Level III to Diagram: Telemetry Monitoring

Req ID	Requirement	Comments	Diagrams		
3.1 LAT ISOC	3.1 LAT ISOC Configuration and Architecture Requirements				
GEN0070	The LAT ISOC shall support automated connections for real-time housekeeping data.		Telemetry Monitoring		
3.1.6 Web Pag	ge Requirements				
WEB0100	The LAT ISOC shall provide authorized remote users RT housekeeping data via the LAT ISOC website.		Telemetry Monitoring, Logging		
3.3.1.1 House	keeping Data Ingest				
TLM0060	The LAT ISOC shall recognize broken socket connections and automatically attempt reconnection.	For connections in which the LAT ISOC is the client.	Telemetry Monitoring		
TLM0070	The LAT ISOC shall receive and process RT HK and alert telemetry from the MOC.		Telemetry Monitoring		
3.3.1.2 Housel	keeping Data Processing				
TLM0230	The LAT ISOC shall process RT telemetry from the MOC.		Telemetry Monitoring		
TLM0330	The LAT ISOC shall process LAT instrument on-board diagnostic data.	This requirement applies to both RT and recorded data.	L0 Data Processing, Telemetry Monitoring		
3.3.1.4 Housekeeping Data Quality & Stats					

Req ID	Requirement	Comments	Diagrams
TLM0500	The LAT ISOC shall automatically perform data integrity checks, and record the results.	This includes at least a check of the anno12 header for each packet.	L0 File Ingest, Telemetry Monitoring, LAT Configuration
TLM0610	The LAT ISOC shall record data quality problems requiring operator intervention.		L0 File Ingest, Telemetry Monitoring, LAT Configuration
3.3.1.5 House	keeping Data Value Conversion		
TLM0640	The LAT ISOC shall provide discrete state conversions as specified in the T&C database.		L0 Data Processing, Telemetry Monitoring
TLM0650	The LAT ISOC shall provide conversion from downlinked raw values to Engineering Units (EUs), as identified in the T&C database and GLAST T&C Handbook.		L0 Data Processing, Telemetry Monitoring
3.3.1.6 House	keeping Data Transfer		
TLM0680	The LAT ISOC shall provide the capability to enable and disable the real-time housekeeping data from the MOC.	This is intended to be configurable in the MOC so that the real-time link to the LAT ISOC is brought up only when needed (MOC2110).	Telemetry Monitoring
3.3.4 Alert Te	lemetry Monitoring Requirements		
TDRS0010	The LAT ISOC shall be able to receive notification of alert telemetry (including real time alerts) from the MOC.		Telemetry Monitoring
3.3.5 User Int	erface Language Requirements		

Req ID	Requirement	Comments	Diagrams
UIL0030	The LAT ISOC user interface language shall b capable of providing telemetry monitoring.	e	LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0050	The LAT ISOC user interface language shall allow procedure parameter passing.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0060	The LAT ISOC user interface language shall provide local and global variables.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0070	The LAT ISOC user interface language shall provide arithmetic capabilities using local and global variables, telemetry values, system variables, and constants.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0090	The LAT ISOC user interface language shall provide comment capability.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0100	The LAT ISOC user interface language shall provide access to current telemetry and system values, allowing observations of values in raw or converted form.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0130	The LAT ISOC shall provide the capability to process user interface language directives as part of a procedure.		LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0140	The LAT ISOC shall provide the capability to create procedures.		LAT Configuration, Telemetry Monitoring, L0 Data Processing

