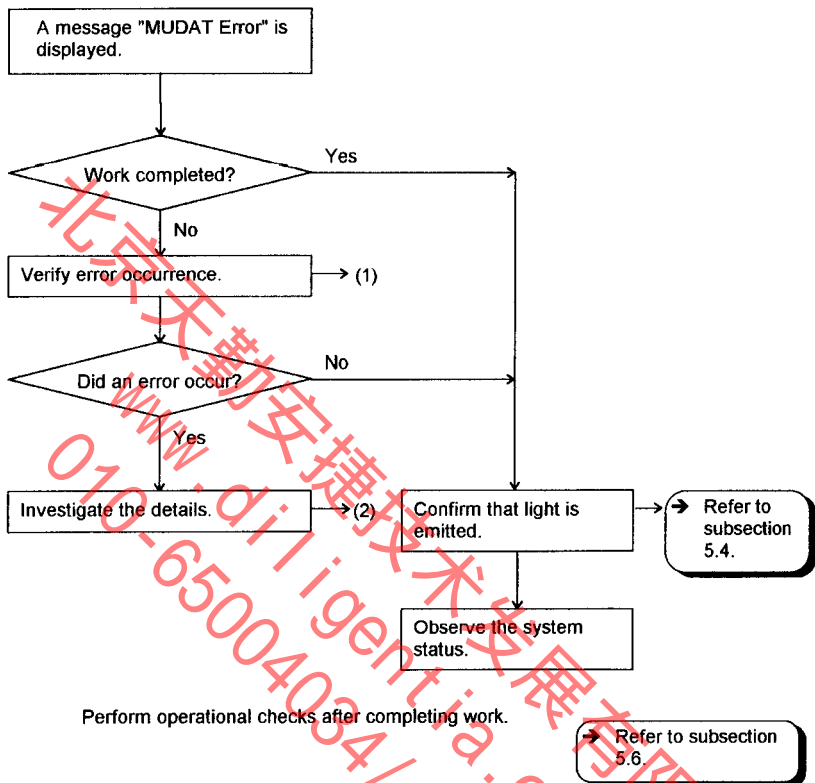


5.2 Malfunction of Control System Data Communication



NOTE:

1. Be sure to turn the power OFF/ON after maintenance or check work. The system may detect an error due to the following operation:
 - Power is supplied only to the stationary section.
 - Power is turned OFF/ON only for the rotating section.
2. When the error message above is displayed, scan cannot be performed at all. This error can be reset only by turning the power supply (gantry) OFF and then ON again, or hardware resetting of the KGTS PWB.

(1) Verify error occurrence

Perform MUDAT tests (ROTSOT test, SOTROT test) to check whether an error occurs by observing the LEDs on the OPCONT2 PWB and GCIF2 PWB.

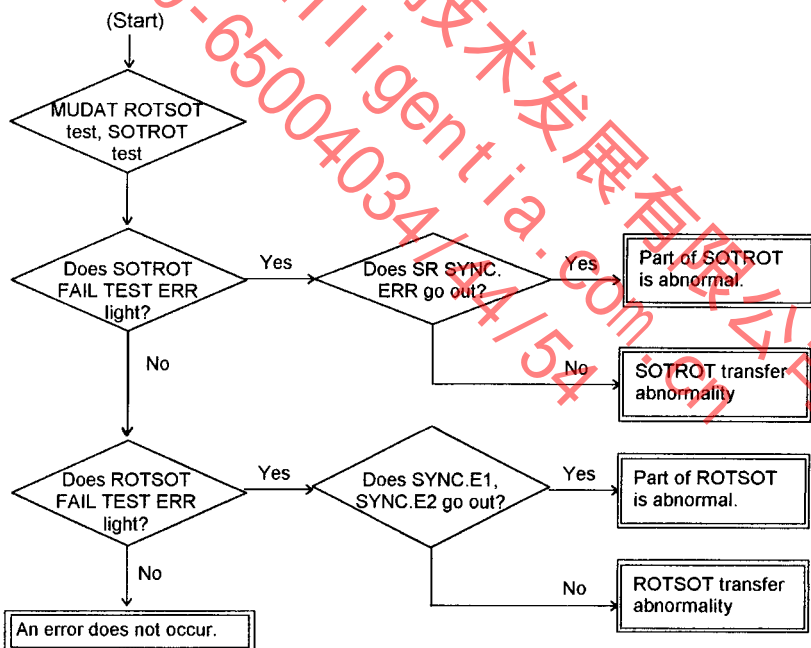
Confirm that SOTROT FAIL GCIF2 (LED17), SOTROT TEST ERR (OPCONT2 LED20), ROTSOT FAIL GCIF2 (LED15) or ROTSOT TEST ERR (GCIF2 LED20) lights.


(Procedure)

<1> Set SW3-6 and SW3-7 on the OPCONT2 PWB to ON and also set SW6-6 and SW6-7 on the GCIF2 PWB to ON. This switches the system to the MUDAT test setting.

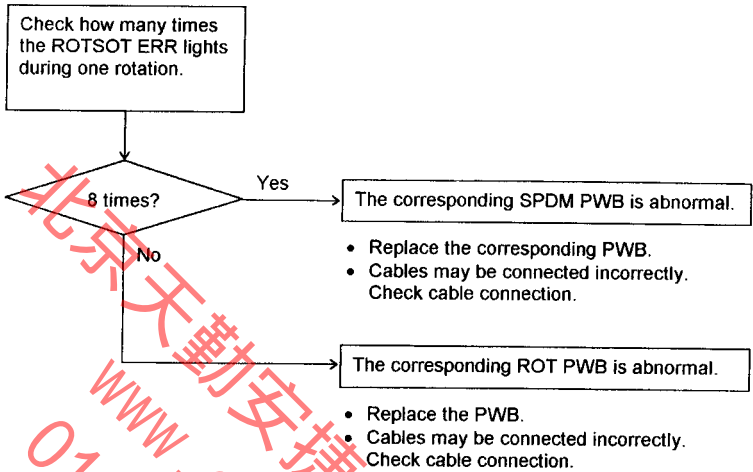
<2> Rotate the gantry (about 20 rotations) using the test rotor (60-s rotation) in KGTSM local mode.

