Envisat-1	TOTAL DOSE RADIATION TEST REPORT No. PO-TR-TLG-PL-2037	Issue: 1 Rev.: Date: 27/03/96 Page: 1/11

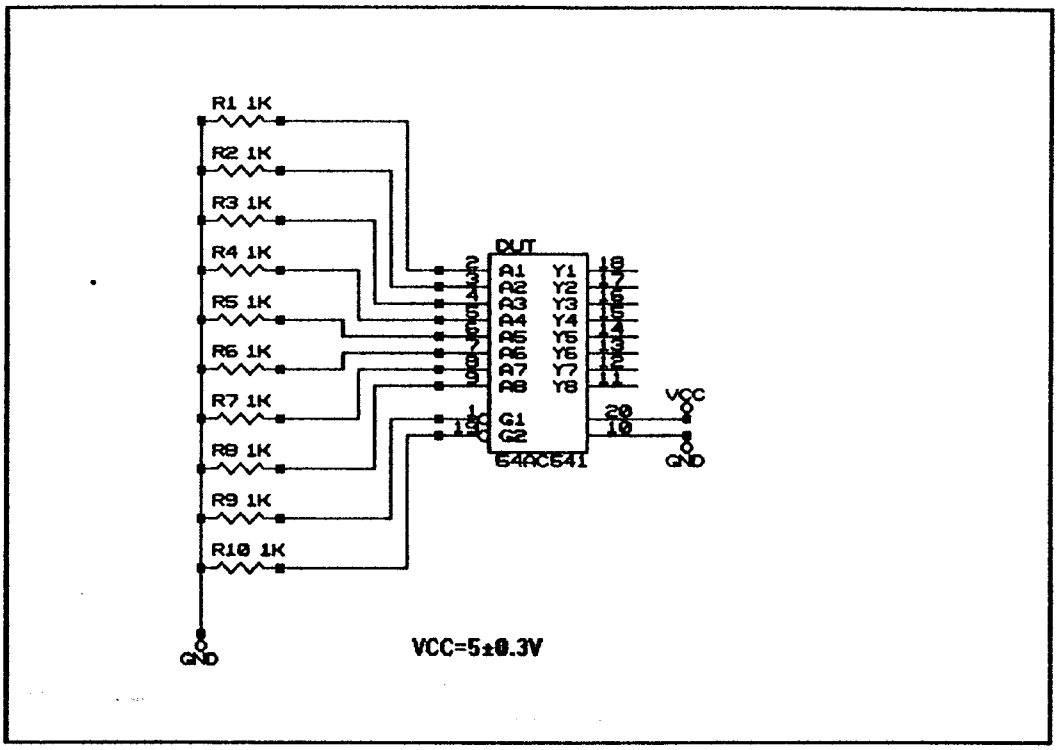
SCC Component No.: 940105801B		Component Designation: 54AC541	Irradiation Spec. No.: PO-PL-TLG-PL-0500 Iss.2
Gen. Spec.: SCC 9000 8D Det. Spec.: SCC 9401/058 Iss.1 Amend.:		Evaluation: - Acceptance Difussion: - Acceptance Lot: X	Project/Programme: ENVISAT-1
Family: 08	Group: 01	Functional Assignment: OCTAL BUS BUFFERS 3-STATE	Package: DIL-20
Manuf.Name: MOTOROLA Address: FRANCE		Test House: TECNOLOGICA Address: MADRID (SPAIN)	Orig.house: TECNOLOGICA Address: SEVILLA (SPAIN)
Radiation Test Plan No.: PO-PL-TLG-PL-2037		Sample Size: 5 Irradiation Devices: 4 Control Devices: 1	Date Code: 9509 Diffusion LOT: AH40730UA Wafer No.: 9
Radiation Source: Cobalt-60 Facility Name: CIEMAT Address: MADRID (SPAIN)		Energy: 1.33/1.17 MeV Dose Rate: 402.6 Rad(Si)/h	Date of Test: 03/96
Irradiation Conditions: Biased: Y Unbiased: - Test Circuit: Figure 1		Irradiation Measurements Interval: Remote test: - In situ Test: X	Annealing Tests: 24h / 25°C Ageing: 168h / 100°C Biased: X Unbiased: - Test Circuit: Figure 1

Electrical Measurements. Parameters Tested:

FT_1 , FT_2 , FT_3 , IDD , VOL_5 , VOH_5 , VIL , VIH .

