operations)	Mechanical	5×10⁶	
	Electrical 1 A 24 V DC	10⁵	

Coil (polarized) (at 25°C, 68°F)

	1 Form C	2 Form C
Single side stable	350 mW	400 mW
1 coil latching	175 mW	200 mW
2 coil latching	350 mW	400 mW

Characteristics

Initial insulation resistance*1		Min. 100 MΩ at 500 V DC
Initial breakdown voltage*2	Between open contacts	1,000 Vrms
	Between contacts and coil	2,000 Vrms
	Between contacts and earth terminal	500 Vrms
Operate time*3 (at nominal voltage)		Approx. 10 ms
Release time*3 (at nominal voltage)(without diode)		Approx. 5 ms
Set time*3 (at nominal voltage)		Approx. 7 ms
Reset time*3 (at nominal voltage)		Approx. 7 ms
Temperature rise (at 20°C)		Max. 55°C with nominal coil voltage across coil and at nominal switching capacity
Shock resistance	Functional*4	Min. 196 m/s² (20 G)
	Destructive*5	Min. 980 m/s² (100 G)
Vibration resistance	Functional*6	10 to 55 Hz at double amplitude of 2 mm
	Destructive	10 to 55 Hz at double amplitude of 2 mm
Conditions for operation, transport and storage (Not freezing and condensing at low temperature)	Ambient temp.	−50°C to 60°C −58°F to 140°F
	Humidity	5 to 85%R.H.
Unit weight	1 C type	Approx. 8 g .282 oz
	2 C type	Approx. 10 g .353 oz

Remarks
* Specifications will vary with foreign standards certification ratings.
*1 Measurement at same location as "Initial breakdown voltage" section
*2 Detection current: 10mA
*3 Excluding contact bounce time
*4 Half-wave pulse of sine wave: 11ms; detection time: 10μs
*5 Half-wave pulse of sine wave: 6ms
*6 Detection time: 10μs

Perte 0.3dB à 1.0 GHz

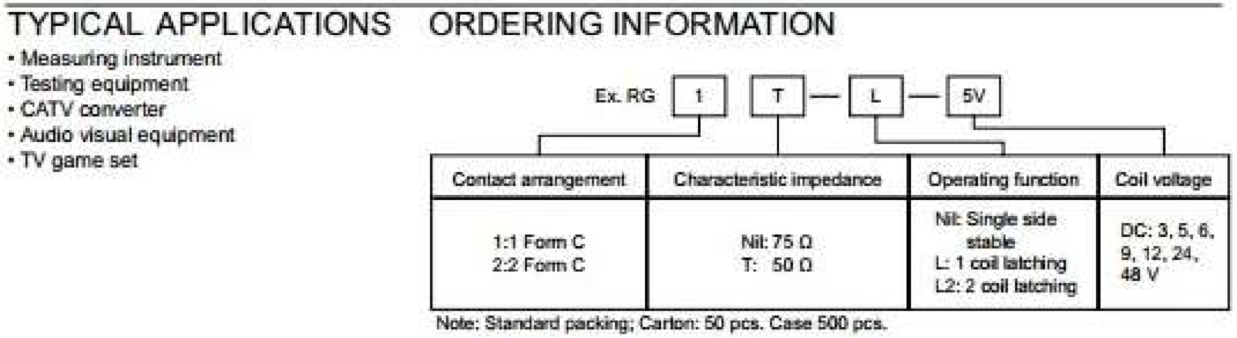
non qualifié pour 2.3GHz !

Pmax_out = 10W

Max switching 24V DC et 1A

SP-13 : relais NAIS Matsushita RG-1T 12V ARG331

Pas 2.54 (obsolète)



TYPICAL APPLICATIONS

- Measuring instrument
- Testing equipment
- CATV converter
- Audio visual equipment
- TV game set

ORDERING INFORMATION

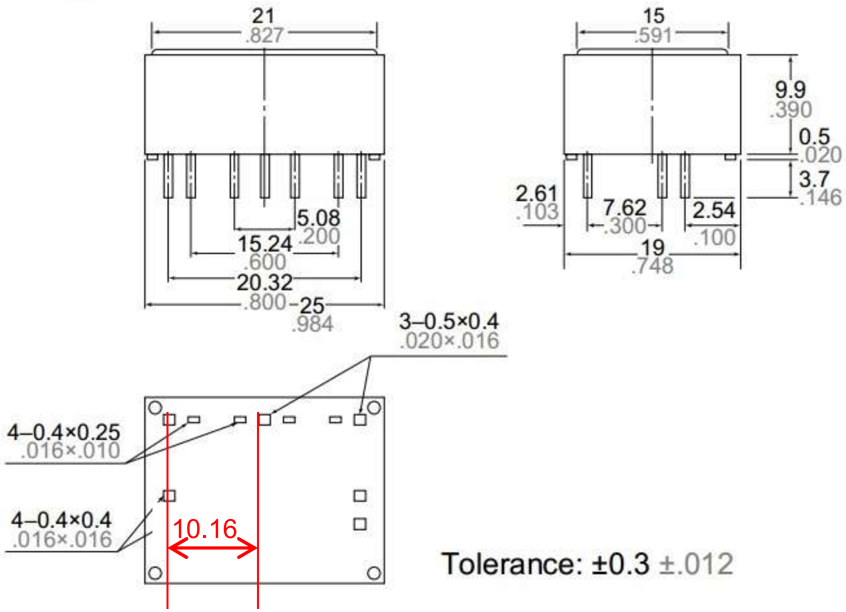
Ex. RG 1 T — L — 5V

Contact arrangement	Characteristic impedance	Operating function	Coil voltage
1:1 Form C 2:2 Form C	Nil: 75 Ω T: 50 Ω	Nil: Single side stable L: 1 coil latching L2: 2 coil latching	DC: 3, 5, 6, 9, 12, 24, 48 V

Note: Standard packing; Carton: 50 pcs. Case 500 pcs.

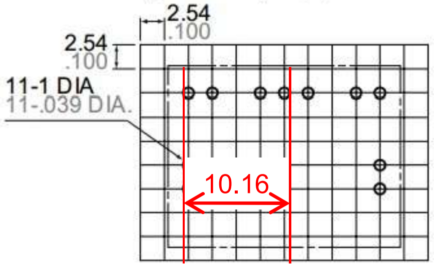
Perte 0.3dB à 1.0 GHz (insuffisant)
Pmax_out = 10W
Max switching 24V DC et 1A

1 Form C type


21
.827
5.08
.200
15.24
.600
20.32
.800
25
.984
3–0.5×0.4
.020×.016
4–0.4×0.25
.016×.010
4–0.4×0.4
.016×.016
10.16
15
.591
9.9
.390
0.5
.020
3.7
.146
2.61
.103
7.62
.300
2.54
.100
19
.748

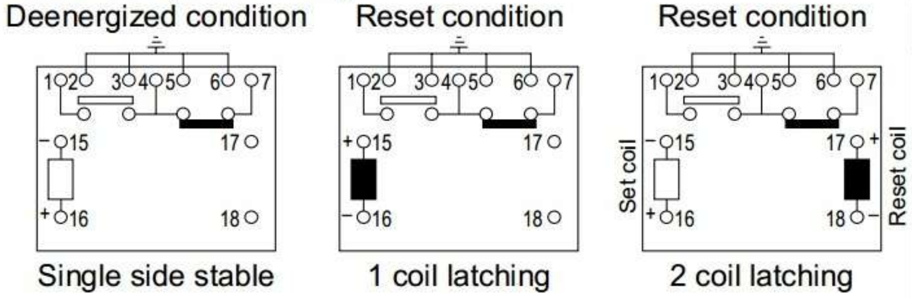
Tolerance: ±0.3 ±.012

PC board pattern (Copper-side view)


2.54
.100
2.54
.100
11-1 DIA
11-.039 DIA.
10.16

Tolerance: ±0.1 ±.004

Schematic (Bottom view)

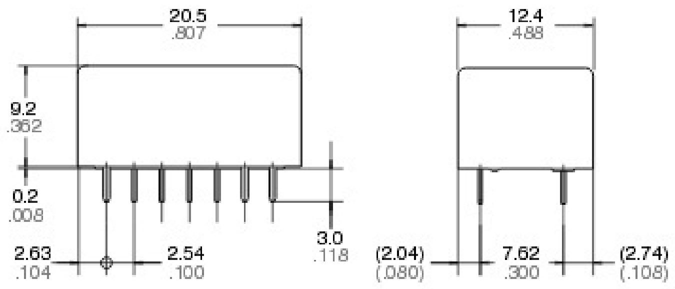

Deenergized condition
Reset condition
Reset condition
1 2 3 4 5 6 7
15 17
16 18
Set coil
Reset coil
Single side stable
1 coil latching
2 coil latching

Relais NAIS Matsushita ARX1012

Relais déjà utilisés sur un 1er SP-13 en 2010, actuellement toujours en activité (introuvables actuellement) !

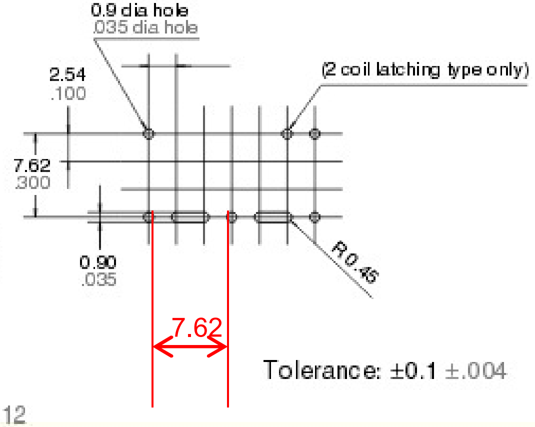
CAD Data

Pas 2.54



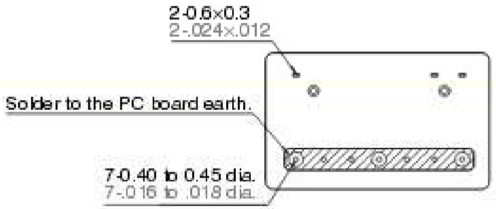
20.5
.807
12.4
.488
9.2
.362
0.2
.008
3.0
.118
2.63
.104
2.54
.100
(2.04)
(.080)
7.62
.300
(2.74)
(.108)

PC board pattern (Bottom view)



0.9 dia hole
.035 dia hole
(2 coil latching type only)
2.54
.100
7.62
.300
0.90
.035
R0.45
7.62

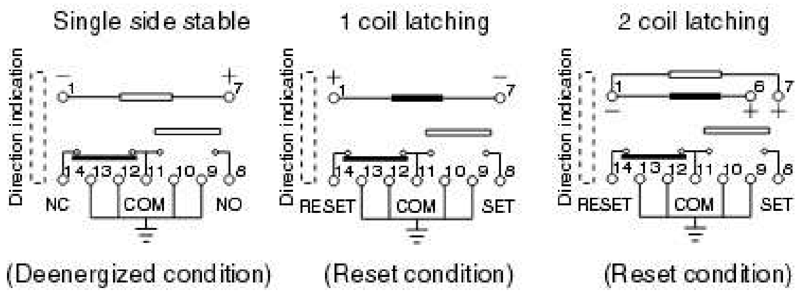
Tolerance: ±0.1 ±.004



2-0.6×0.3
2-.024×.012
Solder to the PC board earth.
7-0.40 to 0.45 dia.
7-.016 to .018 dia.

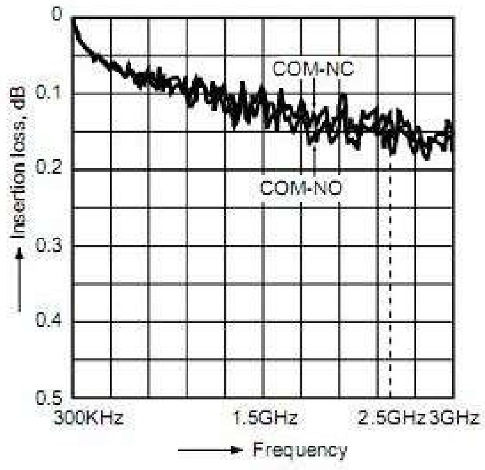
General tolerance: ±0.3 ±.012

Schematic (Bottom view)



Single side stable
1 coil latching
2 coil latching
Direction indication
NC
COM
NO
RESET
SET
14 13 12 11 10 9 8
1
7
6
(Deenergized condition)
(Reset condition)
(Reset condition)

- Insertion loss



Perte 0.15dB à 2.5 GHz
Pmax_out = 10W
Max switching 24V DC et 1A

Relais NAIS Matsushita ARS1412 (1512=latch)

Pas 2.54

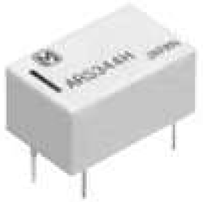
DIMENSIONS (mm inch)

The CAD data of the products with a **CAD**

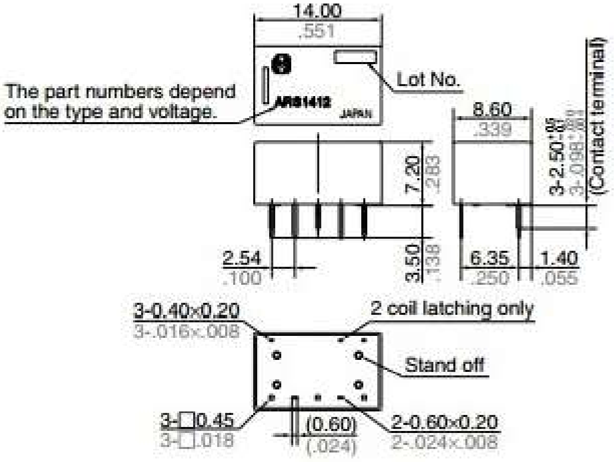
<Standard PC board terminal>

1. 50Ω type

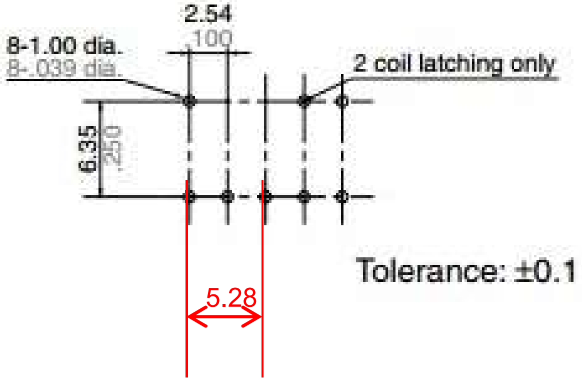
CAD Data



External dimensions


14.00
.551
Lot No.
The part numbers depend on the type and voltage.
ARS1412
JAPAN
8.60
.339
7.20
.283
3-2.50
3-.098
(Contact terminal)
2.54
.100
3.50
.138
6.35
.250
1.40
.055
3-0.40×0.20
3-.016×.008
2 coil latching only
Stand off
3-□0.45
3-□.018
(0.60)
(.024)
2-0.60×0.20
2-.024×.008