<3> Determine how the error occurs according to the tree diagram shown below. The determination is used for detailed investigation.

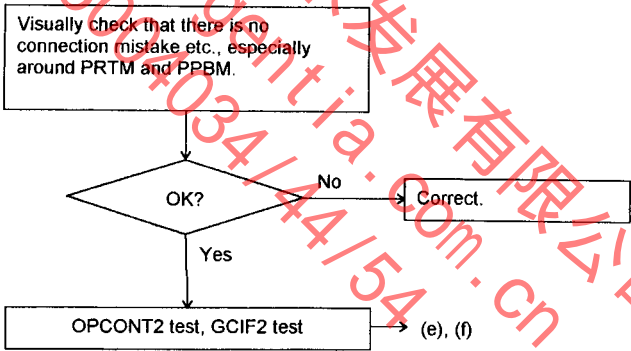


 indicates a judgment.

(c) Part of ROTSOT is abnormal



(d) ROTSOT transfer abnormality



(e) OPCONT2 test

1) Procedure

- <1> Turn OFF gantry CP1.
- <2> Disconnect the cables of CN906 and CN907 of the OPCONT2 PWB and bind them using cable ties to prevent their connectors from coming into contact with other parts.

- <3> Connect CN906 and CN907 of the OPCONT2 PWB using a MUDAT coaxial cable (for example, CX77-96126).
- <4> Set SW3-6, SW3-7, and SW3-8 to ON.
- <5> Turn ON gantry CP1 and check whether TEST ERR (LED20), SOTROT ERR (LED14), or SOTROT FATAL ERR (LED15) lights.

2) Criteria

If any of the LEDs lights, replace the OPCONT2 PWB. When none of the LEDs light, the OPCONT2 PWB is normal.

*: After completing the test, restore the cable connections to their original status and return SW3-6, SW3-7, and SW3-8 to their original settings.

(f) GCIF2 test

1) Procedure

- <1> Turn OFF gantry CP1.
- <2> Disconnect connectors CN606 and CN607 of the GCIF2 PWB and bind them using cable ties to prevent them from coming into contact with other parts.
- <3> Connect CN606 and CN607 of the GCIF2 PWB using a MUDAT coaxial cable (for example, CX77-96126).
- <4> Set SW6-6, SW6-7, and SW6-8 to ON.
- <5> Turn ON gantry CP1 and check whether TEST ERR (LED20), ROTSOT ERR (LED14), or ROTSOT FATAL ERR (LED15) lights.

2) Criteria

If any of the LEDs lights, replace the GCIF2 PWB. When none of the LEDs light, the GCIF2 PWB is normal.

*: After completing the test, restore the cable connections to their original status and return SW6-6, SW6-7, and SW6-8 to their original settings.

5.3 Malfunction of DAS Data Communication

Relationship between MUDAT and an abnormal image

A communication error of DAS data results in an abnormal image.

An abnormality in the MUDAT appears as streak or ring artifacts.

Data corruption by a single communication error becomes a streak artifact.

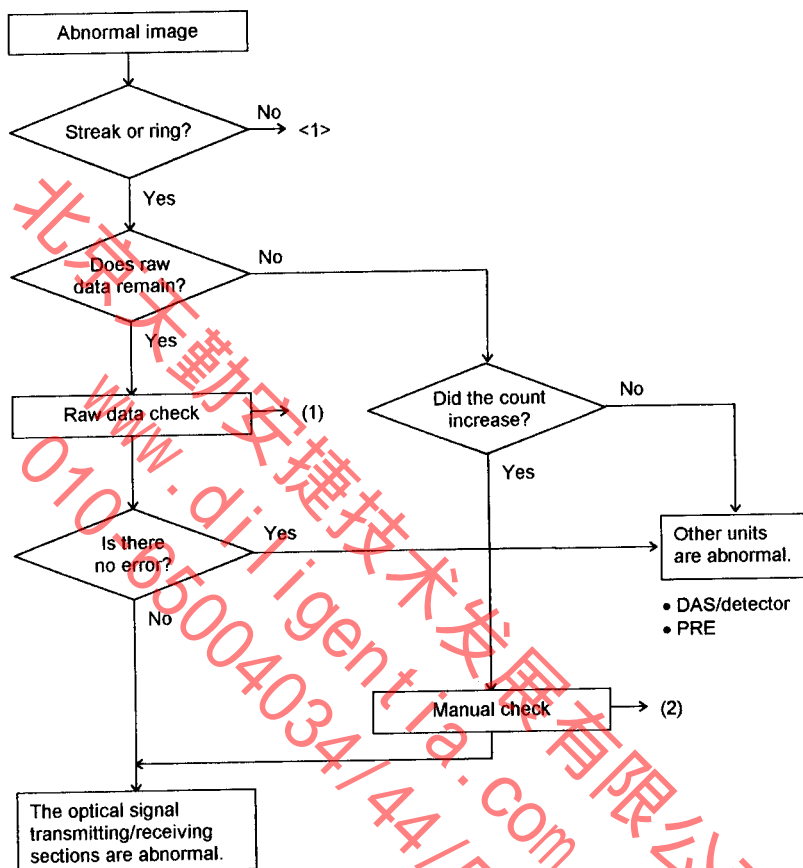
If the frequency of errors becomes high, the number of streak artifacts will increase. If this communication error occurs during offset acquisition, an image with ring-shaped artifacts appears because offset data of the channel is corrupted. The ring-shaped artifacts appear at random locations on the image, permitting them to be distinguished from those due to malfunction of the DAS or detector.

