Request for Proposal
for
Amplifier System for
Vibro-acoustic modulator

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한국항공우주연구원

우주환경시험팀

305-333 대전광역시 유성구 어은동 45번지
전화 : (042)860-2562 / 팩스 : (042)860-2234

1. Overview of the project

1.1 Korea Aerospace Research Institute (hereinafter referred to as "KARI") is located at Daeduk Research Complex, 140 km south of Seoul.

1.2 KARI has a satellite assembly, integration and test center (hereinafter referred to as "AITC") as a research institutes for the purpose of the effective development of domestic & scientific satellites.

1.3 In the AITC, for the acoustic test, the high intensity acoustic chamber is operated and can generate the noise of 150dB OVSAL.

1.4 This acoustic chamber uses the low frequency source(WAS-3000) and high frequency source (WAS-5000) to generate the acoustic noise.

1.5 The purpose of this project is to change the amplifier system for high frequency source (WAS-5000).

1.6 The supplier should show that the amplifier & cooling system are well operated with WAS-5000 modulator.

1.7 Acosutic performance data with WAS-5000 modulator should be equivalent or better than that of WAS-5000.

1.8 The supplier should submit the bisiness showing of sales and installation records for high frequency acoustic source and acoustic chamber facilities.

1.9 The main undertakings of the project are to perform guarantee quality and training, installation and site acceptance test etc.

1.10 All the descriptions in this RFP are minimum requirements and the

supplier can suggest the better one to improve the overall performance and cost. But in this case, the proposal should clearly indicate the improvements from KARI's requirements.

2. Procedure of the project

The project shall be proceeded with four parts as follows:

1) Supply for Amplifier & Cooling system
2) Transportation
3) Installation at KARI
4) KARI site acceptance test with acoustic modulator(WAS-5000)

3. Requisites of participants

3.1 The supply should submit the bisiness showing of sales and installation records for high frequency acoustic source and acoustic chamber facilities.

4. Technical Requirements

For the acoustic facility, main components are :

- Reverberant chamber,
- GN2 supply & control system
- Acoustic horns & modulators
- Acoustic control system
- Monitoring & Safety system

