



**Escuela Universitaria
Politécnica - La Almunia**
Centro adscrito
Universidad Zaragoza

**ESCUELA UNIVERSITARIA POLITÉCNICA
DE LA ALMUNIA DE DOÑA GODINA (ZARAGOZA)**

ANEXOS

Mapeo de la vía del sistema digestivo por localización
híbrida de una cápsula endoscópica microrrobótica

Digestive system mapping using hybrid localization of
a microrobotic endoscopic capsule

Identificador: 424.20.52

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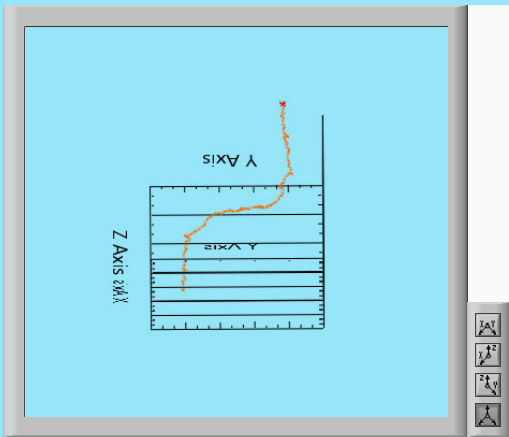
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1. Anexo I: Documentación LabVIEW

3D COMET



CÁPSULA



HISTORIAL
COORD.

X	Y	Z
0	2,75	2,81081
2,235	12,102	1,61554
1,965	7,12296	10,9699
2,727	8,34261	10,6494
1,498	6,89722	19,3179
1,196	7,94285	25,8748
3,169	10,0324	31,6234
1,562	2,4018	37,6312
1,086	-1,0381	45,3663
0,1584	5,0795	49,8956
3,724	7,15609	50,8521
2,582	4,74465	53,4737
2,832	3,25081	54,3127
1,782	7,0004	63,3926
4,006	-4,10415	65,1096
4,406	-4,01446	70,1247
4,206	7,60428	73,5284
5,473	9,12321	77,7669
4,183	5,79527	78,3496
5,23	4,29396	85,2012
5,576	-0,23114	90,8188
3,847	1,54744	95,3537

INFORMACIÓN
IMÁGENES

Coordenadas Imagen
1,48265
-362,674
658,65

Images Data	alpha	beta	gamma	velocity
0,6059	-0,0767	-7,2111	11	0,6059
16	0,2333	0,5584	3,4662	11
1,5986	0,8972	29,3032	11	1,5986
0,884	0,1157	7,4566	-0,5111	0,884
1,2663	0,0723	3,2677	11	1,2663
0,5681	-0,1329	-13,1681	7,2901	0,5681
1,441	0,1312	5,201	8,4588	1,441
1,035	-0,0472	-2,61	6,1509	1,035
16	-1,2409	-3,9762	9,6772	16
-1,5266	-0,4879	17,7241	8,4773	-1,5266
-2,4485	-0,6425	14,7027	1,5638	-2,4485
0,3485	0,0066	1,0917	2,4188	0,3485
0,9876	-0,1917	-10,9836	-1,06	0,9876
1,4192	0,2556	10,2107	11	1,4192
1,5138	-0,0405	-1,5312	11,9934	1,5138
4,2532	2,6881	32,2936	8,5278	4,2532

PARÁMETROS
INICIALES

Zxo	Zyo	Zzo
0	0	0
0,1	0,1	0
0	0	0,1
0,2	0	0
0	0,1	0
0	0	0,01
0	0	0
0	0	0
0	0	0
0	0	0

INFORMACIÓN
RADAR

Coordenadas Radar
4
-356
668

Radar Data	X	Y	Z
0	2	3	2
3	17	-3	17
2	6	9	6
3	9	11	3
1	8	15	1
1	10	25	10
4	13	33	4
1	-1	33	1
1	-1	42	1
0	12	44	0
5	9	50	5
2	4	55	2
3	2	59	3
1	13	63	1
4	-7	43	4
4	-1	65	4