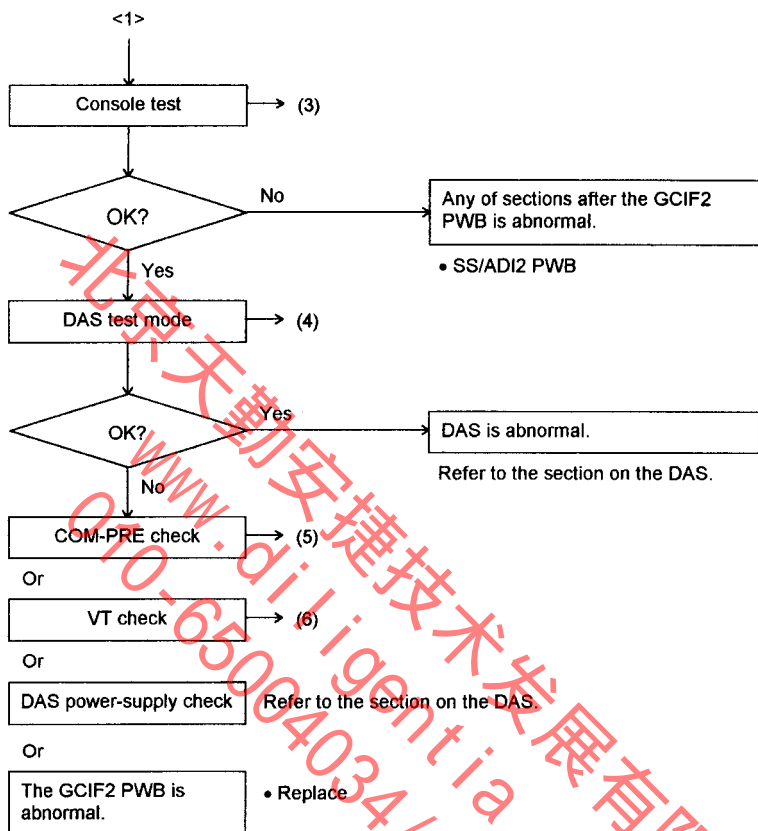
On the other hand, abnormalities in the I/F and PRE section make the image meaningless.

Note that very frequent errors at the MUDAT are recognized as a control system data communication error.

→ Refer to
subsection 5.2.

5.3.1 Investigating the cause of abnormal image





NOTE: Count means MULTI ERR counts.

(1) Raw data check

The DCA test program uses the extra data to determine the existence of generated errors, and the error position. (Refer to the software service manual regarding the DCA test program.)

☆ For Asteion VR, VI systems

Data	Word #	Contents
Extra 1 (18 words)	001 (E0)	Tube position
	002 (E1)	Rotation Speed
	003 (E2)	Couch position
	004 (E3)	Raw Data Error
	005 (E4)	DAS Word
	006 (E5)	Proj. #1
	007 (E6)	Proj. #2
	008 (E7)	Tilt Angle
	009 (E8)	PRE MODE
	010 (E9)	Heart
	011 (E10)	Breath
	012 (E11)	Reserved
	013 (E12)	Check #0
	014 (E13)	Check #1
	015 (E14)	Check #2
	016 (E15)	Check #3
	017 (E16)	Reserved
	018 (E17)	Reserved
Extra 2 (3 words)	019 (Ref.)	Reference
	020 (FMD A)	FMD A
	021 (FMD B)	FMD B
PURE RAW (760 words)	022 (1)	1
	781 (760)	760

* Details concerning extra data

Raw Data Error : Number of pure raw data transfer errors

DAS Word : Number of data sets transferred from the DAS:
^h 8300 is normal.

Proj. #1 : Number of projections
16 higher-order bits (bits 17 to 32)

Proj. #2 : Number of projections
16 lower-order bits (bits 1 to 16)

Check #0 : ^hFFFF

Check #1 : ^h5555

Check #2 : ^hAAAA

Check #3 : ^hFFFF

MUDAT error count information enters channel 4 (E3) and DAS data count information concerning DCLK ERR enters channel 5 (E4).

☆ For Asteion VF system

Data	Word #	Contents
Extra 1 (18 words)	001 (E0)	Tube position
	002 (E1)	Rotation Speed
	003 (E2)	Couch position
	004 (E3)	Raw Data Error
	005 (E4)	DAS Word
	006 (E5)	Proj. #1
	007 (E6)	Proj. #2
	008 (E7)	Tilt Angle
	009 (E8)	PRE MODE
	010 (E9)	Heart
	011 (E10)	Breath
	012 (E11)	Reserved
	013 (E12)	Check #0
	014 (E13)	Check #1
	015 (E14)	Check #2
	016 (E15)	Check #3
	017 (E16)	Reserved
	018 (E17)	Reserved
Extra 2 (3 words)	019 (Ref.)	Reference
	020 (FMD A)	FMD A
	021 (FMD B)	FMD B
PURE RAW (573 words)	022 (1)	1
	594 (573)	573

* Details concerning extra data

Raw Data Error : Number of pure raw data transfer errors

DAS Word : Number of data sets transferred from the DAS:
^h 8240 is normal.

Proj. #1 : Number of projections
16 higher-order bits (bits 17 to 32)

Proj. #2 : Number of projections
16 lower-order bits (bits 1 to 16)

Check #0 : ^hFFFF

Check #1 : ^h5555

Check #2 : ^hAAAA

Check #3 : ^hFFFF

MUDAT error count information enters channel 4 (E3) and DAS data count information concerning DCLK_ERR enters channel 5 (E4).

