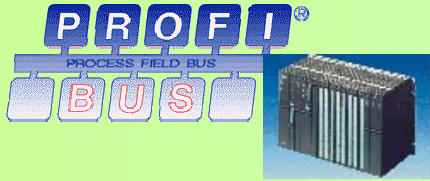




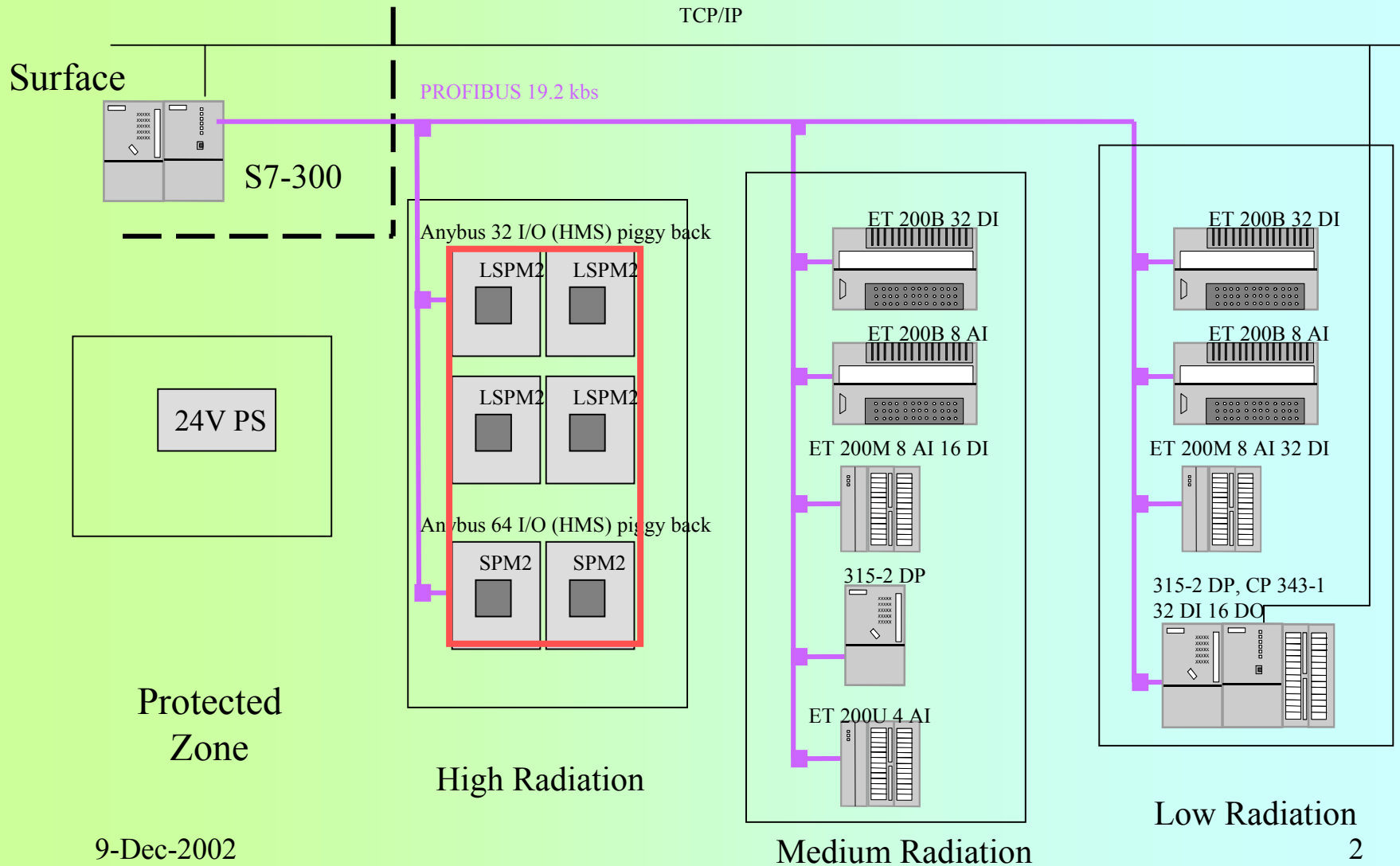
Radiation tests for Siemens and PROFIBUS

