Test Org.*	Device	Function	Technology	Mfr.	Effective SEU LET* Threshold	Device Xsection (cm^2)	Bits Tested	Bit Xsection (cm^2)	Test Date	LUth	LU Xsection (cm^2)	Fac.	Remarks 31-Aug-99
		Microprocessor peripherals											
	Note: Entries in **RED** indicate data added since the 1997 Compendium.												
JPL	2909	4-bit Sequencer	Bipolar TTL	AMD	3	2.3E-04	46	5.0E-06					Stack plus Pointer
CNES	2910	4-bit ROM Sequencer	Bipolar TTL	AMD	3	4.0E-03	87	5.0E-05	Feb-89				Rept. by Chapuis-- with Aerospace.
ARSP	2914	4-bit Priority Interrupt Cntrlr	lBipolar TTL	AMD	5	5.0E-04	25	2.0E-05					
JPL	9407	4-bit Data Register	Bipolar TTL	FAS	<2.9	7.0E-04	32	2.2E-05				UCB	Four registers tested.
JPL	9407	4-bit Data Register	Bipola -IIL	FAS	15	1.4E-04	32	4.0E-06				UCB	Four registers tested. IIL appears to harder than TTL (above)
ARSP	82510	16-bit UART	CMOS	INT	~10			4.0E-05	1984			UCB	
JPL	2909 (SA3327)	4-bit Sequencer	CMOS with R=80 Kohms	SNL	>100		~26		1984			UCB	
JPL	2909 (SA3327)	4-bit Sequencer	CMOS with no resistor	SNL	50		~26		1984			UCB	
JPL	2909A	4-bit Sequencer	Bipolar TTL	AMD	<2.9	3.0E-04	46	>6E-6	1984			UCB	Stack plus Pointer
ARSP	2914Rev.	4-bit Priority Interrupt Cntrlr	Bipolar TTL	AMD	10	5.0E-04	25	2.0E-05					
JPL	81C55RH	Peripheral to 8085	CMOS/epi	HAR	40	4.0E-03	~2000	2.0E-06	Sep-91			UCB	RAM data at high LET.
GSFC	**82C54**	**Timer**	**CMOS**	**INT**	**9**				**1995**	**>80**		**BNL**	**LaBel, et al, 96IEEE Wrkshp Rec., pg 19.**
IBM	ADS 10C00JT00	Disk Controller		WDC					May-93	>37		BNL	WP-02. Jim Pollack.
GSFC	**D8255A-5**	**Prog. Peripheral Interface**	**CMOS**	**INT**	**<3.6**				**1995**	**59.6**		**BNL**	**LaBel, et al, 96IEEE Wrkshp Rec., pg 19.**
MMS	**DP83932CVF**	**Network Interface Controller**	**M2CMOS (1 µm)**	**NSC**					**1995**	**15**	**3.0E-03**	**GANIL GSI**	**Poivey, et al, 96IEEE Wrkshp Rec., pg 73. D/C 9442**
MMS	**DP83950BVQB**	**Repeater Interface Controller**	**M2CMOS (1.5 µm)**	**NSC**					**1995**	**15**	**1.0E-03**	**GANIL GSI**	**Poivey, et al, 96IEEE Wrkshp Rec., pg 73. D/C 9506**
MMS	**DP83956AVLJ**	**Repeater Interface Controller**	**M2CMOS (1.5 µm)**	**NSC**					**1995**	**20**	**2.5E-03**	**GANIL GSI**	**Poivey, et al, 96IEEE Wrkshp Rec., pg 73. D/C 9452**
CNES	EF6821CM	Periph. Interface Adapter	NMOS	TMS	5	2.0E-03	48		Feb-89			UCB	Also tested at IPN with same results.
GSFC	HS2420	Sample & Hold Circuit	HCMOS rad hard (1.2 µm)	HAR	20	5.0E-06			Mar-93	>80		BNL	LaBel, et al, 94IEEE Wrkshp Rec., pg 64.
JPL	HS82C37ARH	16-bit DMA Cont. (80C86)	CMOS (junction isolation)	HAR	9	5.0E-04	~597		May-88	>50		BNL	Dynamic test mode. 244 bits tested.
JPL	HS82C54RH	16-bit Prog. Interval Timer	CMOS/epi (5 µm)	HAR	22		96		Feb-89	>80		UCB	Tested to T = 125 °C.
ESA	HS82C59A	16-bit Prority Interrupt Cont.	CMOS & CMOS/epi (12 µm)	HAR	20			4.0E-06	Jun-88			HARW	ESA: LU with Cf-252 in both bulk & 12 µm epi
ARSP	HS82C59A	16-bit Prority Interrupt Cont.	CMOS & CMOS/epi (12 µm)	HAR	16	2.0E-03			Feb-91			UCB	
JPL	HS82C85RH	16-bit Clock Generator	CMOS/epi (12 µm)	HAR	22		3/49		Feb-89	>80		UCB	No LU @ T = 70 deg C.
GSFC	IMSCO11	Data link- MicroP peripheral		ISM	~2	2.0E-04			1995	>72		IPN	Bezerra et al, RADECS 95, pg 340.
CNES	IMSCO11	Transputer link adapter		SGS	~2	2.0E-04				>72		IPN	Bezerra et al, RADECS 95, pg 340.
JPL	L29C520	Pipelined Register	CMOS	LDI					Mar-93	26	5.0E-05	BNL	

