

ISOCOM  Total Dose Test Report			Ref: TIO/IS0038
			Issue: 03
Part Type: IS49 (4N49)	Designation: Optocouplers	Specification: ESA/SCCNo: 22900	Date: 10/07/12
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2.4 Irradiation test sequence

A total dose of 150krad(Si) was reached at the ESTEC Co-60 facility in 7 dose steps of 4krad, 16krad, 8krad, 17krad, 7krad, 70krad and 28krad respectively in accordance with the irradiation test sequences shown in Table 2 below.

Run	Date	Start	Stop	Run	Distance	Rate	Dose	Cumulative	Total
N	Time	Time	Time	Time	cm	rad/min	krad	krad	krad
1	22/10/08	13.20	17.10	405	128.0	20.0	4.50	4.50	4.50
2	23/10/08		8.46	901	127.5	20.3	18.27	22.77	20.30
3	23/10/08	9.26	17.00	454	128.0	20.0	9.12	31.90	28.70
4	24/10/08	17.32	9.20	948	129.0	19.8	18.77	50.67	45.60
5	24/10/08	18.00	9.30	3807	127.4	20.3	77.28	127.95	122.36
6	27/10/08	13.24	15.92	1592	129.7	19.9	31.15	159.10	150.50
Total				8331	mins	20.0	average dose rate		
				5.8	days				

Table 2: Irradiation Test Sequence & Total Dose

Commencing 22 October 2008, the irradiation tests were conducted over a period of six days. The average dose rate was 20 Rad(Si)/min and the total dose of 150Krad(Si) exceeded the original target standard dose of up to 100Krad(Si).

The optocouplers were electrically tested to space requirement specification within one hour of leaving the radiation chamber after each step run. The test results were recorded and are summarised in **Appendix A**.

The electrical control system for ionisation was setup to provide a 5 Volt supply to the printed circuit board. Resistors on the printed circuit board provided a constant current of 1mA to the first row of devices and 10mA to the second row in **Figures 8 and 9**. The third row was unbiased in the OFF condition and all the input and output leads of the optocouplers were connected to the ground.

The control system in **Figure 2** above shows if there is any sudden change in performance of the devices by an increase in current supplied to the PC board. The control system supplied 5 Volts and the total current was monitored during irradiation.

The control system showed that the total current consumed by the components on the printed circuit board throughout the test remained under 70mA.

