

ARINC 781 Flange Mounted HPA
Key Technical Requirements – 23 April 2008

Summary of key FMHPA Performance Characteristics

FMHPA Characteristic	Small FMHPA	Big FMHPA	Consensus	Action
Power Input	240 VA 5 amp 115 VAC circuit breaker, HPA current draw 4 amps maximum, actual current draw expected to be less	470 VA maximum proposed by Thales, currently 200 VA 105 VA max in loss of cooling mode	Open – Thales proposing 470VA for Big HPA	Thales EMS Airbus Boeing
Power Output Normal Mode	22 watts minimum 35 watts maximum, manufacturer to optimize power given design constraints 2 SBB for cabin only or 1 SBB 1 C-channel, 1 R/T channel	30 watts minimum 60 watts maximum normal mode, manufacturers to maximize power given design constraints 1xSBB channel 1x8400 bps C- channel (global beam), 1x low rate R/T channel	Yes	
Low power mode support for loss of cooling	No	Yes	Yes	
Power Output Loss of Cooling Mode	Not Supported since key driver is small dimension, and with small dimension Loss of Cooling Mode is technically very difficult.	9.0 watts minimum, assuming 11 dBi antenna gain with 1.5 dB of cable/insertion loss 1x8400 bps C- channel (global beam), I-3 or I-4 1x1200 bps R/T channel, 360 minutes duration	Agreed on 23 Apr that not required at moment for small HPA but put a commentary say it is desirable. Noted that no one is currently developing a small HPA.	
Heat dissipation/Cooling airflow requirements	TBD watts maximum 50 kg/hr, pressure drop TBD	35W HPA: 260 ish watts maximum 72 kg/hr, pressure drop 50 mm, 60 degree cent inlet temp 60W HPA - tbd	Small HPA – Pressure Drop open Large HPA – Airflow rate open Thales and EMS want around 440W (140 kg/hr with 2” pressure drop)	Airbus Boeing to confirm available pressure drop for small and airflow rate for large.

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			cooling for 60W RF power.	
LRU dimensions	Use outline drawing Starting point for discussion: 3.5 inches tall x 8.0 inches wide x 12.2 inches long	Use outline drawing 7.25 inches tall x 12.5 inches wide x 14.19 inches long (excl spud)	Large HPA Yes Small HPA issue on length 16 vs 14.4 inches. EMS and Thales to resolve.	Thales EMS
Mounting footprint	6.4 inch spacing, 11.19 inch spacing	6.4 inch spacing, 11.19 inch spacing	Large – yes Small – same footprint as large and same fixing holes. EMS to confirm sizes	Thales EMS
Space requirements around FMHPA	5 inches	1 inch	Small FMHPA Yes Large FMHPA in work	Thales EMS
Connectors	J1 - Power/Control MIL-C-38999 Series III Insert Arrangement 17-26 J2 - RF Input; TNC Female J3 - RF Output; N Type Female	J1 - Power/Control MIL-C-38999 Series III Insert Arrangement 17-26 J2 - RF Input; TNC Female J3 - RF Output; N Type Female	Yes	
Thermal protection	Yes – shutdown for loss of cooling	Yes – low power mode then shutdown	Yes	
Cooling spud diameter	1.75 inches outside diameter, spud bead style AS5131 Style B, 1.5 inches in length	2.0 inches outside diameter, spud bead AS5131 Style B, 1.8 inches in length	Large FMHPA Yes Small FMHPA in work, not contentious	Thales

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Key issue is cooling for 60W. Boeing do not have a aircraft programme for 60W HPA. There are two ways to achieve 60W RF power – more cooling or better technology. Airbus do have a requirement for a 60W FMHPA.