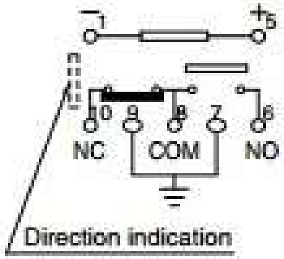
PC board pattern (Bottom view)


2.54
.100
8-1.00 dia.
8-.039 dia.
2 coil latching only
6.35
.250
Tolerance: ±0.1
5.28

Schematic (Bottom view)

1. Standard contact type

Single side stable type
(Deenergized condition)


1
+
5
10
8
9
7
6
NC
COM
NO
Direction indication

Perte 0.15dB à 2.5 Ghz
Pmax_out = 10W
Max switching 30V DC et 0.5A

ARS1412 Conrad 9.79€
R-S 11.22€

Relais OMRON G6Z-1PEA 12V

Pas 2.54

Surface-mounting High-frequency Relay — G6Z

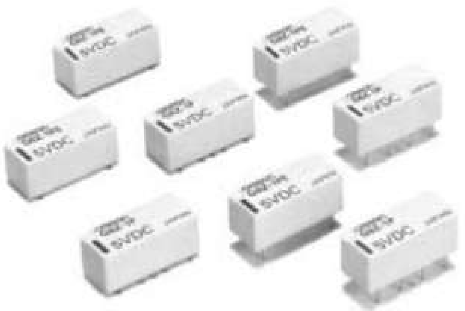
Aucune lettre U = latching

Réf : G6Z-1PEA 12V
47.25€ le pack de 25 pièces

Perte 0.4dB à 2.6 GHz
Pmax_out = 10W
Max switching 30V DC et 0.5A
R-S : que 3V et 24V

aussi : G6Z-1FEA 12V sur eBay
G6Z-1FA 5V 9.40€ les 2

Surface-mounting, 2.6-GHz-Band, Miniature, SPDT, High-frequency Relay



- Superior high-frequency characteristics, such as an isolation of 30 dB min., insertion loss of 0.5 dB max., and V.SWR of 1.5 max. at 2.6 GHz.
- Surface-mounting terminals and superior high frequency characteristics combined using semi triplate strip transmission lines.
- Miniature dimensions of 20 x 8.6 x 8.9 mm (L x W x H).
- Choose from a lineup that includes single-winding latching models (200 mW), double-winding latching models (360 mW), and models with a reverse contact arrangement.
- Series includes models with an E-shape terminal structure (same as existing models), and models with a Y-shape terminal structure, allowing greater freedom with PCB design.
- Models with 75-Ω impedance and models with 50-Ω impedance are available.

Ordering Information

Model Number Legend

G6Z-□-□□□-□□
1 2 3 4 5 6

1. Relay Function
None: Single-side stable
U: Single-winding latching
K: Double-winding latching

2. Contact Form
1: SPDT

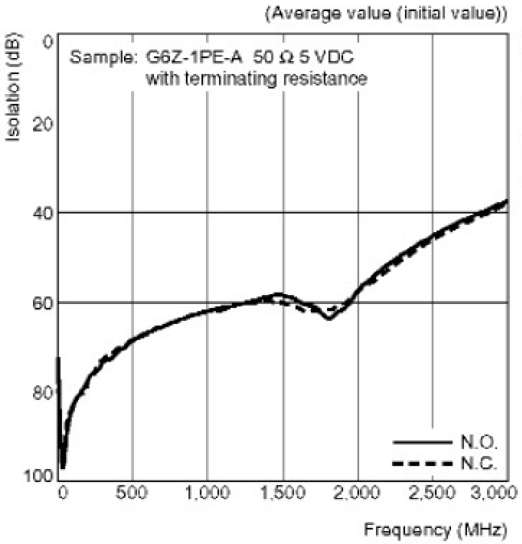
3. Terminal Shape
F: Surface-mounting terminals
P: PCB terminals

4. Terminal Structure
None: Y-shape terminal structure
E: E-shape terminal structure

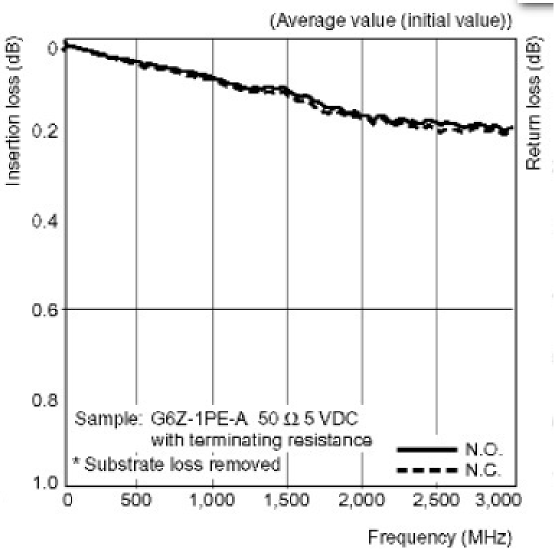
5. Characteristic Impedance
None: 75 Ω
A: 50 Ω

6. Contact Arrangement
None: Standard contact arrangement
R: Reverse contact arrangement

High-frequency Characteristics at 50 Ω (Isolation)

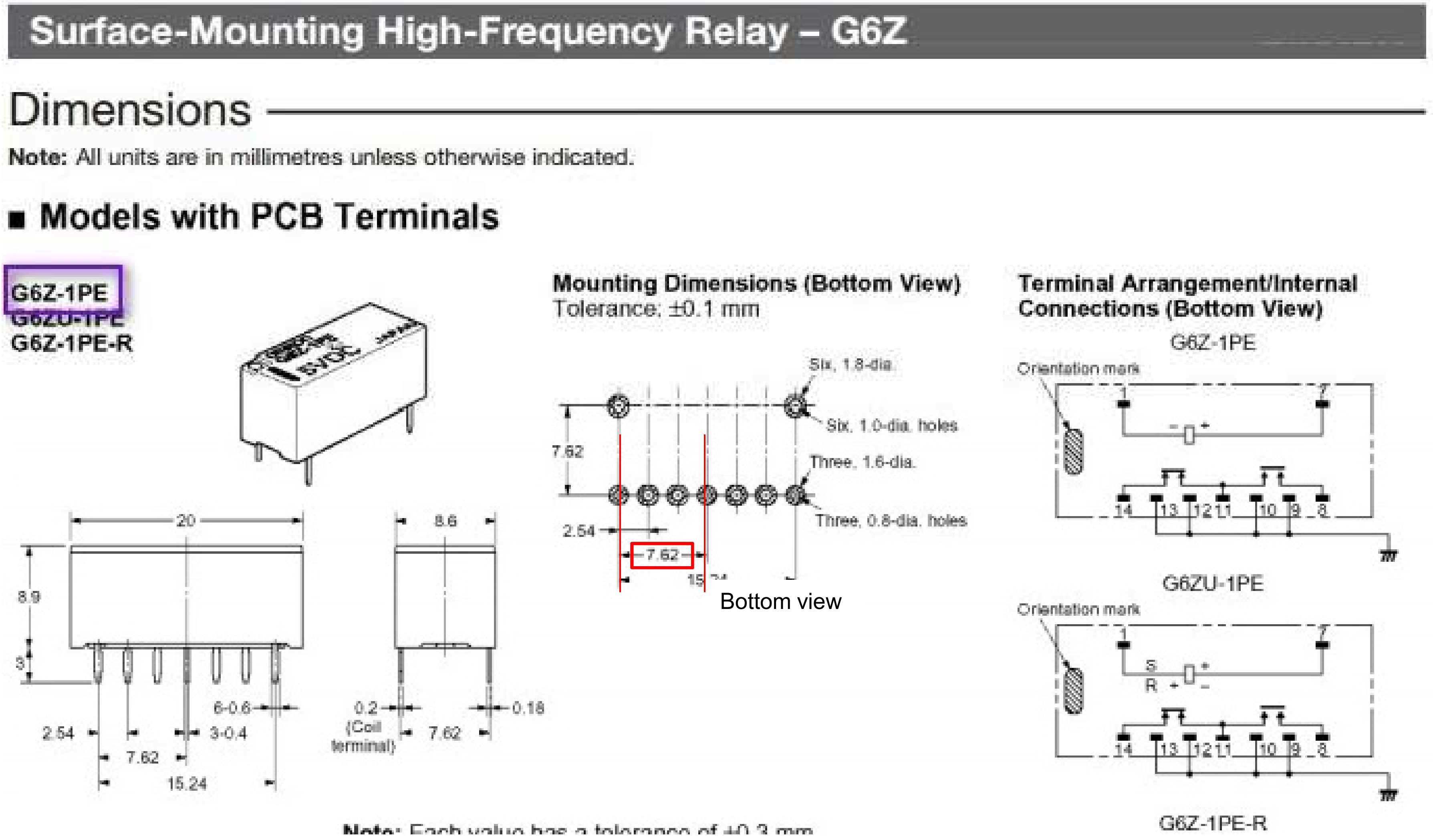


High-frequency Characteristics at 50 Ω (Insertion Loss)



Relais OMRON G6Z-1PEA 12V

Pas 2.54



Surface-Mounting High-Frequency Relay – G6Z

Dimensions

Note: All units are in millimetres unless otherwise indicated.

■ Models with PCB Terminals

G6Z-1PE
G6ZU-1PE
G6Z-1PE-R

Mounting Dimensions (Bottom View)
Tolerance: ±0.1 mm

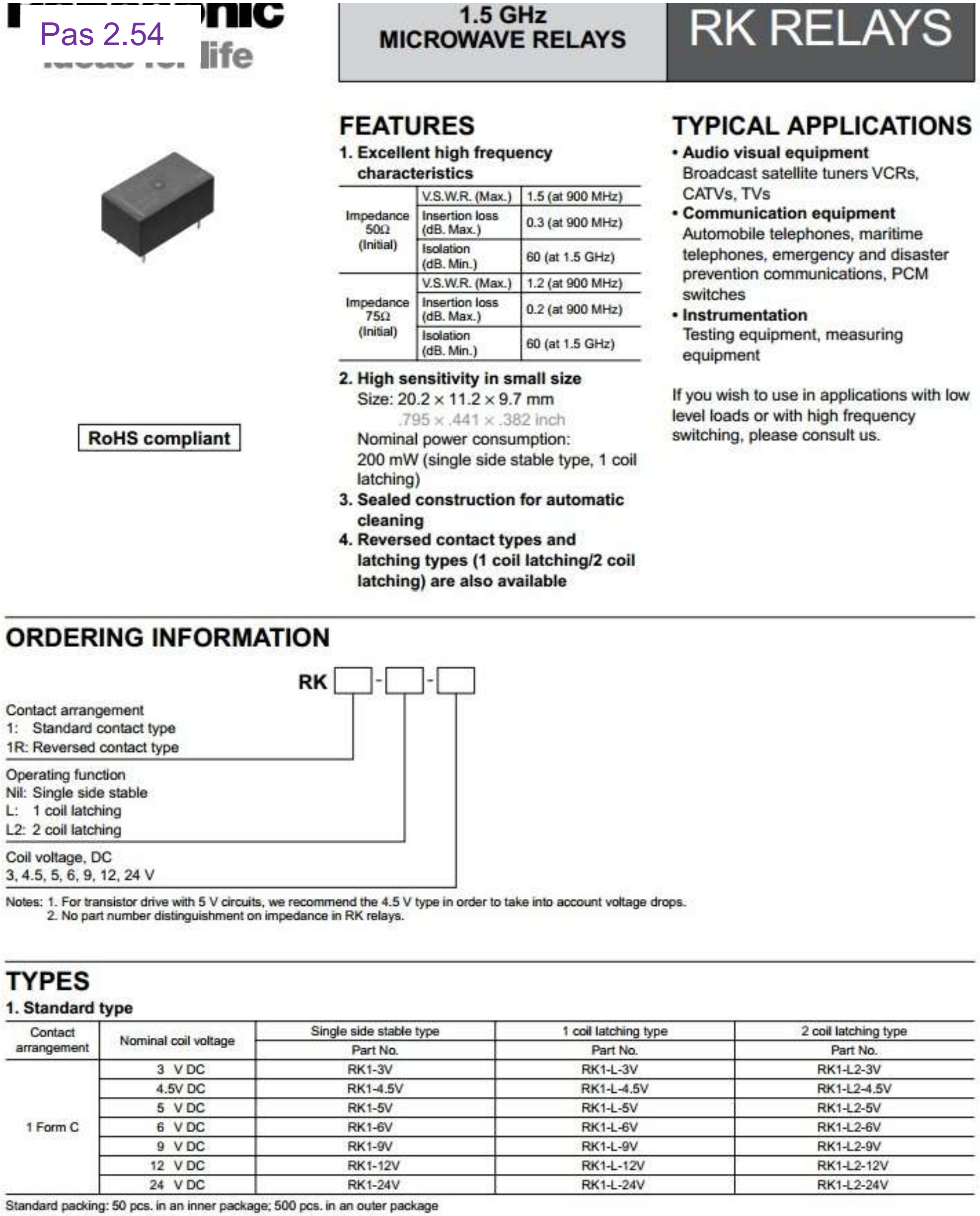
Bottom view

Terminal Arrangement/Internal Connections (Bottom View)

Note: Each value has a tolerance of ±0.3 mm.

5VDC
20
8.9
3
6-0.6
3-0.4
2.54
7.62
15.24
8.6
0.2
(Coil terminal)
7.62
0.18
Six, 1.8-dia.
Six, 1.0-dia. holes
7.62
Three, 1.6-dia.
Three, 0.8-dia. holes
2.54
7.62
15.24
G6Z-1PE
Orientation mark
1
7
−
+
14
13
12
11
10
9
8
G6ZU-1PE
Orientation mark
1
7
S
R
+
+
−
14
13
12
11
10
9
8
G6Z-1PE-R

Relais NAIS Matsushita RK1-12V ARK111 (F6AJW)



Pas 2.54

1.5 GHz MICROWAVE RELAYS

RK RELAYS

RoHS compliant

FEATURES

1. Excellent high frequency characteristics

Impedance 50Ω (Initial)	V.S.W.R. (Max.)	1.5 (at 900 MHz)
	Insertion loss (dB. Max.)	0.3 (at 900 MHz)
	Isolation (dB. Min.)	60 (at 1.5 GHz)
Impedance 75Ω (Initial)	V.S.W.R. (Max.)	1.2 (at 900 MHz)
	Insertion loss (dB. Max.)	0.2 (at 900 MHz)
	Isolation (dB. Min.)	60 (at 1.5 GHz)

2. High sensitivity in small size

Size: 20.2 × 11.2 × 9.7 mm
.795 × .441 × .382 inch

Nominal power consumption:
200 mW (single side stable type, 1 coil latching)

3. Sealed construction for automatic cleaning

4. Reversed contact types and latching types (1 coil latching/2 coil latching) are also available

TYPICAL APPLICATIONS

- **Audio visual equipment**
  Broadcast satellite tuners VCRs, CATVs, TVs
- **Communication equipment**
  Automobile telephones, maritime telephones, emergency and disaster prevention communications, PCM switches
- **Instrumentation**
  Testing equipment, measuring equipment

If you wish to use in applications with low level loads or with high frequency switching, please consult us.

