Title	Electrical Engineering I Requirements (MTR) f	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for Mission 52.003/52.004 Kletzing	pport)
Doc. No.		EE120237MTR	
Revision	Rev-Dash	Release Date	07/17/17

30	S.	:S	SS	SS	55	SS	SS	SS	SS	SS	SS	SS	SS	S5	SS	S	£	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	55	SS
36	SZ	52	52	52	52	25	\$2	25	22	52	52	52	\$2	25	52	52	25	25	\$2	25	52	25	52	25	52	25	25	52	52	\$2	\$2	25	\$2	22	SZ	SZ	52	SZ	\$2	25
96	SS	es 6S	83	65	65	6S	65	83	SS	83	65	65	65	89	SS	89	65	65	es 6s	65	65	65	S9	S3	59	S9	S9	65	65	65	65	83	59	es 6s	S9	S9	65	es 6S	65	65
23	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	8S	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
36	S1	S1	S1	S1	S1	S1	S1	S1	Sı	SI	SI	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	51	S1	S1	S1	S1	S1	S1	S1	S1	S1
36	22	R3	83	R3	83	83	R3	R3	83	R3	83	83	R3	R3	R3	R3	R3	83	83	83	83	83	R3	R3	R3	R3	R3	83	R3											
7.6	A30	A31	A30	A65	A30	A81	A30	A82	A30	A83	A30	A86	A30	96A	A30	RS	A30	R6	A30	R7	A30	A31	A30	A65	A30	A81	A30	A82	A30	A83	A30	A86	A30	96A	A30	RS	A30	R6	A3D	R7
23	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID	SFID
22	S14	S14	S14	S14	S14	\$14	\$14	514	514	S14	\$14	S14	514	\$14	514	514	514	S14	514	S14	S14	\$14	514	514	514	514	514	514	514	\$14	S14	\$14	\$14	514	514	514	\$14	\$14	\$14	\$14
2.1	S13	S13	513	S13	S13	S13	\$13	513	513	513	S13	S13	S13	513	513	513	513	513	\$13	513	\$13	513	513	513	513	513	513	513	513	S13	513	\$13	513	513	S13	513	513	\$13	\$13	S13
20	51	S1	S.1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	SI	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1
19	Se	98	98	98	98	98	98	98	98	98	. 9S	98	98	98	98	98	98	98	98	98	98	99	98	98	98	98	98	98	98	98	98	98	99	98	98	98	98	98	98	86
3.8	SS	55	SS	SS	SS	S5	SS	\$5	\$5	55	SS	55	55	S5	SS	S5	\$5	55	SS	55	55	\$5	\$5	S5	55	S5	S5	S5	SS	SS	SS	S5	55	S5	SS	S5	55	S5	55	22
17	22	25	22	22	25	25	25	S2	S2	52	52	52	22	25	25	22	25	25	52	25	52	52	52	25	52	22	25	S2	S2	22	25	22	25	25	25	22	52	52	52	25
16	29	29	29	59	89	59	éS	S9	65	89	59	89	89	S	65	83	S9	59	89	89	89	89	89	S9	89	85	65	89	83	83	59	68	89	65	65	59	83	59	89	89
15	28	88	88	88	88	88	88	88	88	88	88	88	28	88	SB	88	88	28	88	88	88	88	88	88	88	88	88	88	88	28	88	SS	88	88	88	S8	88	88	88	88
14	S1	S1	SI	S1	S1	S1	S.1	S1	51	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	Sı	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1
13	22	72	22	12	R1	R1	R1	72	R1	72	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	72	R1	RI	72	R1	R1	R1	R1	R1						
12	2.5	S7	S7	22	22	S7	57	22	S7	S7	S7	22	22	22	S7	22	S7	22	22	S7	S7	22	22	22	22	22	22	22	22	22	22	22	57	57	57	57	S7	57	57	57
11	23	23	83	S3	S	S	23	23	23	23	23	23	23	23	23	S3	23	S3	S3	23	23	23	23	23	23	23	23	23	23	23	S3	23	23	S3	S3	53	23	23	S3	S3
10	89	89	65	89	29	89	89	89	89	65	89	89	29	29	65	65	83	89	89	89	S9	S9	89	83	89	89	89	89	S9	65	65	29	29	89	89	89	89	S9	89	83
6	28	28	88	28	28	28	28	28	88	88	28	28	28	28	88	28	28	28	88	28	88	88	88	88	28	S8	28	88	28	88	88	28	88	88	88	88	88	88	88	88
8	5.1	51	S1	23	51	51	51	21	51	12	S1	S1	21	S1	21	21	51	51	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	SI	21	S1	S1	S1	S1	51	S1	S1	51	S1
- 4	98	Se	S6	Se	Se	98	Se	Se	98	98	S6	S6	S6	S6	Se	98	98	S6	S6	S6	98	98	Se	Se	98	98	Se	Se	98	Se	Se	Se	S6	S6	Se	S6	Se	S6	98	S6
9	SS	S5	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	S5	SS	\$5	\$5	SS	S2	\$5	SS	SS	25	\$5	25										
5	25	22	22	22	22	22	25	25	22	22	22	25	22	22	22	22	25	22	22	22	22	25	22	ß	22	22	22	22	25	25	22	22	22	25	25	22	22	25	22	25
	SS	83	83	83	83	83	83	SS S	SS	89	89	89	S9	SS SS	SS	SS	83	83	89	S	89	89	89	SS	SS	SS	89	S9	89	89	89	89	89	83	89	83	59	89	83	89
3	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	28	88	88	88	88	88	88	28	88	28	88	88
2	SI	S1	SI	SI	Z	SI	SI	21	S1	S1	S1	S1	S1	S1	21	21	SI	S1	S1	S1	21	S1	53	51	51	23	23	23	21	S1	S1	S1	21	21	21	51	51	21	21	SI
	R3					2			Ц	R3	_	_	-	_	- 1	- 1		_	_	- 1	_	_	R3	-4	-1		- 1	83	- 1	Ы.	Ы.	- 4	2	ч	£3		_		83	
	H	2	3	4	5	9	7	80	6	97	#	17	13	14	15	16	17	18	61	20	21	77	23	24	22	92	27	87	ฆ	98	뀲	32	33	*	35	36	37	38	88	8

