Envisat-1	TOTAL DOSE RADIATION TEST REPORT No. PO-TR-TLG-PL-2035	Issue: 1 Rev.: Date: 27/03/96 Page: 1/15

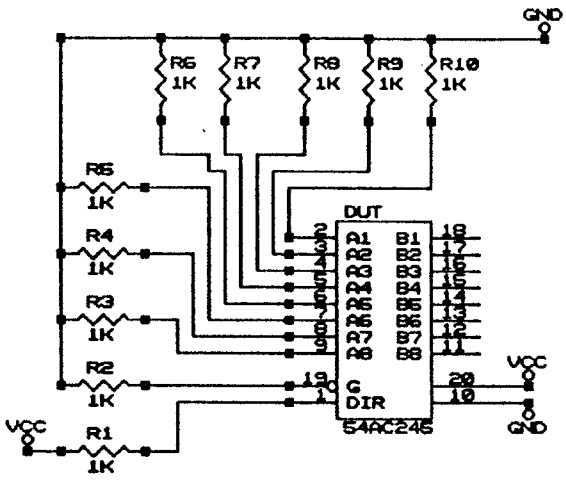
SCC Component No.: 940501701B		Component Designation: 54AC245	Irradiation Spec. No.: PO-PL-TLG-PL-0500 Iss.2
Gen. Spec.: SCC 9000 8D Det. Spec.: SCC 9405/017 Iss.1 Amend.:		Evaluation: - Acceptance Difussion: - Acceptance Lot: X	Project/Programme: ENVISAT-1
Family: 08	Group: 01	Functional Assignment: OCTAL BIDIR. TRANS. 3-STATE	Package: DIL-20
Manuf.Name: MOTOROLA Address: FRANCE		Test House: TECNOLOGICA Address: MADRID (SPAIN)	Orig.house: TECNOLOGICA Address: SEVILLA (SPA[illegible]
Radiation Test Plan No.: PO-PL-TLG-PL-2035		Sample Size: 5 Irradiation Devices: 4 Control Devices: 1	Date Code: 9509 Diffusion LOT: AH0262[illegible]TA Wafer No.: 18
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. VAQUERO Date: 27/03/96 Signature:	Electr. Test Resp.: J.M. VALVERDE Date: 28/03/96 Signature:	Approved by QA: S MAYORDOMO Date: 01/04/96 Signature:

FIGURE 1.-TEST CIRCUIT



VCC=5±0.3V

SUMMARY

Total dose steady-state irradiation test has been carried out on OCTAL BIDIRECTIONAL TRANSCEIVER 3-STATE from MOTOROLA with date code 9509. The irradiated parts were labelled as follows: R2 = S/N 56, R3 = S/N 57, R4 = S/N 58, R5 = S/N 59 irradiation devices and R1 = S/N 55 control device.

RESULTS

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

	0 KRAD	10 KRAD	20 KRAD	30 KRAD	ANN 168
FT_1	PASS	PASS	PASS	PASS	PASS
FT_2	PASS	PASS	PASS	PASS	PASS
FT_3	PASS	PASS	PASS	PASS	PASS
IDD(Patt.1)	PASS	PASS	PASS	PASS	PASS
IDD(Patt.2)	PASS	PASS	PASS	PASS	PASS
IDD(Patt.3)	PASS	PASS	PASS	PASS	PASS
IDD(Patt.4)	PASS	PASS	PASS	PASS	PASS
IDD(Patt.5)	PASS	PASS	PASS	PASS	PASS
IDD(Patt.6)	PASS	PASS	PASS	PASS	PASS
VOL_5	PASS	PASS	PASS	PASS	PASS
VOH_5	PASS	PASS	PASS	PASS	PASS
VIL	PASS	PASS	PASS	PASS	PASS
VIH	PASS	PASS	PASS	PASS	PASS