ORDERING INFORMATION

RK ☐-☐-☐

Contact arrangement
1: Standard contact type
1R: Reversed contact type

Operating function
Nil: Single side stable
L: 1 coil latching
L2: 2 coil latching

Coil voltage, DC
3, 4.5, 5, 6, 9, 12, 24 V

Notes: 1. For transistor drive with 5 V circuits, we recommend the 4.5 V type in order to take into account voltage drops.
2. No part number distinguishment on impedance in RK relays.

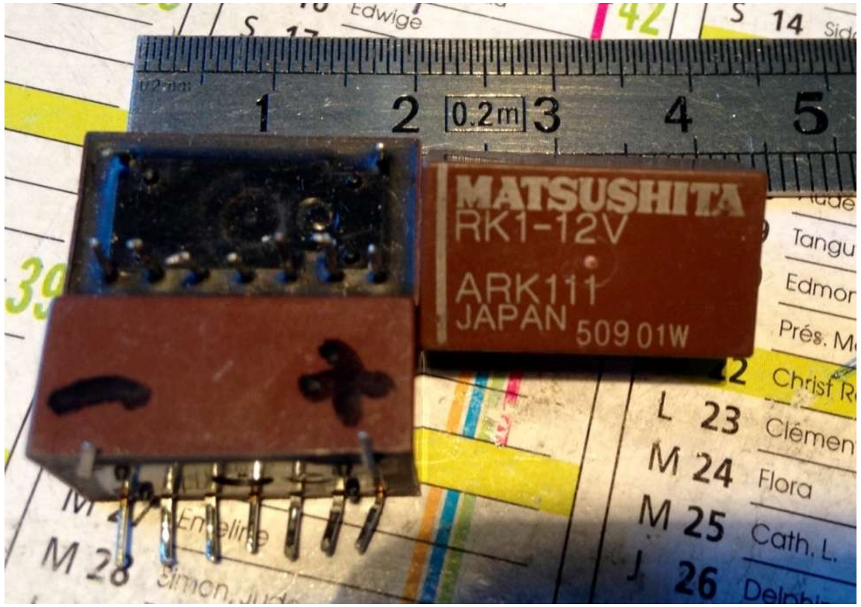
TYPES

1. Standard type

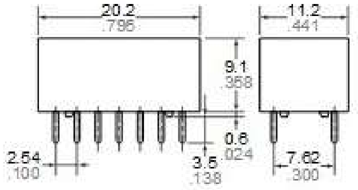
Contact arrangement	Nominal coil voltage	Single side stable type	1 coil latching type	2 coil latching type
		Part No.	Part No.	Part No.
1 Form C	3 V DC	RK1-3V	RK1-L-3V	RK1-L2-3V
	4.5V DC	RK1-4.5V	RK1-L-4.5V	RK1-L2-4.5V
	5 V DC	RK1-5V	RK1-L-5V	RK1-L2-5V
	6 V DC	RK1-6V	RK1-L-6V	RK1-L2-6V
	9 V DC	RK1-9V	RK1-L-9V	RK1-L2-9V
	12 V DC	RK1-12V	RK1-L-12V	RK1-L2-12V
	24 V DC	RK1-24V	RK1-L-24V	RK1-L2-24V

Standard packing: 50 pcs. in an inner package; 500 pcs. in an outer package

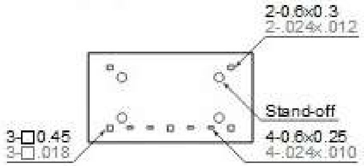
Pertes :
-NC (repos) 0.8 dB à 2.3 GHz
-NO (travail) 0.5 dB à 2.3 GHz
Pmax_out = 10W
Max switching 30V DC et 0.5A



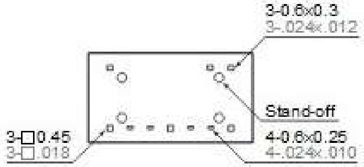
Relais NAIS Matsushita RK1-12V ARK111 (F6AJW)


20.2
.795
11.2
.441
9.1
.358
0.6
.024
2.54
.100
3.5
.138
7.62
.300

Single side stable and
1 coil latching

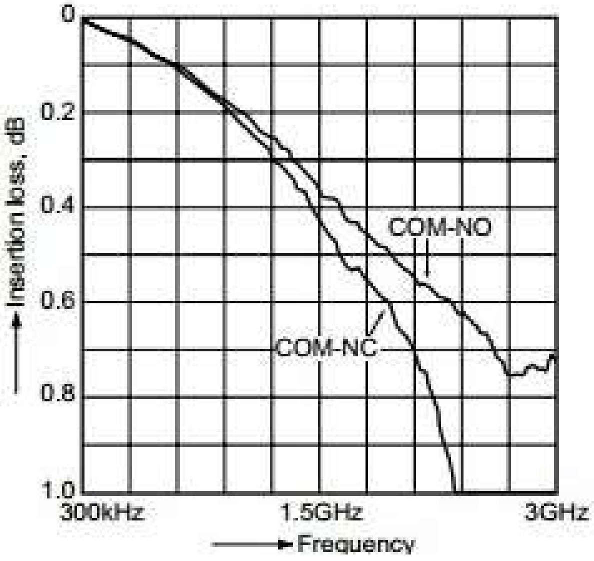

2-0.6×0.3
2-.024×.012
Stand-off
3-□0.45
3-□.018
4-0.6×0.25
4-.024×.010

2 coil latching

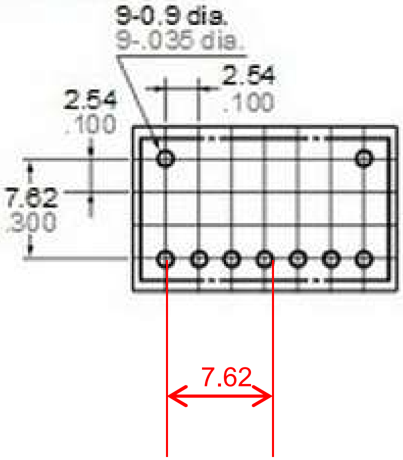

3-0.6×0.3
3-.024×.012
Stand-off
3-□0.45
3-□.018
4-0.6×0.25
4-.024×.010

General tolerance: ±0.3 ±.012

- Insertion loss characteristics

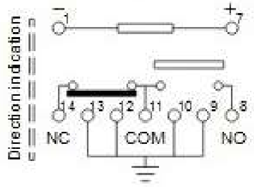


Single side stable and
1 coil latching


9-0.9 dia.
9-.035 dia.
2.54
.100
2.54
.100
7.62
.300
7.62

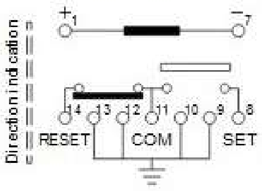
Schematic (Bottom view)

Single side stable


Direction indication
1
7
14
13
12
11
10
9
8
NC
COM
NO

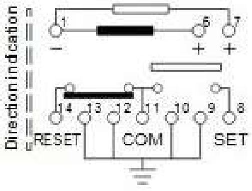
(Deenergized condition)

1 coil latching


Direction indication
+
1
−
7
14
13
12
11
10
9
8
RESET
COM
SET

(Reset condition)

2 coil latching


Direction indication
1
6
7
−
+
+
14
13
12
11
10
9
8
RESET
COM
SET

(Reset condition)

Pertes :
-NC (repos) 0.8 dB à 2.3 GHz
-NO (travail) 0.5 dB à 2.3 GHz
Pmax_out = 10W
Max switching 30V DC et 0.5A

Relais NAIS Matsushita RP1-12V ARP103

Pas 2.54

RP

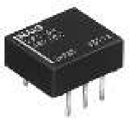
TYPES ANE COIL DATA (at 20°C 68°F)

Part No.		Nominal voltage, V DC	Pick-up voltage, max. V DC	Drop-out voltage, min. V DC	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Maximum allowable voltage, V DC
Standard PC board terminal	Self-clinching terminal							
RP1-1.5V	RP1-H-1.5V	1.5	1.125	0.15	16	93.8	140	2.25
RP1-3V	RP1-H-3V	3	2.25	0.3	64.3	46.7	140	4.5
RP1-4.5V	RP1-H-4.5V	4.5	3.375	0.45	145	31.1	140	6.75
RP1-5V	RP1-H-5V	5	3.75	0.5	178	28	140	7.5
RP1-6V	RP1-H-6V	6	4.5	0.6	257	23.3	140	9
RP1-9V	RP1-H-9V	9	6.75	0.9	579	15.6	140	13.5
RP1-12V	RP1-H-12V	12	9	1.2	1,028	11.7	140	18
RP1-24V	RP1-H-24V	24	18	2.4	2,133	11.3	270	28.8

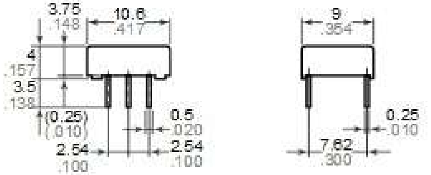
NAIS
RP1-12V
ARP103
JAPAN 01115
TECHNOFOX.de

DIMENSIONS

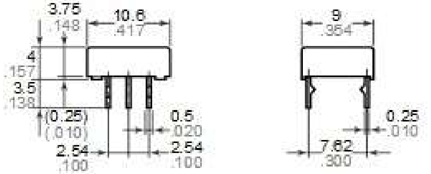
mm inch



Standard PC board terminal

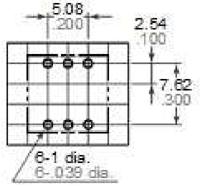

3.75
.148
10.6
.417
9
.354
4
.157
3.5
.138
(0.25)
(.010)
0.5
.020
2.54
.100
2.54
.100
0.25
.010
7.62
.300

Self-clinching terminal


3.75
.148
10.6
.417
9
.354
4
.157
3.5
.138
(0.25)
(.010)
0.5
.020
2.54
.100
2.54
.100
0.25
.010
7.62
.300

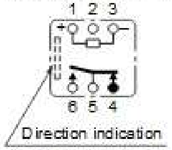
General tolerance: ±0.3 ±.012

PC board pattern (Copper-side view)


5.08
.200
2.54
.100
7.62
.300
6-1 dia.
6-.039 dia.

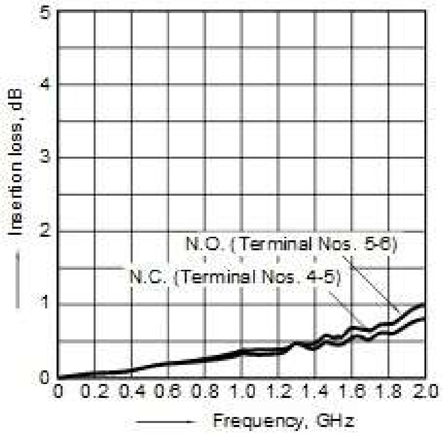
Tolerance: ±0.1 ±.004

Schematic (Bottom view)


1 2 3
+
–
6 5 4
Direction indication

Deenergized condition

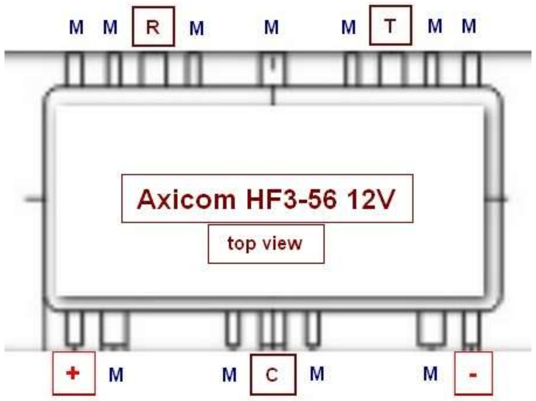
- Insertion loss



Perte 1.0dB déjà à 2.0 GHz → non utilisable à 2.3 GHz ! !
Pmax_out = 10W
Max switching 30V DC et 0.5A

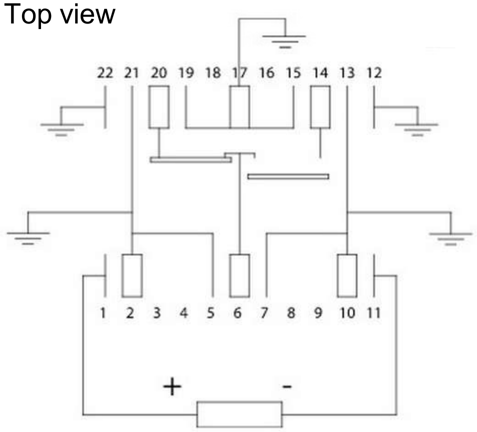
Relais TE - Axicom HF3-56 12V

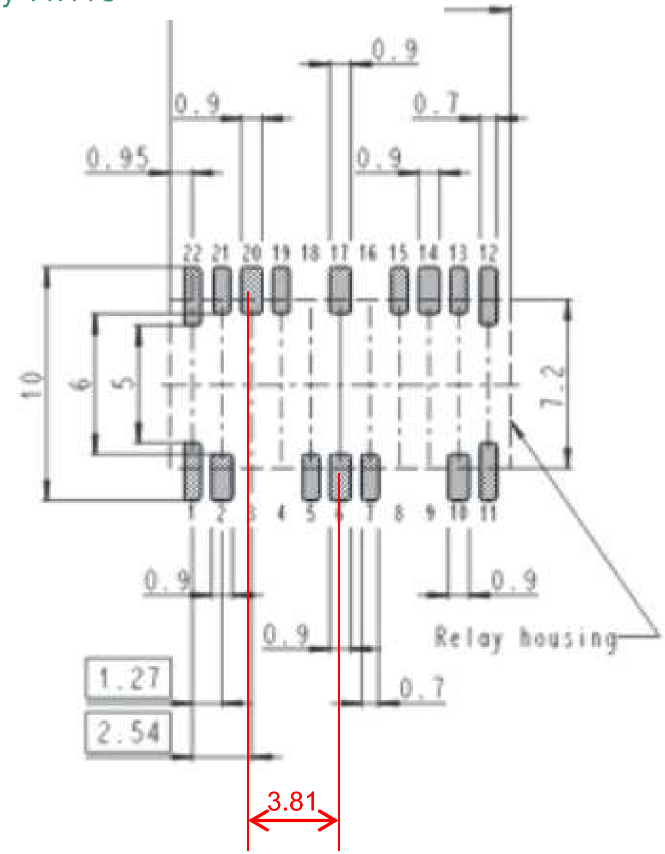
Pas 1.27

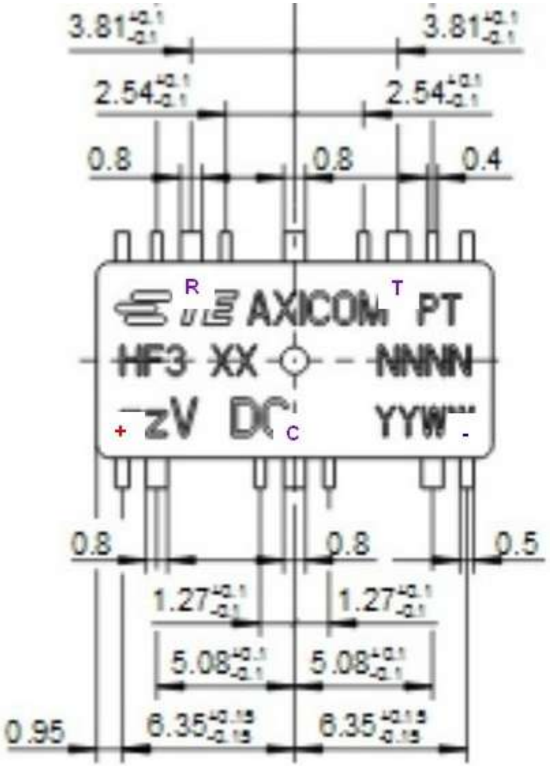

M
M
R
M
M
M
T
M
M
Axicom HF3-56 12V
top view
+
M
M
C
M
M
-

Perte 0.22dB à 2.5 GHz
Max switching 50W à 2.5 GHz
RS 7.02€ HT
Farnell 9.74€ HT
eBay 11.11€