Irradiat. Respons.: J.A. VALDUEZA Date: 27/03/96 Signature:	Electr. Test Resp.: J.M. VALVERDE Date: 28/03/96 Signature:	Approved by QA: S. MANDELLI Date: 02.04.96 Signature:

FIGURE 1.-TEST CIRCUIT



SUMMARY

Total dose steady-state irradiation test has been carried out on OCTAL BUS BUFFERS 3-STATE from **MOTOROLA** with date code 9509. The irradiated parts were labelled as follows: R2= S/N 8, R3= S/N 9, R4= S/N 10, R5= S/N 11 irradiation devices and R1= S/N 7 control device.

RESULTS

The next table shows a results resume of the irradiation test:

	0 KRAD	10 KRAD	20 KRAD	30 KRAD	ANN 168
FT1	PASS	PASS	PASS	PASS	PASS
FT2	PASS	PASS	PASS	PASS	PASS
FT3	PASS	PASS	PASS	PASS	PASS
IDD(Pat.1)	PASS	PASS	PASS	PASS	PASS
IDD(Pat.2)	PASS	PASS	PASS	PASS	PASS
IDD(Pat.3)	PASS	PASS	PASS	PASS	PASS
IDD(Pat.4)	PASS	PASS	PASS	PASS	PASS
VOL_s	PASS	PASS	PASS	PASS	PASS
VOH_s	PASS	PASS	PASS	PASS	PASS
VIL	PASS	PASS	PASS	PASS	PASS
VIH	PASS	PASS	PASS	PASS	PASS