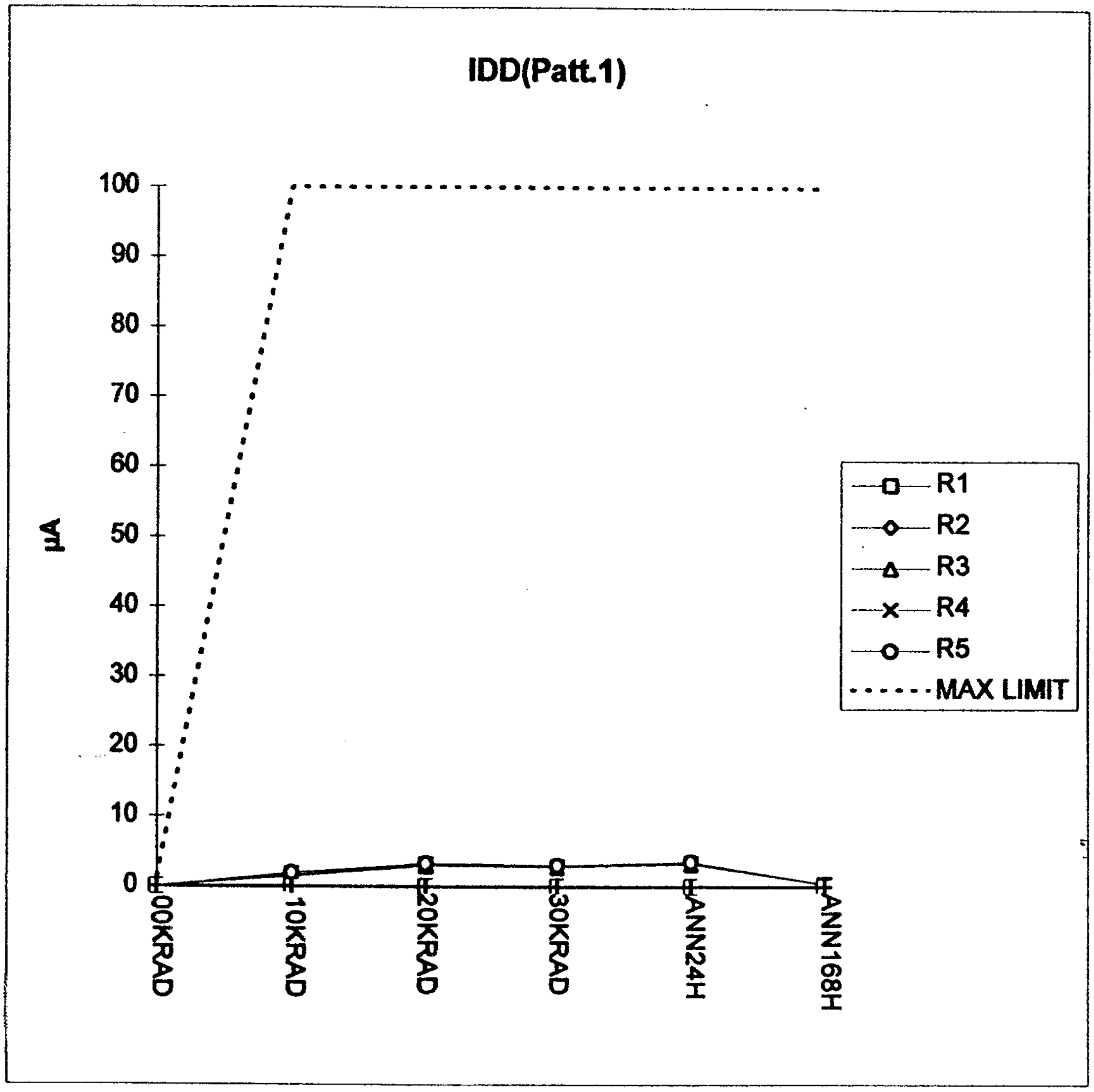
CONCLUSION

All parameters remain under specification.