Top view


22 21 20 19 18 17 16 15 14 13 12
1 2 3 4 5 6 7 8 9 10 11
+
-


0.9
0.9
0.7
0.95
0.9
22 21 20 19 18 17 16 15 14 13 12
10
6
5
7.2
1 2 3 4 5 6 7 8 9 10 11
0.9
0.9
0.9
Relay housing
1.27
0.7
2.54
3.81


3.81 +0.1 -0.1
3.81 +0.1 -0.1
2.54 +0.1 -0.1
2.54 +0.1 -0.1
0.8
0.8
0.4
R
T
AXICOM PT
HF3 XX NNNN
+ zV DC C
YYW -
0.8
0.8
0.5
1.27 +0.1 -0.1
1.27 +0.1 -0.1
5.08 +0.1 -0.1
5.08 +0.1 -0.1
0.95
6.35 +0.15 -0.15
6.35 +0.15 -0.15

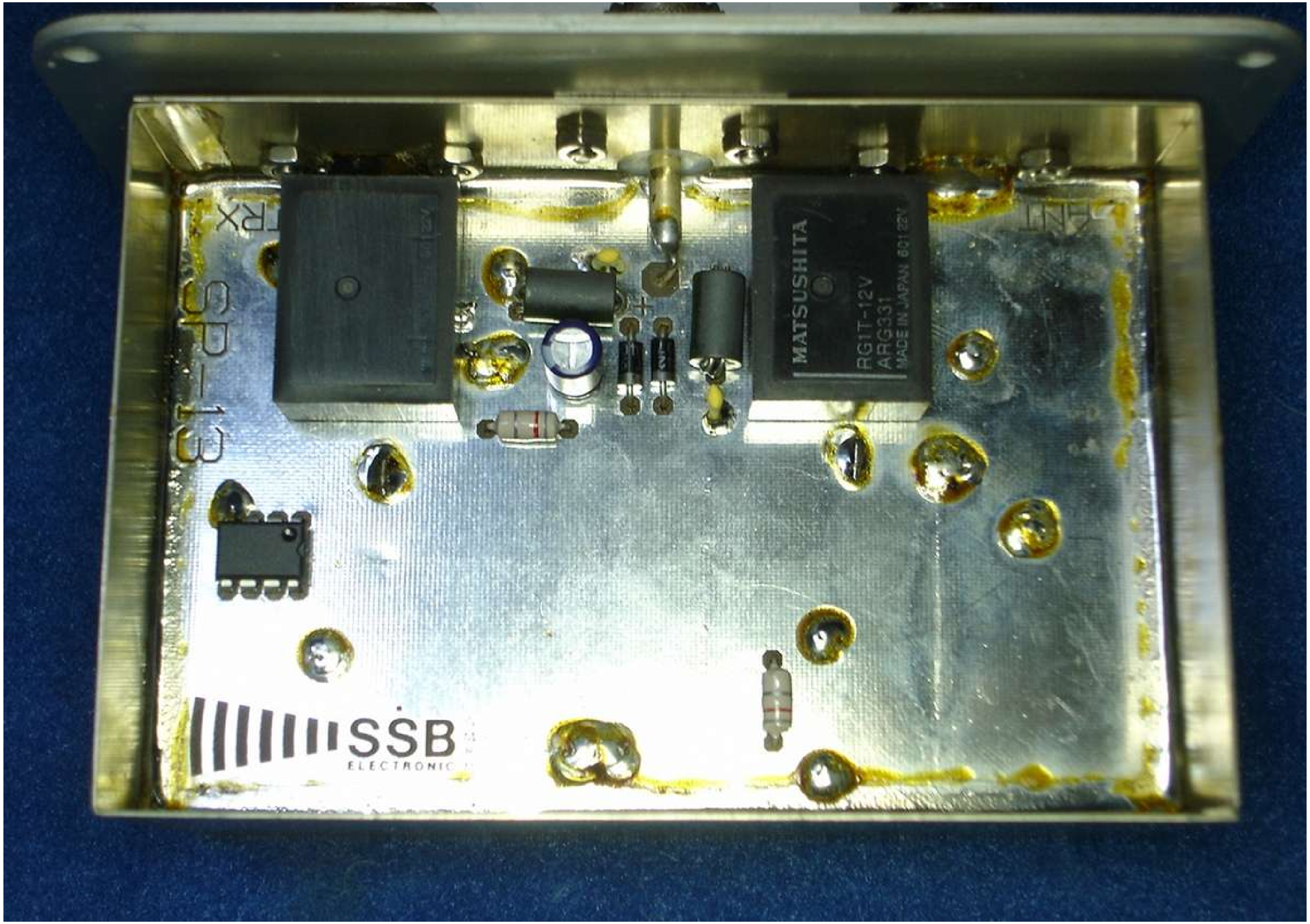
3- Substitution relais par des Matsushita RK1-12V ARP103

Un grand merci à Jacques F6AJW

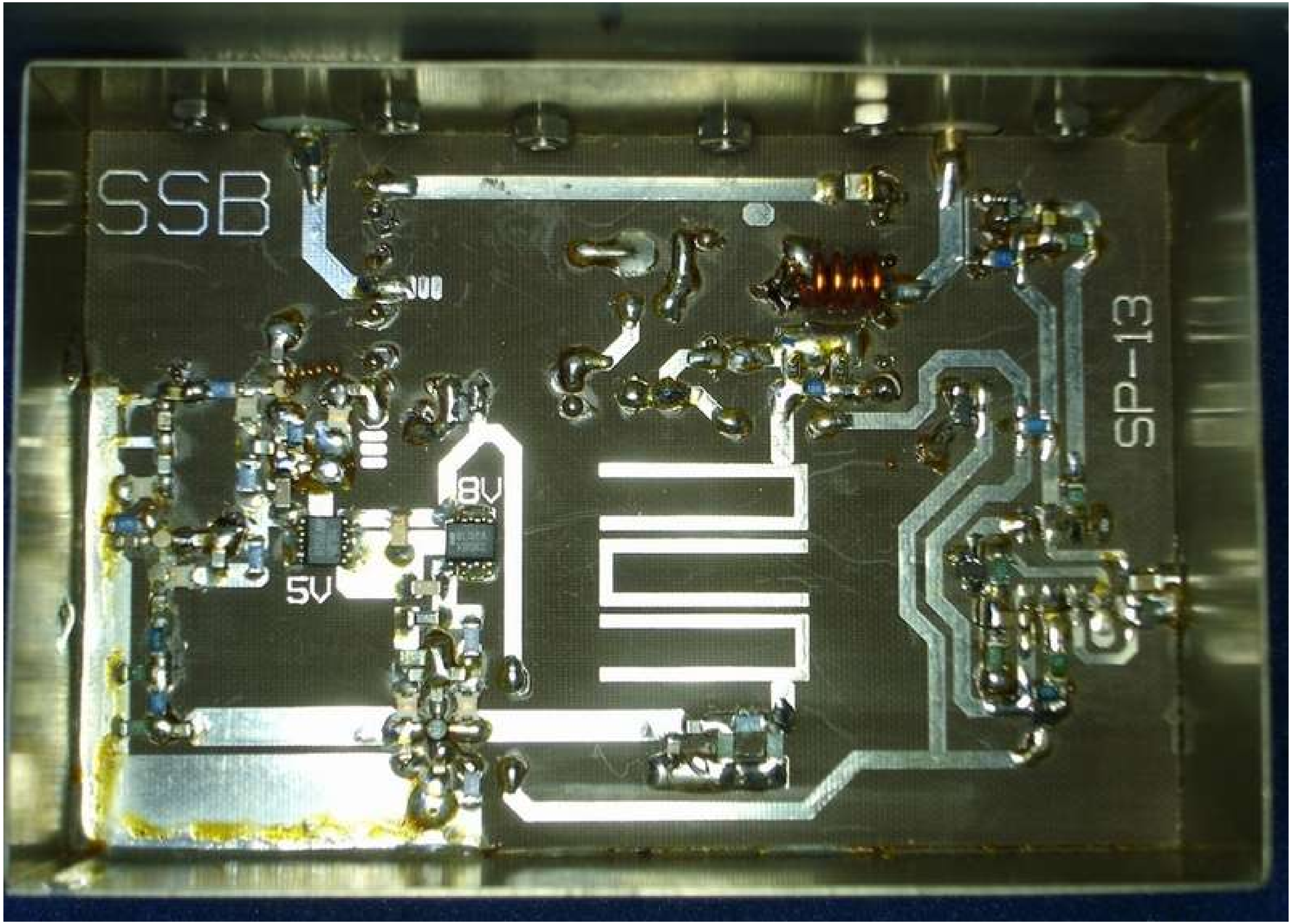
- RK1-12V → nouveaux perçages résultants
- Nouvelles mesures RF
- Bruit aléatoire résiduel liés à la déficience des clous de masse autour du LNA 1er étage