Jacky Brahy LHC/IAS
Pierre Dahlen SL/MS

RADWG day 9-dec-2002



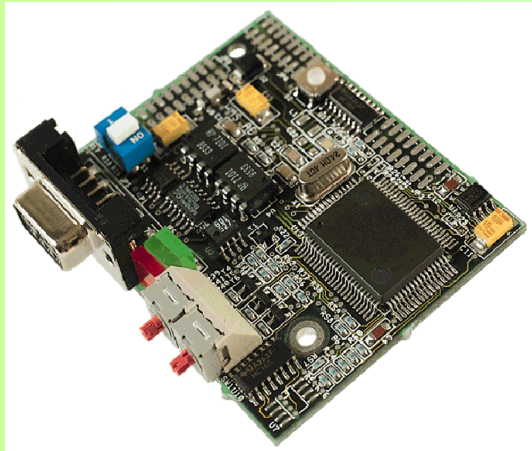
Radiations test : Setup 2002



9-Dec-2002



SIEMENS & PROFIBUS tested modules (1)



AnyBus I/O module



PLC S7-300



ET 200U



SIEMENS & PROFIBUS tested modules (1)



PLC S7-300

The PLC is corrupted
after some minutes.

It is not recommended
to use this material in
radiation environment



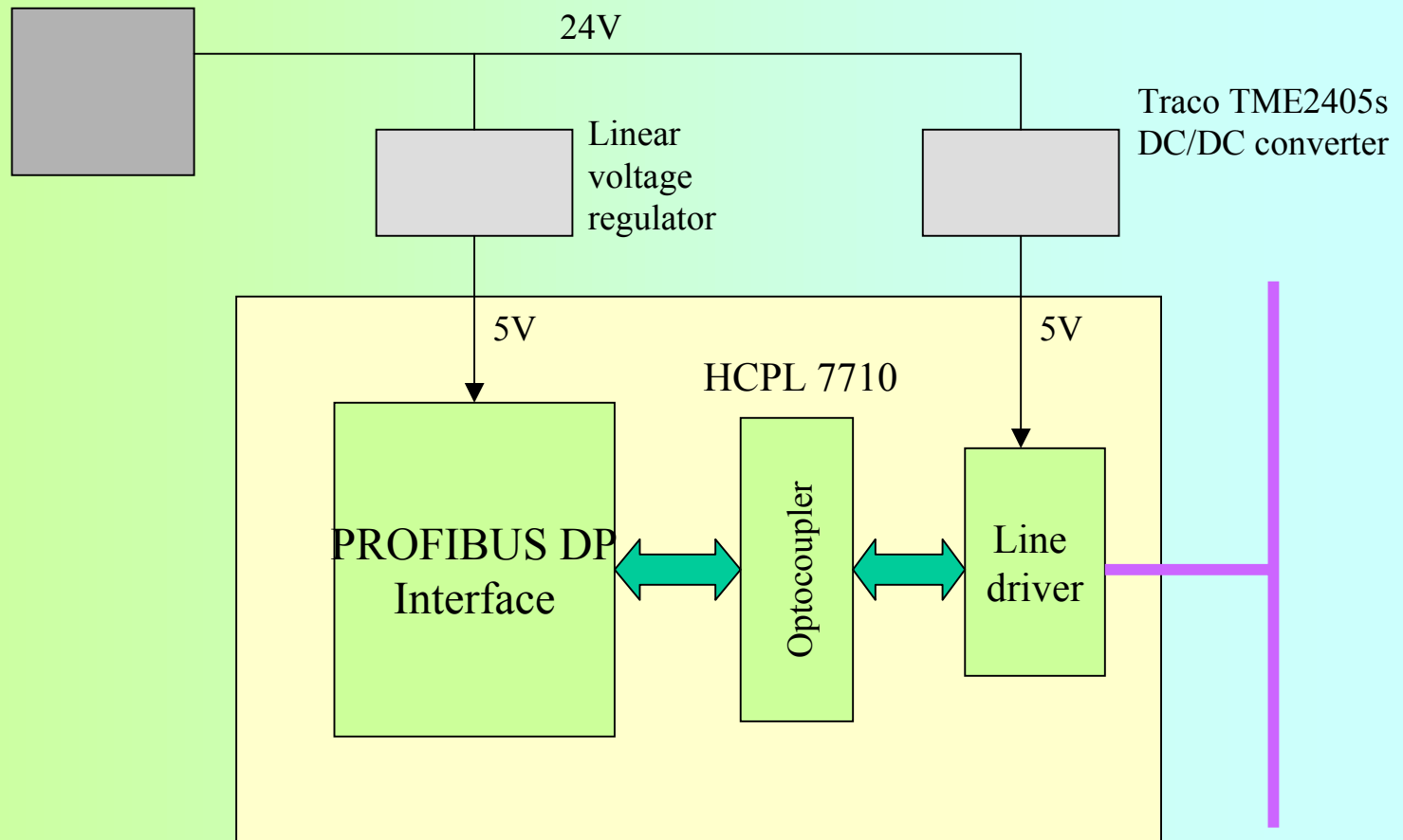
ET 200U

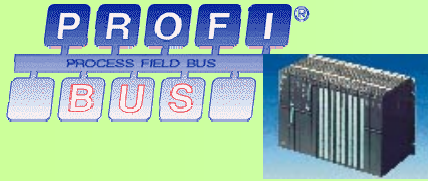
ET 200U decentralized I/O
is an old and simple Siemens
serie. The behaviour is worst
than ET 200M (the new system)
This product is not recommended



