Approved per signature page

SERVICE MODULE

COMMUNICATION SYSTEM (PTK)

SM.1

2000
## Revision Log

<table>
<thead>
<tr>
<th></th>
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<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>4—1 25 Sep 00</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>25 Sep 00</td>
<td>5—1 25 Sep 00</td>
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<tr>
<td>4</td>
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<td>5—3 25 Sep 00</td>
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<tr>
<td>6</td>
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</tr>
<tr>
<td>1—1</td>
<td>25 Sep 00</td>
<td>6—1 25 Sep 00</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

**INTRODUCTION** ........................................................................................................... 5

1. **GENERAL INSTRUCTIONS** ...................................................................................... 1—1
   1.1. CREW RESPONSIBILITIES ..................................................................................... 1—1
   1.2. SAFETY PRECAUTIONS ......................................................................................... 1—1

2. **SM AUDIO SUBSYSTEM** ............................................................................................ 2—1
   2.1. [CTTC] FUNCTIONAL SCHEMATIC ..................................................................... 2—1
   2.2. [CTTC] OPERATIONAL FEATURES .................................................................... 2—2
   2.3. [CTTC] INITIAL CONFIGURATION ....................................................................... 2—2
   2.4. INTERNAL COMMUNICATION ................................................................................ 2—3
   2.5. CONTROL VIA LAPTOP ....................................................................................... 2—3
      2.5.1. REGUL COMM ................................................................................................. 2—3
      2.5.2. LIRA COMM ..................................................................................................... 2—3
      2.5.3. VHF COMM ..................................................................................................... 2—4
      2.5.4. REGUL- VHF2 DUPLEX RELAY ..................................................................... 2—5
      2.5.5. LIRA-VHF2 DUPLEX RELAY ......................................................................... 2—5
      2.5.6. VHF1-VHF2 DUPLEX RELAY ......................................................................... 2—6
      2.5.7. EVA COMM ..................................................................................................... 2—7
   2.6. CONTROL VIA ИНПУ ............................................................................................ 2—8
      2.6.1. VHF COMM ..................................................................................................... 2—8
      2.6.2. EVA COMM ..................................................................................................... 2—9
   2.7. INTERMODULE COMMUNICATION SETUP .............................................................. 2—10
   2.8. COMM FROM FGB ............................................................................................... 2—10
   2.9. COMM FROM DOCKED SOYUZ VIA INTERMODULE COMMUNICATION .............. 2—10
   2.10. PACKET COMM ................................................................................................... 2—11
   2.11. GNOM-S TAPE RECORDER OPERATION ............................................................ 2—12
   2.12. [CTTC] FUNCTIONAL CHECK ........................................................................... 2—14
      2.12.1. SIDETONE CHECK ....................................................................................... 2—14
      2.12.2. COMM CALL CHECK .................................................................................... 2—14
      2.12.3. PAGE CHECK ............................................................................................... 2—14
      2.12.4. ALARM ANNUNCIATION CHECK (DURING COMM PASS) ......................... 2—14
      2.12.5. VHF RECEIVER FUNCTIONAL CHECK ....................................................... 2—15
   2.13. OFF-NOMINAL SITUATIONS ................................................................................. 2—17
      2.13.1. NO COMM VIA LOW-NOISE HEADSET ....................................................... 2—17
      2.13.2. SWITCHOVER TO BACKUP [CTTC] ............................................................ 2—17

3. **TELEVISION SUBSYSTEM** .......................................................................................... 3—1
   3.1. [TBC] FUNCTIONAL SCHEMATIC ..................................................................... 3—1
   3.2. [TBC] OPERATING MODES ................................................................................ 3—2
   3.3. SCHEMATIC OF PREPARATION FOR VIDEO EVENT AND VIDEO EVENT FROM SM.. 3—2
   3.4. SCHEMATIC OF PREPARATION FOR VIDEO EVENT AND VIDEO EVENT FROM FGB. 3—4
   3.5. [TBC] OPERATION FEATURES ........................................................................... 3—5
      3.5.1. TV DEACTIVATION PROCEDURE FEATURES ................................................ 3—5
      3.5.2. FEATURES OF [TBC] OPERATING MODE SELECTION USING COMMANDS .... 3—5
3.6. VIDEO EVENT FROM SM (DOWNLINK) ............................................................................ 3—6
3.7. EVA VIDEO EVENTS (DOWNLINK) ............................................................................. 3—7
3.8. TV SIGNAL TRANSMISSION FROM EXTERNAL T/K TO MCC (DOWNLINK) ............ 3—9
   3.8.1. OPERATION IN BKV MODE ............................................................................. 3—9
   3.8.2. OPERATION IN TV DISPLAY MODE (DURING DYNAMIC MODES) .................... 3—10
   3.8.3. CAMERA CONTROL ............................................................................ 3—11
3.9. TV SIGNAL RECESSION AND TRANSMISSION FROM SOYUZ (PROGRESS) TO MCC (VIDEO RELAY) ........................................................................ 3—12
3.10. TV SIGNAL RECESSION FROM MCC (UPLINK) .................................................... 3—13
3.11. TV COMMUNICATION (TWO-WAY VIDEO) .......................................................... 3—13
3.12. VIDEO EVENT FROM FGB (DOWNLINK) ............................................................. 3—14
3.13. TV IMAGE VIEWING IN FGB ............................................................................. 3—15
3.14. [ТВС] АФУ SWITCHOVER ................................................................................... 3—16
3.15. OFF-NOMINAL SITUATIONS .............................................................................. 3—18
   3.15.1. TV XMTR SWITCHOVER TO BACKUP .......................................................... 3—18
   3.15.2. NO IMAGE ON BKV1(2) ............................................................................... 3—18
   3.15.3. SWITCHOVER TO КЛ-160M BACKUP SET .................................................. 3—19

4. REGUL .............................................................................................................. 4—1
   4.1. STANDBY MODE DEACTIVATION ..................................................................... 4—1
   4.2. REGUL STANDBY MODE ACTIVATION ............................................................ 4—1
   4.3. THE THIRD TRANSMITTER ACTIVATION .......................................................... 4—2
   4.4. THE THIRD SET TRANSMITTER DEACTIVATION .......................................... 4—2
   4.5. THE THIRD SET DEACTIVATION ..................................................................... 4—2

5. БИТС2-12 .................................................................................................... 5—1
   5.1. RS LAPTOP CONTROL DISPLAY FEATURES ................................................... 5—1
   5.2. REAL-TIME TRANSMISSION (НП) MODE ......................................................... 5—1
      5.2.1. REAL-TIME TRANSMISSION (НП-А (НП-Б)) PARAMETERS SETUP ........... 5—1
      5.2.2. REAL-TIME TRANSMISSION (НП-А (НП-Б)) ACTIVATION ....................... 5—2
      5.2.3. REAL-TIME (НП) MODE DEACTIVATION ................................................. 5—3
   5.3. CHANNEL A(B) PLAYBACK MODE ACTIVATION .............................................. 5—4
   5.4. ЗУ MODE ........................................................................................................ 5—6
      5.4.1. CHANNEL A(B) RECORD MODE (ЗАП) ACTIVATION .................................. 5—6
      5.4.2. RECORD MODE (ЗАП) ACTIVATION (СТОП ЗУ MODE) ............................ 5—6
      5.4.3. ЗУ INITIAL CONFIGURATION SETUP FOR RECORDING (ИСХ ЗУ-А(Б) MODE) 5—6

6. TRANZIT SYSTEM .......................................................................................... 6—1
   6.1. TRANZIT-B POWER UP ................................................................................. 6—1
   6.2. TRANZIT-B POWER DOWN ........................................................................... 6—1
INTRODUCTION

These PTK crew procedures contain information for the crew about the following: [CTTC], [TBC], command radio system, onboard measurement system operations and [CTTC], [TBC] schematics.

These crew procedures are intended for trained crew members who have completed the full training course and simulations.

These crew procedures may be updated ISS assembly, pending systems modification and procedure validation at simulators and training facilities.

These crew procedures are developed per БВС software release 4.30.14 and RS Laptop software dated 07.03.00.

ACRONYMS AND ABBREVIATIONS

АФУ - antenna feeder unit
АО - propulsion compartment
б/и - crew procedure
БРТА - Orlan telemetry unit
БТ - push-to-talk unit
ВКЛ - on, activate
ВКУ - video control monitor
ВНА - omni antenna
ВПУ - intercom
ГНШК - low-noise headset
Дназ-М - report to MCC-M
ДпоОЗ-М - √MCC-M
ЗАП - record
ЗУ - memory device
ИСХ - initial condition
ИнПУ - integrated control panel
инд - indicator
КРЛ - command radio link
кбл - cable
кн - pushbutton, pb
М 1,2 - microphone 1,2
МБС - intermodule communication
МКС - International Space Station, ISS
НП - real-time transmission
Н/С - off-nominal situation
ОВЛ - open EV hatch
ОРЛАН-М - Orlan
ОТКЛ - off, deactivate
<table>
<thead>
<tr>
<th>Сокращение</th>
<th>Описание</th>
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<tbody>
<tr>
<td>ПА</td>
<td>comm panel</td>
</tr>
<tr>
<td>ПНА</td>
<td>semi-directional antenna</td>
</tr>
<tr>
<td>ППС</td>
<td>system power panel</td>
</tr>
<tr>
<td>ПРД</td>
<td>transmitter</td>
</tr>
<tr>
<td>ПРМ</td>
<td>receiver</td>
</tr>
<tr>
<td>ПСС</td>
<td>caution and warning panel</td>
</tr>
<tr>
<td>Пр</td>
<td>fuse</td>
</tr>
<tr>
<td>ПрК</td>
<td>SM transfer tunnel</td>
</tr>
<tr>
<td>ПхО</td>
<td>SM transfer compartment</td>
</tr>
<tr>
<td>поУЗ-М</td>
<td>on MCC-M GO</td>
</tr>
<tr>
<td>п</td>
<td>procedure</td>
</tr>
<tr>
<td>пан</td>
<td>panel</td>
</tr>
<tr>
<td>пл</td>
<td>plane</td>
</tr>
<tr>
<td>РЕЖ</td>
<td>mode</td>
</tr>
<tr>
<td>РЕЗ</td>
<td>backup</td>
</tr>
<tr>
<td>РЕТР</td>
<td>retransmission, relay</td>
</tr>
<tr>
<td>РПУ</td>
<td>voice converter</td>
</tr>
<tr>
<td>РТК</td>
<td>communication system</td>
</tr>
<tr>
<td>рис</td>
<td>Figure</td>
</tr>
<tr>
<td>рзм</td>
<td>connector</td>
</tr>
<tr>
<td>СБ</td>
<td>solar array</td>
</tr>
<tr>
<td>СМ</td>
<td>Service Module</td>
</tr>
<tr>
<td>СТТС</td>
<td>SM audio subsystem</td>
</tr>
<tr>
<td>СвД</td>
<td>LED, light emitting diode</td>
</tr>
<tr>
<td>СУДН</td>
<td>motion control and navigation system</td>
</tr>
<tr>
<td>см</td>
<td>ref</td>
</tr>
<tr>
<td>с/с</td>
<td>comm pass</td>
</tr>
<tr>
<td>ТВ</td>
<td>television</td>
</tr>
<tr>
<td>ТВС</td>
<td>television subsystem</td>
</tr>
<tr>
<td>Т/К</td>
<td>TV camera</td>
</tr>
<tr>
<td>ТЛФ</td>
<td>phone, telephone</td>
</tr>
<tr>
<td>ТНГ</td>
<td>push-to-talk button</td>
</tr>
<tr>
<td>ТМИ</td>
<td>telemetry data</td>
</tr>
<tr>
<td>тмб</td>
<td>switch, sw</td>
</tr>
<tr>
<td>ФГБ</td>
<td>Functional Cargo Block</td>
</tr>
<tr>
<td>ЦВКУ</td>
<td>color video control monitor</td>
</tr>
<tr>
<td>ЦП</td>
<td>central post</td>
</tr>
<tr>
<td>ЦТ</td>
<td>color (TV image)</td>
</tr>
<tr>
<td>ЦУП</td>
<td>Mission Control Center</td>
</tr>
<tr>
<td>ЧБ</td>
<td>black-and-white (TV image)</td>
</tr>
<tr>
<td>ЭВК</td>
<td>LIV experimental video complex</td>
</tr>
</tbody>
</table>
**SYMBOLS**