PCM Code = R	NRZ-L	Frame Sync1 =	1111-1110-0110-1011	Bit Rate =	9.6 Mbit/sec
Words/Frame = 1:	20	Frame Sync 2 =	0010-1000-0100-0000	Bits/Word =	16
Frames/Major Frame =	40	Frame Sync (Hex) =		Frames/sec =	2000
52.003 Kletzing		SFID = 10000	22222200000	Mjr Frame/sec =	125

Title	Electrical Engineering I	Electrical Engineering Mission Telemetry (Ground Support)	Support)
Doc. No.		EE120237MTR	>
Revision	Rev-Dash	Release Date	07/17/17

09	57	S7	S7	22	57	22	57	S7	SZ	S7	S7	S7	S7	22	22	25	S7	S7	22	57	52	57	57	S7	22	22	22	S7	22	2.5	S7	22	S7	22	S7	52	S7	S7	S7	22
59	23	S3	83	83	S3	S3	S3	83	S3	53	S3	S3	S3	S3	83	23	S3	S3	S3	S3	S3	S3	S3	S3	S3	83	83	S3	83	83	S3	83	83	S3	S3	S3	S3	SS	23	23
28	83	SS	SS	65	65	68	es es	es es	88	68	65	68	S9	89	83	65	es 6s	68	68	es 6S	68	68	65	65	es 6s	68	68	65	65	65	6S	68	es 6S	65	65	65	es 6S	83	65	89
25	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	28	88	88
58	S1	S1	S1	S1	S1	S1	S1	SI	S1	Sı	S1	S1	SI	SI	SI	ST	Sı	SI	S1	S1	Sı	S1	SI	S1	S1	S1	S1	51	Sı	S1	S1	\$1	S1	S1	S1	Sı	S1	SI	S1	S1.
55	98	Se	Se	Se	Se	Se	Se	Se	Se	Se	98	98	95	Se	98	98	98	Se	Se	Se	98	Se	Se	98	Se	98	Se	98	98	26	Se	98	98	Se	Se	98	98	Se	98	98
35	25	SS	SS	SS	SS	SS	SS	S5	SS	SS	SS	SS	SS	55	SS	SS	SS	SS	SS	SS	\$5	SS	SS	55	55	25	55	S2	S2	S5	55	22	SS	SS	S5	SS	S5	SS	55	SS
æ	25	25	25	25	25	25	22	25	25	52	22	25	25	25	25	25	25	25	25	25	22	25	25	\$2	25	25	25	25	25	25	25	S2	25	25	25	25	S2	22	25	22
23	89	89	83	88	89	65	83	83	88	89	89	89	89	89	89	89	89	59	59	S9	S9	89	65	89	89	89	89	89	89	89	89	89	89	89	59	88	83	SS	89	S
15	88	88	28	88	88	88	88	28	88	88	28	88	88	88	58	88	88	88	58	28	28	88	88	88	88	88	58	88	88	88	88	88	88	58	58	28	58	88	58	88
05	51	S1	51	51	51	5.1	S1	51	51	S1	S1	51	51	51	5.1	5.1	5.1	51	51	51	51	51	51	5.1	5.1	5.1	51	S1	S1	S1	\$1	S1	5.1	51	51	51	51	51	51	S1
69	R3	ß	R3	R3	R3	R3	83	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	£
48	M1	M1	M1	M1	M1	M1	M	M1	M	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	M1	Mī	MI	M1	M1	M	M	M1	M1	M1	M1	M1	M1	M1	M
2.0	R2	R4	R2	R4	RZ	R4	R2	R4	R2	R4	R2	R4	R2	R4	R2	<b>R</b> 4	R2	R4	R2	R4	RZ	R4	R2	R4	R2	84	R2	<b>8</b> 4	<b>R</b> 2	R4	R2	<b>R</b> 4	R2	R4	R2	R4	R2	R4	R2	\$
46	89	SS	89	89	S9	59	SS	\$9	SS	89	SS	83	89	89	89	89	89	83	S9	89	89	89	S9	89	89	SS	89	89	89	89	S	89	88	88	S9	89	89	S	SS	S
45	28	28	88	88	88	88	88	88	88	88	88	28	88	88	88	88	28	28	88	88	88	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88
44	51	51	S1	S1	S1	S1	51	S1	51	S1	51	S1	51	S1	S1	21	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	21	21	21	21	S1	21	S1	S1	S1	S1	S1	S	S1	S
43	S6	S6	98	98	S6	Se	98	Se	98	98	98	S6	98	S6	S6	S6	98	Se	Se	Se	98	98	98	98	S6	Se	S6	S6	S6	S6	S6	S6	S6	S6	S6	98	98	9S	98	S6
42	S5	SS	25	S2	SS	S5	S5	SS	25	S5	S5	S5	55	25	SS	S5	S5	S5	SS	S2	S5	S5	S5	S5	S5	SS	SS	25	SS	S5	S5	S5	S5	25	22	S5	S5	SS	S5	SS
41	22	22	22	22	22	25	52	52	25	52	22	25	52	22	22	22	25	22	22	25	25	22	25	22	22	25	22	25	22	25	22	25	22	25	22	22	22	25	25	SS
40	89	89	89	89	89	89	89	89	88	89	89	89	89	89	89	88	89	89	89	89	89	89	89	89	83	89	89	S	SS	89	89	83	88	89	29	89	89	S	89	S
39	88	88	88	28	28	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	28	28	88	88	88	88	88	88	28	88	88	88	88	28	88	28	88	88	88
38	S1	S1	S1	S1	21	S1	\$1	S1	51	51	51	S1	S1	21	21	21	S1	S1	S1	21	21	51	51	51	21	S1	21	21	21	21	21	21	S1	S1	21	51	51	21	21	S
35	꾜	R	Ŧ	2	2	R1	R1	R	RI	RI	R1	£	R1	됩	22	돲	Z	£	2	72 12	R1	R1	R1	R1	EZ	22	R1	Æ	돲	22	72	뒫	R1	RI	B	R1	R1	22	묎	끂
36	57	S7	S7	S7	S7	S7	S7	S7	S7	57	S7	S7	S7	S7	57	57	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	57	SZ	S7	S7	SZ	S7	57	S7	S7	27	S7	S7	22
35	23	23	23	S3	S3	23	23	23	23	23	23	23	83	23	83	S3	23	S3	23	83	23	83	23	23	S3	S	23	S3	23	23	23	ß	83	23	23	23	23	83	S3	83
34	89	88	88	S	SS	89	89	S	89	88	88	S	89	8	S	SS	S	S	S	S	88	S	89	89	S	S	S	89	89	89	89	SS	SS	88	SS	SS	89	89	89	89
33	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
32	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	21	S1	S1	21	S1	S1	S	S	SI	S	SI	21	S1	S1	S1	S1	S1	S1	21	S1	S1	21	23	SI	21	S1	S1	21
31	_	_			-1			-4			_	_			_	- 4			- 1	_		_	_	- 1		-1	- 1		_	_	_	_	-	-4				98	4	
		.	(1)	*	"	٦	'`	~	٠,	Ħ	귀	汨	Ħ	Ä	뒤	#	=	7	=	7	2	77	2	77	72	7	2.	22	22	<u>س</u>	8	3	83	뜻	 	3	33	88	35	4