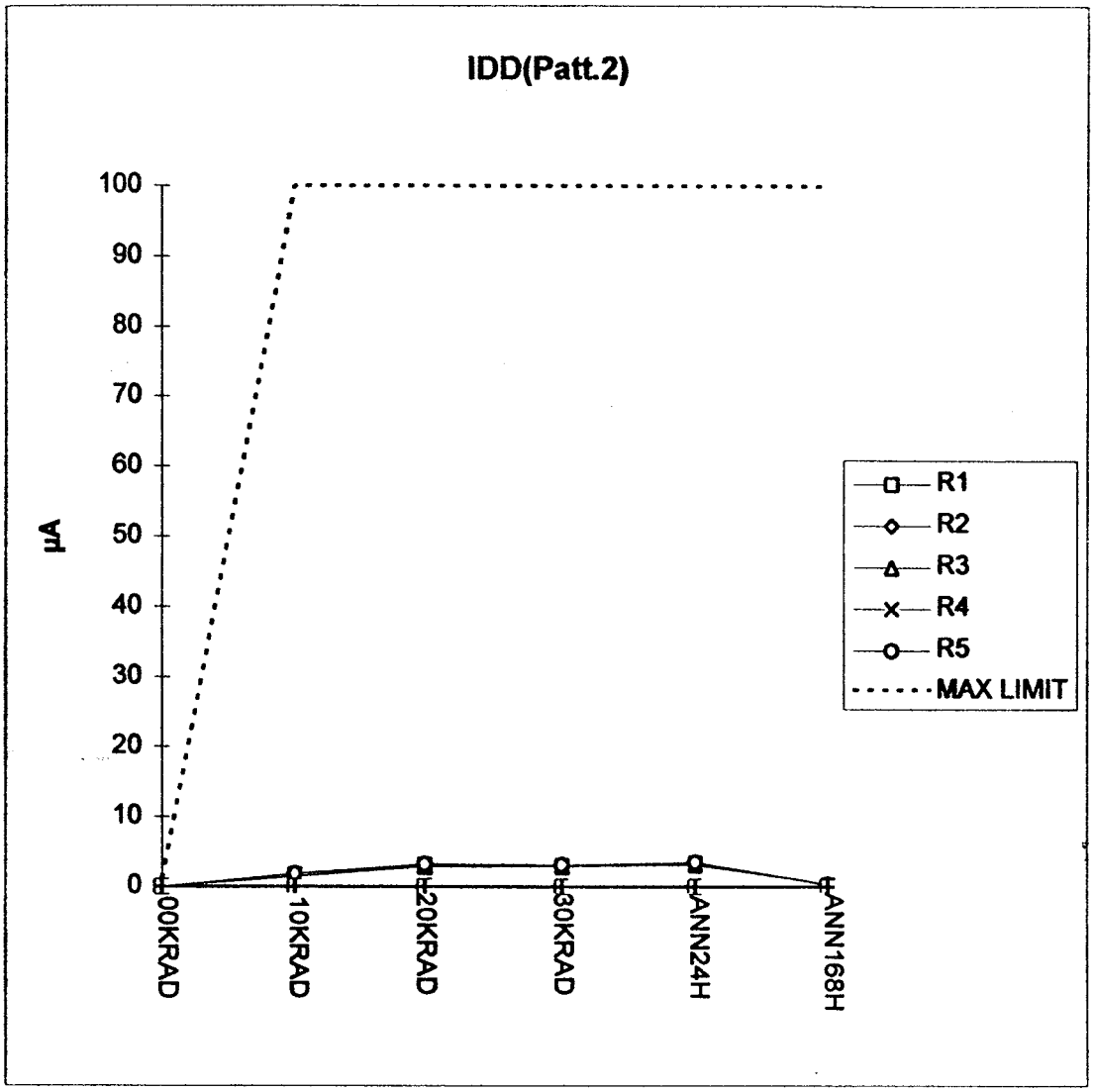
SCHEDULE

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

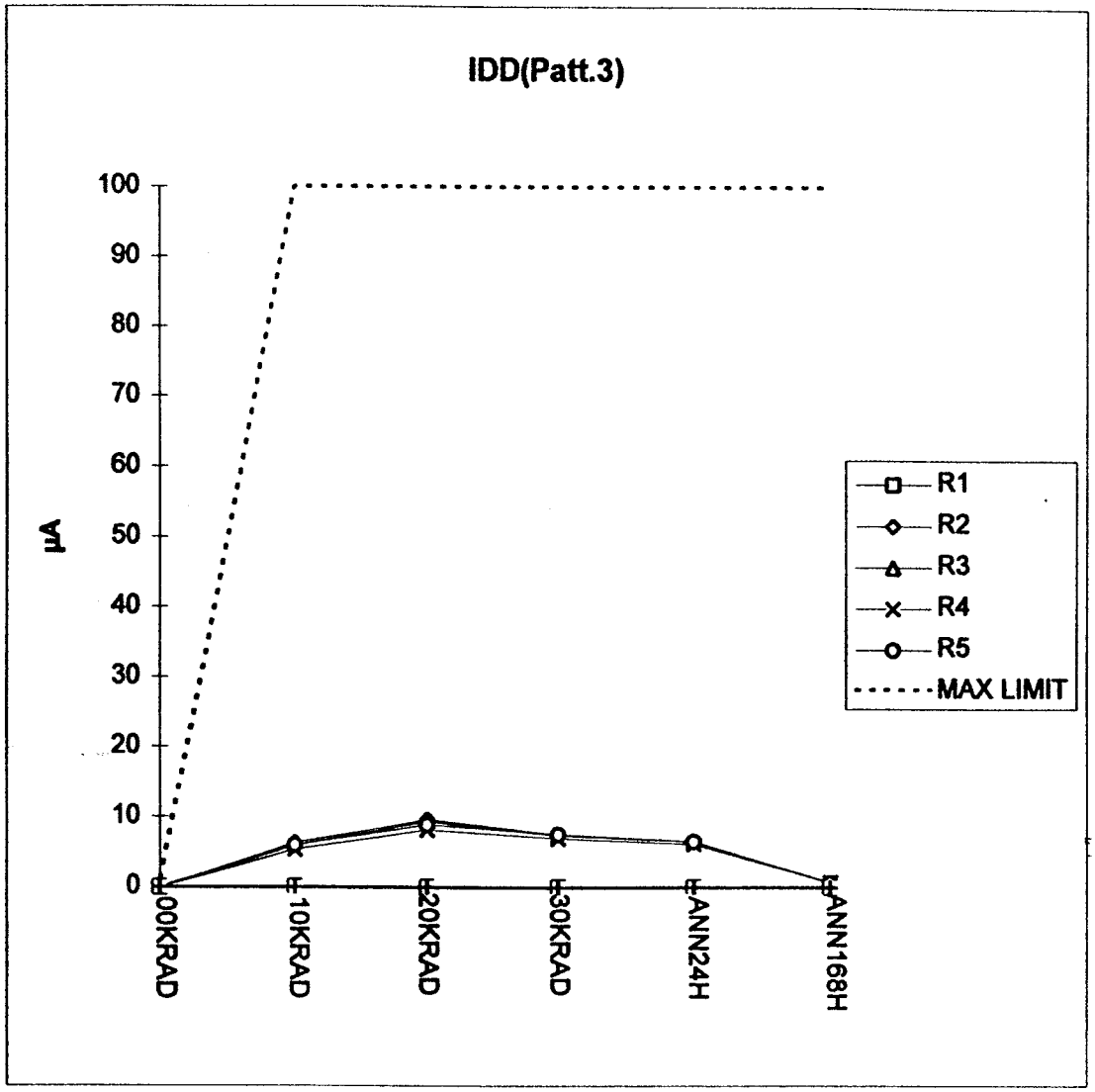
Test Step	Description	Result or Actual Test Condition	Time In	Time Out	Exposure
11	Intermediate Electrical Measurements	See 30 krad(Si) values in respective Parameter Data Tables Temperature: 25.0°C (average) Humidity: 28.0%	13:15 14/03	13:40 14/03	20 min
12	Annealing	Bias circuit verified according 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	



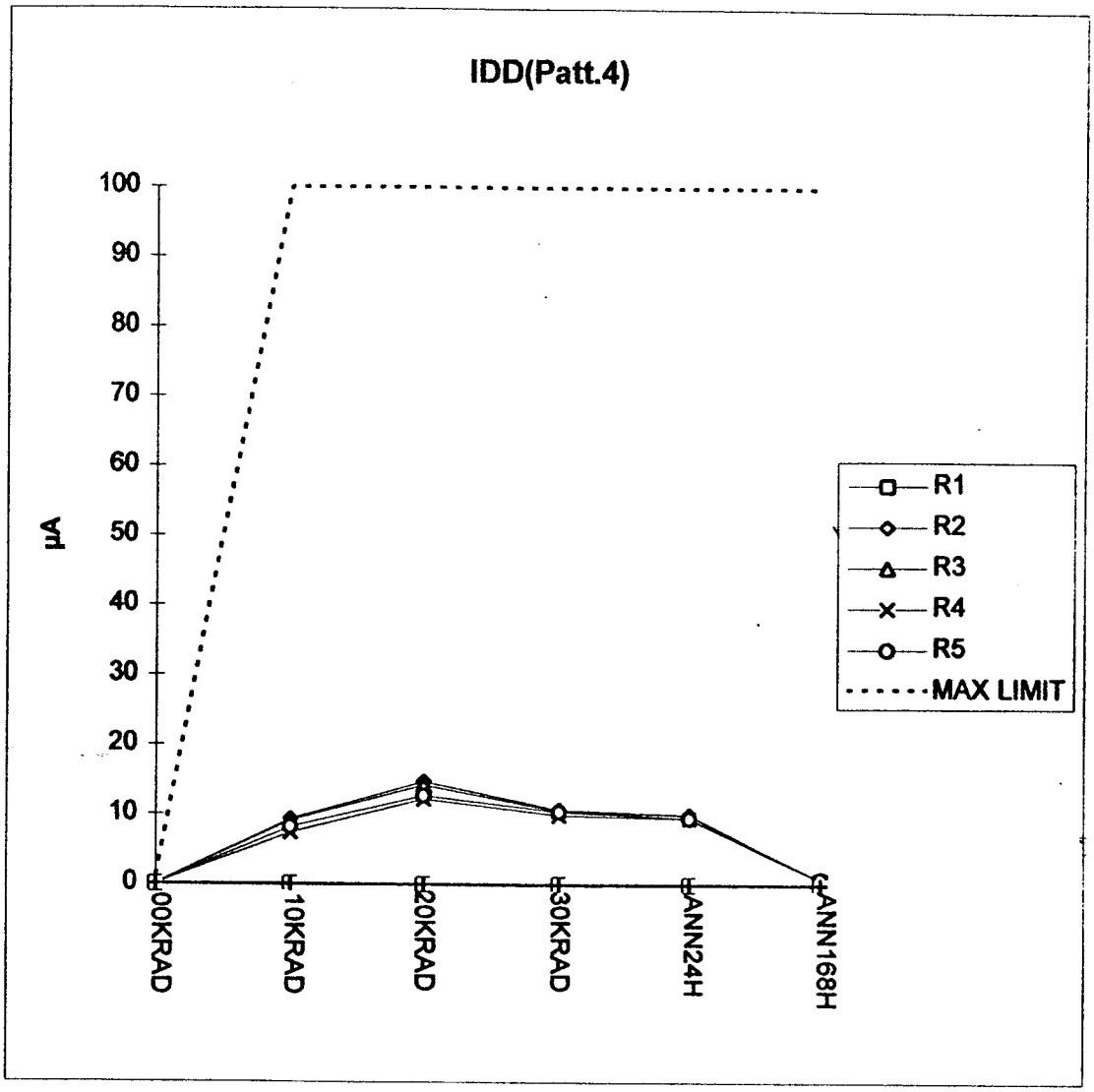
IDD(Patt.1)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.022	0.155	0.047	0.066	0.007	0.037
R2	0.026	1.540	3.072	2.978	3.301	0.360
R3	0.028	1.364	2.923	2.786	3.165	0.310
R4	0.027	1.824	3.250	2.873	3.363	0.412
R5	0.020	1.932	3.293	2.996	3.483	0.383
MAX LIMIT	1	100	100	100	100	100