- illuminated
- not illuminated
- sw → On (i.e. up relative to label on panel)
- sw → Off (i.e. down relative to label on panel)
- sw labeled BEHT → OCHOBH (if there are two positions labeled OCHOBH and PE3EPB, respectively)
- sw BEHT → PE3EPB (if there are two positions positions labeled OCHOBH and PE3EPB, respectively)
- mouse left click
- adjust by rotating
- place physical device in designated position
- disconnect
- connect
- press pushbutton
- press pushbutton to lock
- press pushbutton to release
- check (in case of discrepancy, attempt a corrective action one time only)
- verify
- verify aurally

15:46:28 - 15 h 46 min 28 sec

***********

*********** - an anticipated off-nominal situation, if the condition left of the asterisks on the same line is not met, perform action(s) enclosed by asterisk lines

***********

- unit has a reserve
- notification annunciation (not necessary for monitoring)

Press pb CHANNEL 1 to stop
- LED on this pb
COMMAND ISSUE VIA RS LAPTOP

RS Laptop СМ:СОТР:Команды
  cmd T_ONPSKV1 (Вкл пум.СКВ-1) - Open the specified display
  Execute - Select the command by its unique ID
           - Issue the command with execution confirmation

PROCEDURE RUN VIA RS LAPTOP

RS Laptop СМ:СОТР:СТР_проц
  proc FT_11 (КОХ loop selection) - Open the specified display
  param 1 __ - Select the command by its unique ID
  ..............
  param n __ - Type parameter #1 value in the parameter input field
  ..............
  param n __ - Type parameter #n value in the parameter input field, 
             'n' stands for total number of procedure parameters
  Execute - Run the procedure with execution confirmation

COMMAND ISSUE VIA INTEGRATED CONTROL PANEL (ИнПУ)

ИнПУ СМ COTP CONTROL
  FAN MASTER PWR OFF □ FANS PWR OFF - Open the specified display
  - Place cursor on softkey (FAN MASTER PWR)
  - Press key COMMAND / ON (OFF)
  - Verify indicator (FANS PWR OFF)
    becomes highlighted (in bright green)

INDICATOR MONITORING VIA ИНПУ

ИнПУ СМ COTP CONTROL
  □ FAN1 ПрК PWR ON - Open the specified display
  - Verify indicator (FAN1 ПрК PWR ON)
    becomes highlighted (in bright green)
1. GENERAL INSTRUCTIONS

1.1. CREW RESPONSIBILITIES

While performing operations, the crew is responsible for the following actions:

1. Perform operations per these crew procedures and MCC-M instructions in accordance with the crew functional responsibilities and current status of the onboard systems

2. **Report to MCC-M** completed operations and any system problems at earliest available comm pass

3. Monitor systems operation per these crew procedures and MCC-M instructions

4. When there is a deviation from nominal systems operation, the crew is responsible for the following actions:
   - record time when the deviation (malfunction) was detected
   - record the nature of the deviation (malfunction)
   - **report to MCC-M** at the earliest available comm pass

5. Upon detection of an off-nominal situation, documented in these crew procedures, take actions to eliminate or to localize it per these crew procedures

6. Prior to operations, perform indicator checks on the control panels to be used

7. Output commands via control panels using pushbuttons (no lockout feature) by pressing them to the stop for 1 – 2 sec

8. Record actual time spent performing operations

9. When working with hardware equipped with protective caps and covers:
   - remove caps and covers before operations
   - re-install caps and covers after operations

1.2. SAFETY PRECAUTIONS

To ensure nominal systems operation and crew safety, the crew is responsible for the following actions:

1. When working with the system, use only hardware, tools, and protective devices, designated by these crew procedures or on MCC-M GO

2. Upon detection of an off-nominal situation, not documented in these crew procedures, the crew is responsible for the following actions:
   - stop working with the system
   - record time when the off-nominal situation was detected
   - record the nature of the off-nominal situation
   - **report to MCC-M** at earliest available comm pass

3. Before replacing fuses, powerdown appropriate systems and/or instruments.
   Replace fuse according to voltage given on the fuse.
   Repeat fuse replacement on MCC-M GO
2. SM AUDIO SUBSYSTEM

2.1. [CTC] FUNCTIONAL SCHEMATIC

Fig 2.1 [CTC] Schematic
2.2. [CTTC] OPERATIONAL FEATURES

1. [CTTC] setup can be activated only via ИнПУ or via КРЛ
2. pb CTTC Reinit on RS Laptop does not deactivate Regul and Lira RCVR-XMTR. MCC activates and deactivates Regul and Lira
3. ↓ PAGE – speakers on all ПА are activated except the speaker which pb is pressed
4. ↓ XMIT on any ПА - □ LED XMIT on all ПА
5. In case of system configuration change (new mode selection)
   ПА  →  XMIT  (↓ XMIT)

**NOTE**
For transmission use push-to-talk button on push-to-talk unit or pb XMIT on ПА (push-to-talk button remains depressed). In this case:
on ПА on RS Laptop СМ:БРТК:CTTC

□ LED XMIT 1(2, 3) УСБ-14МХ (УСБ-14МД, УСБ-14МБ)

2.3. [CTTC] INITIAL CONFIGURATION

ППС-22 (308)

1. √ Ø МБС
2. √ ✓ All pb  □ All LEDs
3. СМ:БРТК:CTTC
   CTTC preparation
   □ all units and channels (Regul and Lira units can be blue)
   (to deactivate ↓ pb CTTC Reinit)

ИнПУ

4. SM COMM CONTROL
   √ SM COMM READY INIT ON  □
   √ VHF 1 SQUELCH ON  □
   √ VHF 2 SQUELCH ON  □
   √ VHF 1 OFF
   √ VHF 2 SIMPLEX OFF
   √ VHF 2 DUPLEX OFF
   √ EVA COMM OFF

SM COMM -STATUS
   □ VHF 1 SQUELCH PWR OFF
   □ VHF 2 SQUELCH PWR OFF
   □ RCVR VHF 1
   □ RCVR 1 VHF 2
   □ RCVR 2 VHF 2
2.4. INTERNAL COMMUNICATION

1. † and hold PAGE
   Page a crewmember using the low-noise headset
2. † ICOM
   Communicate

To complete comm
3. √ ICOM

2.5. CONTROL VIA Laptop

2.5.1. REGUL COMM

PA (in use)
□ LED REGUL
(when operating via НИП extra □ VHF)

† CHANNEL 1
□ CHANNEL 1

To complete comm
■ LED REGUL
√ √ XMIT
√ CHANNEL 1
■ CHANNEL 1

2.5.2. LIRA COMM

PA (in use)
□ LED LIRA

† CHANNEL 2
□ CHANNEL 2

To complete comm
■ LED LIRA
√ √ XMIT
√ CHANNEL 2
■ CHANNEL 2
2.5.3. VHF COMM

1. COMMUNICATION SETUP

<table>
<thead>
<tr>
<th>Mode selection</th>
<th>Mode deactivation</th>
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<tbody>
<tr>
<td>VHF1</td>
<td>cmd: U_ONUK1 (VHF1 ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
<tr>
<td>VHF2d</td>
<td>cmd: U_ONUK2D (VHF2 duplex ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
<tr>
<td>VHF2s</td>
<td>cmd: U_ONUK2S (VHF2 simplex ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
</tbody>
</table>

**NOTE**
Use VHF2s for comm during rendezvous and docking with Soyuz and Orbiter.

RS Laptop [CM:БРТК;СТТС]

2. VHF1 COMM

ПА (in use)  

To complete comm

| CHANNEL 2 |
| CHANNEL 2 |

3. VHF2 DUPLEX COMM

ПА (in use)  

To complete comm

| CHANNEL 3 |
| CHANNEL 3 |

4. VHF2 SIMPLEX COMM

**NOTE**
For reception via VHF2s, release push-to-talk button (■ LED XMIT 3)

ПА (in use)  

To complete comm

| LED XMIT 1, 2, 3 | (all ПА √ XMIT) |
| CHANNEL 3 | CHANNEL 3 |
2.5.4. REGUL- VHF2 DUPLEX RELAY

<table>
<thead>
<tr>
<th>パ (in use)</th>
<th>パ (in use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ LED XMIT 3  (mode selected)</td>
<td>□ LED XMIT 3</td>
</tr>
<tr>
<td>If □ LED XMIT 3</td>
<td>If □ LED XMIT 3</td>
</tr>
<tr>
<td>To select mode</td>
<td>To select mode</td>
</tr>
<tr>
<td>cmd: U_ONTRREGUK2 (Regul-VHF2 relay ON)</td>
<td>cmd: U_ONTRREGUK2 (Regul-VHF2 relay ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
</tbody>
</table>

For comm

| with MCC | with manned vehicle or Orlan |
| CHANNEL 1 | CHANNEL 3 |
| CHANNEL 1 | CHANNEL 3 |