Figure 1 shows a block diagram of a acoustic facility

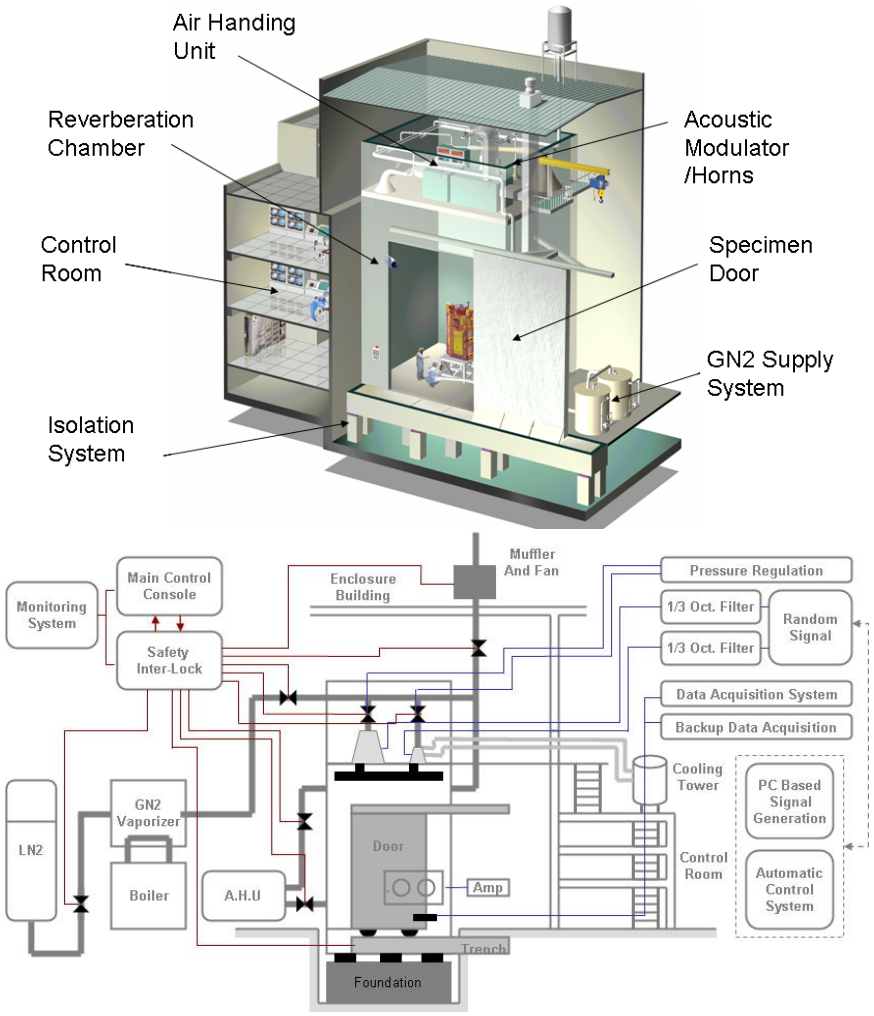

Figure 1 Block diagram of a acoustic facility

KARI acoustic chamber employ the two horns which have cutoff frequencies of 25Hz and 125Hz are employed for acoustic impedance matching. Two type of modulators are used to generate the sound. One is the WAS-3000 which is used at 25Hz horns. The other is WAS-5000 which is used at 125 Hz. Figure 2 shows the acoustic noise sources of KARI.

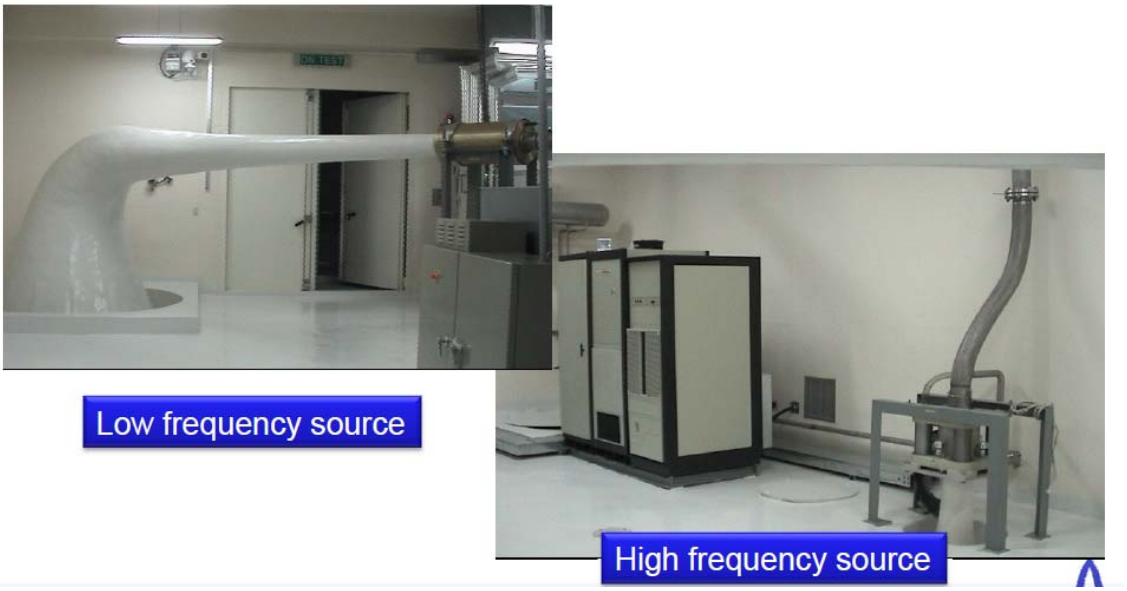

Figure 2 Acoustic noise source in KARI acoustic chamber

Figure 3 shows the vibro-acoustic source of high frequency band(WAS-5000) which is installed at KARI.

Figure 3 WAS-5000(High frequency vibro-acoustic modulator)

The purpose of this project is to change change the amplifier system for high frequency source (WAS-5000).