PROFIBUS radiation tests

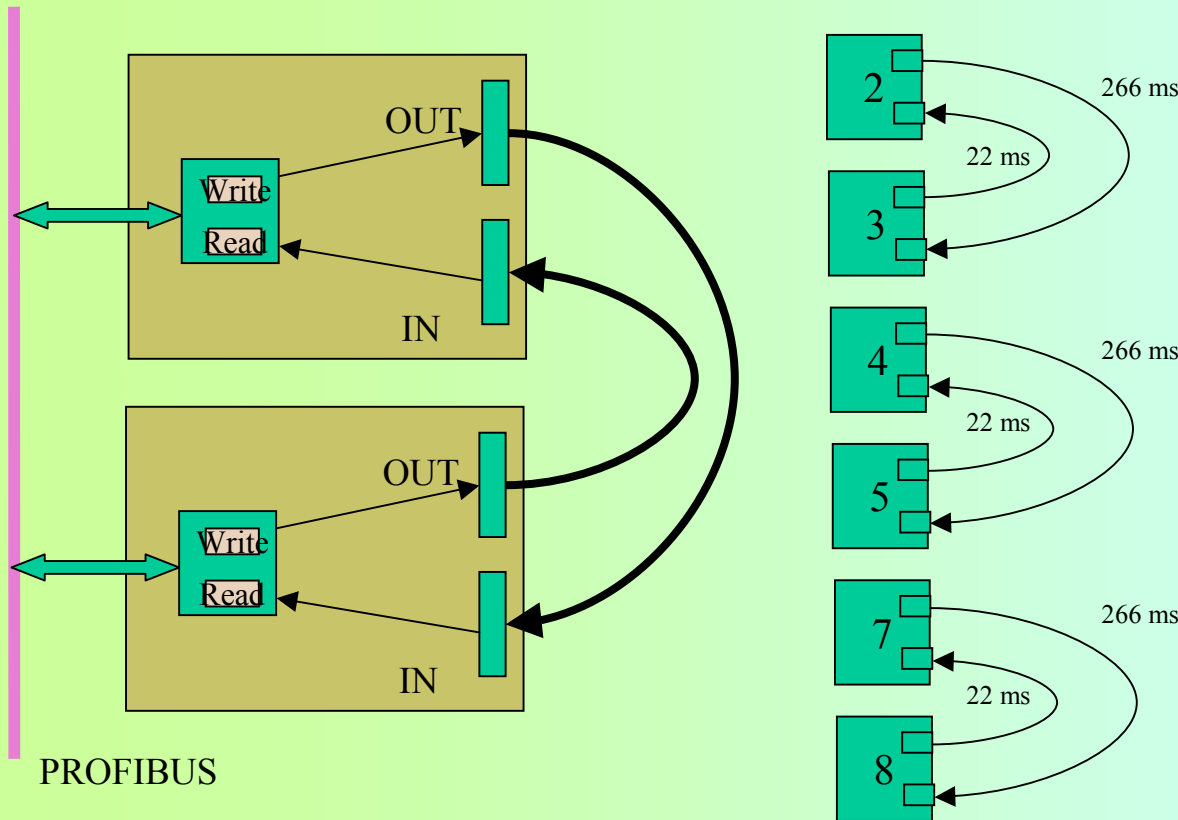
2002 : AnyBus modules





Single event upset probability of HMS Anybus 32 & 64 I/O PROFIBUS piggy back interface