PCM Code =	RNRZ-L		Frame Sync 1 =	1111-1110-0110-1011	Bit Rate =	9.6 Mbit/se
Words/Frame =	120		Frame Sync 2 =	0010-1000-0100-0000	Bits/Word =	16
Frames/Major Frame =		40	Frame Sync (Hex) =	FE6B2480	Frames/sec =	2000
52,003 Kletzing			SFID = 10000	2222200000	Mir Frame/sec =	125

Title	Electrical Engineering N Requirements (MTR) f	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for Mission 52.003/52.004 Kletzing	upport)
Doc. No.		EE120237MTR	
Revision	Rev-Dash	Release Date	07/17/17

90	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS
68	SS	22	S2	SS	S	SS	SS	SZ	SS	SS	22	SS	S	SS	S2	SS	SS	SS	SS	S	SS	SS	25	S2	\$2	SS	SS	SS	22	S	S2	S2	S	SS	S	SS	S	SS	S	25
88	SS.	68	68	65	89	68	89	S9	89	89	88	SS SS	83	89	68	S9	68	65	65	S9	68	89	SS	89	68	S	83	es 6s	89	83	eS 6	89	53	65	83	65	59	ន	SS	S9
83	88	88	88	88	88	88	88	88	88	88	88	82	88	88	88	88	88	88	88	88	88	88	88	88	28	88	88	82	88	88	88	88	88	88	88	88	88	88	88	88
98	51	S1	S1	S1	\$1	S1	S1	S1	S1	S1	SI	S1	S1	S1	S1	S1	S1	S1	S1	S1	12	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	Sı						
58	R1	R1	R1	R1	R1	R1	R1	17 12	R1	R1	R1	22	R1	R1	R1	R1	R1	R1	R1	R 1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	72							
28	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	S7	2.5	S7	S7	S7	S7	S7	57	25	S7	S7	22	S7	57	S7	S7
8	23	23	23	53	23	23	53	23	S3	23	83	23	53	23	23	23	23	83	23	23	23	53	53	83	83	23	23	23	53	23	83	23	23	53	53	23	S3	53	23	S3
82	65	89	65	65	89	65	89	65	es 6S	65	6S	65	S9	65	65	65	65	65	S9	65	65	S9	65	65	65	65	65	65	89	S9	89	89	65	89	89	89	S9	89	S9	S9
18	88	88	88	88	S8	88	88	88	S8	88	88	88	88	88	88	88	88	88	88	S8	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
80	21	51	S1	51	S1	S1	S1	S1	S1	51	S1	51	S1	5.1	51	S1	51	5.1	S1	S1	51	S1	5.1	51	51	S1	21	5.1	S1	51	5.1	S1	5.1	5.1	51	51	51	5.1	S1	5.1
79	98	98	98	98	Se	99	98	98	98	56	98	Se Se	98	98	98	98	98	98	Se Se	98	99	98	98	98	98	98	98	98	S6	98	Se	98	98	98	98	26	98	98	98	98
78	S5	S5	25	S5	S5	S5	S2	\$5	SS	SS	S5	S5	55	S5	55	S2	S5	55	S5	55	55	SS	\$5	55	S5	25	S5	SS	SS	SS	SS	SS	SS	55	55	S5	S5	S5	S5	SS
11	25	S2	25	25	25	S2	25	25	25	52	25	25	52	S2	25	25	25	52	25	52	25	52	22	25	25	25	25	25	25	S2	S2	25	25	25	S2	S2	25	S2	S2	22
36	65	89	89	S9	89	89	89	65	65	89	S9	89	89	S9	89	S9	68	65	59	89	89	59	89	89	89	89	89	89	S	S9	S	S9	65	65	89	89	89	89	SS	83
