To: Gary Davis, Don Peterson
CC: Bruce Swinyard, John Delderfield, John Hackett, Joe Taylor, Dwight Caldwell, Robert Deschambault
RE: Closure of DKG Action Items from Shutter PDR Meeting

Number	Description	Outcome
1	Find out from Astrium what the CVV lid temperature and emissivity are. See if Astium can vary the properties of the CVV lid to help the shutter. They want e < 10% and T<100K	I have written an email to the Astrium SPIRE systems engineer. I am awaiting a reply.
2	What is the variation in the cryo-harness resistance between cold and hot	John Delderfield has given me the figures of 1kΩ for signal wires, 100Ω for current carrying wires and as low as 30Ω upon "special request". I have had subsequent discussions with a member of the HIFI team and he told me this figure was unreliable.
3	What is the story with an integrating cavity for Herschel OGSE	I have asked and it seems that there is a possibility of this cavity. It is unclear how exactly it would be used.
4	Put Robert in touch with Dave Parker. Whether the SPIRE EGSE can command the Shutter EGSE. What are the details of the Telemetry Packets?	I have spoken with Dave Parker (D.J.Parker@rl.ac.uk, +44 1235 44 5850). He has told me that the idea is that RAL would provide you with the software that packetises data from Labview in the correct format to allow the Shutter EGSE with the SPIRE EGSE. He agrees that it is good that there is a dedicated Shutter EGSE PC that can communicate with the SPIRE EGSE with TCP/IP protocol. Dave is obviously happy to liase with you on this one.
5	What is the accessibility of the EGSE connection to the FCU prior to launch? What are the stowage conditions (atmosphere)? When is it desirable to reconnect the EGSE to confirm launch latch confirm.	I have raised this issue within the SPIRE project team. It will be very difficult to access the SPIRE FCU after final integration. We (SPIRE) will need to liase with Alcatel on this point and decide at what point in the satellite level AIT the SVM will be closed and the FCU become inaccessible.
6	Is the 10Ω the switch or the switch and harness. Is there a sensing current 100% of time or only during sense?	This resistance is across the terminals of the switch. The resistance of the harness can be compensated for. The current will only flow in the wire during sense.
7	Confirm the rationale for the 30mA limit on the cryoharness. Look at means of increasing the current possibly through duty cycle limitations. Can they increase the current rating of the harness	John has agreed that it would be desirable to increase the current to 100mA in the motor drive power and the solenoid.
8	In the AIT EGSE configuration, the harness between J27 and J28, there will be a Y connection to allow connection of the BSM and SMEC. Talk with JD about who will provide the harnesses. Could also use a hydra.	It has been agreed that this is part of the RAL EGSE and therefore we will provide the hydra for the connection of the BSM and the FTS launch lock confirm lines. You will only have to provide the harness from the hydra to your EGSE.
9	Whether Aluminium back shells or Stainless M83513/02-BN	EMC back shells will definitely be required on the connection to the shutter. Upon discussion of this point with John Delderfield, I pointed out that it appeared to me that there is no shielding (apart from the shielding used in screened twisted pairs/triples/quad etc) from the connector to the various EEE components of the shutter. He said that this should be included.
10	Check that the ESA provided cryo-harness runs from CVV directly to the shutter	I have checked this up. It is currently baselined that ESA will provide the harness right up to the shutter as is shown in the Harness Definition Document. Alcatel has not formally signed this document so you ought make provision for an extra connector near the filter box but we hope that it will not be necessary.

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11	What level of shutter thermal testing will be required for the STM	This is partly up to yourselves. SPIRE will be qualifying the structure of the instrument under launch conditions. Thus, for this, the STM should structurally represent the shutter in the stowed state. In terms of thermal representation, the shutter does not have any dissipation loads only parasitic loads through the harness from the Herschel Optical Bench to the FPU. This should be included via provision of a representative harness.
12	Do we want to move the shutter into the beam during STM. I have said that it doesn't have to be cold. Is it OK that shutter does not move? There will be no motor.	The shutter does not need to move into the beam during the STM program.
13	During cooler recycle at RAL, does the shutter have to be un-powered	The cooler and the shutter operate completely independently, and as such no provision in the design of the EGSE needs be made to unpower the shutter during recycle.

Please feel free to question me further on these items.

Cheers

Doug