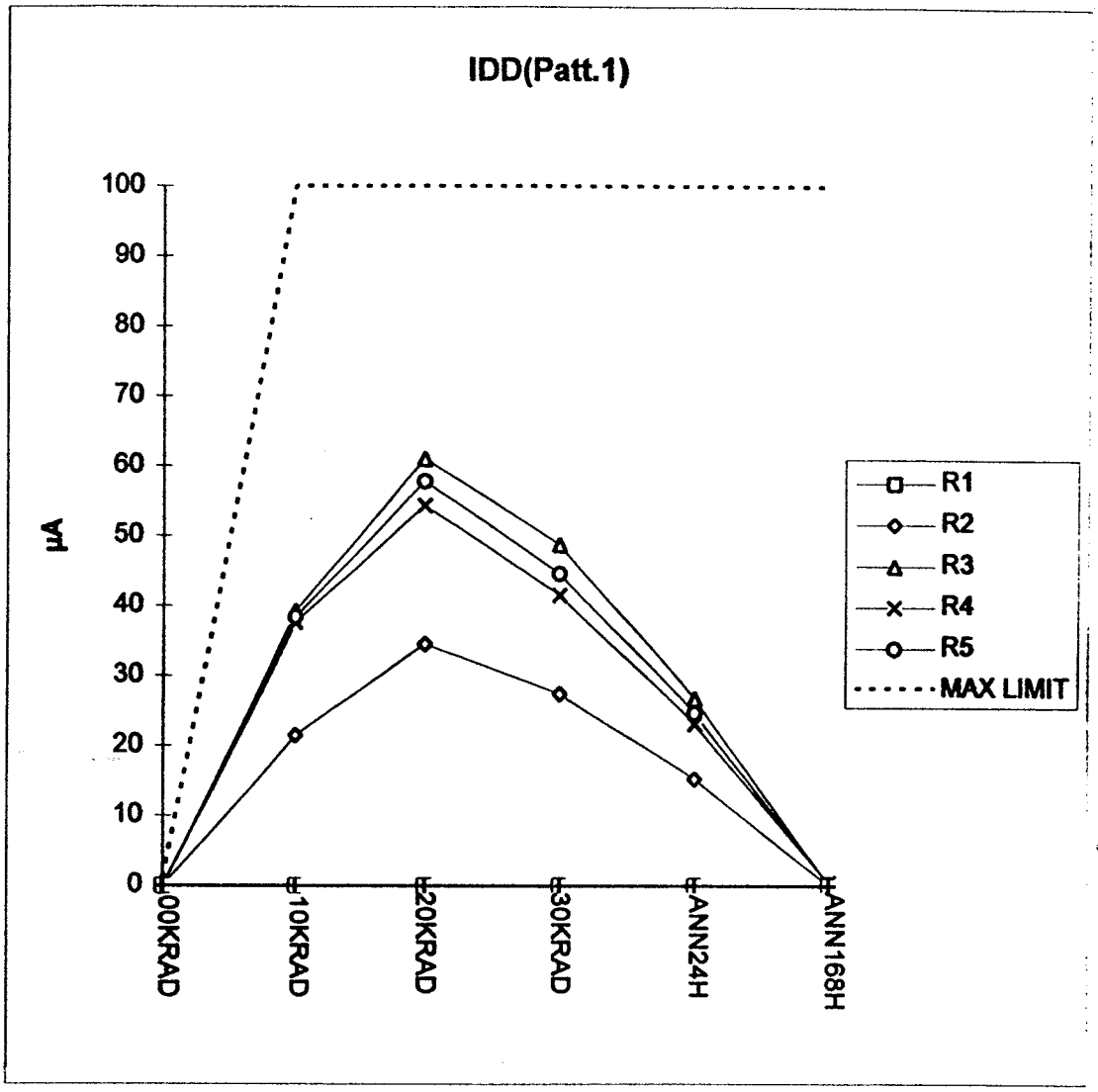
CONCLUSION

All parameters remain under specification.