75	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	28	S8	88	88	88	88	28	82	88	88	88	88	88	28	88	88	28	88	88	28	88	88	28	88	28
74	5.1	S1	5.1	S1	51	S1	51	51	5.1	51	51	51	51	5.1	51	51	5.1	51	51	5.1	5.1	51	\$1	5.1	S1	5.1	5.1	S1	21	S1	S1	S1	5.1	S1	S1	S1	\$1	S1	S1	S1
73	R3	R3	R3	R3	83	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	83	R3	R3	R3	ß	22	22	22	83	22	83	R3	83	R3	R3	R3	22	22
77	A61	A7	A8	A9	A61	A10	A11	A12	A61	A13	A14	A15	A61	A16	A17	A18	A61	A19	A20	A21	A61	A22	A23	A24	A61	A25	A26	A27	A61	A28	A29	A32	A61	A33	A34	A35	A61	A36	A37	A38
11	A1	A2	А3	A49	A1	¥2	A3	A49	Α1	A2	A3	A49	A1	A2	A3	A49	A1	A2	A3	A49	A1	A2	A3	A49	Α1	A2	A3	A49	Α1	A2	A3	A49	A1	A2	A3	A49	Α1	A2	А3	A49
20	65	SS	SS	S9	S9	S9	88	65	65	89	89	83	89	83	23	83	89	83	68	89	83	83	89	89	59	89	89	23	S9	S9	S9	S9	65	89	65	59	65	89	83	68
69	88	88	88	88	88	88	88	28	88	28	28	88	28	88	88	88	88	88	28	88	28	288	88	88	28	88	88	28	88	88	S8	88	88	88	88	88	S8	88	88	88
89	S1	S1	21	S1	S1	2.1	S1	21	S1	S1	S1	SI	S1	S1	S1	S1	S1	S1	S1	SI	Sı	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1						
29	98	98	Se	26	98	S6	Se	Se	Se	98	98	98	Se	Se	<b>S6</b>	S6	Se	S6	<u>S6</u>	Se	Se	Se	Se	98	Se	Se	98	98	Se	98	Se	S6	98	S6	98	98	98	98	98	98
99	55	S	SS	SS	S	SS	S5	SS	SS	S5	SS	SS	SS	SS	SS	SS	SS	S5	SS	SS	SS	SS	S	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	\$5	SS
65	25	S	25	25	22	22	22	25	22	S2	22	25	22	22	25	22	22	22	22	22	25	22	22	25	25	25	25	22	22	S2	22	22	25	22	22	22	22	22	22	22
64	68	89	89	89	S	89	89	89	S	S9	89	65	89	89	65	83	65	83	89	S	89	89	89	S	SS	S	S	89	89	89	89	89	83	89	89	29	89	89	89	SS
83	88	88	82	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
62	S1	S1	51	S	S1	S1	21	S1	S1	S1	S1	21	S1	21	SI	S	21	S1	SI	S1	S1	SI	SI	S1	S1	SI	S1	21	S1	S1	S1	SI	S1	SI	S1	S1	SI	S1	S1	SI
19	R1	R1				- 4							_						- 4									- 1	-									-1	R1	
	T	2	3	4	S	9	7	00	6	91	11	12	13	14	15	16	17	18	19	৪	17	77	£	*	22	56	27	88	53	8	31	32	33	25	32	36	37	38	22	8

CM Code =	RNRZ-L		Frame Sync1=	ä	Bit Rate =	9.6 Mbit/sec
Vords/Frame =	120		Frame Sync 2 =	0010-1000-0100-0000	Bits/Word =	16
rames/Major Frame =		40	Frame Sync (Hex) =	FE6B2480	Frames/sec =	2000
2.003 Kletzing			SFID = 100	100000000CCCCC	Mir Frame/sec =	125

Title	Electrical Engineering I Requirements (MTR) f	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for Mission 52.003/52.004 Kletzing	upport) etzing
Doc. No.		EE120237MTR	
Revision	Rev-Dash	Release Date	07/17/17