Req ID	Requirement	Comments	Diagrams
UIL0200	The LAT ISOC shall provide the capability to execute procedures.	For use during pre-launch test and for validation of procedures on the testbed	LAT Configuration, Telemetry Monitoring, L0 Data Processing
UIL0230	The LAT ISOC shall report both the acceptance and completion of the procedures to the user.	For use during pre-launch test and for validation of procedures on the testbed	LAT Configuration, Telemetry Monitoring, L0 Data Processing
3.4.1 Ground	System Monitoring Requirements		
GMON0020	The LAT ISOC shall report socket failures as event messages.		Telemetry Monitoring, Logging
3.4.2 Display	Pages Requirements		
PAG0010	The LAT ISOC shall provide the capability for the user to create display page definition files.		Telemetry Monitoring
PAG0020	The LAT ISOC shall provide the capability for the user to modify display page definition files.		Telemetry Monitoring
PAG0030	The LAT ISOC shall provide the capability for the user to save display page definition files.		Telemetry Monitoring
PAG0040	The LAT ISOC display pages shall provide the capability to include any processed telemetry data for all mnemonics defined in the T&C database.		Telemetry Monitoring
PAG0050	The LAT ISOC display pages shall provide the capability to display the raw value of a mnemonic.		Telemetry Monitoring

Page 4 of 13

Req ID	Requirement	Comments	Diagrams
PAG0060	The LAT ISOC display pages shall provide the capability to display the EU conversion value of a mnemonic.		Telemetry Monitoring
PAG0070	The LAT ISOC display pages shall provide the capability to display the corresponding discrete state text for the value of a mnemonic.		Telemetry Monitoring
PAG0080	The LAT ISOC display pages shall provide the capability to include a text description of included mnemonics.		Telemetry Monitoring
PAG0130	The LAT ISOC display pages shall provide the capability to display values in hexadecimal.		Telemetry Monitoring
PAG0140	The LAT ISOC display pages shall provide the capability to display values in floating-point.		Telemetry Monitoring
PAG0150	The LAT ISOC display pages shall provide the capability to display values in integer form.		Telemetry Monitoring
PAG0160	The LAT ISOC display pages shall provide the capability to display values in ASCII.		Telemetry Monitoring
PAG0170	The LAT ISOC display pages shall provide the capability to include converted time values.		Telemetry Monitoring
PAG0180	The LAT ISOC display pages shall provide the capability to include a quality flag for questionable quality data.		Telemetry Monitoring

Req ID	Requirement	Comments	Diagrams
PAG0190	The LAT ISOC display pages shall provide the capability to display telemetry values that are being limit-checked with red/yellow, high/low limits in the color associated with the current limit state.		Telemetry Monitoring
PAG0200	The LAT ISOC display pages shall provide the capability to include static data flags.	For use with RT data and pre-launch testing.	Telemetry Monitoring
PAG0210	The LAT ISOC display pages shall provide the capability to include mnemonic value units.		Telemetry Monitoring
PAG0220	The LAT ISOC display pages shall provide the capability to include global variables.		Telemetry Monitoring
PAG0230	The LAT ISOC shall allow a user to display a page defined in a display page definition file.		Telemetry Monitoring
PAG0240	The LAT ISOC shall allow a user to set the update rate of a display page to an integral number of seconds.		Telemetry Monitoring
PAG0250	The LAT ISOC display pages shall have a default update rate of 1 seconds.		Telemetry Monitoring
PAG0270	The LAT ISOC shall provide the capability to support at least 25 display windows per workstation.		Telemetry Monitoring
PAG0280	The LAT ISOC shall provide the capability to support at least 50 parameters per display page.		Telemetry Monitoring
PAG0290	The LAT ISOC shall provide the capability for the user to create telemetry data plot definition files.		Telemetry Monitoring
Friday, Janua	ary 21, 2005		Page 6 of 13