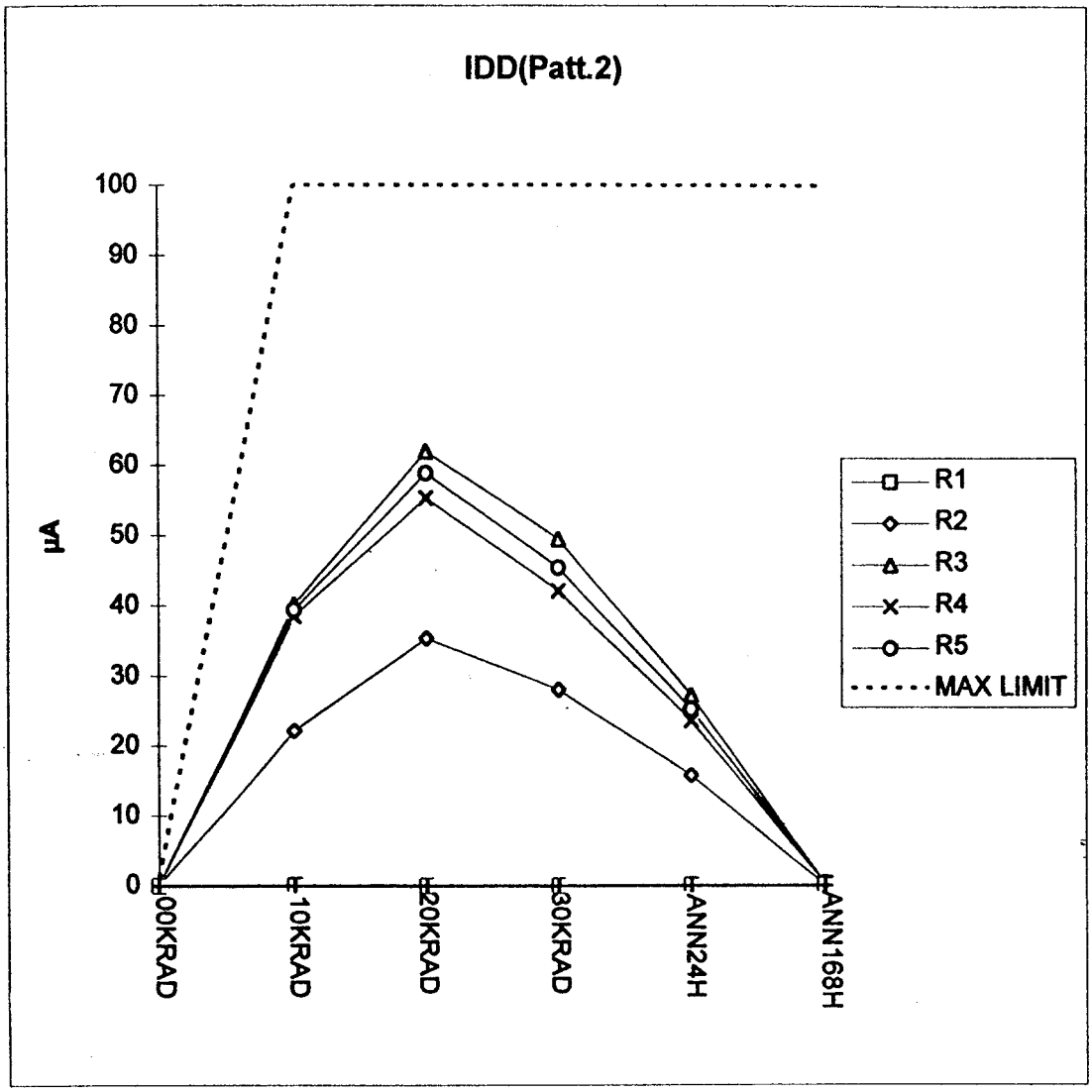
SCHEDULE

Test Step	Description	Result or Actual Test Condition	Time In	Time Out	Exposure
1	Sample serialization	CONTROL R1 IRR. DEVICES R2, R3, R4, R5.			
2	Initial Electrical Measurements	See 0 krad(Si) values in respective Parameter Data Tables Temperature: 24.9°C (average) Humidity: 21.3%			
3	Set-up of Test	Bias circuit verified according to Fig. 1			
4	Irradiation Exposure	Total Dose: 9761.7 rad(Si) Cumulative Dose: 9761.7 rad(Si) Dose Rate: 406.7 rad(Si)/h Temperature: 19.0°C (average)	12:00 11/03	12:00 12/03	24 h
5	Intermediate Electrical Measurements	See 10 krad(Si) values in respective Parameter Data Tables Temperature: 24.8 °C (average) Humidity: 16.0%	12:00 12/03	12:20 12/03	20 min
6	Set-up of Test	Bias circuit verified according to Fig. 1			
7	Irradiation Exposure	Total Dose: 9698.6 rad(Si) Cumulative Dose: 19460.2 rad(Si) Dose Rate: 404.1 rad(Si)/h Temperature: 20.9°C (average)	12:30 12/03	12:30 13/03	24 h
8	Intermediate Electrical Measurements	See 20 krad(Si) values in respective Parameter Data Tables Temperature: 24.4°C (average) Humidity: 24.6%	12:35 13/03	13:00 13/03	25 min
9	Set-up of Test	Bias circuit verified according to Fig. 1			
10	Irradiation Exposure	Total Dose: 9623.3 rad(Si) Cumulative Dose: 29083.5 rad(Si) Dose Rate: 401.0 rad(Si)/h Temperature: 23.2 °C (average)	13:10 13/03	13:10 14/03	24 h