120	FS2	FS2	FS2	FS2	FS2	FS2	FS2	FS2	522	FS2	£25	ES2	FS2	FS2	FS2	FS2	FS2	FS2	F.52	FS2	ESZ	-52 -22	FS2	FS2	522	FS2	cS2	FS2	-S2	FS2	522	FS2	FS2	FS2	FS2	FS2	FS2	FS2	FS2	FSZ
2110	FS1 F	$\vdash$	H	FS1 F	H	FS1 F	H	FS1	FS1 F	H	H	H	⊬	H	FS1 F	H	┝	H	H	H	H	FS1		FS1 F	Н	H	_	Н	FS1 F	H	FS1 F	Н	FS1 F	H	FS1		F	H	H	Н
	89	H	-		-	-	H	H	H	89	H	-	H	H	H	H	H	H		H	H	H	H	H	H	H	-		65	H	H	H	H	S9 1	H	S9 E	H	59	H	Н
17	88	H		88	28	88	82	H	H	88	H	H	-	L	H	H	L	H			H	H	_	H	H	88	Ш	28		_	88	28	82	85	88	28	88	88	H	H
16	S1					S1 :		S1 :			H	S1 :	H	H	Sı	H	H	H	Н	-	S1	H	-	Н	H	S1 :		Н				S1 :	H	H	S1			Ï		S1 :
15	98	H	99	, S6	Н	95	Se s	H		Se .	H	H	-	36	H		-		H	98	H		36	Н		H	-	; 9s	-	Se	-	36	H			Se 3			36	Н
M	SS	H	55	55		SS	-			SS	H	H	H	55			\$5	H	H	H	SS (	-		Н	-		Н	SS	Н	_	SS (			H	-	Н	SS \$	H	S5 5	Н
113	22	S2	S2 .	52	52	_	H	H	-	-	H	H	H	_	-	-	-	-	-	-	-			Н	-	52		-	-	-	S2	-					-	2.5	Н	Н
112	S9	S9	S9	S9	S9	59	59	S9	S9	59	59	S9	89	S9 S	59	59	89	89	59	89	S9 S	S9	59	S9	29	89	S9	59	S9	S9	S9	59	89	S9	89	65	S9	89	65	65
	88	28	28	88	88	28	28	88	88	88	28	88	88	88	58	28	88	88	88	88	S8	28	28	88	88	88	88	28	88	88	88	88	88	88	88	88	88	88	88	88
10	S1	S1	S1	S1	S1	S1	51	H	S1	H	S1 S		S1	-		S1 S	-	S1		H	S1	-	-		S1	S1	S1	S1	51	S1	S1	S1	5.1	S.1	S1	S1	S1		S1	$\dashv$
109	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	R1	77	R1	R1
108	57	S7	57	57	S7	S7	57	22	22	57	22	57	22	22	S7	22	57	22	S7	57	22	22	22	57	22	2.5	S7	57	57	22	22	22	22	22	22	S7	S7	22	22	2.2
107	53	S3	23	53	S3	S3	S3	23	23	23	23	23	S3	23	S3	S3	23	S3	S3	23	S3	S3	S3	23	23	23	S3	23	53	S3	23	S3	S3	23	S3	S3	53	S3	S3	S3
106	S9	65	65	89	89	89	65	65	89	65	65	S9	65	83	89	85	65	S9	S9	89	89	59	65	89	S9	S9	59	S9	S9	S9	S9	83	89	89	65	S9	89	S9	S9	89
105	28	28	88	88	28	28	88	88	88	28	28	88	88	88	88	88	88	28	88	88	88	88	88	S8	88	88	28	88	S8	S8	S8	28	88	88	SB	S8	88	88	88	88
104	SI	S1	2.1	S1	S1	S1	2.1	S:1	S1	S1	S1	S:1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	21	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S.1	S1	S1	S1
103	98	Se Se	98	99	99	Se	Se	Se	Se Se	Se	Se Se	95	Se Se	S6	98	Se Se	S6	Se Se	Se	S6	S6	Se	Se Se	95	Se	99	Se	Se	Se	Se Se	Se	98	Se	98	Se	Se	Se Se	S6	Se	98
102	SS	SS	SS	SS	S5	SS	S5	S2	SS	SS	SS	SS	SS	SS	SS	S5	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	22	S5	SS	SS	SS	SS	SS	SS
101	22	52	52	22	22	22	25	22	25	22	52	25	25	22	52	22	22	22	22	SZ	25	22	25	22	22	52	22	22	SZ	25	25	25	52	22	S2	25	22	22	S2	22
100	29	S9	S9	29	89	S9	89	89	S9	S9	S9	S9	29	89	89	S9	S9	S9	S9	29	29	S9	S9	S9	29	89	65	29	S9	29	89	29	89	29	89	89	89	89	89	SS SS
66	28	S8	88	28	88	88	28	28	28	28	88	88	28	28		88	28	88	88	88	S8	88	28	88	28	88	88	28	28	88	28	88	58	S8	88	88	28	88	88	88
88	51	S1	S1	S.1	23	S1	S1	Sı	S1.	S1	S1	S1	S1	21	S1	S1	S1	S1	S1	S1	S1	21	Sı	S1	S1	21	S1	SI	S1	S1	ᅜ	SI	S1	Sı	S1	S1	S1	SI	S1	S1
26	R3	R3	R3	R3	R3	R3	R3	R3	R3	R3	83	R3	R3	R3	R3	83	£3	R3	83	83	2	22	22	R3	23	22	83	83	22	83	R3	83	83	83	83	83	83	22	R3	R3
96	R8	83 83	R10	R11	R12	A70	A71	A72	A73	A74	A75	A76	A77	A78	A79	A80	A84	A85	A87	A88	82	2	R10	R11	R12	A89	A90	A91	A92	A93	A94	A95	\$4	P1	P2	11	EIH	EZL	EZH	M2
56	A4	A5	A6	A39	A40	A41	A42	A43	A44	$\dashv$	$\dashv$	$\dashv$	-	+	-	$\dashv$	-	$\dashv$	$\dashv$	-	-	$\dashv$	+	+	+	-	+	+	+	+	+	+	-	-	+	+	-	-	+	-
	S9	+	+	+	+	+	-	+	$\dashv$	$\dashv$	$\forall$	+	+	$\dashv$	+	+	$\dashv$	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
93	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	28	88	88	88	88	88	88	88	88	88	288	88	88	88	88	88	88	88	88	88	88	88	88	88
92	S1	S1	S1	51	S1	S1	5.1	S1	12	S1	5.1	S1	S1	Sī	S1	SI	S1	12	SI	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1	S1
93	S6	Se	98	98	Se Se	Se Se	98	9S	26	Se	98	98	26	98	S6	98	Se	Se	Se	98	Se	S6	98	98	29	Se	Se Se	98	98	Se	Se Se	Se	S6	Se	98	98	98	98	98	Se
	1	2	m	4	S	9	7	00	6	10	Ħ	17	13	14	51	16	17	18	13	৪	27	Z	ย	24	52	97	22	82	ଯ	8	33	32	33	×	35	98	37	38	39	40