(a) Procedure

- 1) Enter the DCA test program and read in raw data which generated streak artifacts.
- 2) Change the settings for the following items using the "Calc".

Start channel : channel E0

End channel : channel E17

Data direction : Channel

- 3) If the value on channel 4 (E3) is not 0, it means that a communication error occurred during the data acquisition.

When the value on a channel does not change, it can be assumed that no communication error has occurred, and this completes the check. If there is other data, begin from 1) again.

(2) Manual check

(a) Procedure

- 1) Perform one test rotation of the gantry from the KGTS maintenance panel.
- 2) Turn ON SW1-2 of the GCIF2 PWB. Display MULTI ERR (LED7) on the 7-segment display.
- 3) Perform test rotation in KGTS local mode, and look for the part at which an error is generated. "Error generation" means that the 7-segment display changes continuously.
- 4) When an error occurs, it is assumed that optical data communication between SPDM and the ROT located opposite is malfunctioning.
- 5) Determine whether the error occurs for a specific ROT PWB or at random. If the error occurs at random, corresponding SPDM may be abnormal.
- 6) Return SW1-2 of the GCIF2 PWB to OFF.

(b) Note

- When error frequency is not high, this method of error checking is effective.
- Be sure to return SW1-2 of the GCIF2 PWB to OFF. Otherwise, image acquisition cannot be performed normally.



(3) Console test

(a) Procedure

- 1) Turn ON SW1-4 of the GCIF2 PWB. (C. TEST (LED3: orange) lights at this time.)
- 2) Execute the acquisition command in the DCA test program. (Parameter is through (pure raw).)
- 3) Investigate the value of each channel of the DCA test program, and compare the result with the pattern in figure 5.3-1.
- 4) When an abnormality is found, investigate the cause.
- 5) Turn OFF SW1-4 of the GCIF2 PWB. (C. TEST goes out.)

(b) Note

- When an abnormality is discovered during this check, it may be caused at a part after the GCIF2 PWB (including cables).
- If normal scanning is performed in this status, no meaningful image can be acquired.

Extra1 (18 word)

Extra1	E0	E1	E2	E3	E4	E5	E6	E7	E8
data	8001	8002	8003	8004	8005	8006	8007	8008	8009
Extra1	E9	E10	E11	E12	E13	E14	E15	E16	E17
data	800A	800B	800C	800D	800E	800F	8010	8011	8012

Extra2 (REF_MFD)