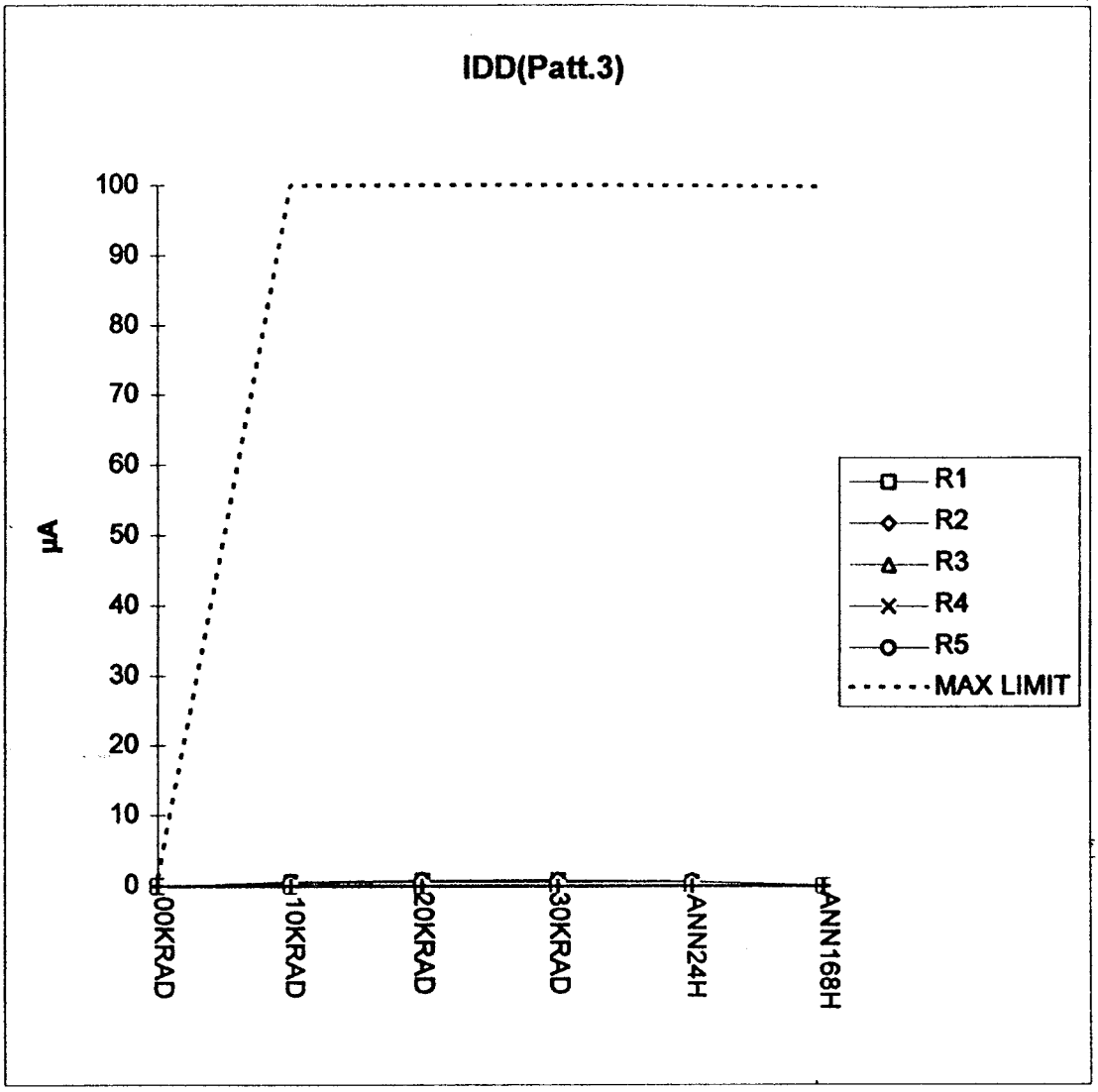
Test Step	Description	Result or Actual Test Condition	Time In	Time Out	Exposure
11	Intermediate Electrical Measurements	See 30 krad(Si) values in respective Parameter Data Tables Temperature: 25.0°C (average) Humidity: 28.0%	13:15 14/03	13:40 14/03	20 min
12	Annealing	Bias circuit verified according to Fig. 1 Temperature: 25.3°C (average)	13:50 14/03	13:50 15/03	24 h
13	Electrical Measurements	See ANN24H values in respective Parameter Data Tables Temperature: 25.0°C (average) Humidity: 21.0%	14:00 15/03	14:20 15/03	20 min
14	Accelerated Ageing	Bias circuit verified according to Fig. 1 Temperature: 100°C	14:30 15/03	14:30 22/03	168 h.
15	Final Electrical Measurements	See ANN168H values in respective parameter Data Tables Temperature: 30.5°C (average) Humidity: 26.0%	14:35 22/03	15:00 22/03	