To complete comm

✓ CHANNEL 1, 3 | ■ CHANNEL 1, 3
✓ ✓ XMIT | ■ LED XMIT 3
If □ LED XMIT 3

To deactivate mode

RS Laptop CM: БРТК: CTTC

2.5.5. LIRA-VHF2 DUPLEX RELAY

<table>
<thead>
<tr>
<th>パ (in use)</th>
<th>パ (in use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ LED XMIT 3  (mode selected)</td>
<td>□ LED XMIT 3</td>
</tr>
<tr>
<td>If □ LED XMIT 3</td>
<td>If □ LED XMIT 3</td>
</tr>
<tr>
<td>To select mode</td>
<td>To select mode</td>
</tr>
<tr>
<td>cmd: U_ONRTRLIRUK2 (Lira-VHF2 relay ON)</td>
<td>cmd: U_ONRTRLIRUK2 (Lira-VHF2 relay ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
</tbody>
</table>

For comm

| with MCC | with manned vehicle or Orlan |
| CHANNEL 2 | CHANNEL 3 |
| CHANNEL 2 | CHANNEL 3 |

To complete comm

✓ CHANNEL 2, 3 | ■ CHANNEL 2, 3
✓ ✓ XMIT | ■ LED XMIT 3
If □ LED XMIT 3

To deactivate mode

RS Laptop CM: БРТК: CTTC

2.5.4. REGUL- VHF2 DUPLEX RELAY

<table>
<thead>
<tr>
<th>パ (in use)</th>
<th>パ (in use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ LED XMIT 3  (mode selected)</td>
<td>□ LED XMIT 3</td>
</tr>
<tr>
<td>If □ LED XMIT 3</td>
<td>If □ LED XMIT 3</td>
</tr>
<tr>
<td>To select mode</td>
<td>To select mode</td>
</tr>
<tr>
<td>cmd: U_ONTRREGUK2 (Regul-VHF2 relay ON)</td>
<td>cmd: U_ONTRREGUK2 (Regul-VHF2 relay ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
</tbody>
</table>

For comm

| with MCC | with manned vehicle or Orlan |
| CHANNEL 1 | CHANNEL 3 |
| CHANNEL 1 | CHANNEL 3 |

To complete comm

✓ CHANNEL 1, 3 | ■ CHANNEL 1, 3
✓ ✓ XMIT | ■ LED XMIT 3
If □ LED XMIT 3

To deactivate mode

RS Laptop CM: БРТК: CTTC

2.5.5. LIRA-VHF2 DUPLEX RELAY

<table>
<thead>
<tr>
<th>パ (in use)</th>
<th>パ (in use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ LED XMIT 3  (mode selected)</td>
<td>□ LED XMIT 3</td>
</tr>
<tr>
<td>If □ LED XMIT 3</td>
<td>If □ LED XMIT 3</td>
</tr>
<tr>
<td>To select mode</td>
<td>To select mode</td>
</tr>
<tr>
<td>cmd: U_ONRTRLIRUK2 (Lira-VHF2 relay ON)</td>
<td>cmd: U_ONRTRLIRUK2 (Lira-VHF2 relay ON)</td>
</tr>
<tr>
<td>Execute</td>
<td>Execute</td>
</tr>
</tbody>
</table>

For comm

| with MCC | with manned vehicle or Orlan |
| CHANNEL 2 | CHANNEL 3 |
| CHANNEL 2 | CHANNEL 3 |

To complete comm

✓ CHANNEL 2, 3 | ■ CHANNEL 2, 3
✓ ✓ XMIT | ■ LED XMIT 3
If □ LED XMIT 3

To deactivate mode

RS Laptop CM: БРТК: CTTC
2.5.6. VHF1-VHF2 DUPLEX RELAY

To select mode

<table>
<thead>
<tr>
<th>LED XMIT 2, 3</th>
<th>(mode selected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED XMIT 2, 3</td>
<td></td>
</tr>
</tbody>
</table>

RS Laptop

- **CM:БРТК:СТТС**
- **cmd:** U_ONRTRLIRUK2 *(Lira-VHF2 relay ON)*
  - **Execute**
- **cmd:** U_ONKANUK1 *(VHF1 Ch ON)*
  - **Execute**

PA

- **LED XMIT 2, 3**

To deactivate mode

RS Laptop

- **CM:БРТК:СТТС**
- **cmd:** U_OFKAHUK1 *(VHF1 Ch OFF)*
  - **Execute**
- **cmd:** U_OFRTLIRUK2 *(Lira-VHF2 relay OFF)*
  - **Execute**

PA

- **LED XMIT 2, 3**

For comm

<table>
<thead>
<tr>
<th>With MCC</th>
<th>With manned vehicle or ORLAN-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL 2</td>
<td>CHANNEL 3</td>
</tr>
<tr>
<td>CHANNEL 2</td>
<td>CHANNEL 3</td>
</tr>
</tbody>
</table>

To complete comm

- **CHANNEL 2, 3**
- **CHANNEL 2, 3**
- **CHANNEL 2, 3**
- **LED XMIT 2, 3**
- **LED XMIT 2, 3**

PA (in use)

- **LED XMIT 2, 3**

To deactivate mode

RS Laptop

- **CM:БРТК:СТТС**
- **cmd:** U_OFKAHUK1 *(VHF1 Ch OFF)*
  - **Execute**
- **cmd:** U_OFRTLIRUK2 *(Lira-VHF2 relay OFF)*
  - **Execute**

PA

- **LED XMIT 2, 3**
2.5.7. EVA COMM

1. PREPARATION FOR EVA

behind panel 406
bottom right
cntr X796 ↔ pln cntr X796 (disconnect ПОСC annunciation unit from [СТТС])
cap ↔ cntr X796-1
cntr X796 → pln cntr X796-1 (connect ПОВ annunciation unit to [СТТС])
ПА-5(ΠхО)
Low-noise headset ↔ ПА and transfer into [РО]

2. EVA COMM USING THE ORLAN UMBILICAL

NOTE
The IV crewmember (on MCC-M GO), or MCC establishes comm via VHF1(2d), Regul, Lira

Prior to Orlan donning
ПА-5(ΠхО)
CHANNEL 1, 2, 3
 CHANNEL 1, 2, 3
XMIT
 LED XMIT 1, 2, 3

After Orlan doffing
✓ XMIT
 ✓ CHANNEL 1, 2, 3
✓ LED XMIT 1, 2, 3
✓ CHANNEL 1, 2, 3

3. EVA COMM USING ΠРТА

NOTE
1. Comm is performed via ΠО-4М panel of the ORLAN-M Korona system
2. IV crewmember (on MCC-M GO), or MCC establishes Regul-VHF2 duplex relay on board (Lira-VHF2d, VHF1-VHF2d)

Prior to Orlan donning
RS Laptop
指令: U_ONSVEXIT (EVA Comm ON)
执行
ПА-5(ΠхО)
CHANNEL 3
 CHANNEL 3
XMIT
 LED XMIT 3

After Orlan doffing
✓ XMIT
 ✓ CHANNEL 3
✓ LED XMIT 3
✓ CHANNEL 3
RS Laptop
指令: U_OFSVEXIT (EVA Comm OFF)
执行

4. CLOSEOUT OPERATIONS

ПА-5(ΠхО)
behind panel 406
bottom right
Low-noise headset ↔ ПА
cntr X796 ↔ pln cntr X796-1
cap → cntr X796-1
cntr X796 → pln cntr X796-1
2.6. CONTROL VIA ИНПУ

2.6.1. VHF COMM

1. COMMUNICATION

<table>
<thead>
<tr>
<th>ИНПУ</th>
<th>SM STATUS SM COMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode activation</td>
<td>Mode deactivation</td>
</tr>
<tr>
<td>VHF1</td>
<td>VHF 1 ON</td>
</tr>
<tr>
<td>VHF2d</td>
<td>VHF 2d ON</td>
</tr>
<tr>
<td>VHF2s</td>
<td>VHF 2s ON</td>
</tr>
</tbody>
</table>

**NOTE**
Use VHF2s for comm during approach and docking with Soyuz and Orbiter.

2. VHF1 COMM

ПА (in use)

**To complete comm**

<table>
<thead>
<tr>
<th>ИНПУ</th>
<th>SM COMM SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>ПА (in use)</td>
<td>CHANNEL 2</td>
</tr>
<tr>
<td></td>
<td>CHANNEL 2</td>
</tr>
<tr>
<td></td>
<td>CHANNEL 2</td>
</tr>
</tbody>
</table>

4. VHF2 SIMPLEX COMM

**NOTE**

For reception via VHF2s, release push-to-talk button (LED XMIT 3)

ПА (in use)

**To complete comm**

<table>
<thead>
<tr>
<th>ИНПУ</th>
<th>SM COMM SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>ПА (in use)</td>
<td>CHANNEL 3</td>
</tr>
<tr>
<td></td>
<td>CHANNEL 3</td>
</tr>
<tr>
<td></td>
<td>CHANNEL 3</td>
</tr>
</tbody>
</table>

Note: For VHF2 SIMPLEX COMM, the push-to-talk button must be released after completing the communication.
2.6.2. **EVA COMM**

1. **PREPARATION FOR EVA**

   Behind panel 406 bottom right:
   - cnctr X796 \(\leftrightarrow\) plate cnctr X796 (disconnect ПСС annunciation unit from [CTTC])
   - cap \(\leftrightarrow\) cnctr X796-1
   - cnctr X796 \(\leftrightarrow\) plate cnctr X796-1 (connect ПОВ annunciation unit to [CTTC])

   **ПА-5(ПхО)**: Low-noise headset \(\leftrightarrow\) ПА and transfer into [ПО]

2. **EVA COMM USING THE ORLAN UMBILICAL**

   **NOTE**
   Crewmember (on MCC-M GO) or MCC performs comm via VHF1(2d), Regul, Lira

   **Prior to Orlan donning**
   - ПА-5(ПхО) \(\downarrow\) CHANNEL 1, 2, 3
   - XMIT
   - \(\Box\) CHANNEL 1, 2, 3
   - \(\blacksquare\) LED XMIT 1, 2, 3

   **After Orlan doffing**
   - XMIT
   - \(\checkmark\) CHANNEL 1, 2, 3
   - \(\blacksquare\) CHANNEL 1, 2, 3
   - LED XMIT 1, 2, 3

3. **EVA COMM USING БРТА**

   **NOTE**
   1. Comm is performed via ПО-4М panel of the ORLAN-M Korona system
   2. Crewmember (on MCC-M GO) or MCC performs Regul-VHF2 duplex relay on board (Lira-VHF2d, VHF1-VHF2d)