Extra2	Ref.	FMD A	FMD B
data	8013	8014	8015

MAIN DATA

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	8016	8016	8017	8017	8018	8018	8019	8019	801A	801A	801B	801B	801C	801C	801D	801D
17	801E	801E	801F	801F	8020	8020	8021	8021	8022	8022	8023	8023	8024	8024	8025	8025
33	8026	8026	8027	8027	8028	8028	8029	8029	802A	802A	802B	802B	802C	802C	802D	802D
49	802E	802E	802F	802F	8030	8030	8031	8031	8032	8032	8033	8033	8034	8034	8035	8035
65	8036	8036	8037	8037	8038	8038	8039	8039	803A	803A	803B	803B	803C	803C	803D	803D
81	803E	803E	803F	803F	8040	8040	8041	8041	8042	8042	8043	8043	8044	8044	8045	8045
97	8046	8046	8047	8047	8048	8048	8049	8049	804A	804A	804B	804B	804C	804C	804D	804D
113	804E	804E	804F	804F	8050	8050	8051	8051	8052	8052	8053	8053	8054	8054	8055	8055
129	8056	8057	8058	8058	805A	805A	805B	805B	805C	805C	805D	805D	805E	805E	805F	805F
145	8066	8067	8068	8068	806A	806A	806B	806B	806C	806C	806E	806E	8071	8072	8073	8074
161	8076	8077	8078	8078	807A	807A	807B	807B	807C	807C	807D	807D	8080	8081	8082	8083
177	8086	8087	8088	8088	808A	808A	808B	808B	808C	808C	808E	808E	8090	8091	8092	8093
193	8096	8097	8098	8098	809A	809A	809B	809B	809C	809C	809E	809E	80A0	80A1	80A2	80A3
209	80A6	80A7	80A8	80A8	80A9	80A9	80AB	80AB	80AC	80AC	80AD	80AD	80AE	80AE	80B1	80B2
225	80B6	80B7	80B8	80B8	80B9	80B9	80BB	80BB	80BC	80BC	80BE	80BE	80C0	80C1	80C2	80C3
241	80C6	80C7	80C8	80C8	80CA	80CA	80CB	80CB	80CC	80CC	80CE	80CE	80D0	80D1	80D2	80D3
257	80D6	80D7	80D8	80D8	80DA	80DA	80DB	80DB	80DD	80DD	80DE	80DE	80E0	80E1	80E2	80E3
273	80E6	80E7	80E8	80E8	80EA	80EA	80EB	80EB	80EC	80EC	80EE	80EE	80F0	80F1	80F2	80F3
289	80F6	80F7	80F8	80F8	80FA	80FA	80FB	80FB	80FD	80FD	80FE	80FE	8100	8101	8102	8103
305	8106	8107	8108	8108	810A	810A	810B	810B	810C	810C	8110	8110	8111	8112	8113	8114
321	8116	8117	8118	8118	811A	811A	811B	811B	811D	811D	811E	811E	8120	8121	8122	8123
337	8126	8127	8128	8128	812A	812A	812B	812B	812C	812C	812E	812E	8130	8131	8132	8133
353	8136	8137	8138	8138	813A	813A	813B	813B	813D	813D	813E	813E	8140	8141	8142	8143
369	8146	8147	8148	8148	814A	814A	814B	814B	814C	814C	814E	814E	8150	8151	8152	8153
385	8156	8157	8158	8158	815A	815A	815B	815B	815C	815C	815E	815E	8160	8161	8162	8163
401	8166	8167	8168	8168	816A	816A	816B	816B	816C	816C	816E	816E	8170	8171	8172	8173
417	8176	8177	8178	8178	817A	817A	817B	817B	817D	817D	817E	817E	8180	8181	8182	8183
433	8186	8187	8188	8188	818A	818A	818B	818B	818C	818C	818E	818E	8190	8191	8192	8193
449	8196	8197	8198	8198	819A	819A	819B	819B	819C	819C	819E	819E	81A0	81A1	81A2	81A3
465	81A6	81A7	81A8	81A8	81AA	81AA	81AB	81AB	81AC	81AC	81AD	81AD	81AE	81AE	81B1	81B2
481	81B6	81B7	81B8	81B8	81BA	81BA	81BB	81BB	81BC	81BC	81BE	81BE	81C0	81C1	81C2	81C3
497	81C6	81C7	81C8	81C8	81CA	81CA	81CB	81CB	81CD	81CD	81CF	81CF	81D0	81D1	81D2	81D3
513	81D6	81D7	81D8	81D8	81DA	81DA	81DB	81DB	81DD	81DD	81DE	81DE	81E0	81E1	81E2	81E3
529	81E6	81E7	81E8	81E8	81EA	81EA	81EB	81EB	81EC	81EC	81EE	81EE	81F0	81F1	81F2	81F3
545	81F6	81F7	81F8	81F8	81FA	81FA	81FB	81FB	81FD	81FD	81FE	81FE	8200	8201	8202	8203
561	8206	8207	8208	8208	820A	820A	820B	820B	820D	820D	820E	820E	8210	8211	8212	8213
577	8216	8217	8218	8218	821A	821A	821B	821B	821C	821C	821D	821D	8220	8221	8222	8223
593	8226	8227	8228	8228	822A	822A	822B	822B	822C	822C	822E	822E	8230	8231	8232	8233
609	8236	8237	8238	8238	823A	823A	823B	823B	823D	823D	823F	8240	8241	8242	8243	8244
625	8246	8247	8248	8248	824A	824A	824B	824B	824C	824C	824E	8250	8251	8252	8253	8254
641	8256	8257	8258	8258	825A	825A	825B	825B	825D	825D	825F	8260	8261	8262	8263	8264
657	8266	8267	8268	8268	826A	826A	826B	826B	826C	826C	826E	8270	8271	8272	8273	8274
673	8276	8277	8278	8278	827A	827A	827B	827B	827D	827D	827E	8280	8281	8282	8283	8284
689	8286	8287	8288	8288	828A	828A	828B	828B	828C	828C	828E	8290	8291	8292	8293	8294
705	8296	8297	8298	8298	829A	829A	829B	829B	829C	829C	829E	829E	82A0	82A1	82A2	82A3
721	82A6	82A7	82A8	82A8	82AA	82AA	82AB	82AB	82AC	82AC	82AD	82AE	82AF	82B0	82B1	82B2
737	82B6	82B7	82B8	82B8	82BA	82BA	82BB	82BB	82BC	82BC	82BE	82BF	82C0	82C1	82C2	82C3
753	82C6	82C8	82C8	82C7	82CA	82CA	82CB	82CB	82CD	82CD	82CE	82CE	82D0	82D1	82D2	82D3
769	82CE	82CE	82CF	82CF	82D0	82D0	82D1	82D1	82D2	82D2	82D3	82D3	82D4	82D4	82D5	82D6
785	82D6	82D6	82D7	82D7	82D8	82D8	82D9	82D9	82DA	82DA	82DB	82DB	82DC	82DC	82DD	82DD
801	82DE	82DE	82DF	82DF	82E0	82E0	82E1	82E1	82E2	82E2	82E3	82E3	82E4	82E4	82E5	82E6
817	82E6	82E6	82E7	82E7	82E8	82E8	82E9	82E9	82EA	82EA	82EB	82EB	82EC	82EC	82ED	82ED
833	82EE	82EE	82EF	82EF	82F0	82F0	82F1	82F1	82F2	82F2	82F3	82F3	82F4	82F4	82F5	82F6
849	82F6	82F6	82F7	82F7	82FA	82FA	82FB	82FB	82FC	82FC	82FD	82FD	82FE	82FE	82FF	82FF
865	82FE	82FE	82FF	82FF	8300	8300	8301	8301	8302	8302	8303	8303	8304	8304	8305	8306
881	8306	8306	8307	8307	8308	8308	8309	8309	830A	830A	830B	830B	FFFF	8000	8000	8000
897	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000

*1) Due to restrictions related to the test pattern, the data is displayed using 892 words (actual data: 896 words).

*2) In the shaded parts of the figure above, the same data is displayed twice in succession because of channel binding.