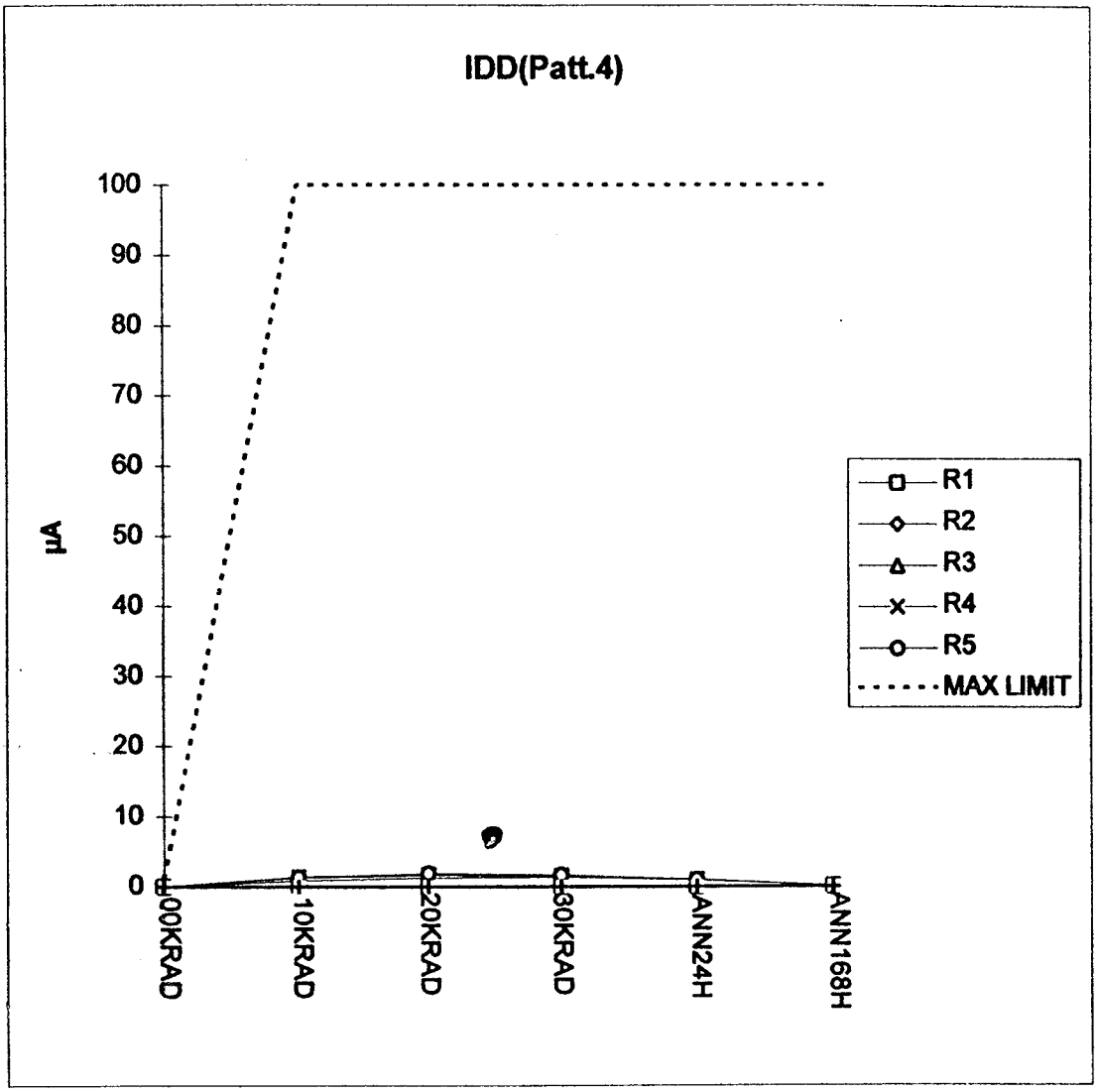
IDD(Patt.1)	00KRAD*	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.008	0.015	0.034	0.036	0.055	0.041
R2	0.023	21.480	34.480	27.387	15.280	0.056
R3	0.012	39.215	61.012	48.721	26.708	0.168
R4	0.014	37.587	54.324	41.472	23.107	0.463
R5	0.011	38.338	57.779	44.567	24.670	0.219
MAX LIMIT	1	100	100	100	100	100