   **Prior to Orlan donning**
   - ИНПУ SM STATUS SM COMM
   - ИНПУ EVA COMM ON
   - ИНПУ VHF 2 DUPLEX ON
   - ПА-5(ПхО) \(\downarrow\) CHANNEL 3
   - XMIT
   - \(\Box\) CHANNEL 3
   - \(\blacksquare\) LED XMIT 3

   **After Orlan doffing**
   - XMIT
   - \(\checkmark\) CHANNEL 3
   - \(\blacksquare\) CHANNEL 3
   - LED XMIT 3

4. **CLOSEOUT OPERATIONS**

   Low-noise headset \(\leftrightarrow\) ПА

   - cnctr X796 \(\leftrightarrow\) plate cnctr X796-1
   - cap \(\leftrightarrow\) cnctr X796-1
   - cnctr X796 \(\leftrightarrow\) plate cnctr 796
2.7. INTERMODULE COMMUNICATION SETUP

<table>
<thead>
<tr>
<th>Comm from docked vehicles on SM:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel 1 (FGB, Soyuz)</td>
<td>Channel 2 (FGB)</td>
</tr>
<tr>
<td>SM ПА-3 pnl 228</td>
<td>SM ПА-2 pnl 407</td>
</tr>
</tbody>
</table>

Select required comm mode per 2.4-2.6

2.8. COMM FROM FGB

SM ПА-3(2) 1. Select required comm mode per 2.7

FGP

БВК-2 (313) 2. ↓ ON □ LED (_RTC is powered from FGB СЭП)

To perform comm

ВСБ-95 3. ↓ CHANNEL 1(2) □ CHANNEL 1(2)

To complete comm

4. ✓ CHANNEL 1(2) ■ CHANNEL 1, 2
   ✓ XMIT ■ LED XMIT 1, 2

БВК 2 (313) 5. ↓ OFF ■ LED (_RTC is powered from SM СЭП)

SM ПА-3(2) 6. ✓ All pb ■ All LEDs

2.9. COMM FROM DOCKED SOYUZ VIA INTERMODULE COMMUNICATION

SM ПА-3 (228) 1. Select required comm mode per 2.4 – 2.6

↓ XMIT □ LED XMIT 1(2, 3)

SOYUZ 2. Perform Intermodule Communication per RODF: SOYUZ TM "ASCENT AND DESCENT" CHECKLIST, п.1.3 INFLIGHT COMMUNICATION OPERATIONS

SM ПА-3 3. ✓ All pb ■ All LEDs
2.10. PACKET COMM

NOTE

1. If there is no RS Laptop, MCC-M outputs command D_ONF3URM (УРМ Ф3 ON) via КРЛ
2. The names of files for transmission should not have more than 8 symbols (English letters and digits) and should not have attributes «Only reading»
3. Do not add files to folder D:\US_TTS\D_SEND\TTSEND until transmission is complete

Prior to comm pass
Wiener 1. Prepare and place files into folder D:\US_TTS\D_SEND\TTSEND
Power
RS 2. СМ:БРТК:СТТС
Laptop cmd: D_ONF3URM (УРМ Ф3 ON) (telephone-telegraph comm УС activation)
Execute

During comm pass
ПА-4 3. Set up comm for packet transmission (On MCC-M GO)
Regulator ТЛФ 2 maximum, ТЛФ 1 minimum
   ↓ XMIT   □ LED XMIT 1(2, 3)
Wiener 4. Start WS_TTS3 program from folder D:\US_TTS\;
Power

If there is no packet transmission via Regul 1(2)
RS Laptop CTTC
√ BC5-92
(On MCC-M GO cmd: U_ONTLFREG16 (Regul 16 Telephone ON)
Execute)

After file exchange is complete
▷ window ‘Reports about comm pass’
   ‘Comm pass was performed without
   mistakes’
   (‘Comm pass was performed with mistakes’)
▷ window ‘List of delivered files’
▷ window ‘List of received files’
   Files not transmitted during comm pass
   Files received during comm pass

After comm pass is complete
5. Exit the program WS_TTS3.EXE
ПА-4 6. □ XMIT   ■ LED XMIT 1, 2, 3
To deactivate mode
RS 7. CTTC
Laptop D_OFF3URM (УРМ Ф3 OFF) (telephone-telegraph comm УС deactivation)

After comm pass is complete
Wiener 8. Take received files from folder D:\US_TTS\D_RECV\OTP
Power
2.11. GNOM-S TAPE RECORDER OPERATION

**NOTE**
1. When tape recorder is activated, track 1 is preset automatically
2. The initial configuration of the new cassette is in middle position
3. Switchover to the other track is automatic
4. For forced switchover ↓ direction 1(2)
5. One track operation time is 1 hour 30 min

1. **RECORD**

<table>
<thead>
<tr>
<th>ПА-3</th>
<th>↓ CHANNEL 1(2, 3)</th>
<th>CH 1(2, 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>↓ ICOM</td>
<td>↓ ICOM</td>
</tr>
<tr>
<td>Tape recorder Switch → ▼</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>↓ On</td>
<td>1(2)</td>
</tr>
<tr>
<td></td>
<td>↓ Off (after recording is complete)</td>
<td></td>
</tr>
<tr>
<td>ПА-3</td>
<td>↑ CHANNEL 1, 2, 3, ICOM</td>
<td>CHANNEL 1, 2, 3, ICOM</td>
</tr>
</tbody>
</table>

2. **PLAYBACK**

<table>
<thead>
<tr>
<th>ПА-3</th>
<th>↓ CHANNEL 1(2, 3)</th>
<th>CH 1(2, 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>↓ ICOM</td>
<td>↓ ICOM</td>
</tr>
<tr>
<td></td>
<td>↓ XMIT</td>
<td>↓ LED XMIT 1(2, 3)</td>
</tr>
<tr>
<td>Tape recorder Switch → ►</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>↓ On</td>
<td>1(2)</td>
</tr>
<tr>
<td></td>
<td>↓ Off (after playback is complete)</td>
<td></td>
</tr>
<tr>
<td>ПА-3</td>
<td>↑ CHANNEL 1, 2, 3, ICOM</td>
<td>CHANNEL 1, 2, 3, ICOM</td>
</tr>
</tbody>
</table>

3. **REWIND**

| Tape recorder Switch → ▶ |
|      | ↓ On             | 1(2)       |
|      | ↓ 1(2) (to choose direction) |
|      | ↓ Off (to stop) |

4. **CASSETTE REPLACEMENT**

| Tape recorder ↓ CASSETTE |
| Retrieve cassette |
| Insert new cassette |
| Close cover |
| Switch → ▶ |
| ↑ On |
| ↑ 2 |
| ↓ Counter → 2-3 points |
| ↓ Off |
Notes
2.12. [CTTC] FUNCTIONAL CHECK

ПА ↓ TEST RESET □ all LEDs ■ FUSE

2.12.1. SIDETONE CHECK

ПА ↓ CHANNEL 1 □ CHANNEL 1
↓ and hold push-to-talk button □ LED XMIT 1
Perform sidetone, check volume
Release push-to-talk button ■ LED XMIT 1
✓ CHANNEL 1 ■ CHANNEL 1

2.12.2. COMM CALL CHECK

NOTE
When pressing pb PAGE all ПА speakers are activated, except the speaker via which check is being performed

ПА
Deactivate all speakers
↓ and hold pb PAGE
Page a crewmember from SM (module) using the low-noise headset

2.12.3. PAGE CHECK

ПА-1
1. ↓ ICOM □ ICOM
ПА 2—6
2. ↓ ICOM (in turn from 2 to 6)
Perform comm check using the low-noise headset, volume ✔
↓ SPKR ON
Perform comm check using the speaker, volume ✔
All ПА
3. ✓ ICOM ■ ICOM

2.12.4. ALARM ANNUNCIATION CHECK (during comm pass)

ИнПУ
On МСС-М GO 1. SM STATUS SM COMM
SM COMM READY INIT OFF ■ SM COMM READY INIT
To МСС-М 2. Comm call (КРЛ Б-К5)
TONЕ
ИнПУ
3. SM COMM
✓ □ SM COMM READY INIT
Report to МСС-М
2.12.5. VHF RECEIVER FUNCTIONAL CHECK

1. SM STATUS SM COMM
   □ VHF 1
   □ CHANNEL 2
   SM COMM
   VHF 1 SQUELCH OFF
   Ṣ RCVR VHF 1 via the low-noise headset
   VHF 1 SQUELCH ON
   □ VHF 1 SQUELCH
   □ CHANNEL 2
   ↓ CHANNEL 2

2. VHF 2 DUPLEX OFF
   □ VHF 2 DUPLEX
   □ CHANNEL 3
   SM COMM
   VHF 2 SQUELCH OFF
   Ṣ RCVR 1 VHF 2 noise via the low-noise headset
   □ VHF 2 SQUELCH
   □ CHANNEL 3
   ↓ CHANNEL 3

3. EVA COMM ON
   □ EVA COMM
   □ CHANNEL 3
   SM COMM
   VHF 2 SQUELCH OFF
   Ṣ RCVR 2 VHF2 noise via the low-noise headset
   □ VHF 2 SQUELCH
   □ CHANNEL 3
   ↓ ЛИНИЯ СВЯЗИ 3
   ЛИНИЯ СВЯЗИ 3
2.13. OFF-NOMINAL SITUATIONS

2.13.1. NO COMM VIA LOW-NOISE HEADSET

If □ FUSE
Replace fuse
Report to MCC-M

If ■ FUSE

If there is comm via second low-noise headset
Reconnect low-noise headset to be checked to cnctr X1 of second low-noise headset
If there is comm via to be checked low-noise headset
If there is comm, first cnctr X1 is bad
Work via good cnctr X1
If there is no comm
Replace low-noise headset
Report to MCC-M

2.13.2. SWITCHOVER TO BACKUP [СТТС]
(on MCC-M GO)

NOTE
Select the operating mode for the desired unit on the RS Laptop or ИмПУ before switching to backup RCVR and XMTR VHF2(2d)

<table>
<thead>
<tr>
<th>Device</th>
<th>Crewmember actions</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal telegraph receiver</td>
<td>behind pnl 331</td>
<td>Reconnect cbl from cnctr 891-Ш6 to cnctr 891-Ш5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reconnect cap from cnctr 891-Ш5 to cnctr 891-Ш6</td>
</tr>
<tr>
<td>МБС ВСБ-589</td>
<td>pnl 330</td>
<td>@ CHANNEL 1(2) → BACKUP</td>
</tr>
</tbody>
</table>