DP cycle time : 274 ms



Results

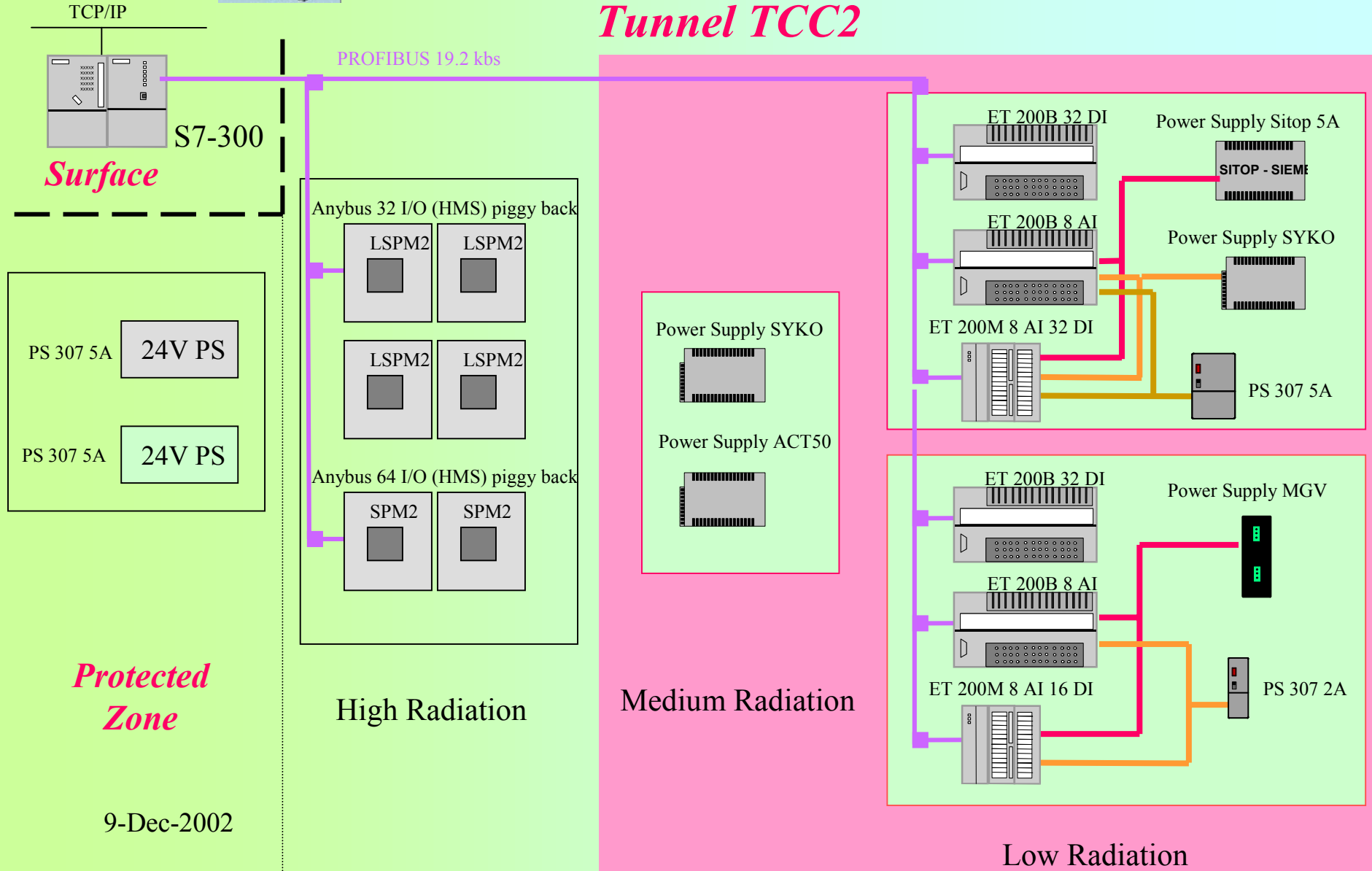
Anybus 32 I/O
OK up to 700 Gys

Anybus 64 I/O
OK up to 2000 Gys



Radiations test : Setup 2002 after Week 28

Tunnel TCC2





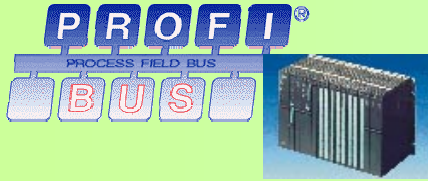
