FIRST / Planck EMC Working Group

Meeting 1, 17 March 2000

Identification of S/C - Instrument Interface Issues

Why do we (ESA) want to do this?

Instrument teams need a minimum set of input to continue their development and delivery the instrument models in time

We (ESA) have to know the needs of the instruments in order to establish the S/C requirements

What do we want to do?

Define necessary minimum inputs/needs - leave maximum flexibility to industry for S/C design (we do not want to design the S/C !)

Identification of S/C - Instrument Interface Issues

How do we want to do this?

Define dedicated tasks, with ESA leader/chair

Independent working groups (parallel work possible)

Work together with Instrument teams (everybody has to accept his responsibilities and has to contribute)

Various different ways - as it is most economic, i.e. written exchange, meetings (at ESTEC), ….

The anticipated working groups/activities

- FIRST Instrument Alignment Plan update (FIA)
- Planck Telescope Working Group (PTW)
- Planck Cryogenic Testing (PCT)
- FIRST Instrument CQM Testing (FIT)
- Planck Instrument to AOCS Interfaces (PAO)
- FIRST Instrument to AOCS Interfaces (FAO)
- FIRST/Planck Instrument to CDMS Interfaces (FPD)
- FIRST System EMC Working Group (FEMC)
- Planck System EMC Working Group (PEMC)

Working Group Tasks

- Identification and assessment of potential EMI sources and susceptors

  To be done by questionnaire to be prepared for the instrument teams
- Support instrument teams in the identification of critical elements

  that require special attention, and in the completion of the questionnaire
- Establish draft instrument grounding concepts
- Prepare instrument return and grounding diagrams
- Establish guidelines for instrument harness design, shielding and routing
- Prepare input for industrial phase modelling.

FIRST/Planck EMC working group members)

Chair, organisation and lead:	**B. Jackson**
ESA functional support:	**A. Ciccolella**
<u>Instrument team representatives</u>:	
HFI	**R. Pons, Jean Paul Chambaud**
SPIRE	**Colin Cunningham**
PACS	**M. Rumitz**
LFI	**C. Butler, Roberto Silvestri, Marco Bercanelli**
HIFI	**Albert Naber, Bert Joost van Leeuwen**

FIRST/Planck EMC Working Group Meetings

Proposed dates:-

Kick off:	**CW 11,**	**17.3.2000**
PM#1:	**CW 19,**	**11/12.5.2000**
PM#2:	**CW 27,**	**6/7.7.2000**
PM#3:	**CW 35,**	**4/5.9.2000**
PM#4:	**CW 43,**	
PM#5:	**CW 51,**	
PM#6:	**CW 08,**	

FIRST / Planck EMC Interface Issues

Inputs / questions received from Instrument teams regarding

Grounding requirements, Spacecraft, Instruments, connectors, EMC plan

FIRST / Planck Power Interface Issues

Questions raised on Power interfaces
Separate panel, Different team members ?

HFI

HFI-29 Connectors shielding is a commonality issue. Some types of connector shield may have to be specifically developed. Is there any heritage available from ISO ?

HFI-30 Grounding pins located on instruments units have to be specified.

HFI-31 It is understood that grounding straps shall be designed and provided by ESA PPLM integration contractor.

HFI-47 IID-A § 5.14.1 conducted susceptibility spec. has to be issued.

HFI-48 IID-A § 5.14.2 radiated susceptibility spec. has to be issued.

FIRST / Planck EMC Interface Issues

HIFI

HIFI-06 The ISO EMC requirements, as recently communicated, can be used as a baseline.

Sop

Sorp-03 Grounding requirements

Sorp-04 Isolation requirements

Sorp-07 EMI/EMC requirements

SPIRE

Spire-08 Require EMC Plan and grounding

EMC Grounding

Instrument Grounding diagrams to show

- Unit cases
- grounding/isolation of unit cases
- primary & secondary power grounding resp. isolation
- primary & secondary power interfaces
- secondary power network & interface circuit grounds inside the Instrument
- principal interface circuits showing circuit isolation resp. grounding reference and the type of interface (i.e. analogue digital thermistor, relay status etc.)
- DC/DC converters
- filters
- wiring, i.e. twisting of wires, shielding, grounding of wire shield etc.
- cross-coupling at redundant components, where applicable and where grounding/isolation requirements are affected