1. SWITCHOVER VIA Laptop

<table>
<thead>
<tr>
<th>Device</th>
<th>Crewmember actions</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>РПУ ВСБ-92</td>
<td>RS Laptop [CM:5ΡΤΚ:СТΤС cmd: U_ONAKK_R (Backup speaker ON)] Execute</td>
<td>Switchover to backup subset is performed by all units at the same time</td>
</tr>
<tr>
<td>РПУ ВСБ-94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>БРТС 17Р 55.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital comm unit</td>
<td>RS Laptop [CM:5ΡΤΚ:СΤΤС cmd: U_ON1755_R (17P55.59M backup ON)] Execute</td>
<td></td>
</tr>
<tr>
<td>17Р 55.59М</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RСВR (XMTR) VHF1</td>
<td>RS Laptop [CM:5ΡΤΚ:СΤΤС cmd: U_ON1755_R (VHF1 backup RCVR1(XMTR) ON)] Execute</td>
<td></td>
</tr>
<tr>
<td>УСБ-24H(УСБ-14МХ)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RСВR1 (2) VHF2</td>
<td>RS Laptop [CM:5ΡΤΚ:СΤΤС cmd: U_ON1755_R (VHF2 backup RCVR1(2) ON)] Execute</td>
<td></td>
</tr>
<tr>
<td>УСБ-24H(УСБ-24Г)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XMTR2s (XMTR2d) VHF2</td>
<td>RS Laptop [CM:5ΡΤΚ:СΤΤС cmd: U_ON1755_R (VHF2 backup XMTR1(2) ON)] Execute</td>
<td></td>
</tr>
<tr>
<td>УСБ-24МБВ(УСБ-14МД)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. **SWITCHOVER VIA ИnPУ**

<table>
<thead>
<tr>
<th>Device</th>
<th>Crewmember actions</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>РПУ ВСБ-92</td>
<td>![](SM STATUS SM COMM)</td>
<td>Switchover to backup subset is performed by all units at the same time</td>
</tr>
<tr>
<td>РПУ ВСБ-94</td>
<td>SM STATUS SM COMM</td>
<td>BU AMPLFR</td>
</tr>
<tr>
<td>БРТС 17Р 55.58</td>
<td>SM STATUS SM COMM</td>
<td>BU AMPLFR</td>
</tr>
<tr>
<td>RCVR (XMTR) VHF1</td>
<td>SM STATUS SM COMM</td>
<td>BU XMTR (RCVR) VHF 1 ON BU AMPLFR</td>
</tr>
<tr>
<td>RCVR 1 (XMTR 1) VHF 2</td>
<td>SM STATUS SM COMM</td>
<td>BU XMTR 1 (RCVR 1) VHF 2 ON BU XMTR (RCVR) VHF 1</td>
</tr>
<tr>
<td>RCVR 2 (XMTR 2) VHF 2</td>
<td>SM STATUS SM COMM</td>
<td>BU XMTR 2 (RCVR 2) VHF 2 ON BU XMTR 1 (RCVR 1) VHF 2</td>
</tr>
</tbody>
</table>

For VHF2d
3. TELEVISION SUBSYSTEM

3.1. [TBC] FUNCTIONAL SCHEMATIC

Figure 3.1 [TBC] Functional Schematic

- БУБУ - Temporary multiplexing onboard device
- БУБР - Temporary demultiplexing onboard device
- ТМО - Signal converter
- CO-1 - Temporary multiplexing onboard device
- СО-1 - Sync signal
- Pri - Primary
- B/u - Backup
## 3.2 [TBC] OPERATING MODES

### OPERATING MODES

<table>
<thead>
<tr>
<th>Destination</th>
<th>TVXMTR</th>
<th>LiraXMTR</th>
<th>MON(1/2)</th>
<th>MON Simvol-Ts</th>
<th>LIV recorder</th>
<th>LIVMON</th>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cam+X</td>
<td>TVS_0</td>
<td>TVS_1</td>
<td>TVS_27(28)</td>
<td>TVS_2</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cam+X</td>
<td>TVS_3</td>
<td>TVS_4</td>
<td>--</td>
<td>TVS_5</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cam +X + TV display</td>
<td>TVS_6</td>
<td>TVS_7</td>
<td>TVS_29(30)</td>
<td>--</td>
<td>TVS_8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cam +X + TV display</td>
<td>TVS_9</td>
<td>TVS_10</td>
<td>--</td>
<td>--</td>
<td>TVS_11</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Simvol-Ts (monitor)</td>
<td>TVS_20</td>
<td>TVS_21</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cam (portable)</td>
<td>TVS_12</td>
<td>TVS_13</td>
<td>TVS_31(32)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>“LIV” GBR</td>
<td>TVS_14</td>
<td>TVS_15(16)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Lira RCVR</td>
<td>--</td>
<td>--</td>
<td>TVS_35(36)</td>
<td>TVS_23</td>
<td>TVS_25</td>
<td>TVS_24</td>
<td>--</td>
</tr>
<tr>
<td>TVRCVR</td>
<td>--</td>
<td>TVS_17</td>
<td>TVS_33(34)</td>
<td>TVS_22</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Relay</td>
<td>TVS_40</td>
<td>TVS_39</td>
<td>TVS_37(38)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>COMMMUTATOR</td>
<td>EXECUTE FIST BEFORE SELECTING OPERATING MODE USING COMMANDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV deactivation</td>
<td>EXECUTE AFTER OPERATION IS COMPLETE (blue highlights disappear)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SM COMMUNICATION SYSTEM**

**CM-EPTK TV System** from window TVS Modes (F25_TVS_Na) Modes
3.3. SCHEMATIC OF PREPARATION FOR VIDEO EVENT AND VIDEO EVENT FROM SM

Figure 3.3. EVA-1 connection during preparation and video event from SM
Figure 3.4. КП-103-Ц and БКУ connection in FGB
3.5. [TBC] OPERATION FEATURES

3.5.1. TV DEACTIVATION PROCEDURE FEATURES

After TV deactivation procedure (F25_TVS_26) is executed to deactivate TV blue highlights of display elements [CM:BPRT:TV System] disappear for all units, except LIRA RCVR and XMTR which are controlled by MCC-M and can be left highlighted. In this case:

- deactivated:
  - Т/К КЛ-140CT-M+X
  - Т/К КЛ-140CT-M-X
  - Т/К КЛ-103Ц
  - XMTR КЛ-108А
  - БУВР КУ-120М
  - БУБУ КУ-110М
  - RCVR КЛ-123-М
  - Regenerator КЛ-161
  - Commutator КЛ-160М

- not deactivated:
  - LIRA RCVR
  - LIRA XMTR
  - ВКУ 1, 2
  - LIV
  - TV lighting

3.5.2. FEATURES OF [TBC] OPERATING MODE SELECTION USING COMMANDS

**CAUTION**

Simultaneous operation of KLEST transmitter and receiver is not allowed

1. **COMMUTATOR КЛ-160M CONNECTION**
   
   **RS Laptop**
   
   [CM:BPRT:TV System]
   
   *cmd:* I_ONPKL160T (КЛ-160 power ON)
   
   **Execute**
   
   [КЛ-160M Primary set]

2. **TV SIGNAL SOURCE CONNECTION**
   
   **RS Laptop** [TV System]
   
   *cmd:* (source activation command is given in Table 3.2)
   
   **Execute**
   
   [selected source]

3. **TV SIGNAL USER CONNECTION**

   **NOTE**
   
   1. Signal degrades if more than three users are simultaneously connected to one source
   2. When mode is selected using commands, ВКУ1(2), ВКУ Simvol units and lines connecting them on display [TV System] do not appear

   **RS Laptop** [TV System]
   
   *cmd:* (user activation command is given in Table 3.2)
   
   **Execute**
   
   [selected user]

4. **OPERATION CLOSEOUT**
   
   **RS Laptop** [TBC]
   
   *proc:* F25_TVS_26 (Television OFF)
   
   **Execute**
   
   Blue highlights disappear
3.6. VIDEO EVENT FROM SM (DOWNLINK)

1. **PREPARATION FOR VIDEO EVENT**
   Remove T/K protective covers
   Inspect T/K for damage and ensure optical surfaces are clean

<table>
<thead>
<tr>
<th>For video event from [PO]</th>
<th>For video event from ПхО</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure equipment for video event from [PO] per Figure 3.3, p. 3-3</td>
<td>318 cnctr X4IО29(TV ПхО) → [+– cnctr X1IО29</td>
</tr>
<tr>
<td></td>
<td>Configure equipment for video event from ПхО per Figure 3.3, p. 3-3</td>
</tr>
</tbody>
</table>

2. **TV SIGNAL MONITORING ON BKY1(2)**
   1. If necessary install and connect lights per RODF: SM POWER SUPPLY SYSTEM,
      СПР-1 PORTABLE TV LAMP SETUP AND OPERATION

   ППС-21(306) 2. Є ЦВКУ1(2)

   RS Laptop  
   **CM:БРТК:TV System**
   proc: F25_TVS_31(TVS_32) (Connect TV (portable) to MON1(2))
   Execute
   Cam (portable) MON1(2)
   cmd: I_ONPSVETT (TV Lighting power ON)
   Execute
   Adjust lighting

3. **TV SIGNAL TRANSMISSION TO MCC (on MCC-M GO)**
   **NOTE**
   KLEST transmitter takes 2 min to start operating mode

   RS Laptop  
   **TV System**
   proc: F25_TVS_12(TVS_13) (Connect color TV(portable) to TV XMTR (XMTR L) ГОСТ)
   Execute
   Cam (portable) 
   TV XMTR or LIRA XMTR
   Perform video event

4. **OPERATION CLOSEOUT**

   RS Laptop  
   **TV System**
   proc: F25_TVS_26 (Television OFF)
   Execute
   Blue highlights disappear
   cmd: I_OFPSVETT (TV lighting power OFF)
   Execute

ППС-21(306) 2. Є ЦВКУ1(2)
3.7. EVA VIDEO EVENTS (DOWNLINK)

1. T/K FUNCTIONAL CHECK
   1. Remove T/K protective covers
      Inspect T/K for damage and ensure optical surfaces are clean

<table>
<thead>
<tr>
<th>Configure equipment:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>For video event outside [ПО]</td>
<td>For video event in ПхО</td>
</tr>
<tr>
<td>Preparation for EVA video event outside [ПО]</td>
<td>318 cnctr X4И029(ТV ПхО) (\rightarrow) cnctr X1И029</td>
</tr>
<tr>
<td>Figure 3.3, p. 3-3</td>
<td>EVA video event from ПхО</td>
</tr>
<tr>
<td>Figure 3.3, p. 3-3</td>
<td></td>
</tr>
</tbody>
</table>