Installation de test en TCC2 – Run 2002



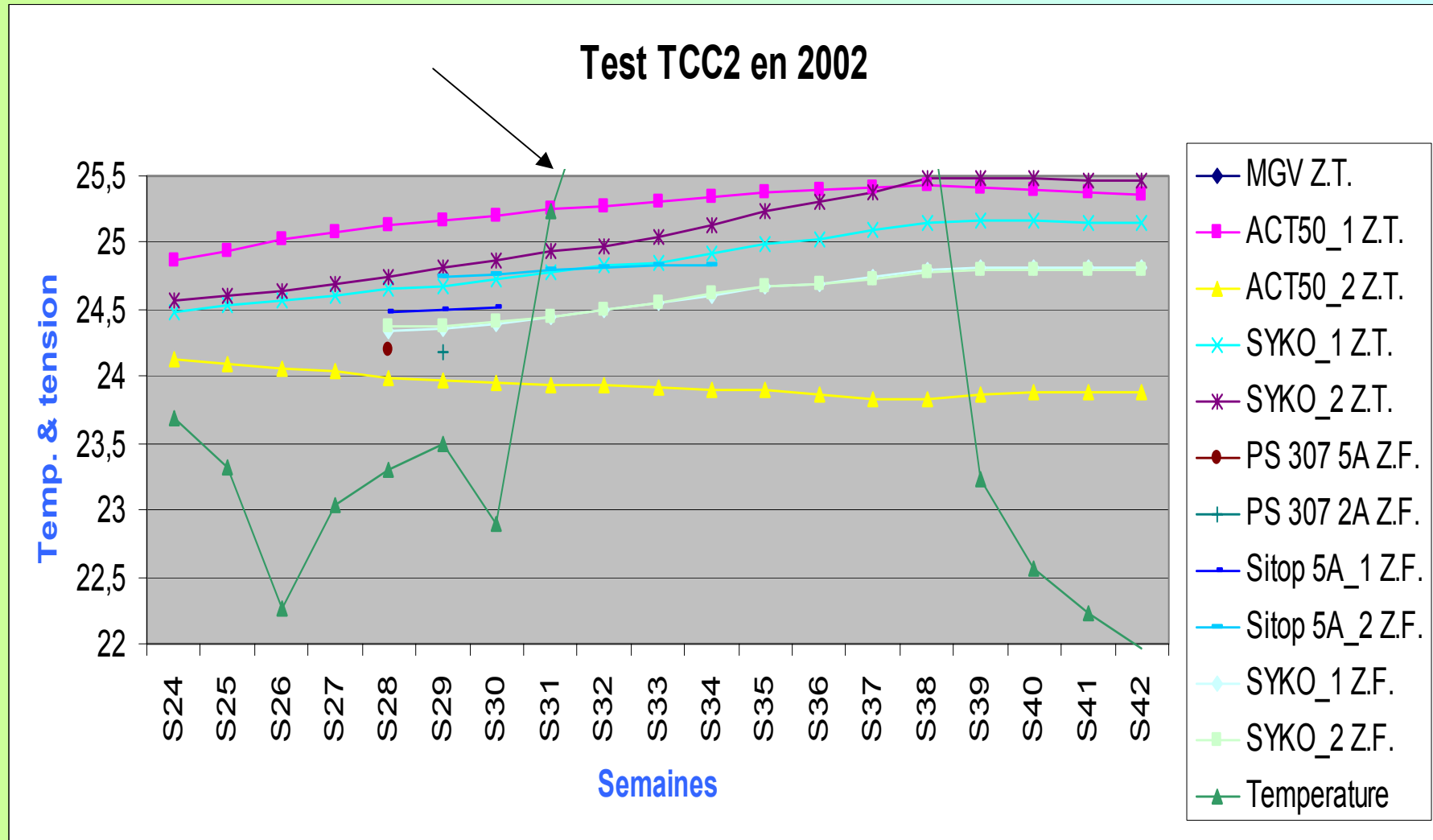
9-Dec-2002

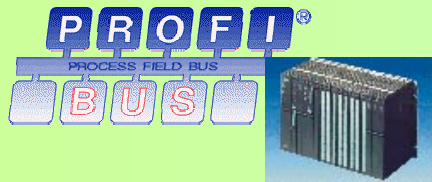
Siemens PLC modules radiations test in TCC2 - May 23 to September 20, 2002 -