-Mesures RF définitives

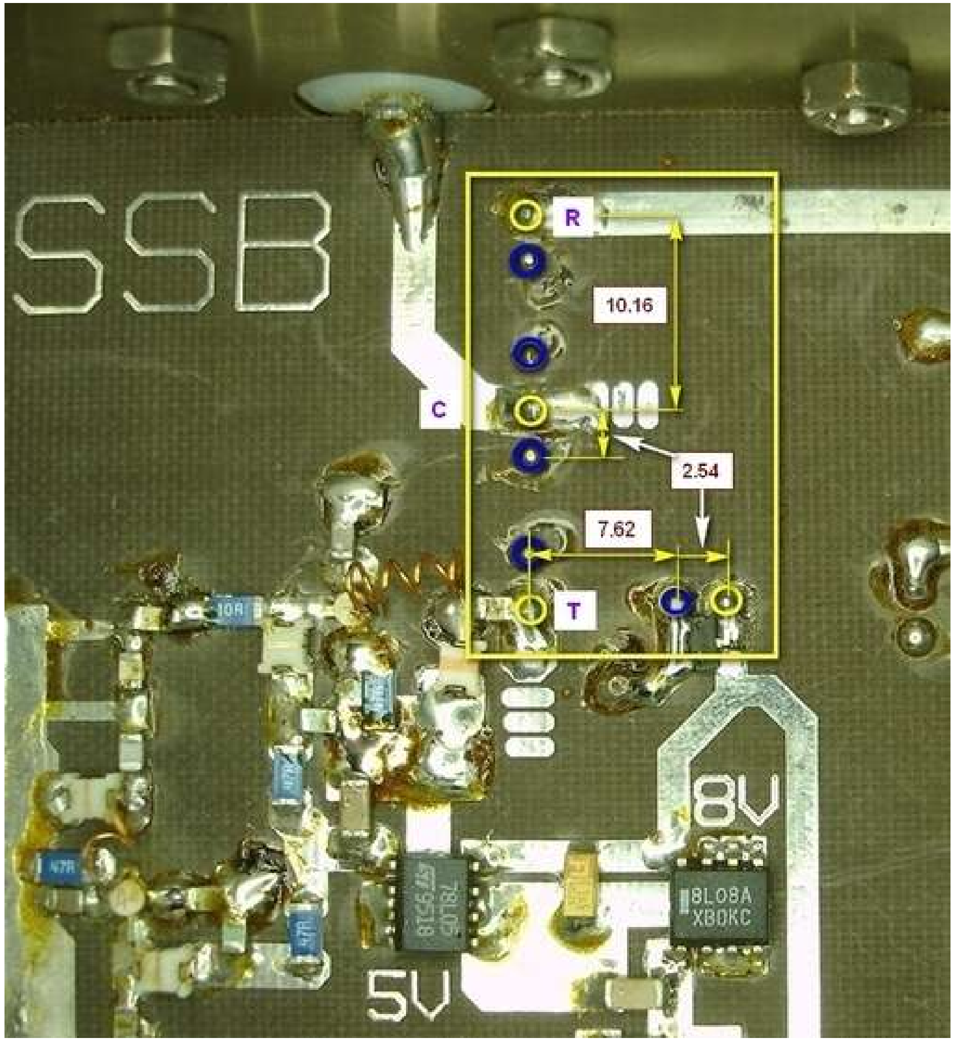
SP-13 originel côté relais

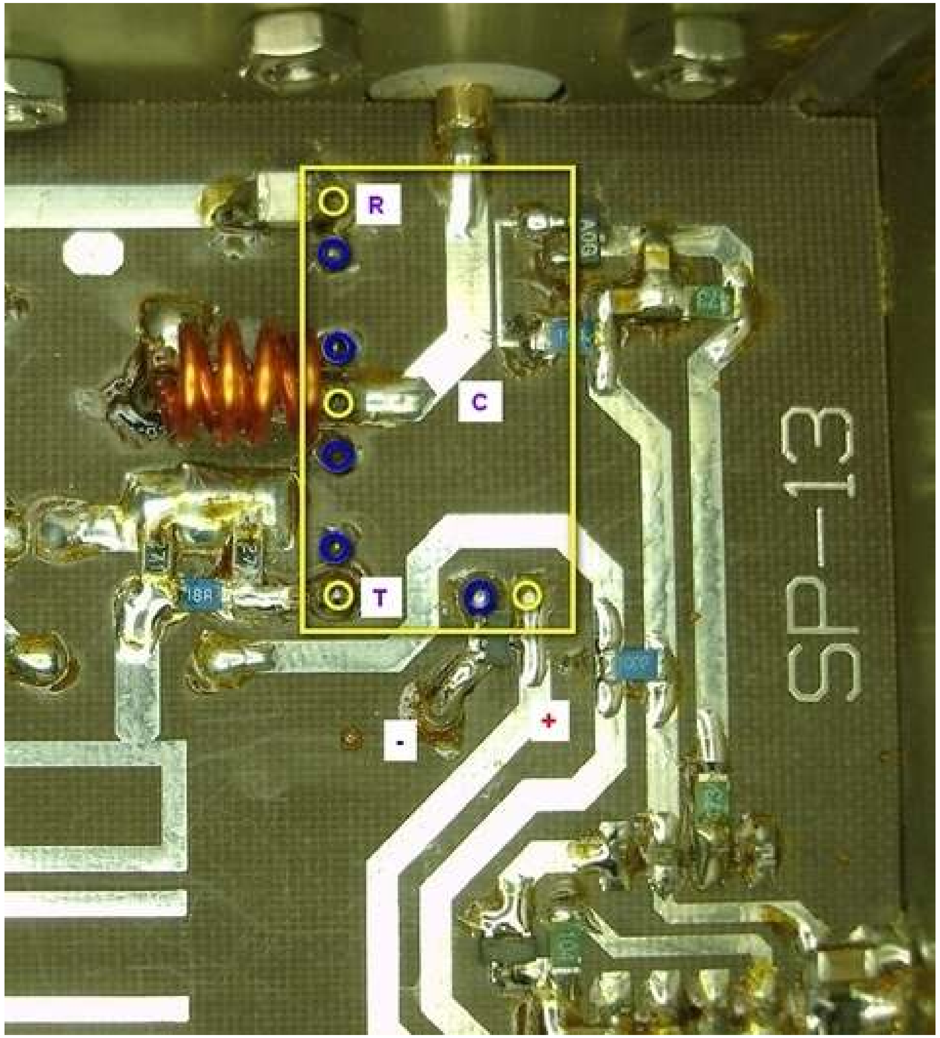

TRX
SP-13
MATSUSHITA
RG1T-12V
ARG331
MADE IN JAPAN
ANT
SSB
ELECTRONIC

SP-13 originel côté composants

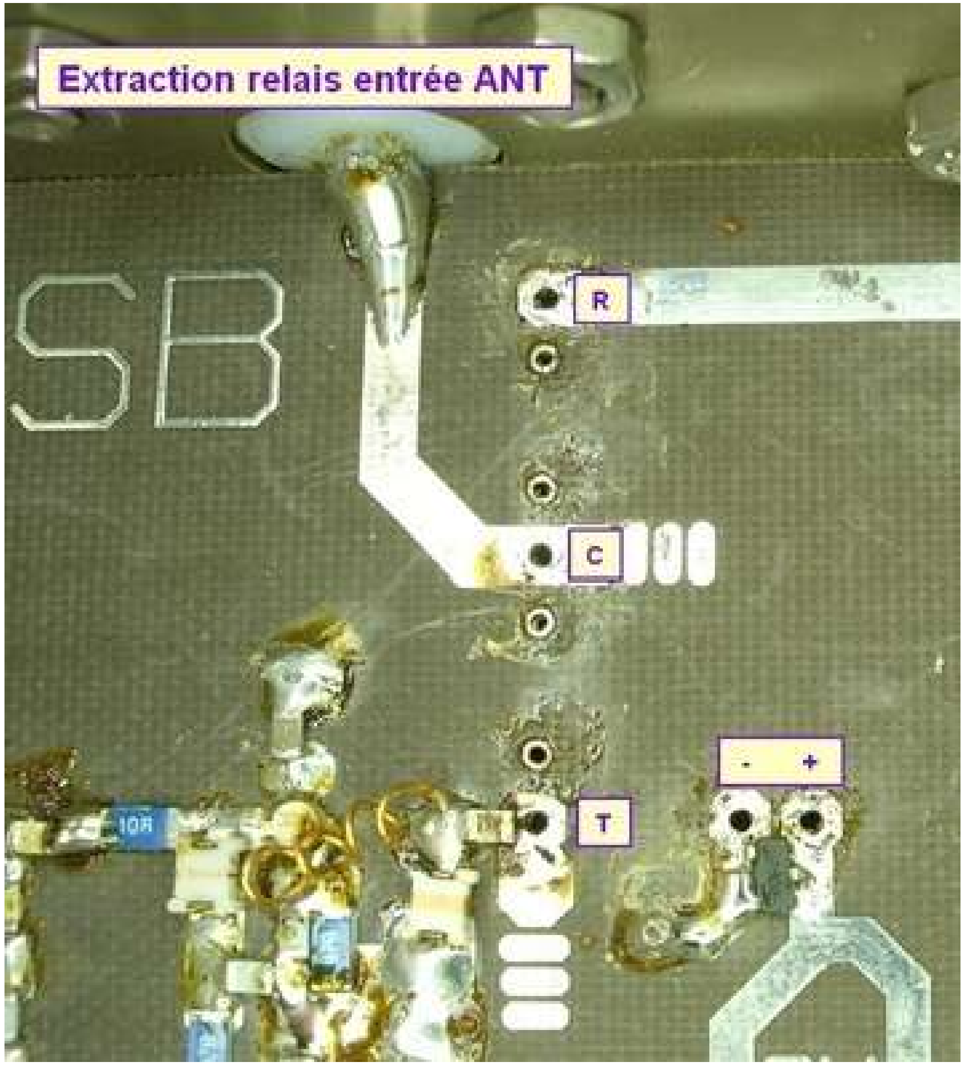

SSB
SP-13
8V
5V

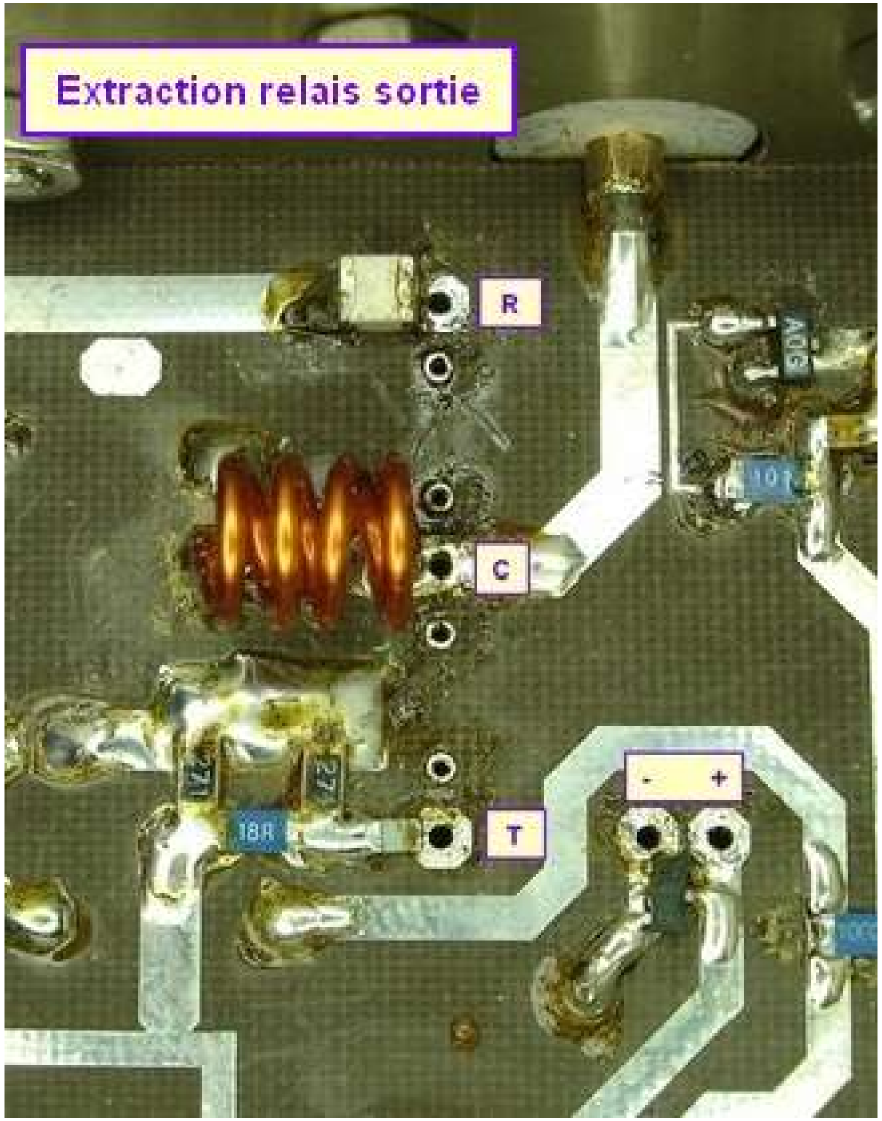
In/Out RF originel côté composants


SSB
R
10.16
C
2.54
7.62
T
8V
5V
8L08A
XB0KC

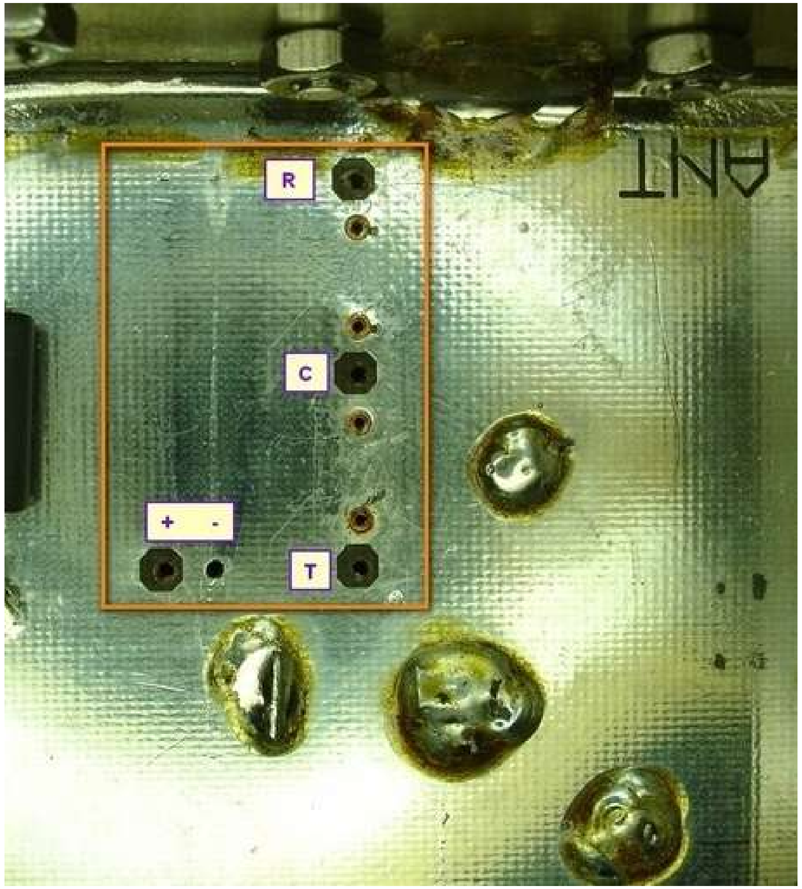


In/Out RF originel côté composants, relais dessoudés

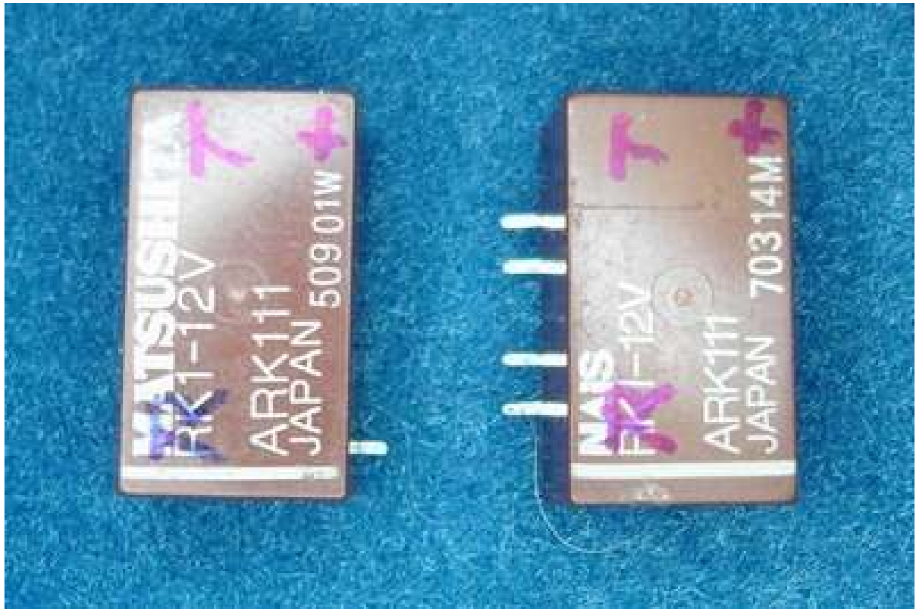

Extraction relais entrée ANT
SB
R
C
T
10R
-
+


Extraction relais sortie
R
C
T
18R
27
27
101
-
+

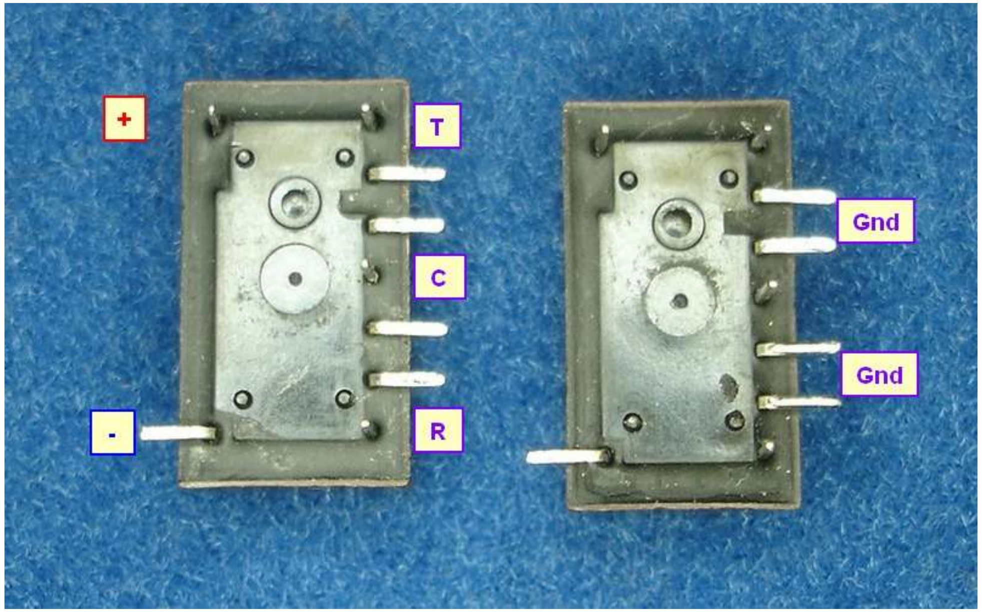
Relais dessoudés : emprunte côté entrée RF