ППС-21(306) 2. Ø ЦВКУ1(2)

RS Laptop

СМ:БРТК:TV System

**proc:** F25_TVS_31(TVS_32) (Connect TV (portable) to MON1(2))

**Execute**

Cam (portable) MON1(2)

\(\leftarrow\) T/K operation

RS Laptop

TV System

**proc:** F25_TVS_26 (Television OFF)

**Execute**

Blue highlights disappear

ППС-21(306) Ø ЦВКУ1(2)

2. PREPARATION FOR VIDEO EVENT

---

**CAUTION**

Do not touch T/K housing with bare hands after cover removal
When operating T/K, hold it only by its handle while wearing gloves

1. Remove T/K cover
   Install T/K on boom 17КС.Е9648-0 (to secure camera on handrails)

2. cnctr X8И029 cbl 17КС.29И0 8029А-10 \(\leftrightarrow\) cnctr Х1И029
   cnctr X12И029(EVA TV) \(\rightarrow\) cnctr X1И029
   cnctr Х6И029 cbl 17КС.29И0 8029А-20 \(\leftrightarrow\) cnctr Х6И029 cbl 17КС.29И0 8029А-10

3. VIDEO EVENT FROM [ПО] SMALL CONE

Locking plate # 5
\(\sqrt{\text{cnctr ХФП5-2} \leftrightarrow \text{cnctr ХФП5-3}}\)
\(\text{cnctr ХФП5-2} \leftrightarrow \text{cnctr Х6И029 cbl 17КС.29И0 8029А-20} \) (Figure 3.3, p. 3-3)

4. VIDEO EVENT FROM [ПО] LARGE CONE

Locking plate # 5
\(\sqrt{\text{cnctr ХФП5-2} \leftrightarrow \text{cnctr ХФП5-3}}\)

Locking plate # 6
\(\text{cnctr ХФП6-1} \leftrightarrow \text{cnctr Х6И029 cbl 17КС.29И0 8029А-20} \) (Figure 3.3, p. 3-3)
5. **TV SIGNAL MONITORING ONBOARD**

ППС-21(306) **ЦВКУ1(2)

RS Laptop [SM:БРТК:TV System]

**proc:** F25_TVS_31(TVS_32) *(Connect TV (portable) to MON1(2))

**Execute**

Cam (portable) — MON1(2)

6. **TV SIGNAL TRANSMISSION TO MCC (on MCC-M GO)**

**NOTE**

KLEST transmitter takes 2 min to start operating mode

**proc:** F25_TVS_12(TVS_13) *(Connect color TV (portable) to TV XMTR ГОСТ)*

**Execute**

Cam (portable)

7. **OPERATION CLOSEOUT**

RS Laptop

1. **ТV System**

**proc:** F25_TVS_26 *(Television OFF)*

**Execute**

Blue highlights disappear

ППС-21(306) **ЦВКУ1(2)

2. √ cnctr ΧΦΠ6-1 ↔ cnctr Χ6Ю29 cbl 17КС.29Ю 8029А-20 *(Figure 3.3, p. 3-3)*

3. **Cover**

Disassemble equipment

Stow cables and T/K
3.8. TV SIGNAL TRANSMISSION FROM EXTERNAL T/K TO MCC (DOWNLINK)

NOTE
1. On MCC-M GO activate in advance external T/K for warming up
2. After docking to FGB, field of view from T/K-X is obstructed
3. To record on LIV VTR prepare per RODF: SM VIDEO & AUDIO, RECORDING FROM EXTERNAL DEVISE

3.8.1. OPERATION IN BKY MODE

1. TV SIGNAL MONITORING ON BKY

ППС-21(306) @ ЦБКУ1(2)
RS Laptop CM:BPTK:TV System
proc: F25_TVS_27(TVS_28) (Connect TV +x to MON1(2))
Execute Cam +X MON1(2)

2. TV SIGNAL TRANSMISSION VIA KLEST TRANSMITTER (on MCC-M GO)

NOTE
KLEST transmitter takes 2 min to start operating mode

RS Laptop TV System proc: F25_TVS_0(TVS_3) (Connect TV (КЛ-140СТ) +x (-x) to TV XMTR)
Execute Cam +X(-X)

3. TV SIGNAL TRANSMISSION VIA LIRA TRANSMITTER (on MCC-M GO)

RS Laptop TV System proc: F25_TVS_1(TVS_4) (Connect TV (КЛ-140СТ) +x (-x) to Lira XMTR)
Execute Cam +X(-X)

4. OPERATION CLOSEOUT

RS Laptop TV System proc: F25_TVS_26 (Television OFF)
Execute Blue highlights disappear

ППС-21(306) @ ЦБКУ1(2)
3.8.2. OPERATION IN TV DISPLAY MODE (during dynamic modes)

1. PREPARATION FOR OPERATION
Simvol-Ts Prepare for TV signal reception per RODF: SM MANUAL CONTROLS

2. TV SIGNAL MONITORING ON SIMVOL-Ts
RS Laptop CM:БПТК:TV System
   proc: F25_TVS_2(TVS_5) (Connect TV Camera КП-140CT +x (-x) to ЦВКУ Simvol-Ts)
   Execute
   Cam+X(-X) MON Simvol-Ts

3. TV SIGNAL RECORDING IN DISPLAY MODE ON VTR
RS Laptop TV System
   proc: F25_TVS_8(TVS_11) (Connect Display TV with TV (КП-140CT) +x (-x) to recorder)
   Execute
   Cam +X(-X) MON Simvol-Ts LIV recorder

4. TV SIGNAL MONITORING VIA T/K +x IN DISPLAY MODE ON BKY

   NOTE
   Mode is off-nominal, image on BKY1(2) is flickering with frequency of 16.5 Hz, color may be degraded

RS Laptop TV System
   proc: F25_TVS_29(TVS_30) (Connect Display TV +x to MON1(2))
   Execute
   Cam+X MON MON1(2) Simvol-Ts

5. TV SIGNAL TRANSMISSION VIA KLEST TRANSMITTER IN DISPLAY MODE (on MCC-M GO)
RS Laptop TV System
   proc: F25_TVS_6(TVS_9) (Connect Display TV with TV (КП-140CT) +x (-x) to TV XMTR)
   Execute
   Cam+X(-X) MON Simvol-Ts

6. TV SIGNAL TRANSMISSION VIA LIRA TRANSMITTER IN DISPLAY MODE (on MCC-M GO)
RS Laptop TV System
   proc: F25_TVS_7(TVS_10) (Connect Display TV with TV (КП-140CT) +x (-x) to Lira XMTR)
   Execute
   Cam +X(-X) MON Simvol-Ts
7. OPERATION CLOSEOUT

**RS Laptop**

1. **CM:БРТК:TV System**
   
   **proc:** F25_TV5_26 (Television OFF)
   
   **Execute**
   
   Blue highlights disappear

**Simvol-Ts**

2. Deactivate per RODF:SM MANUAL CONTROLS

### 3.8.3. CAMERA CONTROL

**NOTE**

To change settings T/K should be activated

<table>
<thead>
<tr>
<th>Command</th>
<th>Setting to be changed</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmd: I_ONPRSVT</td>
<td>(Flare reduction ON)</td>
<td>In case of local glares</td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cmd: I_OFPRSVT</td>
<td>(Flare reduction OFF)</td>
<td></td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cmd: I_SFPLT</td>
<td>(Strong Filter)</td>
<td></td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cmd: I_SFSLT</td>
<td>(Weak Filter)</td>
<td></td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cmd: I_SOUUT</td>
<td>(Narrow-angle lens)</td>
<td></td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cmd: I_SOWUT</td>
<td>(Wide-angle lens)</td>
<td></td>
</tr>
<tr>
<td>Execute</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.9. TV SIGNAL RECEPTION AND TRANSMISSION FROM SOYUZ (PROGRESS) TO MCC
(VIDEO RELAY)

NOTE
If recording on LIV VTR operate per RODF: SM VIDEO & AUDIO, RECORDING FROM EXTERNAL DEVISE

1. TV SIGNAL MONITORING ON BKY

ППС-21(306)
RS Laptop
proc: F25_TVS_33(TVS_34) (Connect TV RCVR to MON1(2))
Execute
TV RCVR
MON1(2)

2. TV SIGNAL MONITORING ON SIMVOL-Ts (during dynamic modes)

Simvol-Ts
RS Laptop
Prepare for TV signal reception per RODF: SM MANUAL CONTROLS
proc: F25_TVS_22 (Connect TV RCVR to ЦВКУ Simvol-Ts)
Execute
TV RCVR
Simvol-Ts

3. TV SIGNAL TRANSMISSION TO MCC VIA LIRA (on MCC-M GO)

CAUTION
Simultaneous operation of KLEST receiver and transmitter is not allowed

RS Laptop
proc: F25_TVS_17 (Connect TV RCVR to Lira XMTR)
Execute
TV RCVR
LIRA XMTR

4. OPERATION CLOSEOUT

RS Laptop
proc: F25_TVS_26 (Television OFF)
Execute
Blue highlights disappear

ППС-21(306)
Simvol-Ts
@ ЦБКУ1(2)
Deactivate per RODF: SM MANUAL CONTROLS
3.10. TV SIGNAL RECEPTION FROM MCC (UPLINK)

**NOTE**
If recording on LIV VTR operate per RODF: SM VIDEO & AUDIO, RECORDING FROM EXTERNAL DEVICE

1. **TV SIGNAL RECEPTION ON BKY**
   
   ППС-21(306) † ЦБҚҚY1(2)
   
   RS Laptop  ЧМ:БТК:TV System
   proc: F25_TVS_35(TVS_36) (Connect Lira RCVR to MON1(2))
   Execute
   
   ![Diagram](LIRA_RCVR_MON_1_2)

2. **MCC TV SIGNAL RECORD ON VTR**
   
   RS Laptop  TV System
   proc: F25_TVS_25 (Connect Lira RCVR to LIV recorder)
   Execute
   
   ![Diagram](LIRA_RCVR_LIV_recorder)

3. **TV SIGNAL RECEPTION ON SIMVOL-Ts**
   
   Simvol-Ts 1. Prepare for TV signal reception per RODF: SM MANUAL CONTROLS
   RS Laptop  TV System
   proc: F25_TVS_23  (Connect Lira RCVR to ЦБҚҚY Simvol-Ts)
   Execute
   
   ![Diagram](LIRA_RCVR_MON_Simvol_Ts)

4. **OPERATION CLOSEOUT**
   
   RS Laptop  TV System
   proc: F25_TVS_26  (Television OFF)
   Execute
   Blue highlights disappear
   