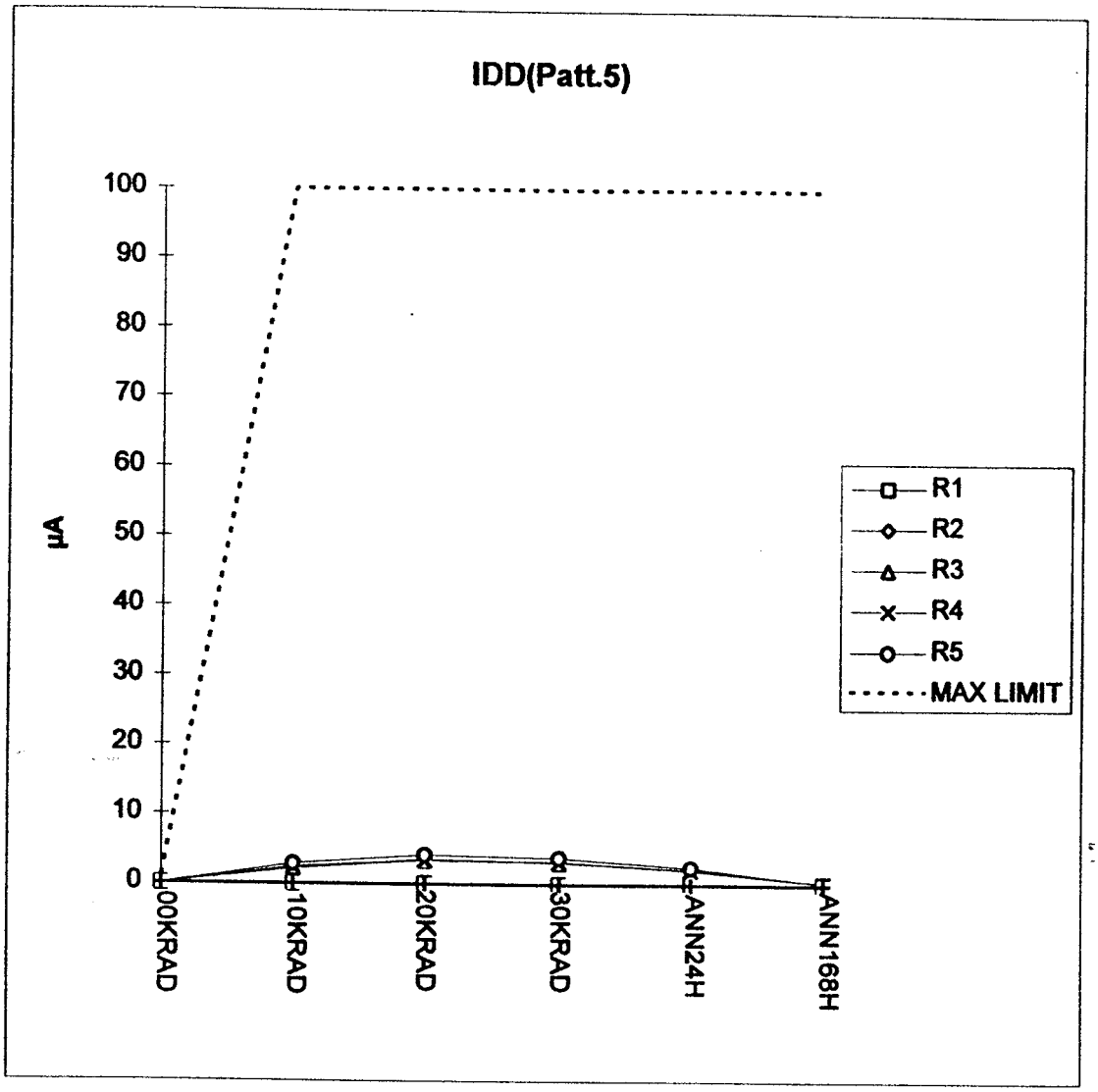
IDD(Patt.2)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.019	0.029	0.061	0.004	0.021	0.086
R2	0.026	1.456	3.057	2.983	3.343	0.249
R3	0.018	1.379	2.814	2.873	3.071	0.316
R4	0.031	1.774	3.201	3.049	3.424	0.276
R5	0.019	1.879	3.242	3.118	3.503	0.348
MAX LIMIT	1	100	100	100	100	100