Req ID	Requirement	Comments	Diagrams
PAG0300	The LAT ISOC shall provide the capability for the user to modify plot definition files.		Telemetry Monitoring
PAG0310	The LAT ISOC shall provide the capability for the user to save plot definition files.		Telemetry Monitoring
PAG0320	The LAT ISOC shall provide the capability to display telemetry data plots.		Telemetry Monitoring
PAG0330	The LAT ISOC shall provide the capability to display plots on display pages.		Telemetry Monitoring
PAG0340	The LAT ISOC shall provide the capability to include up to 4 parameters (raw or EU-converted values) in each plot.		Telemetry Monitoring
PAG0350	The LAT ISOC plots shall display each Y-axis parameter with unique symbols and color.		Telemetry Monitoring
PAG0360	The LAT ISOC plots shall support two Y-axis scales (one on the left side of the plot and one on the right side).		Telemetry Monitoring
PAG0370	The LAT ISOC shall allow the user to specify the scale of each Y-axis in the plot definition file.		Telemetry Monitoring
PAG0380	The LAT ISOC shall provide the capability to display scatter style plots.		Telemetry Monitoring
PAG0390	The LAT ISOC shall provide the capability to display line style plots.		Telemetry Monitoring
PAG0400	The LAT ISOC shall allow the user to specify the plot style in the plot definition file.		Telemetry Monitoring

Req ID	Requirement	Comments	Diagrams
PAG0410	The LAT ISOC shall provide the capability to display a minimum of 10 plots simultaneously.		Telemetry Monitoring
PAG0420	The LAT ISOC shall provide the capability to print telemetry snapshots of any display page.		Telemetry Monitoring
3.4.3 Sequent	ial Prints Requirements		
PRT0010	The LAT ISOC shall allow users to specify sequential print definition files.		Telemetry Monitoring
PRT0020	Sequential print definition files shall include the data points to be sampled, the EU/raw specifications, the data output, the sampling rates, and whether or not the data is quality flagged.		Telemetry Monitoring
PRT0030	The LAT ISOC shall provide the capability to include any system parameter, telemetry mnemonic, or status value as data points in sequential print files.		Telemetry Monitoring
PRT0040	The LAT ISOC shall provide the capability to extract the user-defined data points to generate sequential print files.		Telemetry Monitoring
PRT0050	The LAT ISOC shall support collection of at least 40 data sequential print files at one time.		Telemetry Monitoring
PRT0060	The LAT ISOC shall support the collection of an unlimited number of samples for each telemetry point in an active sequential print file.	Within disk space constraints.	Telemetry Monitoring

Req ID	Requirement	Comments	Diagrams
PRT0070	The LAT ISOC shall provide the capability to display sequential print output files.		Telemetry Monitoring
PRT0080	The LAT ISOC shall provide the capability to print sequential print output files.		Telemetry Monitoring
PRT0090	The LAT ISOC shall provide the capability to save sequential print output files.		Telemetry Monitoring
PRT0100	Sequential print output files shall be saved in ASCII file format.		Telemetry Monitoring
PRT0110	A user-specified delimiter shall separate values within sequential print output files.		Telemetry Monitoring
PRT0120	The LAT ISOC shall provide the capability for each sequential print output file to include an optional header with each telemetry parameter identified by a mnemonic or user-defined description.		Telemetry Monitoring
PRT0130	The LAT ISOC shall provide the capability to save sequential print definition files.		Telemetry Monitoring
PRT0140	The LAT ISOC shall generate sequential print files from recorded housekeeping data at a rate of at least ten times the real-time rate for trend analysis support.	The sequential print files are the collection of telemetry parameters that are used for trend plots, etc.	Telemetry Monitoring

3.4.6 Limit Monitoring Requirements

Req ID	Requirement	Comments	Diagrams
LMIT0010	The LAT ISOC shall determine the limit states of telemetry mnemonics by comparing observatory housekeeping data with associated limit threshold values defined in the PDB.		Telemetry Monitoring, L0 Data Processing
LMIT0030	The LAT ISOC shall automatically determine the limit state for RT HK data.		Telemetry Monitoring
LMIT0050	The LAT ISOC shall report limit state changes as event messages.	also driven by EVT0010	Telemetry Monitoring, L0 Data Processing
LMIT0080	The LAT ISOC shall provide the capability to reset the limit checking counter when telemetry processing is resumed.	The limit checking counter monitors the number of successive out-of-state occurrences.	Telemetry Monitoring, L0 Data Processing
LMIT0090	The LAT ISOC shall provide the capability to reset the limit checking counter when limit checking is enabled.	The limit checking counter monitors the number of successive out-of-state occurrences.	Telemetry Monitoring, L0 Data Processing
LMIT0100	The LAT ISOC shall provide the capability to enable limit checking of any and all parameters.		Telemetry Monitoring, L0 Data Processing
LMIT0110	The LAT ISOC shall provide the capability to disable limit checking of any and all parameters.		Telemetry Monitoring, L0 Data Processing
LMIT0120	The LAT ISOC shall provide the capability to override the limit threshold values defined in the PDB for any parameter.		Telemetry Monitoring, L0 Data Processing
LMIT0140	The LAT ISOC shall provide the capability to display the currently active limit threshold values for any parameter.		Telemetry Monitoring