   ППС-21(306) † ЦБҚҚY1(2)
   Simvol-Ts 2. Deactivation per RODF: SM MANUAL CONTROLS

3.11. TV COMMUNICATION (TWO-WAY VIDEO)

1. **VIDEO EVENT (DOWNLINK)**
   Prepare and perform video event per 3.6, p.3-6

2. **TV SIGNAL RECEPTION FROM MCC (UPLINK)**
   Receive TV signal from **MCC** per 3.10, p. 3-13
3.12. VIDEO EVENT FROM FGB (DOWNLINK)

1. PREPARATION FOR VIDEO EVENT
   1. Remove T/K protective covers
      Inspect T/K for damage and ensure optical surfaces are clean
   2. Unstow cbl 77KM 2912-140 from bag
      Configure equipment for video event from FGB per Figure 3.4, p. 3-4
   3. If necessary install and connect lights per RODF: SM POWER SUPPLY SYSTEM,
      CTP-1 PORTABLE TV LAMP SETUP AND OPERATION

2. TV SIGNAL MONITORING ON BKV 1(2) IN SM

   1. PROCESS: 21(306) ☛ ЦВКУ1(2)
   2. RS Laptop
      СМ.БПТК: TV System
      proc: F25_TVS_37(TVS_38) (Connect FGB TV2 relay to MON1(2))
      Execute
      TV2
      MON1(2)

      cmd: I_ONPSVETT (TV Lighting power ON)
      Execute
      Adjust lighting

3. TV SIGNAL TRANSMISSION TO MCC (on MCC-M GO)

   1. NOTE
      KLEST transmitter takes 2 min to start operating mode
   2. RS Laptop
      TV System
      proc: F25_TVS_39(TVS_40) (Connect FGB TV2 relay to Lira XMTR)
      Execute
      TV2
      LIRA XMTR or TV XMTR

      Perform video event

4. OPERATION CLOSEOUT

   1. RS Laptop
      TV System
      proc: F25_TVS_26 (Television OFF)
      Execute
      Blue highlights disappear
      cmd: I_OFPSVETT (TV lighting power OFF)
      Execute

   2. FGB
      ППС-21(306) ☛ ЦВКУ1(2)
      2. √ ☛ А3С
      Disassemble equipment
      Stow cbl 77KM 2912-140 into bag
3.13. TV IMAGE VIEWING IN FGB

1. PREPARATION FOR OPERATION

FGB
227
Unstow cbl 77KM 2912-80 and cbl 77KM 2912-150 from bag
Configure equipment for TV image viewing in FGB per Figure 3.4, p. 3-4
PБС10/3 @ A3C

2. TV SIGNAL DISPLAY ON FGB BKV

RS Laptop

1. Activate commutator КЛ-160М

Cmd: I_ONPKL160T (КЛ-160 power ON)
Execute

КЛ-160М Primary set

2. Select TV signal source

<table>
<thead>
<tr>
<th>TV signal source</th>
<th>Command</th>
<th>Display on RS Laptop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cam for video event in SM</td>
<td>cmd: I_ONTKRT</td>
<td>Cam (portable)</td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>Cam КЛ-140 СТМ +X</td>
<td>cmd: I_ONTPKXT</td>
<td>Cam КЛ-140 СТМ +X</td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>Cam КЛ-140 СТМ -X</td>
<td>cmd: I_ONTKOXT</td>
<td>Cam КЛ-140 СТМ -X</td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>KLEST RCVR</td>
<td>cmd: I_ONPRMT</td>
<td>TV RCVR</td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>Lira RCVR</td>
<td>cmd: I_ONENLT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>Cam for video event in FGB</td>
<td>cmd: I_RTRTV2FGBT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Relay TV2 FGB -X)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
</tbody>
</table>

3. Connect TV signal user

RS Laptop

Cmd: I_TRTV2FGBT (TV2 FGB -X Relay)
Execute

3. OPERATION CLOSEOUT

RS Laptop

1. [TV System]

Proc: F25_TVS_26 (Television OFF)
Execute

Blue highlights disappear

FGB
PБС10/3 2. √ @ A3C

Disassemble equipment

Stow cbl 77KM 2912-80 and cbl 77KM 2912-150 into bag
3.14. [TBC] АФУ SWITCHOVER

NOTE
Command I_OFPRDT (TV XMTR OFF) enables АФУ switchover. It powers down the equipment, but it does not shutdown automatics.

1. [AO] АФУ CONFIGURATION CHANGE

RS Laptop

\[\text{CM:БРТК:TV System} \]
\[\text{TV XMTR} \]
\[\text{cmd: I_OFPRDT (TV XMTR OFF)} \]
\[\text{Execute}\]

\[\text{pb АФУ TBC} \]
\[\text{CM:БРТК:TBC:АФУ TBC} \]
\[\text{cmd: I_ONVNAT (Switch to BHA mode)} \]
\[\text{Execute}\]
\[\text{cmd: I_ONPNAA1(A2T) (Connect to ПНА A1(A2))} \]
\[\text{Execute}\]
\[\leftarrow \text{АФУ configuration change}\]
\[\text{proc: F25_TV_26 (Television OFF)} \]
\[\text{Execute}\]

Blue highlights disappear

2. TV XMTR SWITCHOVER TO [AO] (СБ)

RS Laptop

\[\text{CM:БРТК:TV System} \]
\[\text{TV XMTR} \]
\[\text{cmd: I_OFPRDT (TV XMTR OFF)} \]
\[\text{Execute}\]

\[\text{pb АФУ TBC} \]
\[\text{CM:БРТК:TBC:АФУ TBC} \]
\[\text{cmd: I_ONANTAO(SB)T (AO(SB)-XMTR Link))} \]
\[\text{Execute}\]
\[\leftarrow \text{connection configuration change}\]
\[\text{proc: F25_TV_26 (Television OFF)} \]
\[\text{Execute}\]

Blue highlights disappear
Notes
3.15. OFF-NOMINAL SITUATIONS

3.15.1. TV XMTR SWITCHOVER TO BACKUP

RS Laptop

\[\text{CM:БПТК:TV System}\]

\[\text{TV XMTR}\]

(run any procedure activating TV XMTR)

\[\text{cmd: I_OFPRDT (TV XMTR OFF)}\]

\[\text{cmd: I_SRPRDT (TV XMTR Select)}\]

\[\text{cmd: I_ONPRDT (TV XMTR ON)}\]

\[\text{proc: F25_TVS_26 (Television OFF)}\]

Blue highlights disappear

3.15.2. NO IMAGE ON BKУ1(2)

front panel

\[\sqrt{\text{pb}}\]

(ЦВКУ operates in mode ПТС – complete TV signal)

(mode \[\text{pb}\] - is not used)
3.15.3. SWITCHOVER TO КЛ-160M BACKUP SET

RS Laptop

1. **КМ:БРТК:TV System**
   - **КЛ-160** Primary set (run any procedure)
   - **cmd:** I_SRKL160T (КЛ-160 Select)
   - **Execute**
   - **КЛ-160** Backup set
   - **proc:** F25_TVS_26 (Television OFF)
   - **Execute**
   - Blue highlights disappear

KL-160M (327)

2. cbl 17KC.29Ю 8229-690 — cncr 2910-Х17A (primary input to КЛ-160 from FGB)
   cbl 17KC.29Ю 8229-690 — cncr 2910-Х69А (backup input to КЛ-160 from FGB)

3. Select required operating mode
4. REGUL

REGUL is nominally controlled via КРЛ
In case of operation via the third set there is no telephone comm
Relay satellite is operating via the first set. If it should operate via the second set - connect its
direction finder to АФУ (see RODF: SM IFM IVA)
On display, operating set transmitter is highlighted in blue

CAUTION

1. Deactivation and activation of standby mode during equipment maintenance on MCC GO
2. When standby mode is deactivated, commands do not pass via КРЛ, АФУ switching is not possible, the third set transmitter
   is activated and deactivated only by the crew via Laptop

4.1. STANDBY MODE DEACTIVATION
(on MCC-M GO)

RS Laptop 1. СМ:БРТК:Regul_S:Control
   Scripts ↓ Сеансный режим 3 к. РЕГУЛ ОС через ВНА АО(СБ)
   (Comm pass mode of РЕГУЛ ОС third set via [АО] (СБ) omni antenna)
   Execute script
   Procedures ↓ Сеансный режим 3 к.РЕГУЛ ОС через ВНА АО(СБ)
   (Comm pass mode of РЕГУЛ ОС third set via ВНА [АО] (СБ) antenna)
   proc: F23_REG_11 (End Comm Pass, through РСУС set 3)
   Execute

2. УЦО3 ПРМ3

ИнПУ 3. СМ СУБА, REGUL, СУД CONTROL
   □ REGUL STBY □ COMMAND INHIBITED
   00:00:00 COMMAND INHIBITED ON □ COMMAND INHIBITED
   <00:00:10 REGUL STBY OFF □ REGUL STBY □ COMMAND INHIBITED

4.2. REGUL STANDBY MODE ACTIVATION
(on MCC-M GO)

RS Laptop 1. СМ:БРТК:Regul_S:Control
   Procedures ↓ Дежурный режим 3 к.РЕГУЛ ОС
   (РЕГУЛ ОС third set standby mode)
   proc: F23_REG_0 (RSUC duty power, Activation)
   Execute

2. УЦО1 ПРМ1
   УЦО2 ПРМ2
4.3. THE THIRD TRANSMITTER ACTIVATION
(on MCC-M GO)

RS Laptop
1. СМ:БРТК:Regul_S
   - There are no operating sets
   - Connected АФУ ([АО] or СБ)

2. СМ:БРТК:Regul_S:Control
   Scripts
   Сеансный режим 3 к. РЕГУЛ ОС через ВНА АО (СБ)
   (Comm pass mode of РЕГУЛ ОС third set via [АО] (СБ) omni antenna)
   Execute script

3. СМ:БРТК:Regul_S
   ПРДЗ

4.4. THE THIRD SET TRANSMITTER DEACTIVATION
(on MCC-M GO)

RS Laptop
1. СМ:БРТК:Regul_S
   ПРДЗ

2. СМ:БРТК:Regul_S:Control
   Procedures
   Сеансный режим 3 к. РЕГУЛ ОС через ВНА АО (СБ)
   (Comm pass mode of РЕГУЛ ОС third set via [АО] (СБ) omni antenna)
   proc: F23_REG_11 (End Comm Pass, through РСУС set 3)
   Execute