37	8	7	88	S	A66	핊	33	21	28 28	S9	22	SS	Se Se	S1	28	89	23	22	RI	S1		88
88	<b>3</b> Se	S1	88	S	A67	EZL	22	S1	88	89	52	55	98	51	88	83	S3	57	R1	SI		88
39	98	S1	88	89	A68	EZH	R3	\$1	88	68	S2	\$5	98	S1	88	83	S3	57	13	S1	_	88
94	98	S1	88	89	A69	M2	R3	S1	88	83	25	SS	98	\$1	88	89	£S	57	R1	S1		88
PCM C	M Code =		RNRZ-L						Frame S	rame Sync 1=		1111-1110-0110-1011	0.0110	1011			Bit Rate =	ı,		9.6 Mbit/sec	15	Sec
Words	ords/Frame =		120						Frame 5	rame Sync 2 =	_	0010-100	0010-1000-0100-0000	0000			Bits/Word =	= pu			16	
Frames	rames/Major Frame	-rame =			40				Frame 5	rame Sync (Hex) =	В	_	FE6B2480	0			Frames/sec=	/sec=			2	2000
52,003	52.003 Kletzing								SFID=	Ħ	000000	222000	S				Mir Fran	ir Frame/sec=			5	īζ

Title	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for <b>Mission 52.003/52.004 Kletzing</b>						
Doc. No.	EE120237MTR						
Revision	Rev-Dash	Release Date 07/					

TM1 Measurement List

Format Label	Description	User	Mnemonic	Wd	Wd Int	Er	Fr Int	Calculated SPS
Analog #1								
A1	X-Axis Accelerometer	TM	X-Accel	71				1250
A2	Y-Axis Accelerometer	TM	Y-Accel	71	120		4	1250
A3	Z-Axis Accelerometer	TM	Z-Accel	71	120		4	1250
A4	Spare	TM	X-Mag	95	120			500
A5	Spare	TM	Y-Mag	95	120	2		500
A6	Dartmouth EXP Current	TM	DTMExpI	95	120	3	10	500
A7	TM1 Bus Current	TM	TM1BusI	72	120	2	40	125
A8	TM2 Bus Current	TM	TM2BusI	72	120	3		125
A9	GPS Bus Current	TM	GPSBus V	72	120	4		125
A10	EXP Bus Current	TM	EXPBusI	72	120	6		125
A11	Iowa EXP Current	TM	DTMBusI	72	120	7	40	125
A12	OSLO EXP Current	TM	OsoBusI	72	120	8	40	125
A13	UCB EXP Current	TM	UCBBusI	72	120	10	40	125
A14	SWRI EXP Current	TM	SWRBusI	72	120	11	40	125
A15	Nose Cone SCM	TM	NC_SCM	72	120	12	40	125
A16	Stacer Boom SCM	TM	SB_SCM	72	120	14	40	125
A17	EEPAA SCM	TM	EPA_SCM	72	120	15	40	125
A18	Needle Probe SCM	TM	NP_SCM	72	120	16	40	125
A 19	Nihka Separation BW	TM	NkSepBW	72	120	18	40	125
A20	PCM1 Temperature	TM	PCM1Tmp	72	120	19 20	40	125
A21 A22	XM1 Temperature	TM TM	XM1Tmp XM2Tmp	72 72	120 120	20	40 40	125 125
A22 A23	XM2 Temperature	TM		72	120	23	40	125
A23	Skin Temperature	TM	Skin Temp PCM2Tmp	72	120	24	40	125
A25	PCM2 Temperature Remote A/D DPLY Pot #1	TM	DPLPot1	72	120	26	40	
A26	DPLY Pot #1 DPLY Pot #2	TM	DPLP0t1 DPLP0t2	72	120	27	40	125 125
A27	DPLY Pot #2 DPLY Pot #3	TM	DPLPot2 DPLPot3	72	120	28	40	125
A28	DPLY Pot #4	TM	DPLPot4	72	120	30	40	125
A29	DPLY Pot #4 DPLY Pot #5	TM	DPLPot5	72	120	31	40	125
A30	Spare	TM	Sparel	24	120	1	2	2500
A31	Spare	TM	Spare2	24	120	2	20	250
A32	Spare	TM	Spare3	72	120	32	40	125
Analog #2	Spare	TIVI	Spares	12	120	32	40	123
A33	PCD-A +5V	TM	PCDA+5V	72	120	34	40	125.0
A34	TM1+28VBus	TM	TMIBusV	72	120	35	40	125.0
A35	XM1 +28V Bus	TM	XM1Bus V	72	120	36	40	125.0
A36	PCD-B+5V	TM	PCDB+5V	72	120	38	40	125.0
A37	TM2 +28V Bus	TM	TM2Bus V	72	120	39	40	125.0
A38	XM2 +28V Bus	TM	XM2Bus V	72	120	40	40	125.0
A39	GPS +28V Bus	TM	GPSBUs V	95	120	4	40	125.0
A40	PCD-C+5V	TM	PCDC+5V	95	120	5	40	125.0
A41	IOWA +28V BUs	TM	IWABusV	95	120	6	40	125.0
A42	Dartmouth +28V Bus	TM	DTMBusV	95	120	7	40	125.0
A43	OSLO +28V Bus	TM	OslBus V	95	120	8	40	125.0
A44	UCB +28V Bus	TM	UCBBus V	95	120	9	40	125.0
A45	TM Pyro Bus Mon	TM	PyroBus	95	120	10	40	125.0
A46	TM Pyro Batt Mon	TM	PyroBat	95	120	14	40	125.0
A47	TM +5V Mon	TM	TM1+5V	95	120	15	40	125.0
A48	SWRI +28V Bus	TM	SWRBusV	95	120	16	40	125.0
A49	Nihka Motor Pressure	TM	NM_Pres	71	120	4	4	1250.0
A50	Terrier Lanyard #2 Mon	TM	TRLOLO2	95	120	17	40	125.0
A51	Nihka SCM Ignition	TM	NIgnSCM	95	120	18	40	125.0
A 52	Nihka SCM Separation	TM	NSepSCM	95	120	19	40	125.0
A53	Nihka SCM De-Spin	TM	De-Spin	95	120	20	40	125.0
A54	Nihka SCM Spare	TM	Spr SCM	95	120	24	40	125.0
A55	Nihka Lanyard Mon #1	TM	NLOLO1	95	120	25	40	125.0
A56	Nihka Lanyard Mon #2	TM	NLOLO2	95	120	26	40	125.0
A57	BB SCM Ignition	TM	BIgnSCM	95	120	27	40	125.0
	BB SCM Separation	TM	BSepSCM	95	120	28	40	125.0
A58	BB Lanyard Mon #1	TM	BBLOLO1	95	120	29	40	125.0
A58 A59								
A59			BBI OI O2	051	1201	301	401	175.11
A59 A60	BB Lanyard Mon #2	TM	BBLOLO2 BB Pres	95 72	120	30	40	
A59 A60 A61	BB Lanyard Mon #2 BB Motor Pressure	TM TM	BB_Pres	72	120	1	4	1250.0
A59 A60	BB Lanyard Mon #2	TM						125.0 1250.0 125.0 125.0