Figure 5.3-1 Test pattern output from GCIF2 (Asteion VR and VI systems)

Extra1 (18 word)

Extra1	E0	E1	E2	E3	E4	E5	E6	E7	E8
data	8001	8002	8003	8004	8005	8006	8007	8008	8009
Extra1	E9	E10	E11	E12	E13	E14	E15	E16	E17
data	800A	800B	800C	800D	800E	800F	8010	8011	8012

Extra2 (REF, MFD)

Extra2	Ref.	FMD A	FMD B
data	8013	8014	8015

MAIN DATA

CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	8016	8016	8017	8017	8018	8018	8019	8019	801A	801A	801B	801B	801C	801C	801D	801D
17	801E	801E	801F	801F	8020	8020	8021	8021	8022	8022	8023	8023	8024	8024	8025	8025
33	8026	8026	8027	8027	8028	8028	8029	8029	802A	802A	802B	802B	802C	802C	802D	802D
49	802E	802E	802F	802F	8030	8030	8031	8031	8032	8032	8033	8033	8034	8034	8035	8035
65	8036	8036	8037	8038	8039	803A	803B	803C	803D	803E	803F	8040	8041	8042	8043	8044
81	8045	8045	8047	8048	8049	804A	804B	804C	804D	804E	804F	8050	8051	8052	8053	8054
97	8055	8055	8057	8058	8059	805A	805B	805C	805D	805E	805F	8060	8061	8062	8063	8064
113	8065	8066	8067	8068	8069	806A	806B	806C	806D	806E	806F	8070	8071	8072	8073	8074
129	8075	8076	8077	8078	8079	807A	807B	807C	807D	807E	807F	8080	8081	8082	8083	8084
145	8085	8086	8087	8088	8089	808A	808B	808C	808D	808E	808F	8090	8091	8092	8093	8094
161	8095	8096	8097	8098	8099	809A	809B	809C	809D	809E	809F	80A0	80A1	80A2	80A3	80A4
177	80A5	80A6	80A7	80A8	80A9	80AA	80AB	80AC	80AD	80AE	80AF	80B0	80B1	80B2	80B3	80B4
193	80B5	80B6	80B7	80B8	80B9	80BA	80BB	80BC	80BD	80BE	80BF	80C0	80C1	80C2	80C3	80C4
209	80C5	80C6	80C7	80C8	80C9	80CA	80CB	80CC	80CD	80CE	80CF	80D0	80D1	80D2	80D3	80D4
225	80D5	80D6	80D7	80D8	80D9	80DA	80DB	80DC	80DD	80DE	80DF	80E0	80E1	80E2	80E3	80E4
241	80E5	80E6	80E7	80E8	80E9	80EA	80EB	80EC	80ED	80EE	80EF	80F0	80F1	80F2	80F3	80F4
257	80F5	80F6	80F7	80F8	80F9	80FA	80FB	80FC	80FD	80FE	80FF	8100	8101	8102	8103	8104
273	8105	8106	8107	8108	8109	810A	810B	810C	810D	810E	810F	8110	8111	8112	8113	8114
289	8115	8116	8117	8118	8119	811A	811B	811C	811D	811E	811F	8120	8121	8122	8123	8124
305	8125	8126	8127	8128	8129	812A	812B	812C	812D	812E	812F	8130	8131	8132	8133	8134
321	8135	8136	8137	8138	8139	813A	813B	813C	813D	813E	813F	8140	8141	8142	8143	8144
337	8145	8146	8147	8148	8149	814A	814B	814C	814D	814E	814F	8150	8151	8152	8153	8154
353	8155	8156	8157	8158	8159	815A	815B	815C	815D	815E	815F	8160	8161	8162	8163	8164
369	8165	8166	8167	8168	8169	816A	816B	816C	816D	816E	816F	8170	8171	8172	8173	8174
385	8175	8176	8177	8178	8179	817A	817B	817C	817D	817E	817F	8180	8181	8182	8183	8184
401	8185	8186	8187	8188	8189	818A	818B	818C	818D	818E	818F	8190	8191	8192	8193	8194
417	8195	8196	8197	8198	8199	819A	819B	819C	819D	819E	819F	81A0	81A1	81A2	81A3	81A4
433	81A5	81A6	81A7	81A8	81A9	81AA	81AB	81AC	81AD	81AE	81AF	81B0	81B1	81B2	81B3	81B4
449	81B5	81B6	81B7	81B8	81B9	81BA	81BB	81BC	81BD	81BE	81BF	81C0	81C1	81C2	81C3	81C4
465	81C5	81C6	81C7	81C8	81C9	81CA	81CB	81CC	81CD	81CE	81CF	81D0	81D1	81D2	81D3	81D4
481	81D5	81D6	81D7	81D8	81D9	81DA	81DB	81DC	81DD	81DE	81DF	81E0	81E1	81E2	81E3	81E4
497	81E5	81E6	81E7	81E8	81E9	81EA	81EB	81EC	81ED	81EE	81EF	81F0	81F1	81F2	81F3	81F4
513	81F5	81F6	81F7	81F8	81F9	81FA	81FB	81FC	81FD	81FE	81FF	8200	8201	8202	8203	8204
529	8205	8206	8207	8208	8209	820A	820B	820C	820D	820E	820F	8210	8211	8212	8213	8214
545	8215	8216	8217	8218	8219	821A	821B	821C	821D	821E	821F	8220	8221	8222	8223	8224
561	8225	8226	8227	8228	8229	822A	822B	822C	822D	822E	822F	8230	8231	8232	8233	8234
577	8235	8236	8237	8238	8239	823A	823B	823C	823D	823E	823F	8240	8241	8242	8243	8244
593	8245	8246	8247	8248	8249	824A	824B	824C	824D	824E	824F	8250	8251	8252	8253	8254
609	8245	8244	8245	8245	8245	8245	8247	8247	8248	8248	8249	8249	824A	824A	824B	824B
625	824C	824C	824D	824D	824E	824E	824F	824F	8250	8250	8251	8251	8252	8252	8252	8252
641	FFFF	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
657	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000

*) In the shaded parts of the figure above, the same data is displayed twice in succession because of channel binding.
(Note that the same data is displayed four times in succession from 637ch to 640ch.)