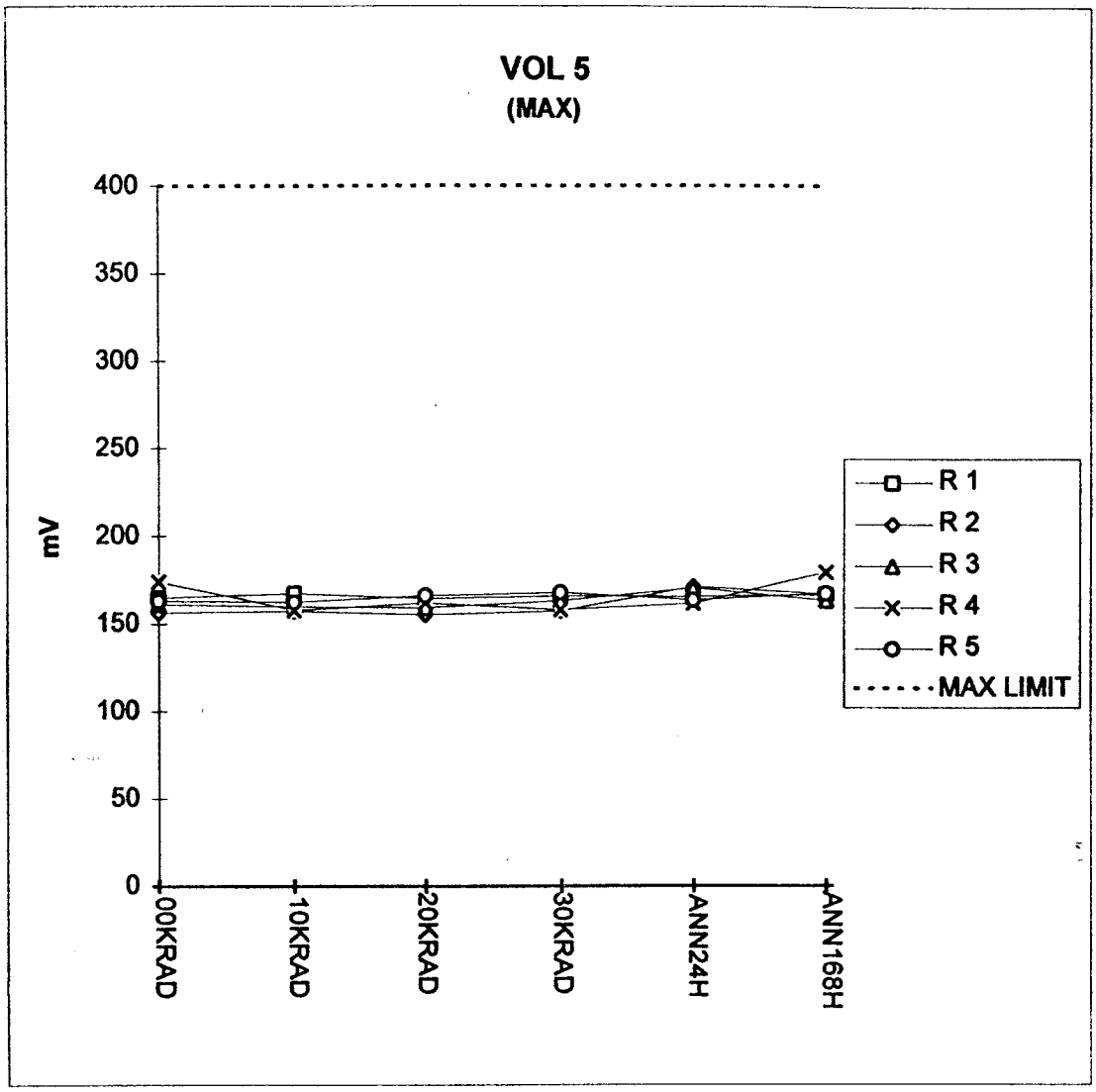
IDD(Patt.2)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.015	0.116	0.003	0.006	0.098	0.040
R2	0.024	22.139	35.348	28.046	15.756	0.072
R3	0.011	40.176	62.033	49.494	27.223	0.305
R4	0.022	38.479	55.333	42.071	23.573	0.363
R5	0.012	39.396	58.867	45.404	25.200	0.432
MAX LIMIT	1	100	100	100	100	100