Title	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for Mission 52.003/52.004 Kletzing						
Doc. No.	EE120237MTR						
Revision	Rev-Dash	Release Date	07/17/17				

TM1 Measurement List

Format Label	Description	User	Mnemonic	Wd	Wd In	Fr	Frint	Calculated SPS
Analog #3								
A65	Pressure Fine Regulator	ACS	FINPRES	24	120		20	250.
A66	X-Axis Gyro	ACS	LN_XRATE	95	120		40	125
A67	GLNMAC -15V Monitor	ACS	GLN_M15V	95	120			
A68	GLNMAC -5V Monitor	ACS	GLN_M5V	95	120			125.
A69	GLNMAC+15V Monitor	ACS	GLN_P15V	95	120	40		125.
A70	GLNMAC+5V Monitor	ACS	GLN_P5V	96	120			125.
A71	GLNMAC +28V Monitor	ACS	GLN_P28V	96	120	7	40	
A72	Temperature - GLNMAC CPU	ACS	GLN_TMP	96	120	8		125.
A73	GLNMAC Motor Torque	ACS	GIM_MTRQ		120	9		125.
A74	Z-Axis Accelerometer	ACS	LN_ZACC	96	120	10	40	125.
A75	Y-Axis Accelerometer	ACS	LN_YACC	96	120		40	125.
A76	X-Axis Accelerometer	ACS	LN_XACC	96	120	12	40	125.
A77	Z-Axis Gyro	ACS	LN_ZRATE	96	120	13	40	125.
A78	Y-Axis Gyro	ACS	LN_YRATE ACS_3_3V	96	120	14	40	125.
A79	3.3V Monitor	ACS	ACS_3_3V	96	120	15	40	125.
A 80	24-34V Conditioned 28V Monitor	ACS	ACS28V2	96	120	16	40	125.
A81 A82	Combined Valve Monitor, VCW-CCW	ACS	VCW_VCCW V270_V90		120		20	250.
A83	Combined Valve Monitor, V270-90	ACS	V270_V90 V0_V180	24 24	120 120	8 10	20	250.
A 84	Combined Valve Monitor, V0-180 ACS +28V Bus Monitor (0-50V)	ACS ACS	ACS 28V	96	120	17	20 40	250. 125.
A 85	Pressure - Tank Pressure	ACS	TNKPRES	96	120	18	40	
A86	Pressure - Coarse Pressure	ACS	CRSPRES	24	120	18	20	125. 250.
A87	Umbi Sep Loop, +5V	ACS	UMBI SEP	96	120	19	40	125.
A88	+12V Stack	ACS	STK_P12V	96	120	20	40	125.
A89	-12V Stack	ACS	STK_M12V	96	120	26	40	125.0
A90	+5V Stack	ACS	STK_N12V	96	120	27	40	125.0
A91	ACS Lanyard Switch Pulled/Stowed	ACS	ACS LOLO	96	120	28	40	125.6
A92	NIACS-Enabled On/Off	ACS	ACS ENBL	96	120	29	40	125.0
A93	GLNMAC - Current Monitor	ACS	ACS I	96	120	30	40	125.0
A94	GPS Green LED	TM	GPSGm	96	120	31	40	125.0
A95	GPS Red LED	TM	GPSRed	96	120	32	40	125.0
A96	Spare	1	Spare5	24	120	14	20	250.0
Parallel Deck #1								250.0
P1	P1		P1	96	120	34	40	125.0
-]	TM LOLO1	TM					=	
-2	Nose Cone Separation uSwitch	TM						
-3	XM1 On/Off Mon	TM						
-4	TM1 Int/Ext Mon	TM						
-5	TM LOLO2	TM						
	GPS Int/Ext Mon	TM						
	XM2 Int/Ext Mon	TM						
	TM2 Int/Ext Mon	TM						
	HV On/Off Mon	TM						
	uSW Retract Mon							
	uSW Deploy Mon							
-12								
-13								
-14								
-15							_	
-16		-	120	0.0	100	- 0.5	- 10	
12	TM LOLO3	-	P2	96	120	35	40	125.0
	UCB Int/Ext Mon	-		-		_	$\rightarrow$	
	OSLO Int/Ext Mon	+		-	_	_	-	
	Iowa Int/Ext Mon		+ +	_		-	$\rightarrow$	
	Experiment Int/Ext Mon			-	$\rightarrow$	$\rightarrow$	$\rightarrow$	
	SWRI Int/Ext Mon	-	+	- +		-	$\rightarrow$	
-7		-	+	-	-	-		
-8		+	+	-	-	-	-	
-9			1	_	-	-		
-10		1						
			+	-		-	_	
-11		+		-	-	-	_	
-11 -12								
-12					$\rightarrow$	_		
-12 -13								