Figure 5.3-2 Test pattern output from GCIF2 (Asteion VF and KG systems)

(4) DAS test mode

(a) Procedure

- 1) Select the acquisition command in the DCA test program.
(Parameter is through (pure raw).)
- 2) Set the parameter for DAS mode to Test Mode, and perform scanning.
- 3) Check data of each channel.

For data format, refer to chapter 5 "DATA ACQUISITION SECTION".

- 4) If no abnormality is found, operation from the OPCONT2 PWB, the GCIF2 PWB, to the SHIF PWB is normal, and DAS is assumed to have an internal abnormality.



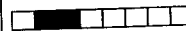
(5) COM-PRE check

(a) Procedure

- 1) Perform PRE check from the KGTSM maintenance panel.

→ Refer to chapter 3.

- 2) In each setting mode, GCIF2 LEDs 21 to 28 must be lit as follows.
In addition, the error log "An error occurred during offset acquisition." must not be generated.

Setting pattern	KGTSM		GCIF2 LED21 to 28 (*)
	LED67	LED66	
Pattern 1	1	D	LED23, 25, 27: ON 
Pattern 2	2	D	LED24, 26: ON 
Offset	3	D	LED22, 23: ON (note that LED22 is OFF after about 2 seconds.)  ↳ OFF after 2 seconds

* The LEDs located in the middle of the GCIF2 PWB are arranged from the top in this order.

■ indicates LED is ON and □ indicates LED is OFF.

(b) Judgment

If the result does not satisfy the standard described in (a) above, replace the GCIF2 PWB.

(6) VT check

(a) Procedure

1) Check OPCONT2 PWB LED41 and GCIF2 LED41. If these are out, the VT is abnormal.

2) Turn ON SW1-1 on the GCIF2 PWB.

3) Check the waveform on the GCIF2 PWB at the following position with an oscilloscope. When an abnormality is found, replace the GCIF2 PWB.

9Q-18: Clock cycle of 0.8 ms (TTL)

4) Check the waveform on the OPCONT2 PWB at the following positions using an oscilloscope. When an abnormality is found, replace the OPCONT2 PWB.

13M-8: Clock cycle of 0.8 ms (TTL)

5) When no abnormality is found in steps 3) and 4), return SW1-1 to OFF and check again whether a clock with a 0.8-ms cycle is output to 13M-8 on the OPCONT2 PWB. If it is not output, connection with the KGTSM PWB is incorrect or the KGTSM PWB is abnormal.

(b) Be sure to return SW1-1 to OFF after completing this work.

5.4 Procedure for Checking the Luminescence

The light of the communication LED is not visible to the eye because it is in the infrared region. Therefore, convert the infrared rays to visible light (red) using an IR converter and visually check whether light is emitted.

Figure 5.4-1 shows the outline of the IR converter.

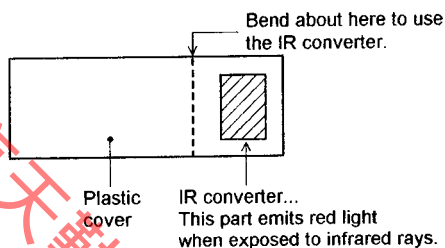


Figure 5.4-1 IR converter (Drawing No. BSX77-2088)



(1) ROT side

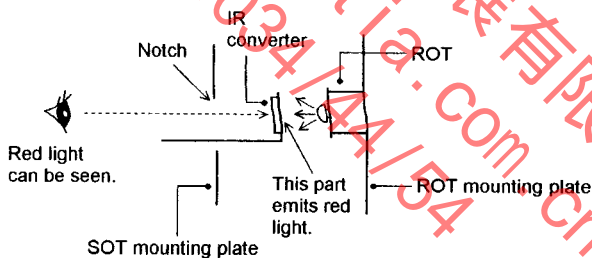
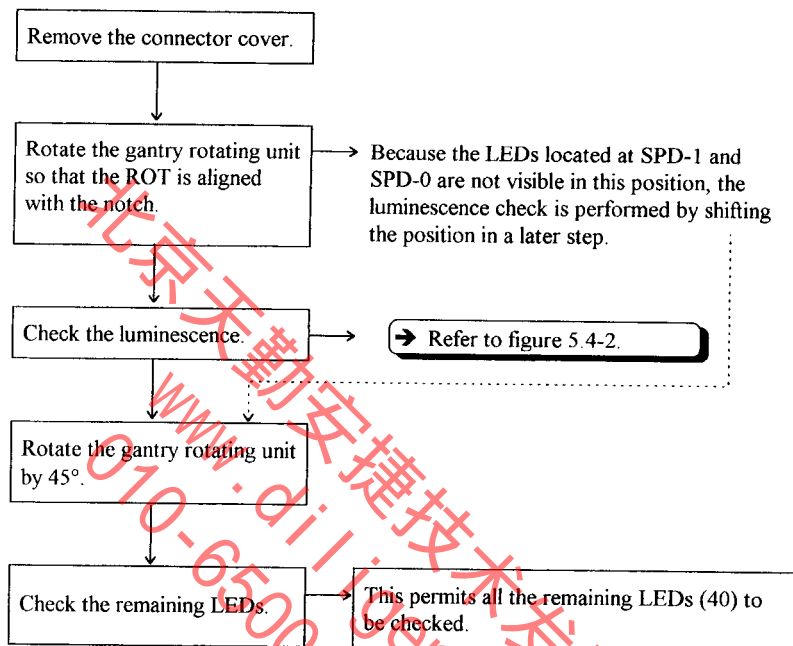


Figure 5.4-2 Luminescence check of the ROT

- CAUTION:**
1. Never rotate the gantry rotating unit with the IR converter inserted in the notch. (Doing so may result in interference with the hood of the rotating unit, damaging the system.)
 2. Never remove the dome cover.
(Touching the LCSR will result in electric shock.)
 3. Do not remove the inside cover of the ROT.
(This cover cannot be removed when the dome cover is mounted.)
 4. For luminescence check, check only whether or not light is emitted.
 5. Use the cover switch, CP320, mechanical rotation stopper, etc. to prevent the gantry from rotating during the work.