Diagrama de Bloques: Filtro Kalman

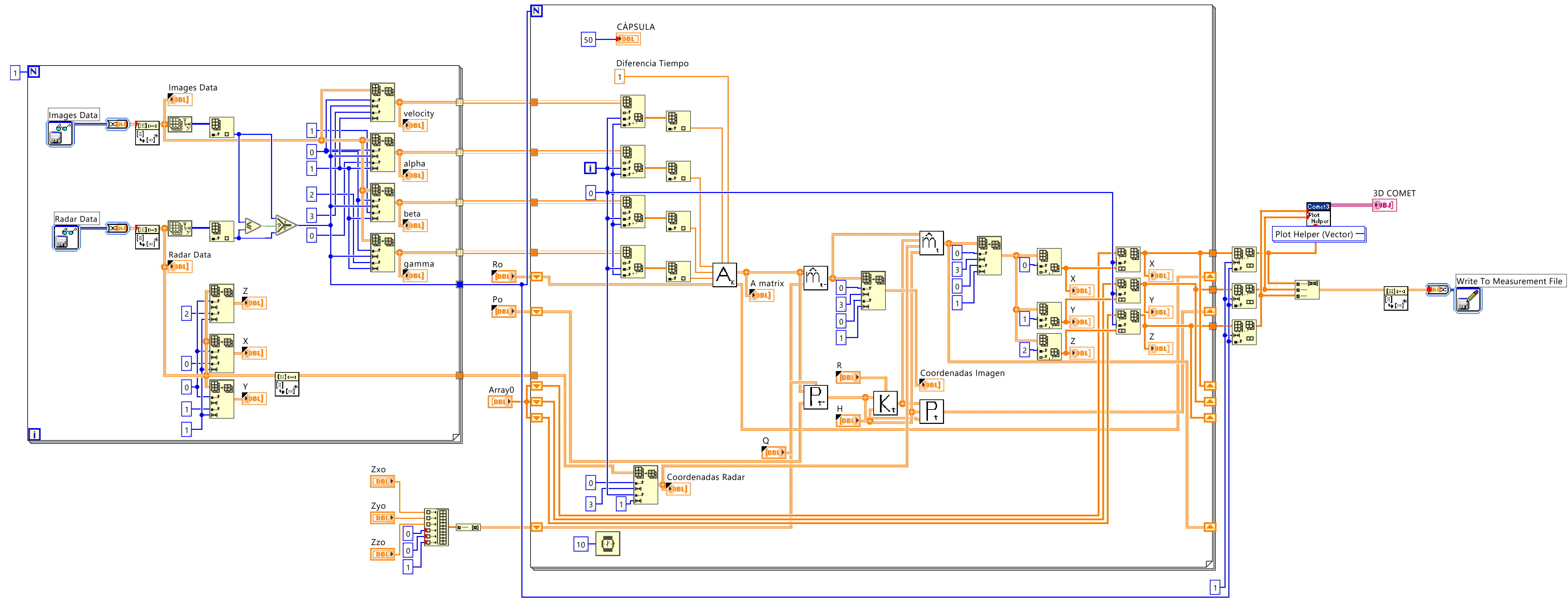


Diagrama de Bloques: Matriz A

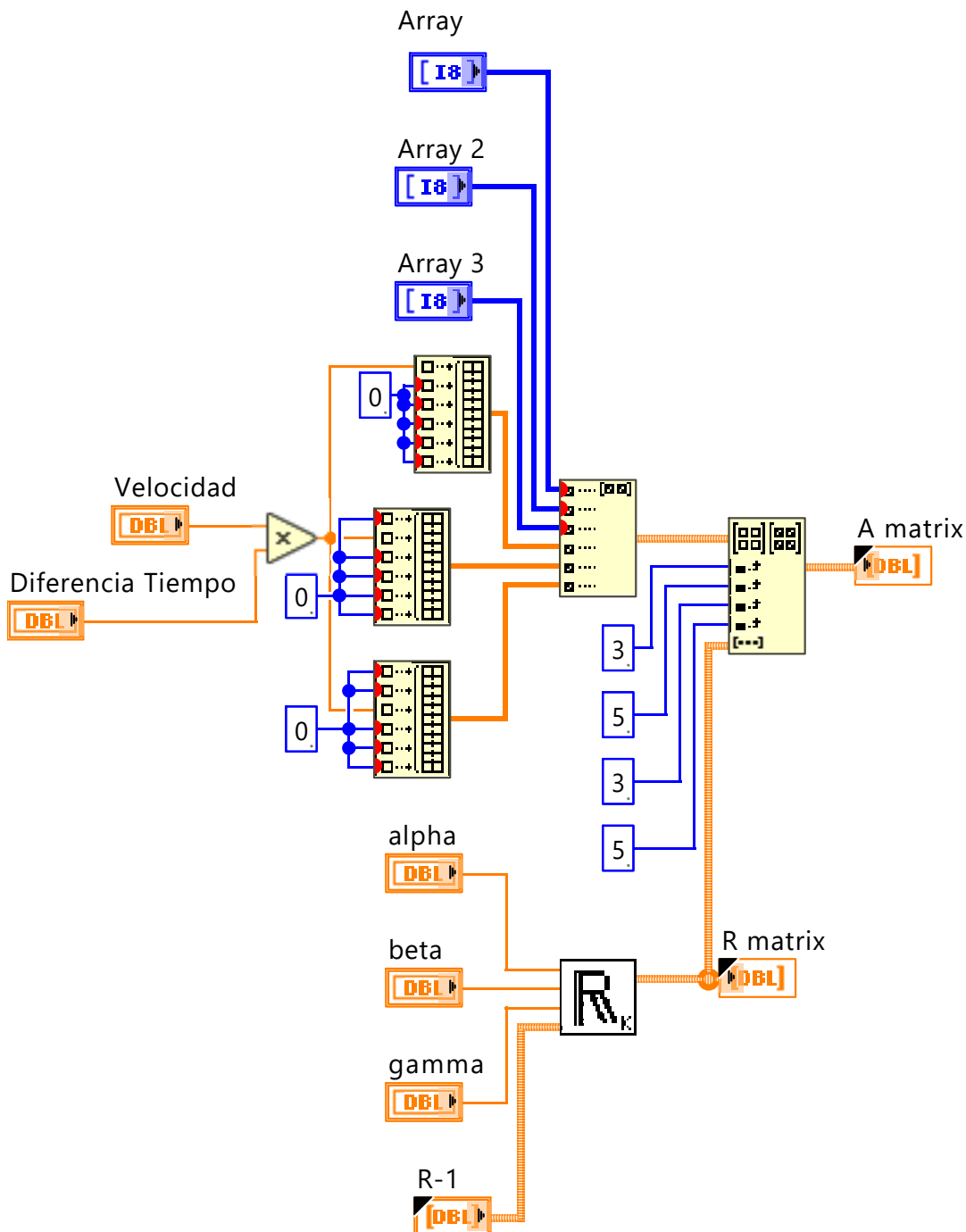


Diagrama de Bloques: Matriz R

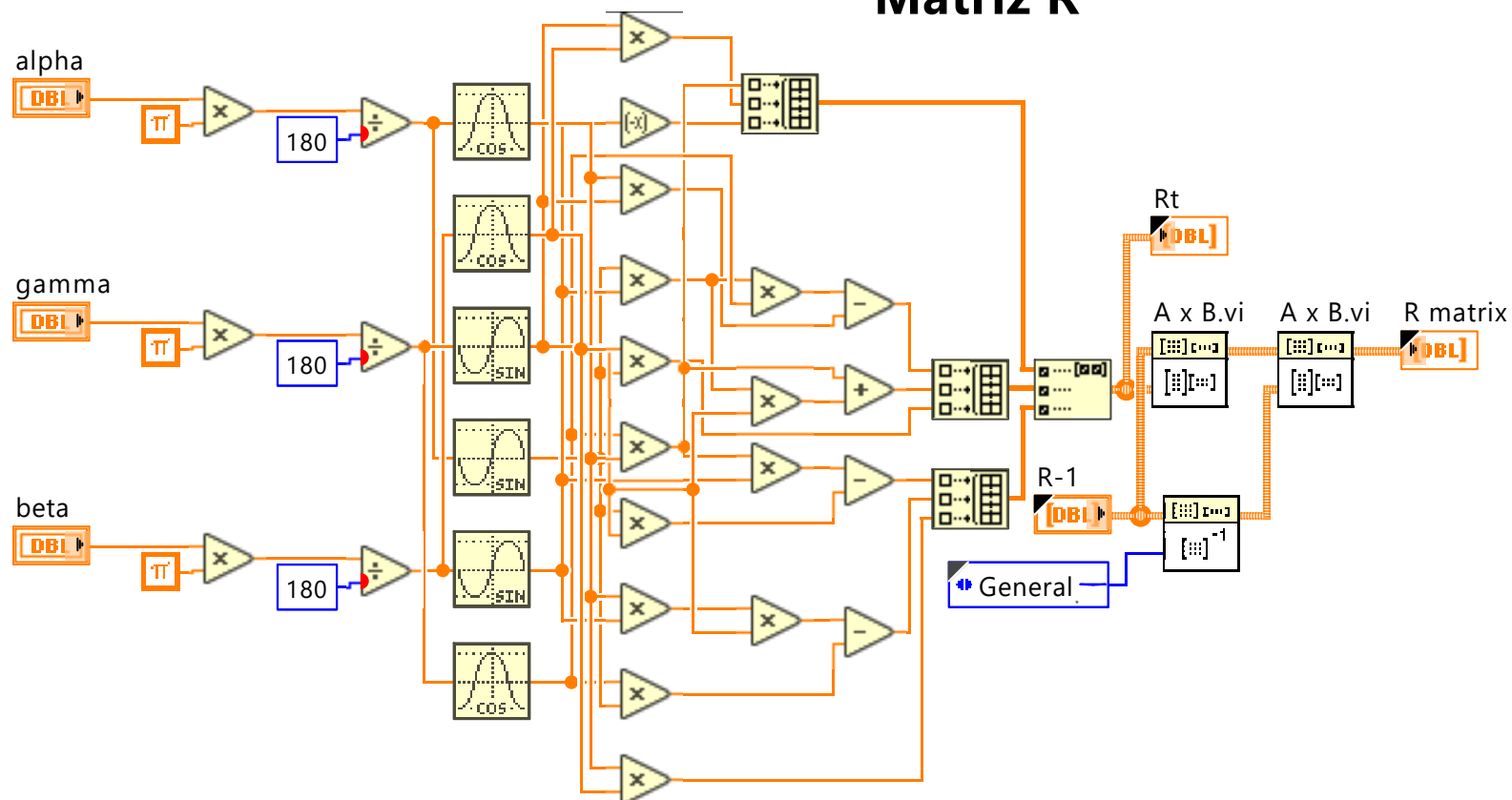


Diagrama de Bloques: Matriz Ganancia K

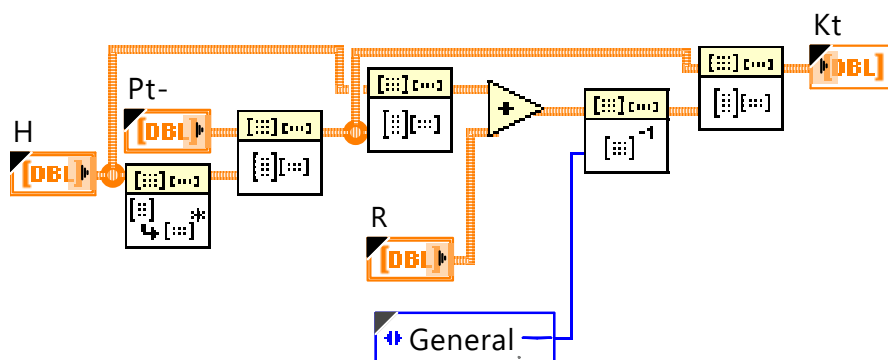


Diagrama de Bloques: Predicción Matriz m

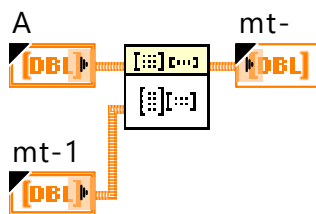


Diagrama de Bloques: Matriz m

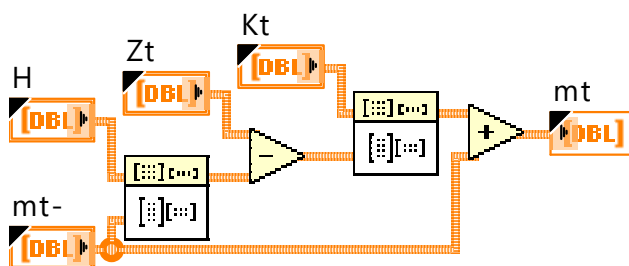


Diagrama de Bloques: Predicción P_t^-

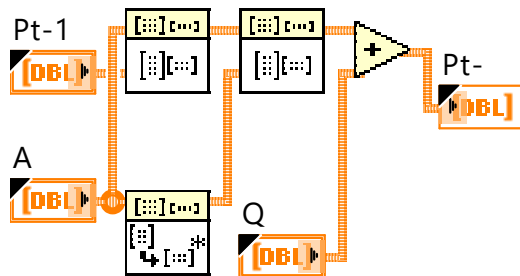


Diagrama de Bloques: Matriz P

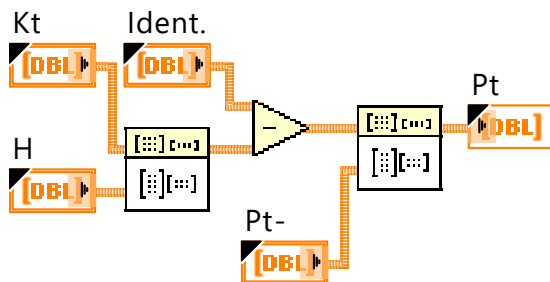
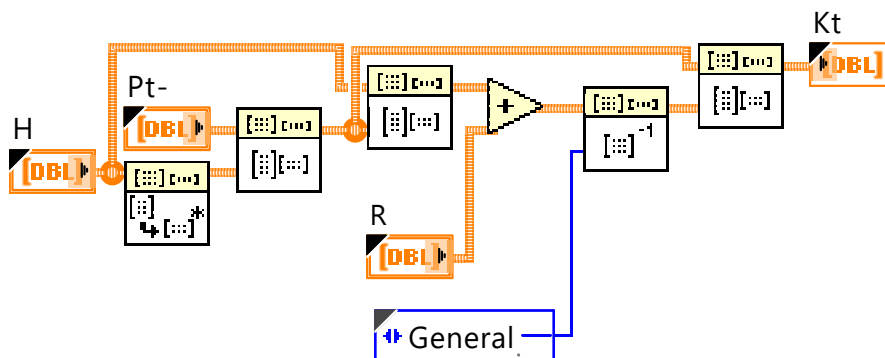


Diagrama de Bloques: Matriz Ganancia K



2. Anexo II: Normativa EN 300 220-2

EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz

Table B.1 summarizes the harmonised frequency bands and their technical key parameters for non specific short-range devices from EC Decision 2017/1483/EU [2].

