ALCATEL SPACE

Alcatel Space Industries
Herschel Planck project office
OS/M/H
Fax + 33 4 92 92 30 10
Tel Secretary: + 33 4 92 92 30 85

Nb pages 1/2

FAX

Date	Référence
06/03/02	H-P-ASPI-LT-1086

DE / FROM :
L. TROUGNOU

FAX n° : +33 4 92 92 30 10

COPY :
K. HIBBERD, P. COUZIN,
G. LUND, B. COLLAUDIN,
M. PASTORINO, P. RIDEAU, J.J. JUILLET

A / *TO* (Dest, Soc/Comp.) :
C. KALDE, J. KROEKER, E HOELZLE, S. IDLER (ASED)

FAX n° : +49 7545 / 8-4243

COPY :
B. JACKSON (ESA)
J. DELDERFIELD, B. SWINYARD (SPIRE)

SPIRE cryo-harness internal overall shield

[Ref. 1] Evaluation of field level inside the cryostat, H-P-ASPI-LT-512, 28/10/2001
[Ref. 2] Cryostat Shielding Efficiency Assessment Consolidation, H-P-2-ASPI-TN-0177, 30/11/2001

Dear Sirs,

At the meeting held on the 13/02 at ESTEC it was decided that SPIRE **internal** cryo-harness overall shield (the "FPU Faraday shield") was **not** considered as the baseline for the PDR design.

The rationale can be summarised as follows :

- the sensitive links are already protected against low frequency EMI by other means (balanced differential links, analogue 0V grounded on one side only, individual shields grounded on one side only, etc.) + to some extent by the cryostat shielding efficiency
- this overall shielding, the way it is planned to be connected to SVM through cryo-harness wires cannot a priori be efficient at high frequency (roughly above 1 MHz), that is to say where the cryostat shielding efficiency is expected to decrease (cf. cryostat shielding efficiency mask next page, also cf. [Ref. 1] and [Ref. 2]), so there would be little extra EMC benefit to expect from it
- on the other hand, this overall shielding, the usefulness/implementation of which is doubtful, may have a significant impact on lifetime

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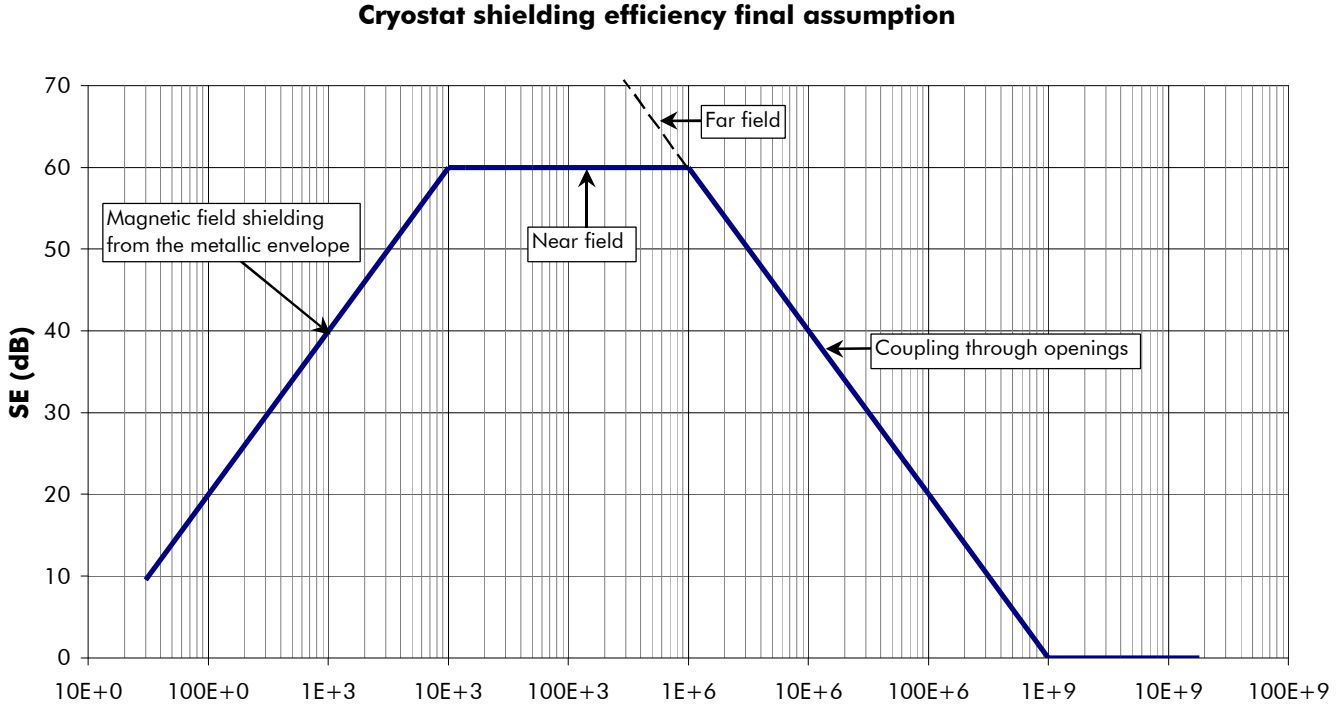

However, in case the EMC tests on the HPLM EQM finally lead to the conclusion that an overshielding is actually necessary on SPIRE internal cryo-harness (i.e. high frequency susceptibility is found), one must evaluate this possible option, i.e :

- define what would be the characteristics of an internal overshielding efficient at high frequency (material, process, backshells, etc.)
- estimate its efficiency (ratio of interface noise pick-up with/without in dB)
- assess the impact of such an overshielding (lifetime, mass, etc.), and the feasibility/impacts of introducing it on the FM after the EQM EMC tests completion

In order to be prepared to such eventuality, Astrium is kindly requested to propose an assessment of these last 3 points.

Best regards,

L. Trougnou P. Couzin