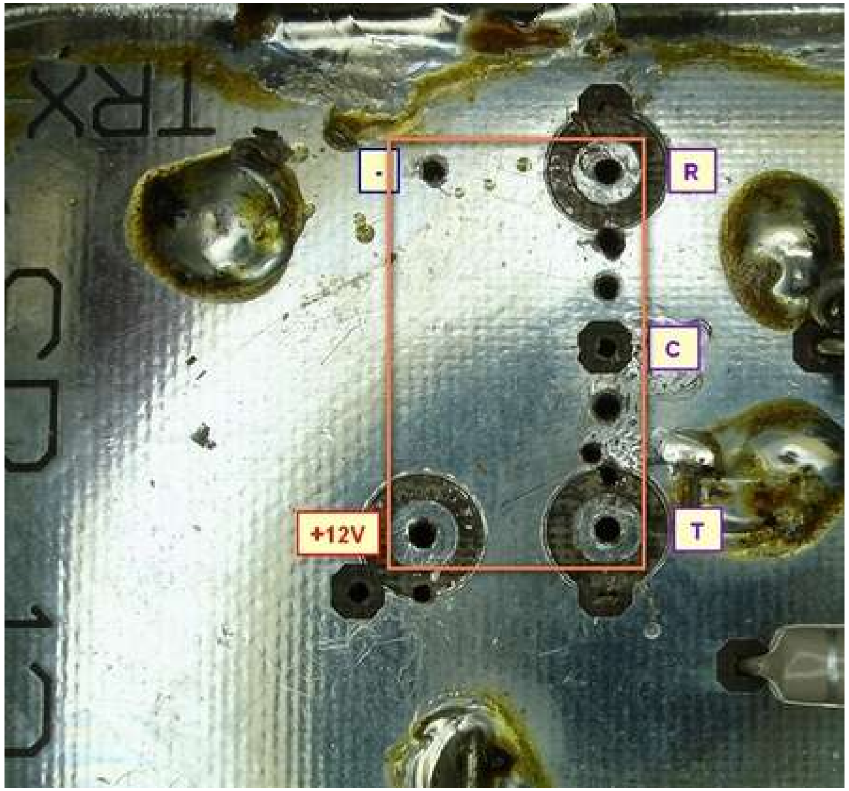
Relais visés : Matsushita RK1-12V (merci à Jacques F6AJW)

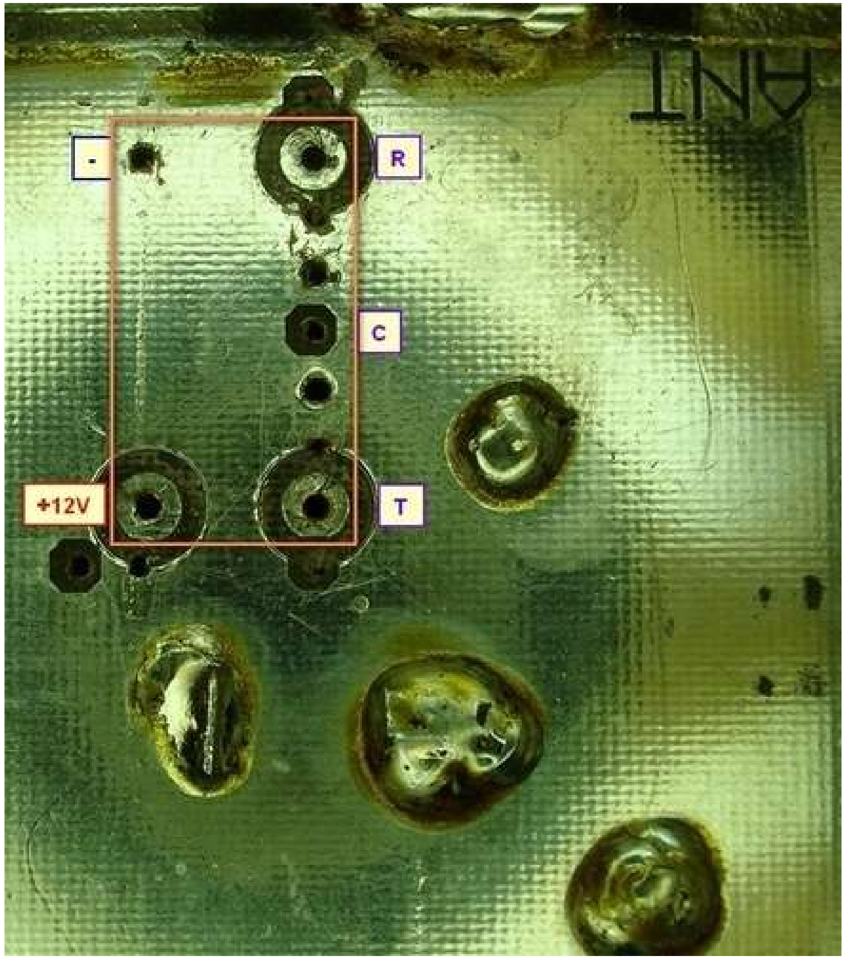


T
+
MATSUSHITA
RK1-12V
ARK111
JAPAN
509 01W
T
+
NAIS
RK1-12V
ARK111
JAPAN
70314M

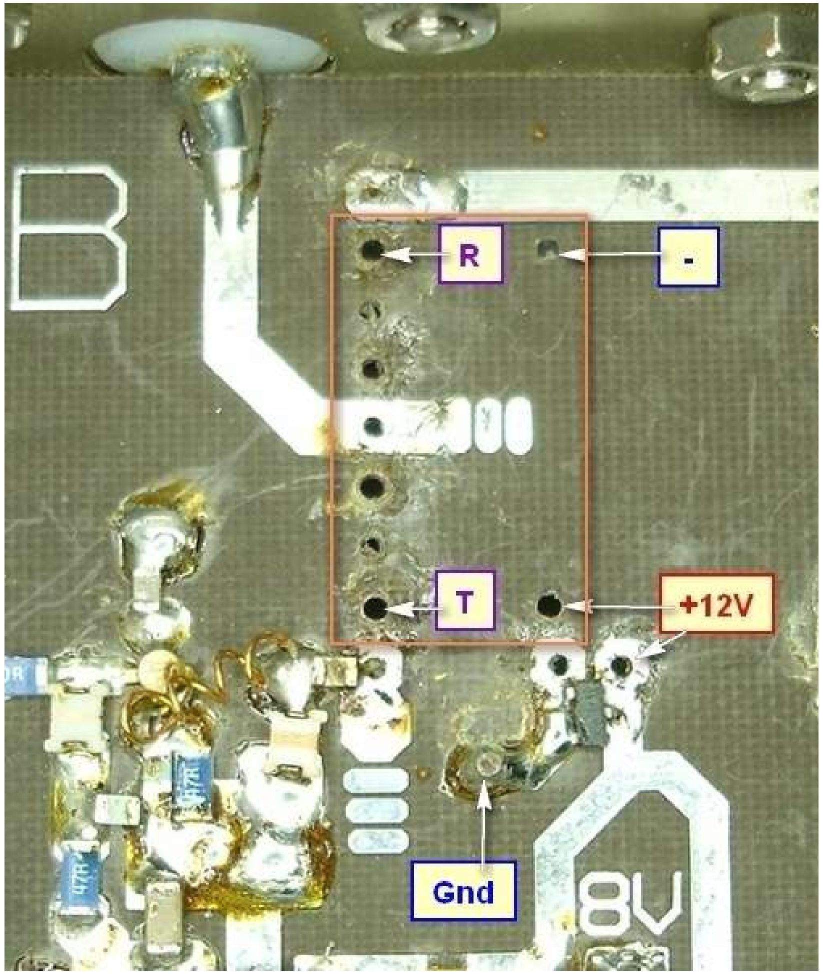


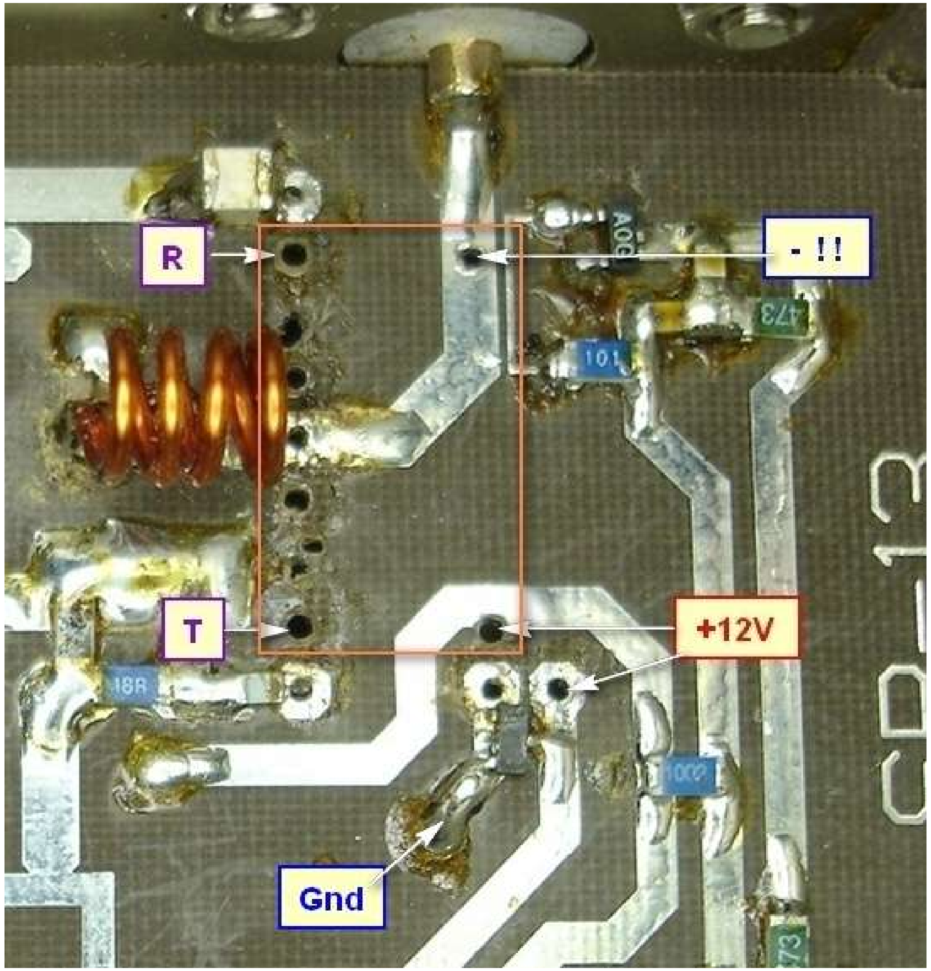
Perçages complémentaires réalisés côté relais



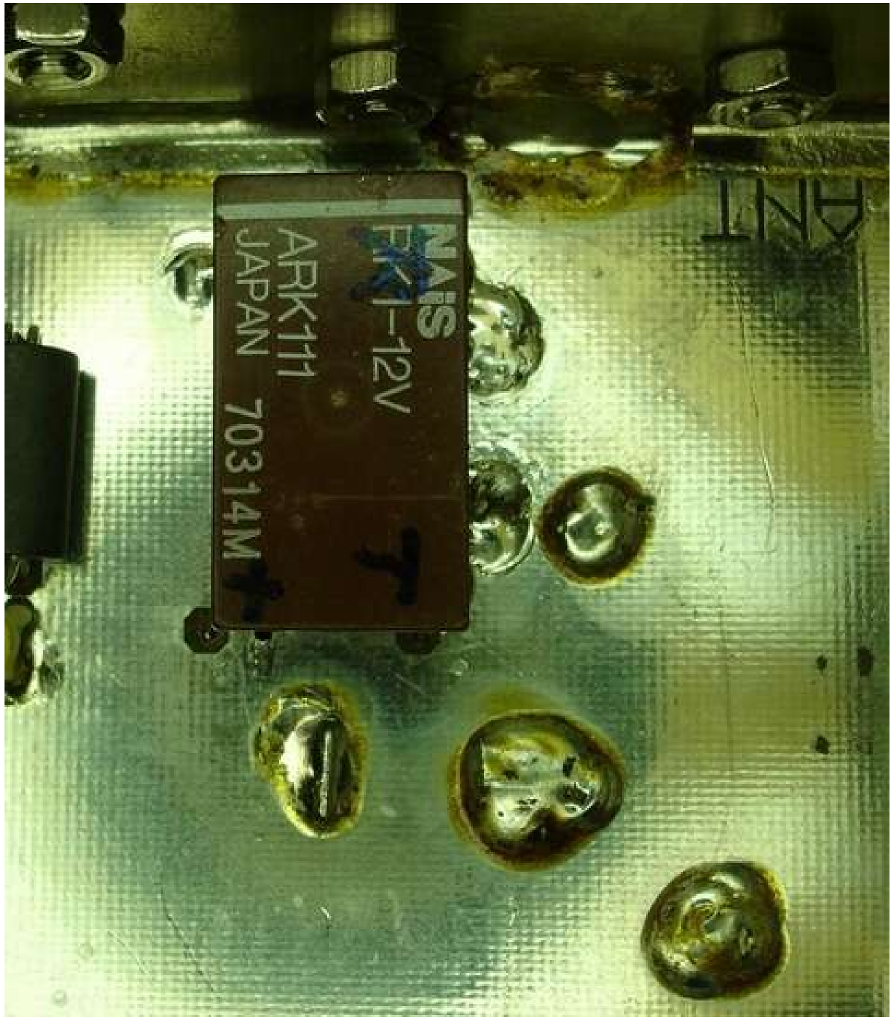


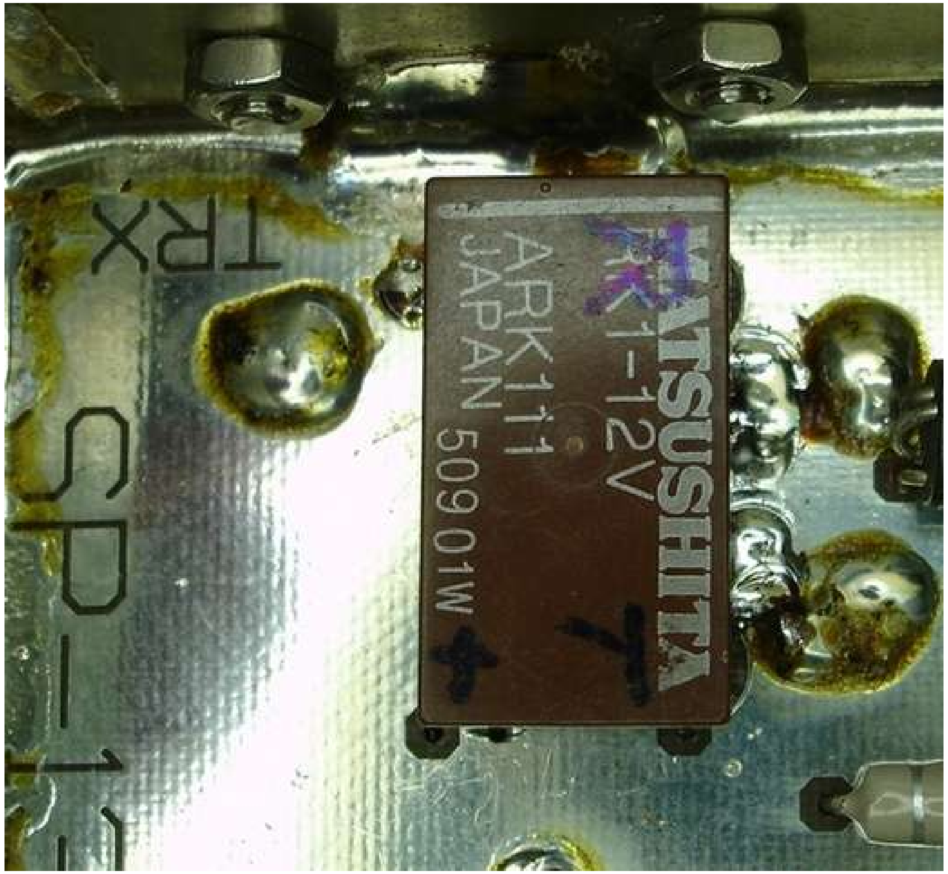
Perçages complémentaires réalisés côté composants