Heavy Ion SEE

Test Org.*	Device	Function	Technology	Mfr.	Effective SEU LET* Threshold	Device Xsection (cm^2)	Bits Tested	Bit Xsection (cm^2)	Test Date	LUth	LU Xsection (cm^2)	Fac.	Remarks 31-Aug-99
GSFC	**M82C59A**	**Interrupt Controller**	**CMOS**	**HAR**	**11.4**				**1995**	**>80**		**BNL**	**LaBel, et al, 96IEEE Wrkshp Rec., pg 19.**
CNES	MD82C54	16-bit Prog. Interval Timer	CMOS/epi (12 µm)	HAR	10	4.0E-04	160		Feb-89	60		UCB	Non rad-hard part. T. Chapuis
GSFC	**MQ82380-25/B**	**32-bit Integrated peripheral**	**CHMOS III**	**INT**	**3.4**				**1995**	**15 to 30**		**BNL**	**LaBel, et al, 96IEEE Wrkshp Rec., pg 19. Reset errors cleared by reset. MicroLU. Also a classic LU or SEE self-test?.**
JPL	NS32201	16-bit Timing Control Unit	Schottky Bipolar	NSC	~6	>3.0E-04	>2					UCB	Only Divide by 2 and Reset Flip-flops were tested.
ARSP	NSC810	4-bit I/O Port		NSC	18	3.0E-03	1000	3.0E-06		<40		UCB	Latchup <40
JPL	SA3304	16-bit Timing Control Unit	CMOS/bulk Twin Well	SNL	40				Nov-89			BNL UCB	Similar to NS32201. Current surges.
CNES	SOR 5053	Coder	CMOS	SOR					1990	9		IPN	Chapuis
GSFC	**TL7705**	**Power Supervisor**	**Bipolar TTL**	**TIX**	**3.38 - 4.5**	**8.0E-05**			**1996**	**>30**		**BNL**	**LaBel, et al, 97IEEE Wrkshp Rec., pg 14.**
GSFC	**TL7770-5**	**Power Supervisor**	**Bipolar TTL**	**TIX**	**7.5 - 11.6**	**1.0E-04**			**1996**	**>65**		**BNL**	**LaBel, et al, 97IEEE Wrkshp Rec., pg 14.**
IBM	WD33 92 A	SCSI Bus Controller		WDC	<<37				May-93	>37		BNL	Upset rates given. WP-02. Jim Pollack.

Legend

Manufacturers: AMD - Advanced Microdevices; FAS - Fairchild Semiconductor; HAR - Harris Corp; INT - Intel; ISM - Inmos Corp; LDI - Logic Devices, Inc; NSC - National Semiconductor; SGS - Silicon General; SNL - Sandia National Labs; SOR - Soreq (Europe); TIX - Texas Instruments; WDC - Western Digital Corp

Test Organizations

ARSP - Aerospace Corp., El Segundo, CA
CNES - Centre National d'etudes Spatiales, Toulouse, France
ESA - European Space Agency, Noordwijk, Netherlands
GSFC - Goddard Space Flight Center, Greenbelt, MD
IBM - IBM Federal Systems Division, Manassas, VA
JPL - Jet Propulsion Laboratory, Pasadena, CA
MMS - Matra Marconi Space, France

Radiation Test Facilities

BNL - Tandem Van de Graaff, Brookhaven National Laboratories, Long Island, NY
GANIL - GANIL Accelerator, France
HARW - Harwell Laboratory, Oxford, UK
IPN - Insitute Physique Nuclaire, University of Orsay, France
IUCF - Indiana University Cyclotron Facility, Bloomington, IN
UCB - 88-inch Cyclotron, University of California, Berkeley, CA