Req ID	Requirement	Comments	Diagrams
LMIT0150	The LAT ISOC shall provide the capability to display the PDB-defined limit threshold values for any parameter.		Telemetry Monitoring
LMIT0160	The LAT ISOC shall support up to two limit sets for each parameter.		Telemetry Monitoring, L0 Data Processing
LMIT0170	LAT ISOC shall check the value of the switch mnemonic to determine which limit set to use.	The switch mnemonic and the associated switch values are optionally defined for each telemetry parameter in the PDB.	Telemetry Monitoring, L0 Data Processing
3.4.7 Configu	ration Monitoring Requirements		
CFG0015	The LAT ISOC shall provide the capability to define one or more Configuration monitor sets.		Telemetry Monitoring, L0 Data Processing
CFG0020	The configuration monitor sets shall consist of a list of telemetry parameters and associated expected values.		Telemetry Monitoring, L0 Data Processing
CFG0030	The LAT ISOC shall compare the configuration monitor sets to telemetered observatory data.		Telemetry Monitoring, L0 Data Processing
CFG0040	The LAT ISOC shall detect differences between the values of the parameters in the configuration monitor sets and the values of the associated parameters in the telemetered observatory data.		Telemetry Monitoring, L0 Data Processing
CFG0050	The LAT ISOC shall provide the capability to compare observatory data to a minimum of 10 configuration monitor sets, simultaneously.		Telemetry Monitoring, L0 Data Processing

Page 11 of 13

Req ID	Requirement	Comments	Diagrams
CFG0060	The LAT ISOC shall provide the capability for automatic execution of configuration monitor sets.		Telemetry Monitoring, L0 Data Processing
CFG0070	The LAT ISOC shall reject questionable quality data in configuration files while making comparisons.	Questionable quality will be based on standards established in the Level 4 operations documents for the LAT ISOC.	Telemetry Monitoring, L0 Data Processing
CFG0080	The LAT ISOC shall provide the capability for the user to enable and disable the automatic execution of configuration monitor sets.		Telemetry Monitoring, L0 Data Processing
CFG0090	The LAT ISOC shall provide the capability to automatically execute a comparison whenever the values for all mnemonics in a configuration monitor set have been updated since the last comparison.		Telemetry Monitoring, L0 Data Processing
CFG0100	The LAT ISOC shall provide the capability to automatically initiate a comparison whenever the value of a single mnemonic in a configuration monitor set has been updated since the last comparison.		Telemetry Monitoring, L0 Data Processing
CFG0110	The LAT ISOC shall provide the capability to automatically execute a comparison whenever the value(s) of one or more mnemonics in a configuration monitor set have been updated since the last comparison.		Telemetry Monitoring, L0 Data Processing
CFG0120	The LAT ISOC shall provide the capability to automatically execute a comparison at a user-defined interval.		Telemetry Monitoring, L0 Data Processing

Req ID	Requirement	Comments	Diagrams
CFG0130	The LAT ISOC shall report the results of configuration monitor sets comparisons as event messages.		Telemetry Monitoring, L0 Data Processing
CFG0140	The LAT ISOC shall be capable of displaying the names of the configuration monitor sets actively being executed.		Telemetry Monitoring, L0 Data Processing