Modules	Reference	Serial N °	Status	Radiation (Gray)	SEE (n/cm ² x10 ¹²)	Duration (weeks/days)
ET 200 M	6ES7 153-1AA03-0XB0	S C-NNE79333	BAD	277	1,87	6 w
ET 200 M	6ES7 153-1AA03-0XB0	S C-P3F0623	BAD	280	1,96	5 w
ET 200 M	6ES7 153-1AA03-0XB0	S C-P3F41194	OK	210	1,57	4 w
SM 321 16DI (ET 200M)	6ES7 321-1BH02-0AA0	S C-NNF16364	BAD	136	0,97	4 w
SM 321 32DI (ET 200M)	6ES7321-1BL00-0AA0	S C-P3F64025	BAD	500	3,69	9 w
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0	S C-NNG50644	BAD	43	0,40	2 w
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0	S C-P3E30770	BAD	60	0,65	12 d
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0	S C-P5C15342	BAD	28	0,34	5 d
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0	S C-NNG 50364	BAD	5	0,05	1 d
ET 200B 32 DI (Module)	6ES7 131-0BL00-0XB0	S C-NNC18601	BAD	80	0,67	3 w
ET 200B 32 DI (Module)	6ES7 131-0BL00-0XB0	S C-NNC18596	BAD	340	2,44	6 w
ET 200B 32 DI (Module)	6ES7 131-0BL00-0XB0	S C-P3E02968	BAD	61	0,32	11 d
ET 200B 32 DI (Module)	6ES7 131-0BL00-0XB0	S C-P3E 02962	OK	510	3,66	9 w
ET 200B 32 DI (Socket)	6ES7 193-0CB10-0XA0	S C-NNA28144	OK	601	4,33	12 w
ET 200B 32 DI (Socket)	6ES7 193-0CB10-0XA0	S C-NNE50566	OK	550	4,01	10 w
ET 200B 8AI (Module)	6ES7 134-0KH01-0XB0	S C-N0A24 755	BAD	20	0,13	5 d
ET 200B 8AI (Module)	6ES7 134-0KH01-0XB0	S C-P2B72516	BAD	27	0,18	5 d
ET 200B 8AI (Module)	6ES7 134-0KH01-0XB0	S C-P2B72527	BAD	25	0,18	5 d
ET 200B 8AI (Socket)	6ES7 193-0CD40-0XA0	S C-NNC 46087	BAD	95	0,67	23 d
ET 200B 8AI (Socket)	6ES7 193-0CD40-0XA0	S C-P3D28352	BAD	80	0,38	15 d
PS 307 5A	6ES7 307-1EA00-0AA0	S Q6NN350341	BAD	13	0,04	2 d
PS 307 5A	6ES7 307-1EA00-0AA0	S Q6P3336437	BAD	3	0,01	0.5 d
PS 307 2A	6ES7 307-1BA00-0AA0	S Q6P5320969	BAD	5	0,05	1 d
PS MGV	PH70-2403	00BC151387	BAD	41	0,13	1 w
PS Syko	7.55.233.001.0	2,06007	OK	550	4,01	10 w
PS Syko	7.55.233.001.0	2,06006	OK	942	8,02	17 w
PS ACT 50	ACT50	4000,1270	OK	942	8,02	17 w
PS Sitop 5A	6EP1333-1AL11	Q6NN367122	BAD	80	0,65	2 w
PS Sitop 5A	6EP1333-1AL11	S Q6P4389091	BAD	317	2,23	5 w
Profibus Repeater	6ES7 972-0AA01-0XA0	S C-P5C65251	OK	268	2,05	5 w



Graphe du suivi des alimentations testées





Installation de test en TT60 - Run 2002



9-Dec-2002



Siemens PLC modules radiations test in TT60 - May 23 to September 20, 2002 -

Modules	Reference	Serial N°	Status	Radiation (Gray)	SEE (n/cm ² x10 ¹²)	Duration (weeks)
ET 200 M	6ES7 153-1AA03-0XB0		OK	22	5,82	17
SM 321 32DI (ET 200M)	6ES7321-1BL00-0AA0		OK	22	5,82	17
SM 321 16DI (ET 200M)	6ES7 321-1BH02-0AA0		OK	22	5,82	17
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0	S C-NNG50364	OK	5,63	0,76	5
SM 331 8AI (ET 200M)	6ES7 331-7KF02-0AB0		OK	16,6	0,76	12
ET 200B 8AI (Module)	6ES7 134-0KH01-0XB0		OK	15	1,20	13
ET 200B 8AI (Socket)	6ES7 193-0CD40-0XA0		BAD	15	1,20	13
ET 200B 16 DI (Module)	6ES7131-0BH00-0XB0		OK	22	5,82	17
ET 200B 16 DI (Socket)	6ES7193-0CA10-0XA0		OK	22	5,82	17
Profibus Repeater	6ES7 972-0AA01-0XA0	S C-P5C65550	OK	8,1	4,68	5
PS ACT 50			OK	22	5,82	17
PS Syko			OK	22	5,82	17
PS Syko			OK	22	5,82	17
PS MGV	PH70-2403		OK	22	5,82	17
PS Sitop 5A	6EP1333-1AL11		OK	22	5,82	17
PS 307 2A	6ES7 307-1BA00-0AA0		OK	22	5,82	17



Graphe du suivi des alimentations testées