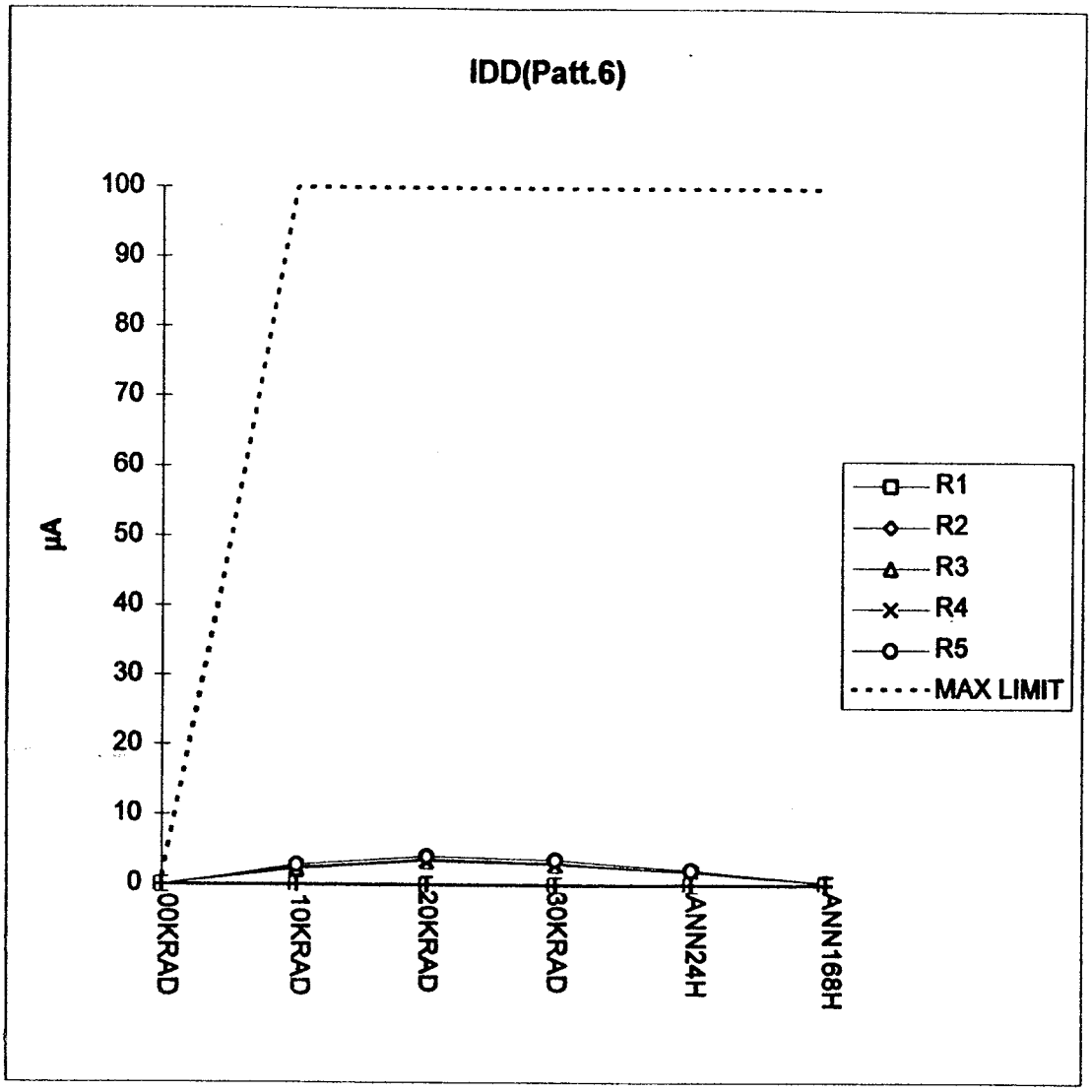
IDD(Patt.3)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.022	0.069	0.034	0.105	0.063	0.007
R2	0.016	6.285	9.578	7.457	6.476	0.572
R3	0.016	5.929	9.305	7.342	6.452	0.692
R4	0.018	5.317	8.151	6.922	6.096	0.722
R5	0.017	5.945	8.868	7.489	6.474	0.632
MAX LIMIT	1	100	100	100	100	100