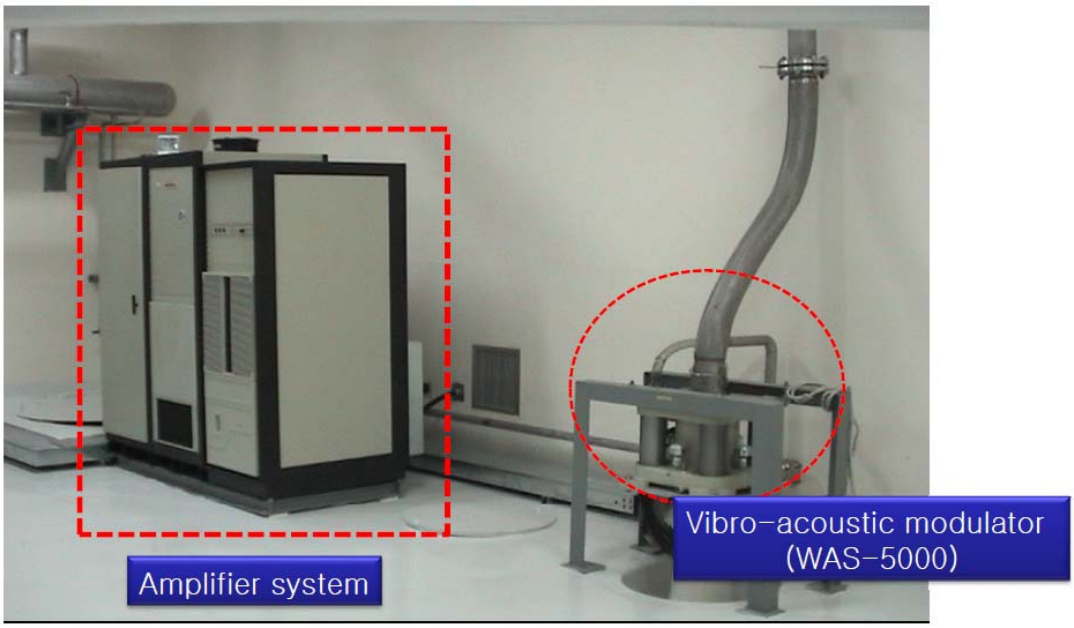

Figure 4 Amplifier system for WAS-5000

4.1 Amplifier specification

- Drive output for one or two WAS-5000 modulator.
- Volt amps : 12 kVA
- Current max : 100 Amps rms
- 100% air-cooled, 480V/240, 3Ø Input
- Remote control system

4.2 Cooling Unit specification

- Cooling and Field Supply for one or two WAS-5000 transducers
- Digital Indication of Field, Voltage and Current
- Current max : 100 Amps rms

- Digital indication of Flow and Pressure

4.3 Amplifier & cooling unit system should be operated with vibrao-acoustic modulator specified below[WAS-5000].

4.4 Specification of Modulator[WAS-5000]

- Acoustic power output : 10 kW
- Air flow rate for 10kW : 1,500 scfm
- Air pressure required at exhaust plenum housing : 30 psi
- Frequency response : 20 to 5000Hz (Maximum modulation up to 1250Hz)
- Drive circuit maximum current : 60 amp rms(sine), 40 amps rms (random)
- Generate spectrum defined as an overall-SPL from 113dB to over 160dB at KARI acoustic chamber(Frequency range : 315Hz ~ 10kHz)

Table 1. acoustic noise capability of WAS-5000

Chamber Power Ratios	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1000 Hz	1250 Hz	1600 Hz	2000 Hz
	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band
WAS 5000 Mod I (watt)	4,370	4,567	4,399	4,550	4,252	2,814	1,625	907	568
EPT 200 (watt)	3,732	4,288	3,970	4,208	3,792	2,624	1,483	806	482
Power Ratio	**117%**	**107%**	**111%**	**108%**	**112%**	**107%**	**110%**	**112%**	**118%**

Chamber Power Ratios	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1000 Hz	1250 Hz	1600 Hz	2000 Hz
	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band	Drive Band
WAS 5000 Mod II (watt)	4,786	5,402	5,464	4,874	3,926	2,722	1,544	840	604
EPT 200 (watt)	3,732	4,288	3,970	4,208	3,792	2,624	1,483	806	482
Power Ratio	**128%**	**126%**	**138%**	**116%**	**104%**	**104%**	**104%**	**104%**	**125%**

4.5 Acosutic performance data with WAS-5000 modulator should be equivalent or better than that of WAS-5000.