R
-
T
+12V
Gnd
8V

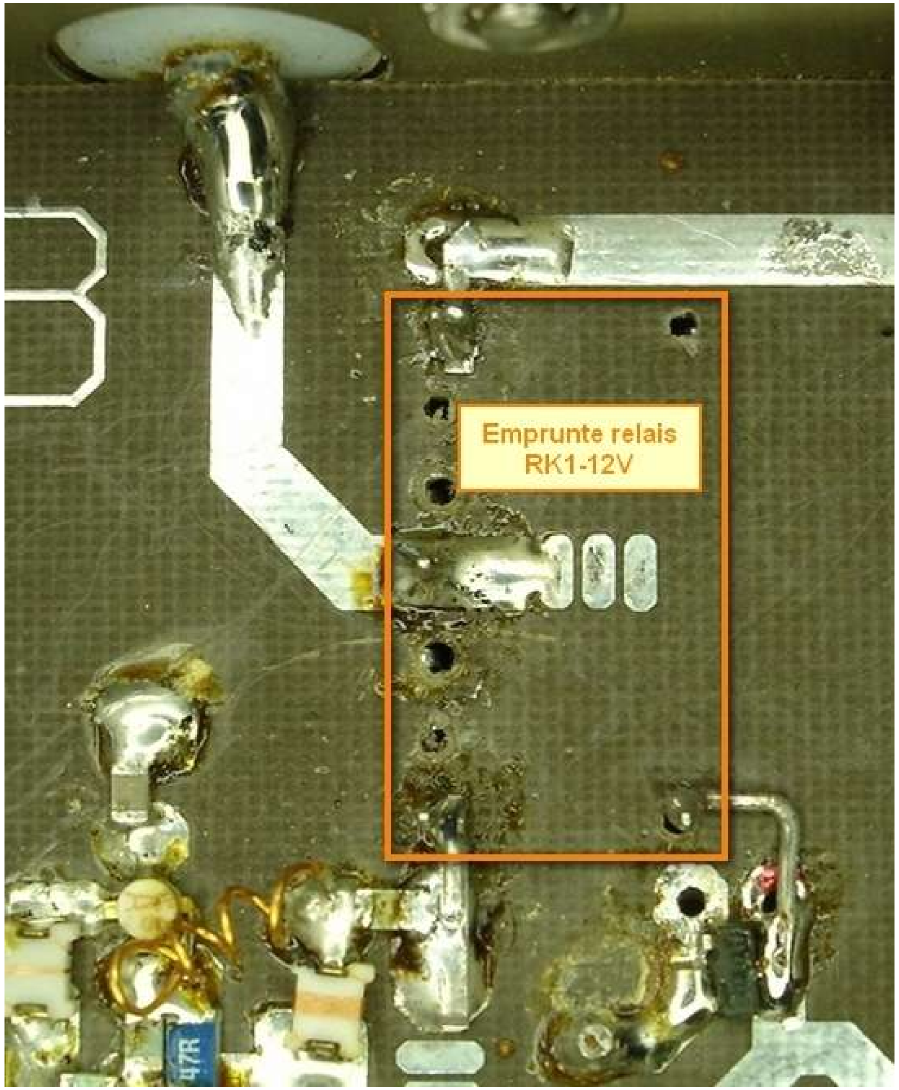

R
- !!
T
+12V
Gnd
SP-13

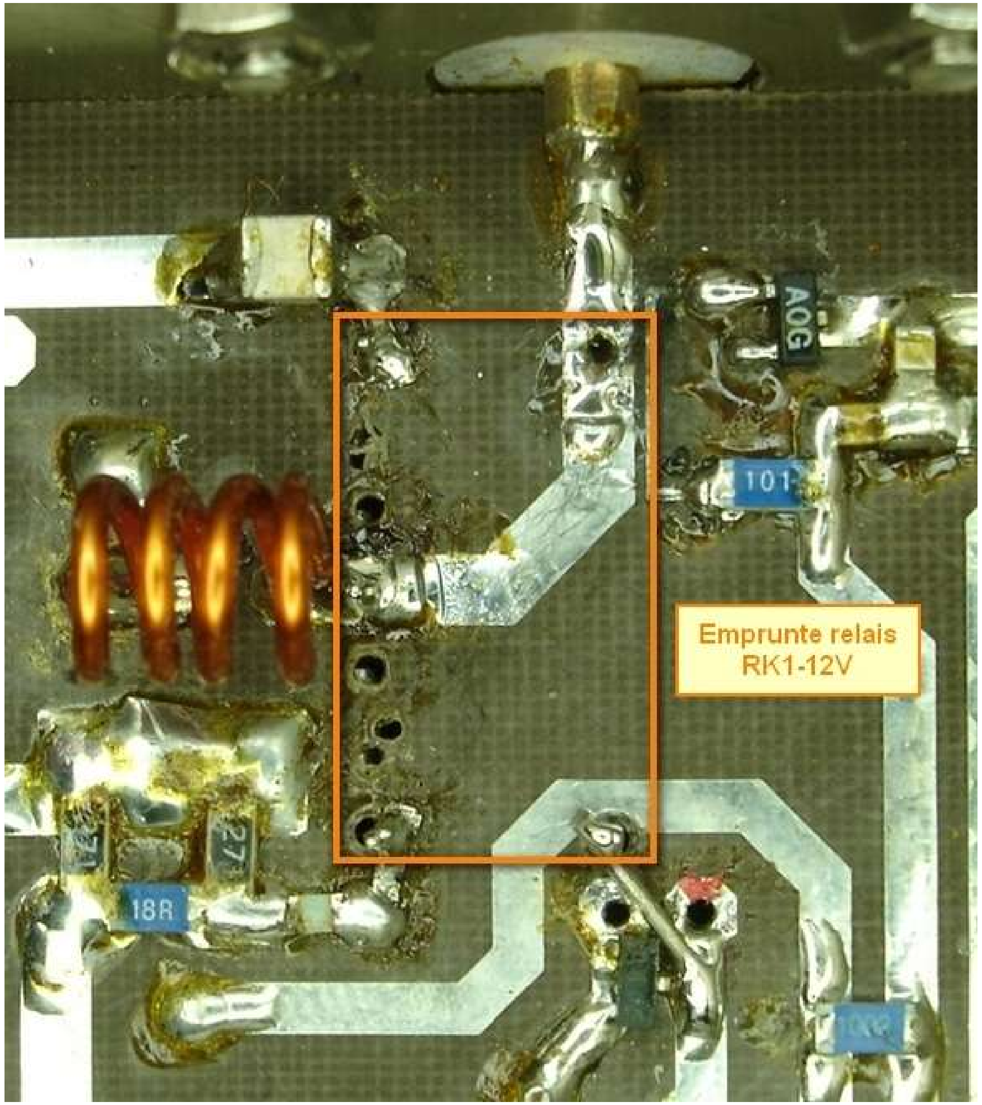
Mise en place relais RK1-12V





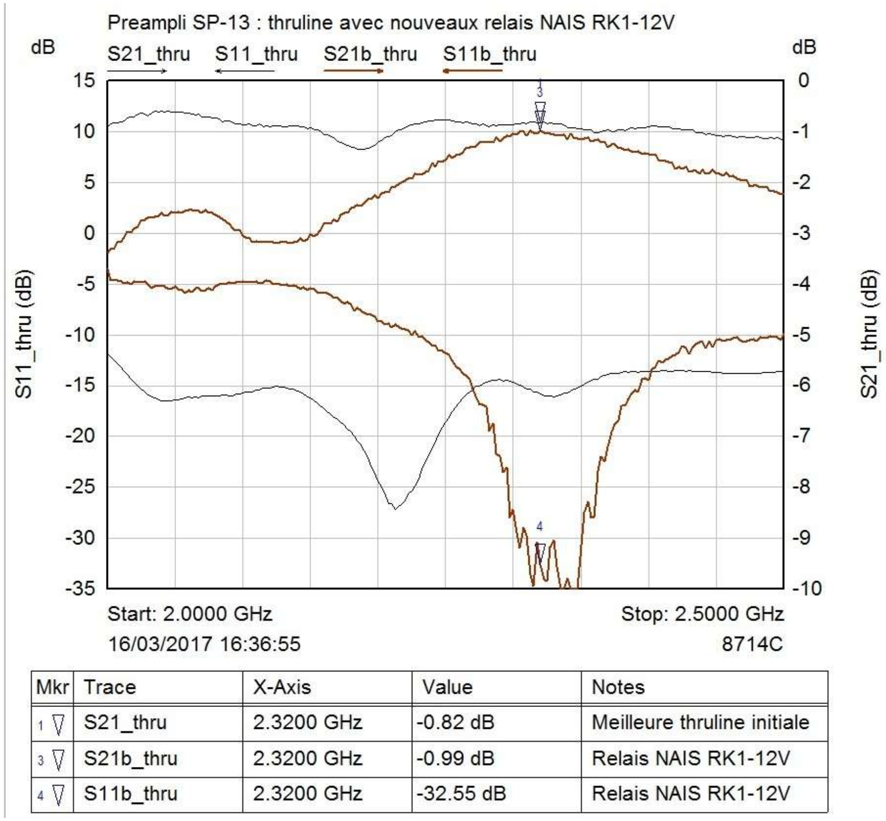
Câblage alimentations 12V relais


Emprunte relais
RK1-12V
47R

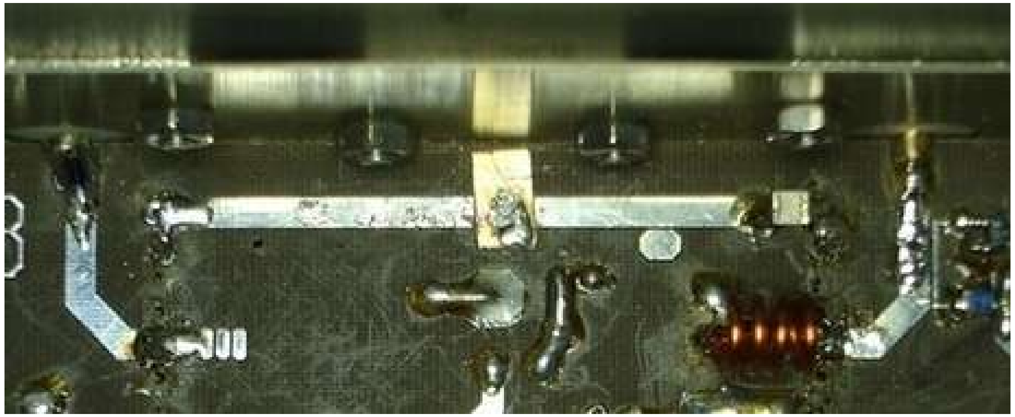

Emprunte relais
RK1-12V
A0G
101
18R
27

Thruline : optimisation par stubage

Courbes en brun

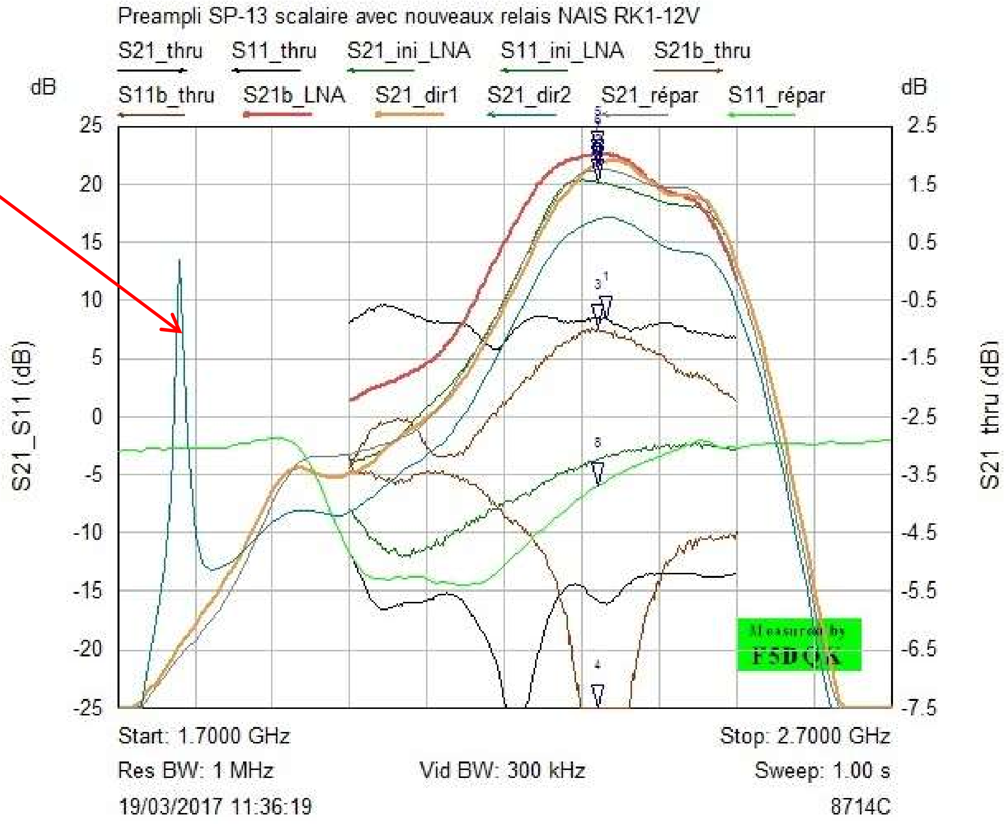


Mkr	Trace	X-Axis	Value	Notes
1 ▽	S21_thru	2.3200 GHz	-0.82 dB	Meilleure thruline initiale
3 ▽	S21b_thru	2.3200 GHz	-0.99 dB	Relais NAIS RK1-12V
4 ▽	S11b_thru	2.3200 GHz	-32.55 dB	Relais NAIS RK1-12V