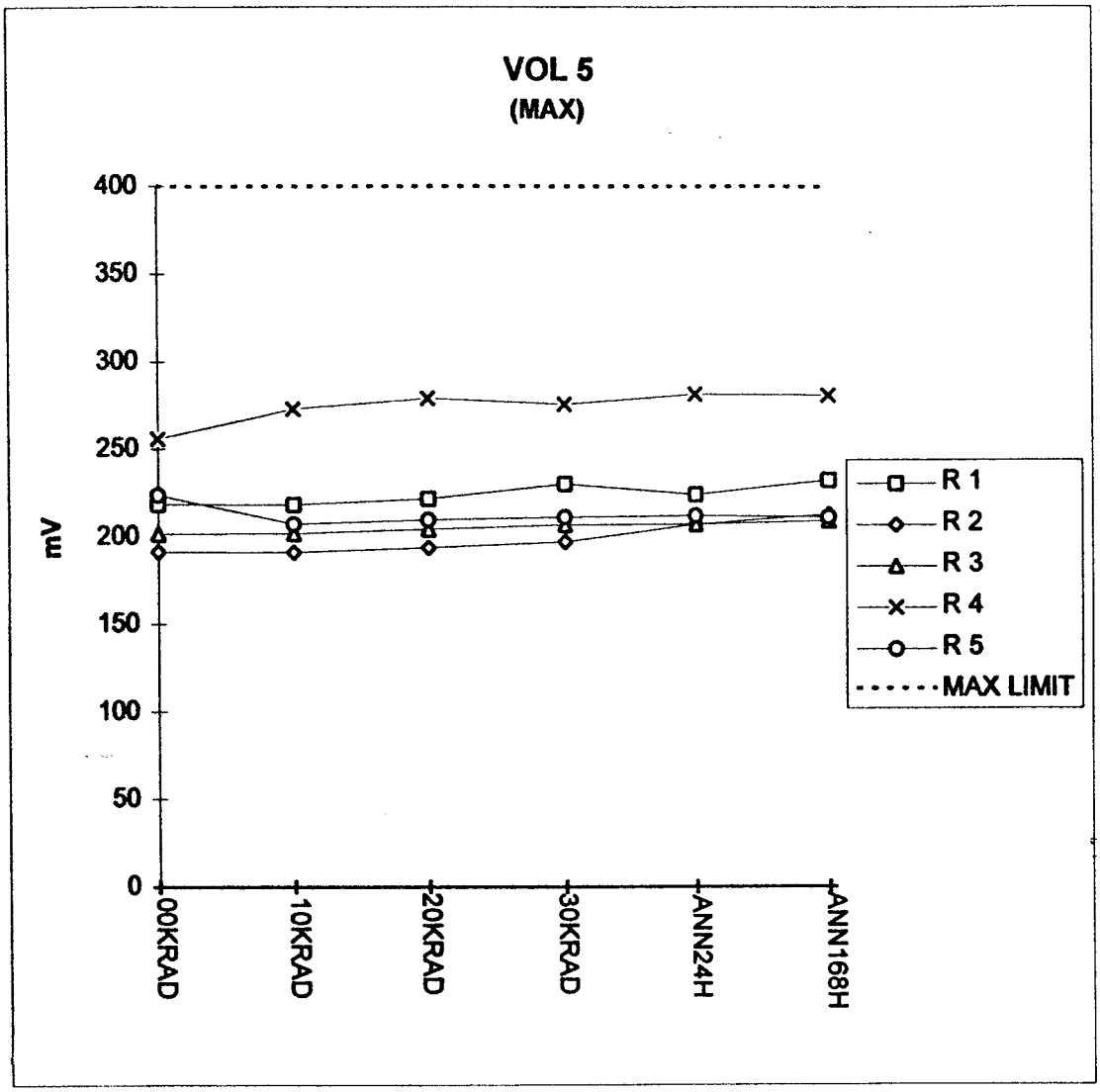
IDD(Patt.4)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.01	0.055	0.017	0.058	0.013	0.085
R2	0.009	9.333	14.755	10.725	10.036	0.729
R3	0.008	9.138	14.233	10.572	9.964	0.649
R4	0.014	7.388	12.260	9.968	9.518	0.697
R5	0.014	8.171	12.753	10.445	9.574	0.832
MAX LIMIT	1	100	100	100	100	100



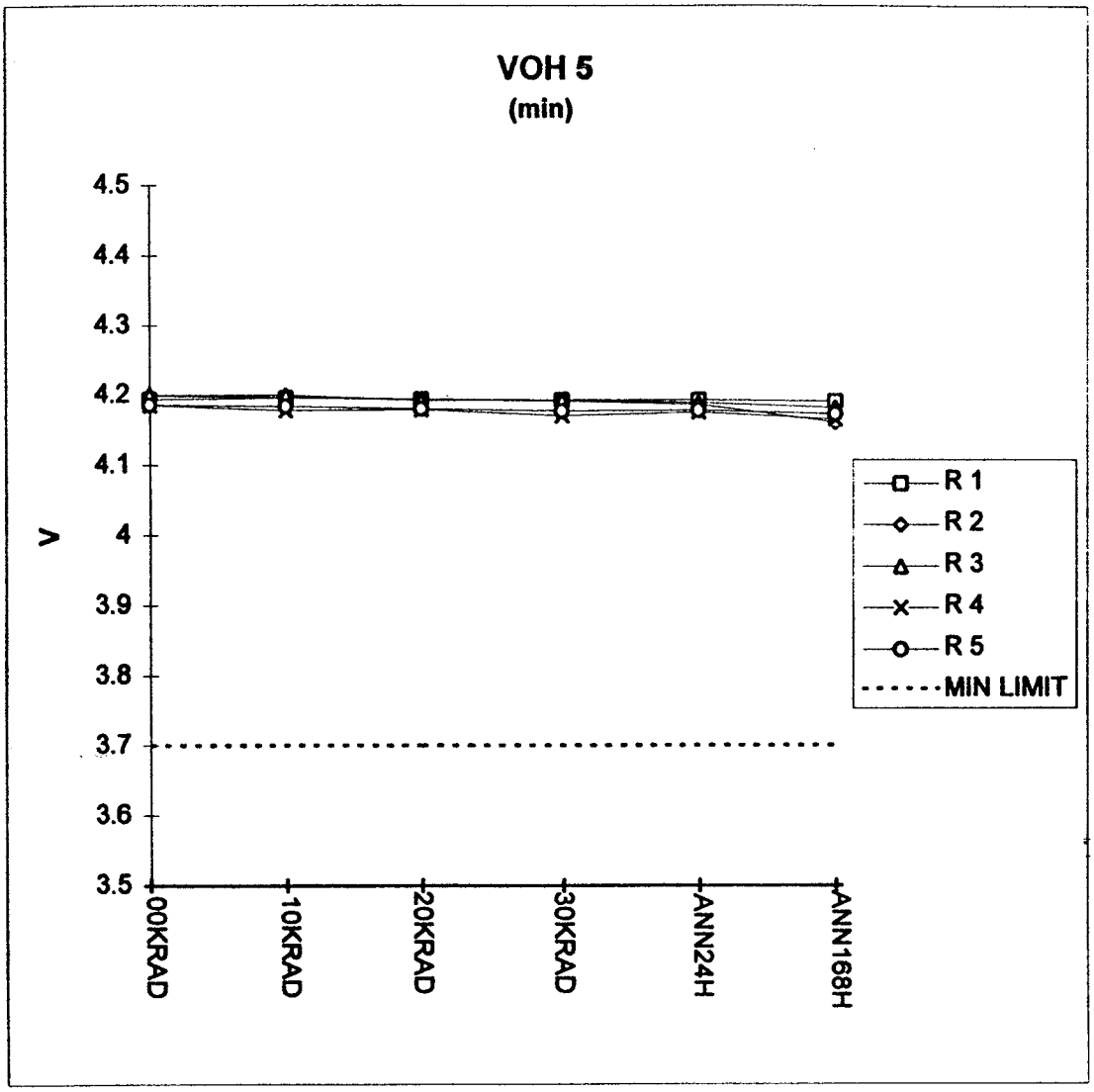
IDD(Patt.5)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.009	0.021	0.083	0.058	0.041	0.065
R2	0.013	2.378	3.551	3.251	2.201	0.286
R3	0.009	2.143	3.419	3.144	2.114	0.258
R4	0.012	2.406	3.354	3.174	2.028	0.320
R5	0.011	2.873	4.164	3.829	2.456	0.228
MAX LIMIT	1	100	100	100	100	100