3. СМ:БРТК:Regul_S
   ПРДЗ

4.5. THE THIRD SET DEACTIVATION
(on MCC-M GO)

RS Laptop
СМ:БРТК:Regul_S:Control
Scripts
Отключение 3 к. РЕГУЛ ОС
(РЕГУЛ ОС third set deactivation)
Execute script
5. БИТС2-12

5.1. RS LAPTOP CONTROL DISPLAY FEATURES

- icon to call display \textsc{см:итс}

Pushbuttons to call mode parameter monitoring displays

Proc call pushbuttons

<table>
<thead>
<tr>
<th>Display names</th>
</tr>
</thead>
<tbody>
<tr>
<td>СМ:ИТС:Transmission_A</td>
</tr>
<tr>
<td>СМ:ИТС:Record_A / Playback_A</td>
</tr>
<tr>
<td>СМ:ИТС:Transmission_Б</td>
</tr>
<tr>
<td>СМ:ИТС:Record_Б / Playback Б</td>
</tr>
</tbody>
</table>

Mode is active - text color is black
Mode is not active - text color is gray

5.2. REAL-TIME TRANSMISSION (НП) MODE

5.2.1. REAL-TIME TRANSMISSION (НП-А (НП-Б)) PARAMETERS SETUP
(on MCC-M GO)

RS Laptop 1. \textsc{см:итс}

\texttt{proc: FB\_19 (FB\_20)}  (Ch A (B) transmission mode parameters, Setup)

\texttt{param1: 0(8, 32, 128, 250)}  (Transmission rate)

\texttt{param2: 0(1, 2, 3, 4, 5, 6, 7, 8)}  (Polling program)

\begin{tabular}{|l|}
\hline
\textbf{NOTE} \\
\hline
1. \texttt{Param1} = 0 does not change selected transmission rate \\
2. \texttt{Param2} = 0 does not change selected polling program \\
\hline
\end{tabular}

Execute

2. \texttt{СМ:ИТС:Transmission\_A} \texttt{СМ:ИТС:Transmission\_Б}

\texttt{Data rate} \\
\texttt{Down list}
5.2.2. REAL-TIME TRANSMISSION (НП-А (НП-Б)) ACTIVATION
(on MCC-M GO)

RS Laptop
1. **СМ:ИТС**
   
   Playback mode of channel А(Б) is **not** active
   
   If active √ МСС-М

2. **ACTIVATE БИТС (LIRA, REGUL) XMTR:**

<table>
<thead>
<tr>
<th>XMTR</th>
<th>RS Laptop procedures</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>БИТС XMTR (НП mode)</td>
<td>proc: FB_1 (FB_2) (НП-А(Б) mode in БИТС2-12, Setup)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIRA XMTR (СДД mode)</td>
<td>proc: FB_9 (FB_10) (Lira-А(Б) mode in БИТС2-12, Setup)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>REGUL XMTR (СДД mode)</td>
<td>When operating via REGUL set 1 or 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>proc: F17_1 (БИТС2-12 system configuration, Setup)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param1: 1 (Group number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param2: 1 (Instrument number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param3: 0 (Primary set)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When operating via REGUL set 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>proc: F17_1 (БИТС2-12 system configuration, Setup)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param1: 1 (Group number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param2: 33(35) (Instrument number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param3: 0 (Primary set)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When operating via REGUL set 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>proc: F17_1 (БИТС2-12 system configuration, Setup)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param1: 1 (Group number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param2: 33(35) (Instrument number)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>param3: 1 (Backup set)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Executions</td>
<td></td>
</tr>
</tbody>
</table>

3. **Channel_A Direct transmission mode to Ground**

( **Channel_B Direct transmission mode to Ground** )
5.2.3. REAL-TIME (НП) MODE DEACTIVATION
(on MCC-M GO)

NOTE
Simultaneous deactivation of telemetry transmission to MCC via all channels – НП, Regul and Lira

RS Laptop
.proc: FB_6 (All transmission modes, Deactivation)
Execute

NOTE
Simultaneous deactivation of telemetry transmission to MCC via all channels – НП, Regul and Lira

RS Laptop
.proc: FB_6 (All transmission modes, Deactivation)
Execute

БП1-А or БП1-А
БП2-А or БП2-А
БП1-Б or БП1-Б
БП2-Б or БП2-Б

БФС1(2)-A
БФС1(2)-A
БФС1(2)-B
БФС1(2)-B

→ LIRA
→ REGUL
→ LIRA
→ REGUL
### 5.3. CHANNEL A(Б) PLAYBACK MODE ACTIVATION
(on MCC-M GO)

**NOTE**

1. In playback mode, command ОТКЛ НП (Realtime Off) is saved and executed after mode is complete
2. Activation of playback mode deactivates НП and ЗАП modes
3. For forced termination of playback mode activate СТОП ЗУ mode per 5.4.2

<table>
<thead>
<tr>
<th>RS Laptop</th>
<th>1. Channel A(Б) record mode is not active</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If active √ MCC-M</td>
</tr>
<tr>
<td></td>
<td>Channel A(Б) НП mode is not active</td>
</tr>
<tr>
<td></td>
<td>If active √ MCC-M</td>
</tr>
</tbody>
</table>

2. ACTIVATE БИТС(LIRA, REGUL) XMTR:

<table>
<thead>
<tr>
<th>XMTR</th>
<th>RS Laptop procedures Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>БИТС XMTR</td>
<td>proc: FB_1 (FB_2) (НП-А(Б) mode in БИТС2-12, Setup) Execute</td>
</tr>
<tr>
<td>(НП mode)</td>
<td></td>
</tr>
<tr>
<td>LIRA XMTR</td>
<td>proc: FB_9 (FB_10) (Lira-А(Б) mode in БИТС2-12, Setup) Execute</td>
</tr>
<tr>
<td>(ССД mode)</td>
<td></td>
</tr>
<tr>
<td>REGUL XMTR</td>
<td>When operating via REGUL set 1 or 3 proc: F17_1 (БИТС2-12 system configuration, Setup) Execute</td>
</tr>
<tr>
<td>(СДД mode)</td>
<td>param1: 1 (Group number)</td>
</tr>
<tr>
<td></td>
<td>param2: 1 (Instrument number)</td>
</tr>
<tr>
<td></td>
<td>param3: 0 (Primary set)</td>
</tr>
<tr>
<td></td>
<td>When operating via REGUL set 2 proc: F17_1 (БИТС2-12 system configuration, Setup) Execute</td>
</tr>
<tr>
<td></td>
<td>param1: 1 (Group number)</td>
</tr>
<tr>
<td></td>
<td>param2: 1 (Instrument number)</td>
</tr>
<tr>
<td></td>
<td>param3: 1 (Backup set)</td>
</tr>
<tr>
<td></td>
<td>When operating via REGUL set 3 proc: F17_1 (БИТС2-12 system configuration, Setup) Execute</td>
</tr>
<tr>
<td></td>
<td>param1: 1 (Group number)</td>
</tr>
<tr>
<td></td>
<td>param2: 33(35) (Instrument number)</td>
</tr>
<tr>
<td></td>
<td>param3: 0 (Primary set)</td>
</tr>
</tbody>
</table>
3. Select playback direction

<table>
<thead>
<tr>
<th>Playback direction</th>
<th>RS Laptop procedures</th>
</tr>
</thead>
</table>
| Direct (Bnp)       | If tape storage device is in initial configuration (дКБ)  
|                    | proc: FB_11 (FB_12) (ВОСПР-А(Б) mode in БИТС2-12, Setup)  
|                    | Execute              |
|                    | If tape storage device is not in initial configuration (<КБ)  
|                    | proc: FB_15 (FB_16) (ИСХЗУ-А(Б) mode in БИТС2-12, Setup)  
|                    | Execute              |
| Reverse (Вобр)     | proc: FB_13 (FB_14) (ВОСПР-А(Б)(proc) mode in БИТС2-12, Setup)  
|                    | Execute              |

4. Channel_A Direct (reverse) playback mode

Channel_B Direct (reverse) playback mode
5.4. 3U MODE

5.4.1. CHANNEL A(B) RECORD MODE (ЗАП) ACTIVAITON
(on MCC-M GO)

RS Laptop 1. СМ:ИТС
Channel A(B) playback mode is not active
   If active √ MCC-M

2. proc: FB_3 (FB_4) (ЗАП-А(Б) mode in БИТС2-12, Setup)
   param1: 1(2, 8, 32) (Record information density)
   param2: 0(1, 2, 3, 4, 5, 6, 7, 8) (Record program)

<table>
<thead>
<tr>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. param2 = 0 does not change selected recording program</td>
</tr>
<tr>
<td>2. Monitor parameters on display СМ:ИТС:Transmission_A</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Execute

[ ] Channel_A  ЛЗУ record mode

( [ Channel_B  ЛЗУ record mode ] )

3. СМ:ИТС:Record_A (СМ:ИТС:Record_B)
   Selected record information density is set
   Selected record program is set

4. If record mode is not set √ MCC-M

5.4.2. RECORD MODE (ЗАП) DEACTIVATION (СТОП 3U MODE)

RS Laptop СМ:ИТС
proc: FB_17 (FB_18) (СТОП ЗУ-А(Б) mode in БИТС2-12, Setup)

Execute

ЛЗУ2-А(Б); or ЛЗУ2-А(Б); ЛЗУ1-А(Б)

ЛЗУ1-А(Б)

5.4.3. 3U INITIAL CONFIGURATION SETUP FOR RECORDING (ИСХ 3У-А(Б) MODE)

RS Laptop 1. СМ:ИТС
Channel A(B) record mode is not active
   If active √ MCC-M
   Channel A(B) playback mode is not active
   If active √ MCC-M

2. СМ:ИТС
proc: FB_15 (FB_16) (ИСХ3У-А(Б) mode in БИТС2-12, Setup)

Execute
6. TRANZIT SYSTEM

6.1. TRANZIT-B POWER UP
(on MCC-M GO)

RS Laptop

<table>
<thead>
<tr>
<th>cmd: H_ONPTRANZIT1</th>
<th>(Tranzit set 1 power ON)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>cmd: H_ONPTRANZIT2</td>
<td>(Tranzit set 2 power ON)</td>
</tr>
<tr>
<td>Execute</td>
<td></td>
</tr>
</tbody>
</table>

6.2. TRANZIT-B POWER DOWN
(on MCC-M GO)

RS Laptop

<table>
<thead>
<tr>
<th>cmd: H_OFPTRANZIT1</th>
<th>(Tranzit set 1 power OFF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execute</td>
<td></td>
</tr>
<tr>
<td>cmd: H_OFPTRANZIT2</td>
<td>(Tranzit set 2 power OFF)</td>
</tr>
<tr>
<td>Execute</td>
<td></td>
</tr>
</tbody>
</table>