

RELIABILITY REPORT

Mean Time Between Failure (MTBF) Prediction

BORA CPU module

S-DBRD5110I1R

History

Revisione	Note	Redatto	Controllato	Approvato
1.0.0	First Proposal	LUONI	MP	SDP



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MTBF CALCULATION criteria CASE A

CALCULATION METHOD: MIL217F Notice 2

CALCULATION PROCEDURE: Part count + suppliers database

ENVIRONMENTAL CONDITION: AUC - Airborne Unhabitate Cargo

FUNCTIONING: CW – Continuous Working

QUALITY LEVEL: FULL MILITARY

MTBF CALCULATION

TEMPERATURE	MTBF (hours)	MTBF(age)	FIT
20°	117986	13	8475
25°	113756	12	8790
30°	109536	12	9129
35°	104820	11	9540
40°	99290	11	10071
45°	92846	10	10770
50°	85578	9	11685
55°	77734	8	12864
60°	69661	7	14355
65°	61698	7	16207
70°	54152	6	18466
75°	47212	5	21181
80°	40986	4	24398



SURVIVAL PROBABILITY AFTER n HOURS

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
HOURS	8760	17520	26280	35040	43800	52560	61320	70080	78840	87600
P% a:°C										
20	92,62	85,78	79,44	73,58	68,14	63,11	58,45	54,14	50,14	46,44
25	92,35	85,29	78,77	72,74	67,18	62,04	57,30	52,91	48,87	45,13
30	92,07	84,77	78,05	71,86	66,16	60,91	56,08	51,63	47,54	43,77
35	91,73	84,14	77,18	70,80	64,94	59,57	54,64	50,12	45,97	42,17
40	91,29	83,33	76,07	69,45	63,40	57,87	52,83	48,23	44,03	40,19
45	90,71	82,29	74,64	67,71	61,42	55,72	50,54	45,85	41,59	37,73
50	89,96	80,94	72,81	65,51	58,93	53,02	47,70	42,91	38,60	34,73
55	89,01	79,23	70,52	62,77	55,87	49,73	44,26	39,40	35,07	31,21
60	87,82	77,12	67,72	59,47	52,22	45,86	40,27	35,37	31,06	27,27
65	86,36	74,57	64,40	55,61	48,02	41,47	35,81	30,93	26,71	23,06
70	84,61	71,59	60,57	51,25	43,36	36,68	31,04	26,26	22,22	18,80
75	82,56	68,15	56,26	46,45	38,35	31,66	26,13	21,58	17,81	14,70
80	80,19	64,30	51,56	41,34	33,15	26,58	21,31	17,09	13,70	10,99

SURVIVAL PROBABILITY WITH TIME MISSION INTENDED

	10 HOURS	24 HOURS	1000 HOURS
HOURS	10	24	1000
P% a:°C			
20	99,99	99,98	99,13
25	99,99	99,98	99,10
30	99,99	99,98	99,06
35	99,99	99,98	99,02
40	99,99	99,98	98,96
45	99,99	99,97	98,89
50	99,99	99,97	98,80
55	99,99	99,97	98,68
60	99,99	99,96	98,53
65	99,98	99,96	98,34
70	99,98	99,95	98,11
75	99,98	99,95	97,84
80	99,97	99,94	97,51



MTBF CALCULATION criteria CASE B

CALCULATION METHOD: MIL217F Notice 2

CALCULATION PROCEDURE: Part count + suppliers database

ENVIRONMENTAL CONDITION: AIC - Airborne Inhabitate Cargo

FUNCTIONING: CW – Continuous Working

QUALITY LEVEL: FULL MILITARY

MTBF CALCULATION

TEMPERATURE	MTBF (hours)	MTBF(age)	FIT
20°	294965	33	3390
25°	284391	32	3516
30°	273841	31	3651
35°	262051	29	3816
40°	248225	28	4028
45°	232115	26	4308
50°	213945	24	4674
55°	194335	22	5145
60°	174154	19	5742
65°	154247	17	6483
70°	135381	15	7386
75°	118030	13	8472
80°	102467	11	9759



SURVIVAL PROBABILITY AFTER n HOURS

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
HOURS	8760	17520	26280	35040	43800	52560	61320	70080	78840	87600
P% a:°C										
20	96,98	94,05	91,21	88,45	85,78	83,18	80,67	78,23	75,87	73,58
25	96,87	93,83	90,89	88,05	85,29	82,62	80,03	77,52	75,09	72,74
30	96,75	93,60	90,56	87,62	84,77	82,01	79,35	76,77	74,27	71,86
35	96,61	93,33	90,16	87,10	84,14	81,28	78,52	75,86	73,28	70,80
40	96,42	92,97	89,64	86,43	83,33	80,35	77,47	74,70	72,03	69,45
45	96,18	92,50	88,96	85,56	82,29	79,14	76,11	73,20	70,40	67,71
50	95,86	91,89	88,08	84,43	80,94	77,58	74,37	71,29	68,34	65,51
55	95,45	91,11	86,96	83,00	79,23	75,62	72,18	68,90	65,76	62,77
60	94,94	90,13	85,56	81,23	77,12	73,21	69,50	65,98	62,64	59,47
65	94,30	88,93	83,86	79,08	74,57	70,32	66,32	62,54	58,97	55,61
70	93,53	87,48	81,83	76,54	71,59	66,96	62,63	58,58	54,79	51,25
75	92,62	85,78	79,45	73,59	68,15	63,12	58,46	54,15	50,15	46,45
80	91,55	83,81	76,72	70,24	64,30	58,86	53,89	49,33	45,16	41,34

SURVIVAL PROBABILITY WITH TIME MISSION INTENDED

	10 HOURS	24 HOURS	1000 HOURS
HOURS	10	24	1000
P% a:°C			
20	100,00	99,99	99,65
25	100,00	99,99	99,64
30	100,00	99,99	99,62
35	100,00	99,99	99,61
40	100,00	99,99	99,58
45	100,00	99,99	99,56
50	100,00	99,99	99,52
55	99,99	99,99	99,47
60	99,99	99,99	99,41
65	99,99	99,98	99,33
70	99,99	99,98	99,24
75	99,99	99,98	99,13
80	99,99	99,98	99,00