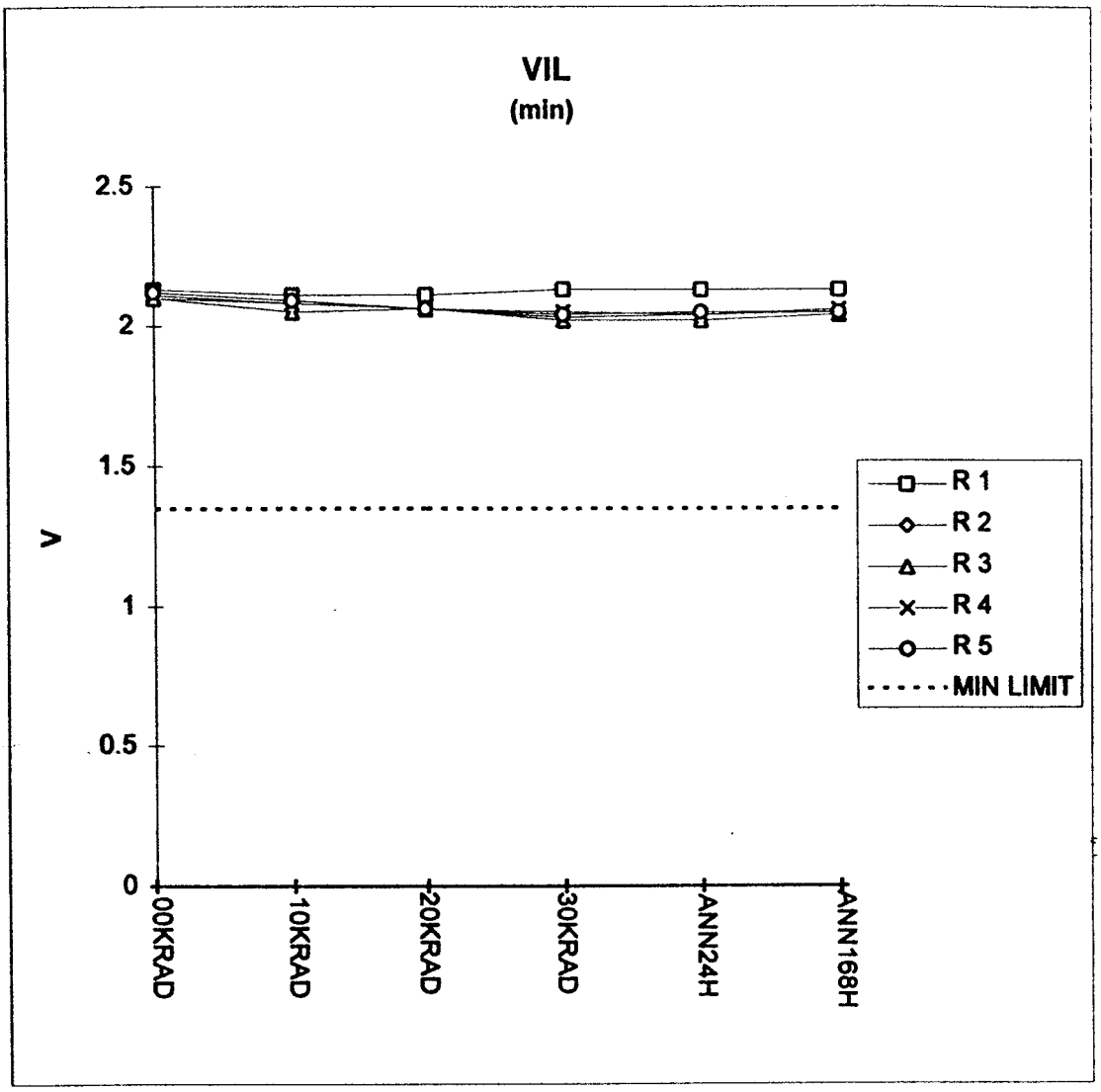
IDD(Patt.6)	00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R1	0.015	0.028	0.054	0.011	0.010	0.139
R2	0.018	2.397	3.653	3.146	1.871	0.311
R3	0.024	2.197	3.413	2.944	1.793	0.236
R4	0.020	2.497	3.361	2.932	1.788	0.313
R5	0.014	2.843	4.036	3.594	2.081	0.298
MAX LIMIT	1	100	100	100	100	100



VOL 5		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	157.850	157.700	159.700	167.100	161.500	170.200
	MAX	218.65	218.400	221.650	230.000	223.900	231.900
R 2	min	162.850	160.050	162.850	164.300	175.000	180.300
	MAX	191.350	191.000	193.600	196.900	206.900	212.300
R 3	min	161.800	158.700	159.350	161.900	161.250	167.150
	MAX	201.600	201.850	204.100	206.700	207.000	208.750
R 4	min	167.200	171.100	172.100	166.750	170.200	194.400
	MAX	255.950	272.900	278.900	275.500	281.150	280.550
R 5	min	184.200	163.350	164.550	166.150	165.000	169.500
	MAX	223.850	207.250	209.650	211.150	211.750	210.950
MAX LIMIT		400	400	400	400	400	400