Title	Electrical Engineering Mission Telemetry (Ground Support) Requirements (MTR) for Mission 52.003/52.004 Kletzing						
Doc. No.	EE120237MTR						
Revision	Rev-Dash	Release Date 07/1					

**TM1 Measurement List** 

Format Label	Description	User	Mnemonic	Wd	Wd In	Fr	Fr Int	Calculated SPS
Asynchronous								
	Asynchronous #1							
R1	ACS GUI - 115.2 K baud	ACS	rsACS	13	24	1	1	25000.
R2	HMR2300 19.2 K baud	ACS	rsHMR	47	120	1	2	2500.
R3	mJAGR GPS - 115.2K baud	TM	rsGPS	1	24	1		25000.
R4	PCD - 19.2K baud	TM	rsPCD	47	120			2500.
-	102 1722 0000	1	101 02	+ ·		_	— <u> </u>	2000.
	Asynchronous #2		<del>                                     </del>					
R5	Nihia RMFT 1 - 1200 baud	TM	rsNihka1	24	120	16	20	250.
R6	Nihka RMFT 2 - 1200 baud	TM	rs Nihka2	24	120			250.
R7	BB RMFT 1 - 1200 baud	TM	rsBB1	24	120			250.
R8	BB RMFT 2 - 1200 baud	TM		96	120			
Kδ	BB RIVIF 1 2 - 1200 baud	1 IVI	rsBB2	90	120	1	20	250.
				-				
	Asynchronous #3 Terrier RMFT 1 - 1200 baud			0.5	1.00			
R9		TM	rsTer1	96	120		20	250
R10	Terrier RMFT 2 - 1200 baud	TM	rsTer2	96	120			250
R11	Payload TM RMFT - 1200 baud	TM	rsRFMT	96	120			250
R12	Spare 1200 baud	TM	rsSpare	96	120	5	20	250.0
	Major Frame Counter							
M1	Major Frame Counter 1	TM	M1	48	120	1	1	5000.0
M2	Major Frame Counter 1  Major Frame Counter 2	TM	M2	96	120	40		125.0
MZ	Major Frame Counter 2	1M	IVI 2	96	120	40	40	125.0
	Overhead Channels	_	-	-		_		
FS1	Frame Sync #1: 1111 1110 0110 1011	TM	FS1	119	120	1	1	5000.0
FS2	Frame Sync #2: 0010 1000 0100 0000	TM	FS2	120	120	1		
F52	Frame Sync #2: 0010 1000 0100 0000	I M	F52	120	120	1	1	5000.0
SFID	Sub Frame Sync: 100000000CCCCCC	TM	SFID	23	120	1	1	5000.0
Time Event	Bub Hallk Bylle. 100000000cccccc	TIVI	5110	- 20	120		- 1	3000,0
THE EVENT	Time Event #1							
EIL	GPS 1PPS lsb		GPSpps1	96	120	36	40	107.0
EIL	GF3 IFF3 ISU		Groppsi	96	120 120	37	40	125.0
DOL	4 C0 1000 1-1		1.001					125.0
E2L	ACS 1PPS lsb		ACSpps1	96	120	38		125.0
E3L	UCB 1PPS ls b	_	ACSppsm	96	120	39	40	125.0
Serial								
	Serial #1			1		i ii		
S1	EEPAA	U Iowa	EEPAA	2	6	1	1	100000.0
	<del></del>	10_101.10		1 -1		- Î		
S2	Langmuir Probes	UiO	LMRPROB	5	12	1	1	50000.0
S2+1	Langmuir Probe Channel 1	UiO	Living ROD	1	14			50000.0
S2+2	Langmuir Probe Channel 2	UiO						
S2+3	Langmuir Probe Channel 3	UiO		-		-		
S2+4		UiO		-				
3274	Langmuir Probe Channel 4	UIO			-			
S3	LICD Fields Law Bata	UCB	FLDSLR	11	24		- 1	25000.0
22	UCB Fields Low Rate	UCB	FLDSLK	11	24	1	1	25000.0
S4	UCB Fields Housekeeping	UCB	FLDSHK	96	120	33	40	125.0
34	OCB Fields Housekeeping	UCB	FLUSTIK	90	120	33	40	125.0
	Remote A/D Serial Deck #2			-			-	
S5		D 1 11	DVI		10			
33	DX1	Dartmouth	DXI	6	12	1	1	50000.0
\$6	DZ2	Dartmouth	D72	7	12			50000
30	DL14	Danmouth	DLZ		12	1	1	50000.0
S7	HF-AGC	Dartmouth	HF AGC	12	24	1	1	25000.0
								22000.0
	Remote A/D Serial Deck #3							
S8	VLF1	UCB	VLF1	3	6	1	1	100000.0
S9	VLF2	UCB	VLF2	4	6	1	1	100000.0