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(2) SOT side

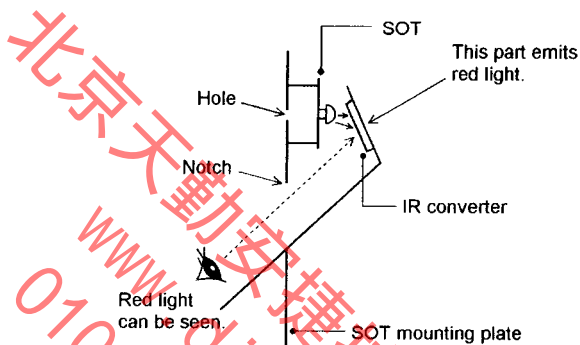
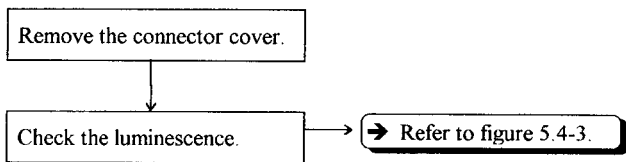


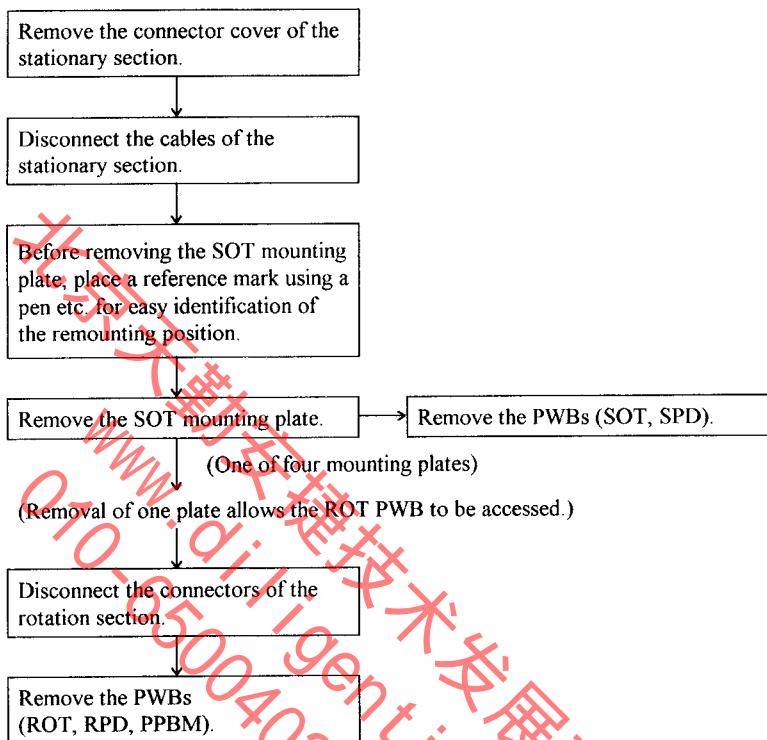
Figure 5.4-3 Luminescence check of the SOT

(Procedure)

- Since a hole indicating the SOT LED location is provided in the SOT mounting plate, observe the IR converter through the notch using the hole as a guide to locate the LED.
- If the hood of the RPD blocks the view, slightly rotate the gantry rotating unit to change the hood position.

- CAUTION:**
1. Never remove the dome cover.
(Touching the LCSR will result in electric shock.)
 2. Do not remove the inside cover of the ROT.
(This cover cannot be removed when the dome cover is mounted.)
 3. For luminescence check, check only whether or not light is emitted.
 4. Use the cover switch, CP320, mechanical rotation stopper, etc. to prevent the gantry from rotating during the work.
 5. Be extremely careful not to hit your head or any other part of your body against peripheral parts when looking into the IR converter through the notch.

5.5 Procedure for Disassembling the MUDAT



To reassemble the MUDAT, reverse the above procedures.

Note that the PRTM PWB can be removed independently of the mounting plate.

- CAUTION:**
1. Never remove the dome cover.
(Touching the LCSR will result in electric shock.)
 2. Do not remove the inside cover of the ROT.
(This cover cannot be removed when the dome cover is mounted.)
 3. Never pull the cable when disconnecting the connector.
 4. Do not perform high-speed rotation while the SOT mounting plate is removed.
(Interference may occur or cables may be caught in the rotation section.)
- Note that this caution does not need to be observed when all four SOT mounting plates are removed.

5.6 Operation Check After MUDAT Work

(1) Procedure

- 1) Confirm that the 3 kinds of error display of the 7-segment display are all "00". If this is not satisfied, perform a forcible clear. (LED6: Note that "88" is displayed as a dummy display.)
- 2) Turn ON SW1-2 on the GCIF2 PWB.
- 3) Rotate the gantry more than 2 rotations in local mode.
(Test rotation: 60-second rotation)
- 4) When FAIL is not displayed and the error displays are all "00", it is OK.
- 5) Return SW1-2 on the GCIF2 PWB to OFF.
- 6) Use SW21 of the KGTSM for resetting.

(2) Note

- Perform the procedure with the power of the gantry turned ON.
- If the result is no good, return to the previous step to investigate the cause.
- Be sure to return SW1-2 to OFF. Otherwise, image scanning cannot be performed normally. (An abnormal image will be generated or the message "Abnormal acquisition data" will be displayed.)