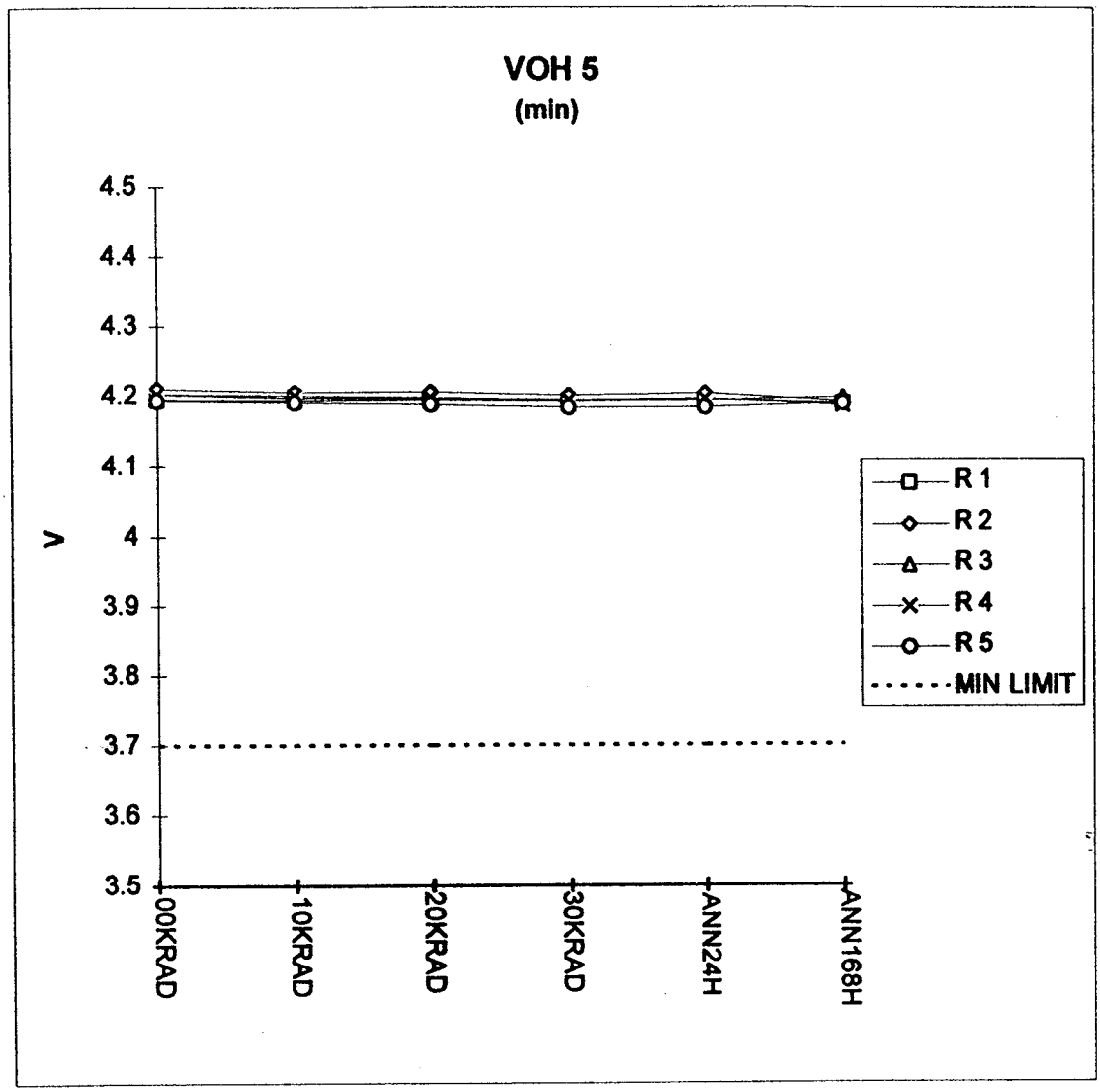
IDD(Patt.3)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.01	0.019	0.012	0.034	0.042	0.015
R2	0.010	0.344	0.566	0.566	0.539	0.030
R3	0.014	0.578	0.706	0.813	0.641	0.098
R4	0.008	0.584	0.806	0.879	0.562	0.025
R5	0.010	0.594	0.824	0.818	0.687	0.007
MAX LIMIT	1	100	100	100	100	100



IDD(Patt.4)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.001	0.043	0.044	0.011	0.009	0.076
R2	0.007	0.821	1.239	1.331	0.913	0.114
R3	0.008	1.221	1.571	1.516	0.905	0.034
R4	0.008	1.411	1.738	1.588	0.995	0.106
R5	0.007	1.325	1.851	1.639	1.006	0.081
MAX LIMIT	1	100	100	100	100	100



VOL 5		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	151.950	155.300	152.650	153.350	154.000	154.400
	MAX	164.95	167.450	164.550	165.800	165.350	166.500
R 2	min	145.050	146.700	143.750	146.150	159.950	154.650
	MAX	156.400	157.300	155.300	157.300	171.000	166.900
R 3	min	148.500	148.500	146.350	150.200	157.450	151.800
	MAX	161.100	159.800	159.300	163.000	170.350	163.300
R 4	min	161.050	144.800	149.250	144.750	148.900	166.650
	MAX	174.050	157.750	162.000	158.050	161.350	179.300
R 5	min	150.600	150.250	153.950	155.900	151.950	153.050
	MAX	163.050	162.450	166.100	167.750	163.400	167.200
MAX LIMIT		400	400	400	400	400	400



VOH 5		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	4.195	4.194	4.194	4.192	4.194	4.189
	MAX	4.205	4.204	4.203	4.201	4.203	4.199
R 2	min	4.210	4.205	4.205	4.2	4.203	4.191
	MAX	4.222	4.216	4.215	4.212	4.215	4.2
R 3	min	4.202	4.197	4.196	4.193	4.193	4.197
	MAX	4.208	4.204	4.202	4.199	4.199	4.209
R 4	min	4.203	4.2	4.197	4.194	4.195	4.186
	MAX	4.211	4.209	4.205	4.203	4.203	4.194
R 5	min	4.194	4.191	4.188	4.184	4.184	4.189
	MAX	4.21	4.207	4.204	4.201	4.201	4.199
MIN LIMIT		3.7	3.7	3.7	3.7	3.7	3.7