Résumé de toutes les mesures au scalaire

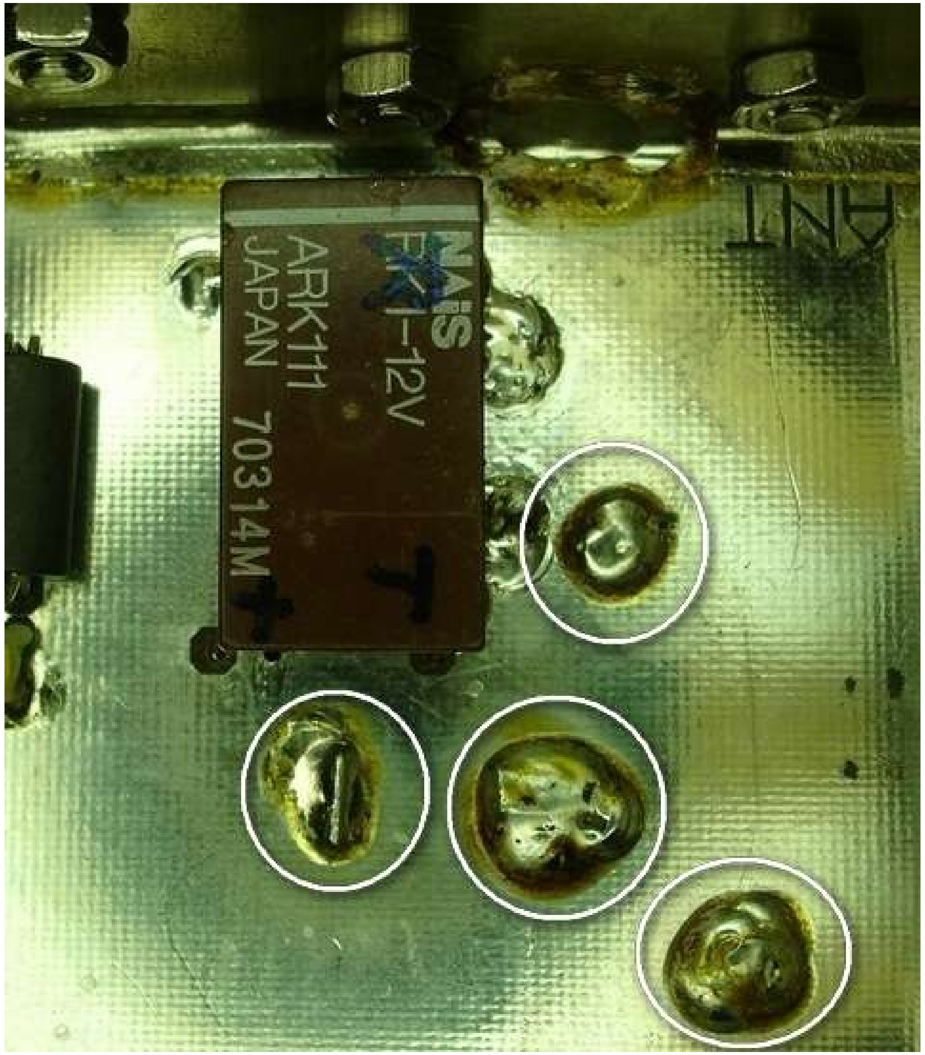
Inutilisable en condition réelle !
Bruit résiduel aléatoire erratique → problèmes d'oscillation vers 1.8 GHz



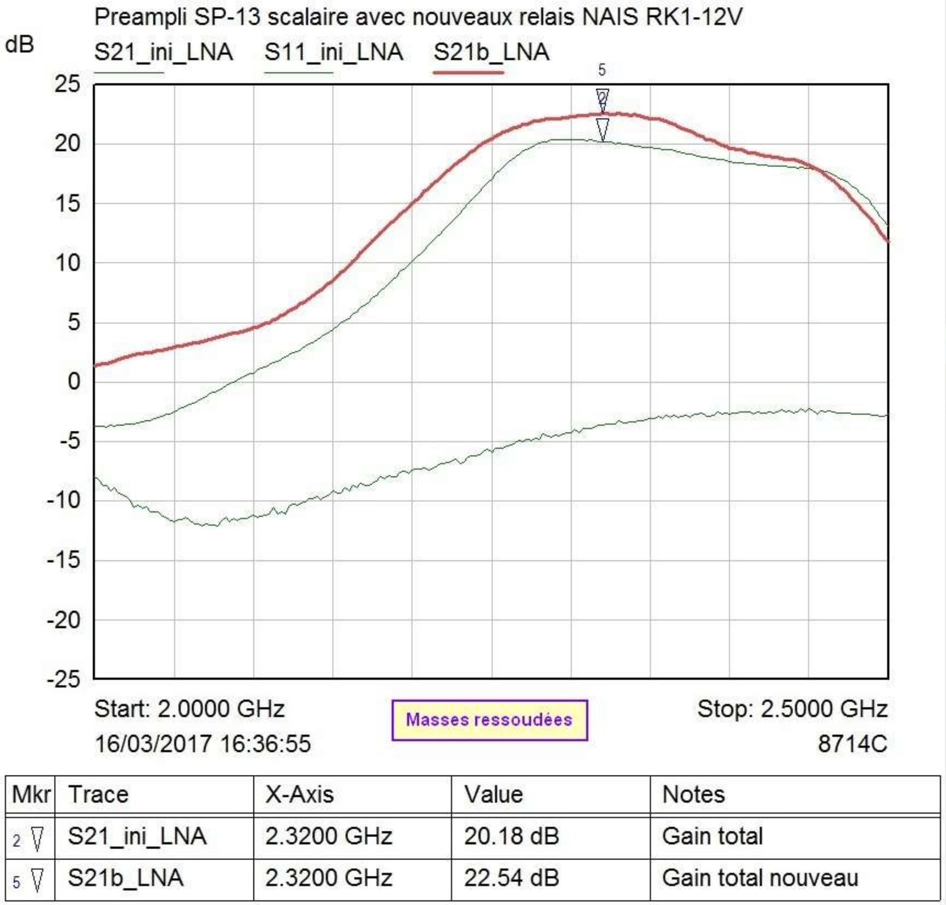
Mkr	Trace	X-Axis	Value	Notes
1 ▽	S21_thru	2.3300 GHz	-0.84 dB	Meilleure thruline initiale
2 ▽	S21_ini_LNA	2.3200 GHz	20.18 dB	Gain total
3 ▽	S21b_thru	2.3200 GHz	-0.99 dB	Relais NAIS RK1-12V
4 ▽	S11b_thru	2.3200 GHz	-32.55 dB	Relais NAIS RK1-12V
5 ▽	S21b_LNA	2.3200 GHz	22.54 dB	Gain total nouveau
6 ▽	S21_dir1	2.3200 GHz	21.83 dB	Entrée directe
7 ▽	S21_répar	2.3200 GHz	21.25 dB	Liaisons masse ressoudées
8 ▽	S11_répar	2.3200 GHz	-5.98 dB	Liaisons masse ressoudées

1er étage GaAs : clous de masse refaits

Bruit aléatoire élevé → problèmes d'oscillation vers 1.8 GHz → resoudure de tous les clous de masse tout autour du 1er étage GaAs → **Problème résolu**

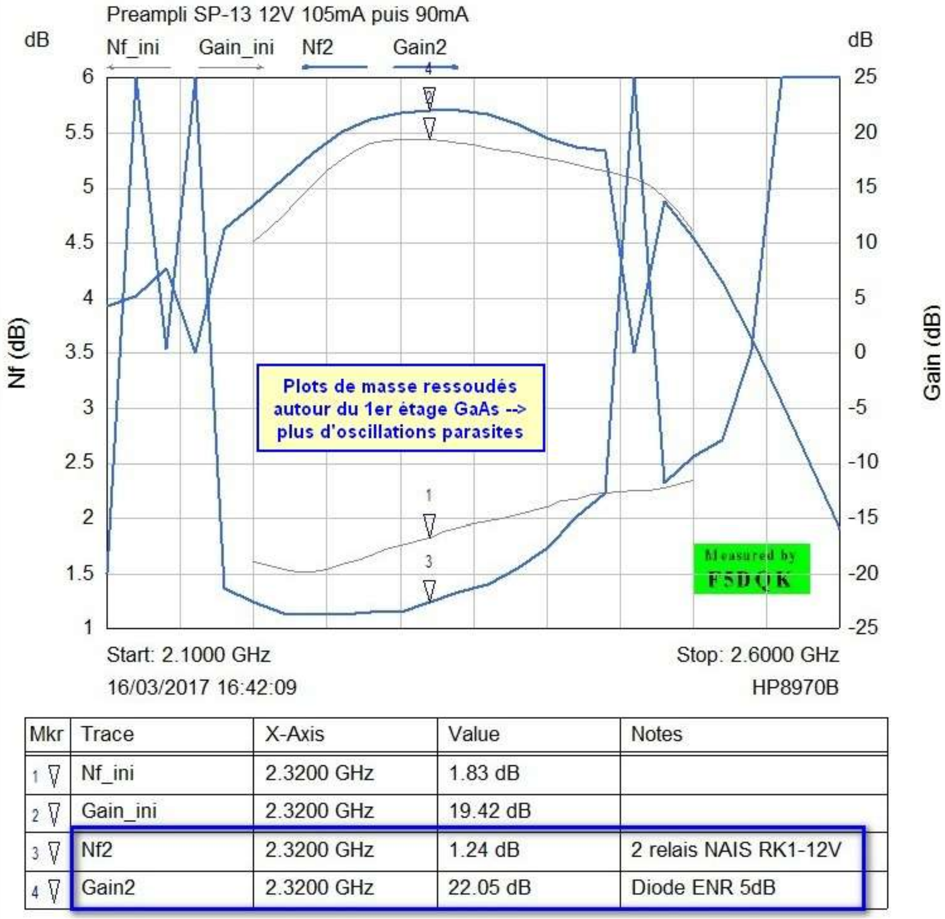

ANT
NAiS
FK1-12V
ARK111
JAPAN
70314M

Scalaire et NGA : mesures définitives avec relais RK1-12V



Masses ressoudées

Mkr	Trace	X-Axis	Value	Notes
2 ▽	S21_ini_LNA	2.3200 GHz	20.18 dB	Gain total
5 ▽	S21b_LNA	2.3200 GHz	22.54 dB	Gain total nouveau

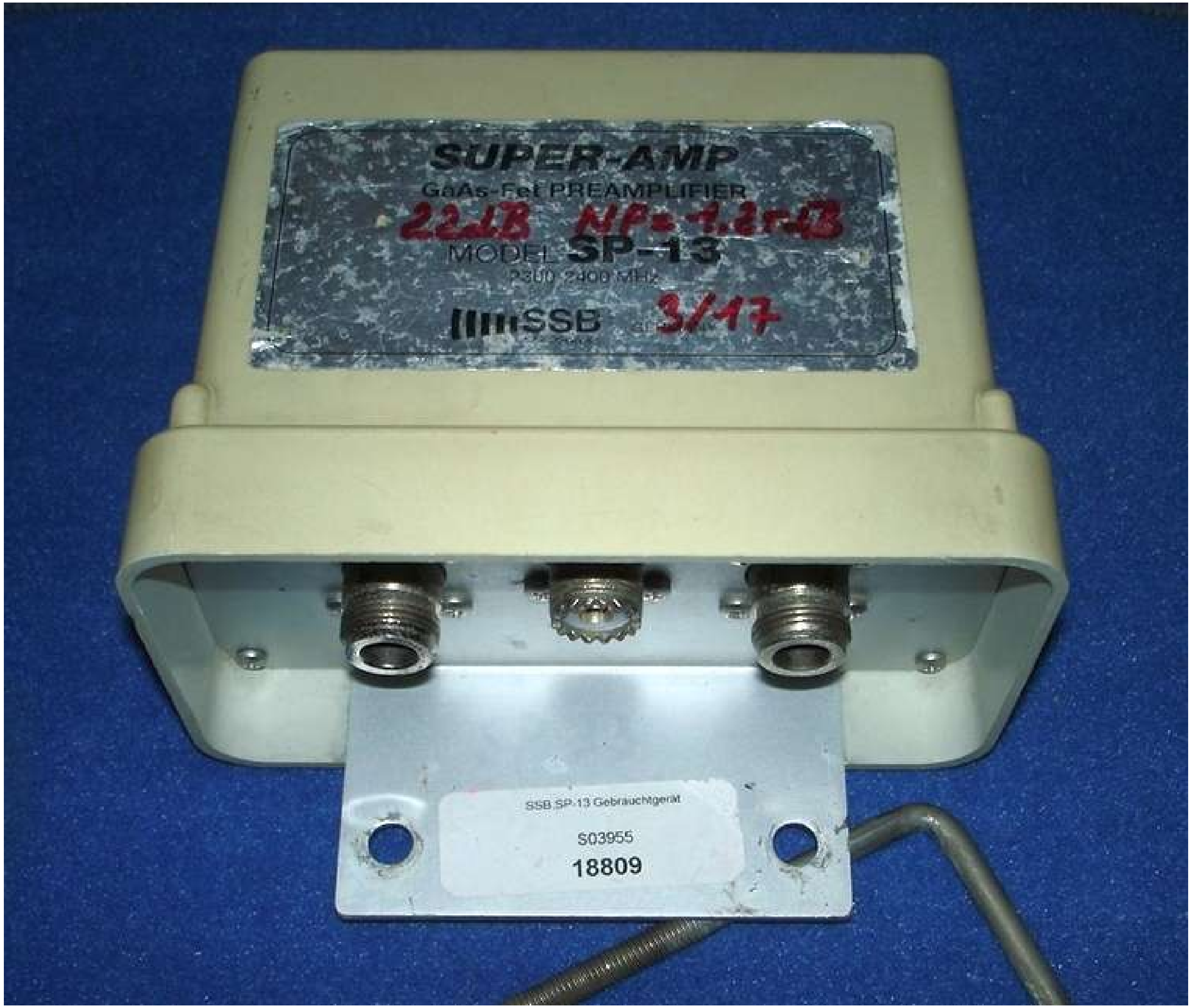


Plots de masse ressoudés autour du 1er étage GaAs --> plus d'oscillations parasites

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Nf_ini	2.3200 GHz	1.83 dB	
2 ▽	Gain_ini	2.3200 GHz	19.42 dB	
3 ▽	Nf2	2.3200 GHz	1.24 dB	2 relais NAIS RK1-12V
4 ▽	Gain2	2.3200 GHz	22.05 dB	Diode ENR 5dB

Pics bleus : artefacts liés à la mesure !

Préampli mât SP-13 de nouveau prêt à l’emploi


SUPER-AMP
GaAs-Fet PREAMPLIFIER
22dB NF=1,2dB
MODEL SP-13
2300-2400 MHz
SSB
3/17
SSB SP-13 Gebrauchtgerät
S03955
18809

Préampli mat SP-13 acheté chez Haro Electronic