VOH 5		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	4.194	4.196	4.194	4.193	4.193	4.191
	MAX	4.204	4.205	4.204	4.202	4.202	4.2
R 2	min	4.199	4.197	4.194	4.191	4.186	4.161
	MAX	4.208	4.208	4.203	4.2	4.202	4.196
R 3	min	4.2	4.2	4.192	4.193	4.189	4.182
	MAX	4.211	4.212	4.208	4.205	4.205	4.2
R 4	min	4.185	4.178	4.179	4.17	4.175	4.165
	MAX	4.194	4.193	4.189	4.188	4.187	4.182
R 5	min	4.186	4.184	4.18	4.177	4.178	4.173
	MAX	4.198	4.196	4.193	4.189	4.19	4.184
MIN LIMIT		3.7	3.7	3.7	3.7	3.7	3.7



VIL		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	2.13	2.11	2.11	2.13	2.13	2.13
	MAX	2.38	2.39	2.39	2.37	2.37	2.37
R 2	min	2.10	2.08	2.06	2.03	2.04	2.05
	MAX	2.36	2.34	2.32	2.30	2.29	2.27
R 3	min	2.10	2.05	2.06	2.02	2.02	2.04
	MAX	2.38	2.36	2.31	2.30	2.32	2.28
R 4	min	2.11	2.08	2.06	2.05	2.04	2.06
	MAX	2.37	2.34	2.32	2.30	2.30	2.28
R 5	min	2.12	2.09	2.06	2.04	2.05	2.05
	MAX	2.37	2.35	2.32	2.32	2.31	2.28
MIN LIMIT		1.35	1.35	1.35	1.35	1.35	1.35

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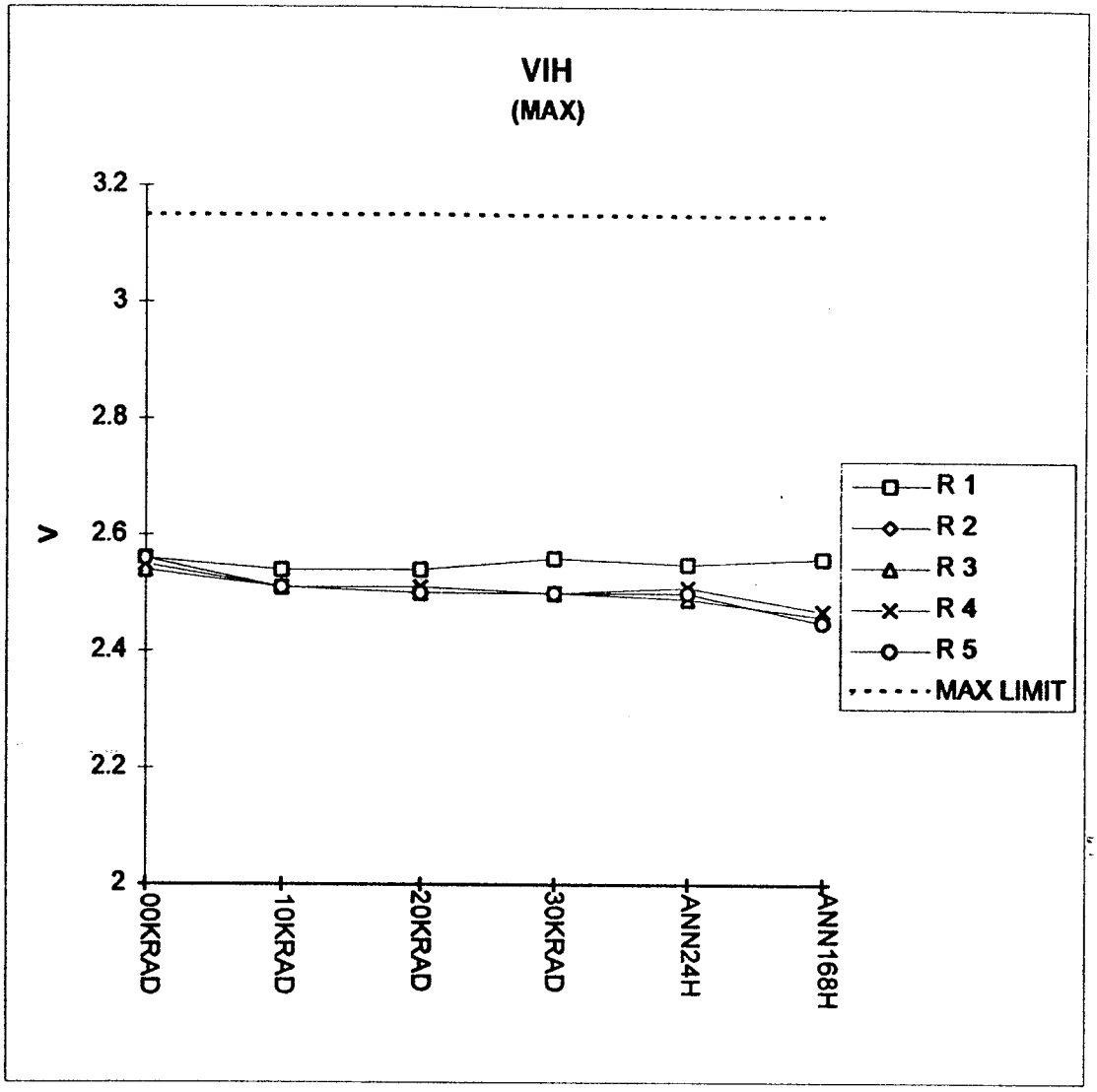

VIH		00KRAD	10KRAD	20KRAD	30KRAD	ANN24H	ANN168H
R 1	min	2.31	2.30	2.31	2.32	2.30	2.30
	MAX	2.56	2.54	2.54	2.56	2.55	2.56
R 2	min	2.29	2.26	2.26	2.24	2.24	2.24
	MAX	2.54	2.51	2.51	2.50	2.50	2.45
R 3	min	2.30	2.27	2.25	2.23	2.23	2.22
	MAX	2.54	2.51	2.50	2.50	2.49	2.46
R 4	min	2.31	2.28	2.27	2.25	2.25	2.24
	MAX	2.55	2.51	2.51	2.50	2.51	2.47
R 5	min	2.30	2.28	2.26	2.24	2.25	2.23
	MAX	2.56	2.51	2.50	2.50	2.50	2.45
MAX LIMIT		3.15	3.15	3.15	3.15	3.15	3.15