Table B.1: EU wide harmonised national radio interfaces from 25 MHz to 1000 MHz

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2017/1483/EU [2]
A	26,957 MHz to 27,283 MHz	10 mW e.r.p.	No requirement	The whole band		28
B	26,995 MHz, 27,045 MHz, 27,095 MHz, 27,145 MHz, 27,195 MHz	100 mW e.r.p.	0,1 % duty cycle	10 kHz	Model control devices may operate without duty cycle restrictions.	29, 30, 31, 32, 33
C	40,660 MHz to 40,700 MHz	10 mW e.r.p.	No requirement	The whole band	Video applications excluded.	35
D	169,400 MHz to 169,475 MHz	500 mW e.r.p.	≤ 1,0 % duty cycle For metering devices duty cycle limit is 10 %	50 kHz		37c
E	169,4000 MHz to 169,4875 MHz	10 mW	0,1 % duty	The whole band		38
F	169,4875 MHz to 169,5875 MHz	10 mW	≤ 0,001 % duty cycle Between 00.00 and 06.00 local time a duty cycle limit of 0,1 % may be used	The whole band	Equipment that concentrates or multiplexes individual equipment is excluded.	39b
G	169,5875 MHz to 169,8125 MHz	10 mW	0,1 % duty cycle	The whole band		40
H	433,050 MHz	10 mW	10%	The whole band		44b, 45b

Operational Frequency Band		Maximum effective radiated power, e.r.p.	Channel access and occupation rules (e.g. Duty cycle or LBT + AFA)	Maximum occupied bandwidth	Other usage restrictions	Band number from EC Decision 2017/1483/EU [2]
I	433,050 MHz to 434,790 MHz	1 mW e.r.p. -13 dBm/10 kHz power spectral density for bandwidth modulation larger than 250 kHz	No requirement	The whole band	Audio and video applications are excluded.	44a, 45a
J	434,040 MHz to 434,790 MHz	10 mW	No requirement	25 kHz	Audio and video applications are excluded.	45c
K	863 MHz to 865 MHz	25 mW e.r.p.	$\leq 0,1$ % duty cycle or polite spectrum access	The whole band except for audio & video applications limited to 300 kHz		46a
L	865 MHz to 868 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band		47
M	868,000 MHz to 868,600 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band		48
N	868,700 MHz to 869,200 MHz	25 mW e.r.p.	$\leq 0,1$ % duty cycle or polite spectrum access	The whole sub-band		50
P	869,400 MHz to 869,650 MHz	500 mW e.r.p.	≤ 10 % duty cycle or polite spectrum access	The whole band		54
P	869,700 MHz to 870,000 MHz	5 mW e.r.p.	No requirement	The whole band	Audio and video applications are excluded.	56a
Q	869,700 MHz to 870,000 MHz	25 mW e.r.p.	≤ 1 % duty cycle or polite spectrum access	The whole band	Analogue audio applications are excluded. Analogue video applications are excluded.	56b



Relación de documentos

(X) Memoria	68	páginas
(x) Anexos	13	páginas
(_) etc		páginas

La Almunia, a 23 de 09 de 2020

Firmado: Antonio Bueno Lara

