

International Civil Aviation Organization**Twenty Seventh Meeting of the Communications/
Navigation and Surveillance Sub-group (CNS SG/27) of
APANPIRG**

Bangkok, Thailand, 28 August – 01 September 2023

Agenda Item 6: Navigation

6.4 Other navigation related matters

KOREA AUGMENTATION SATELLITE SYSTEM (KASS) STATUS

(Presented by Republic of Korea)

SUMMARY

This paper provides information about the Korean SBAS (KASS) Development and Implementation Status led by the Korean government (MOLIT, the Ministry Of Land, Infrastructure and Transport).

1. INTRODUCTION

1.1 The Korean SBAS (Satellite Based Augmentation System) program has been initiated in October, 2014. Korea Augmentation Satellite System (KASS) will be one of the navigation systems to be owned and operated by the Ministry Of Land, Infrastructure and Transport (MOLIT) in the Republic of Korea. The Korea Aerospace Research Institute (KARI) was selected a prime contractor in October, 2016 for the joint development of KASS and full-fledged development has been ongoing.

1.2 From last December 5th 2022, KASS test messages (MT 0/0) was broadcasted from the GEO and since Jun 2023, KASS has been broadcasting MT 0/2 available for use in general industrial sector. In September 2023, flight test for APV-I will be conducted, the broadcast of the Sol service signal is expected from the end of December 2023.

2. KASS CONFIGURATION

2.1 The KASS system comprises of seven KASS Reference Stations (KRSs), two KASS Processing Stations (KPSs), two KASS Control Stations (KCSs) and three KASS Uplink Stations (KUSs at 2 sites). The subsystems communicate each other over the Wide Area Network (WAN) with low latency and high availability, continuity and integrity performance.

2.2 The first KASS GEO satellite is the Measat-3D (located at 91.5° E), which was launched on 23rd June 2022 (KST).

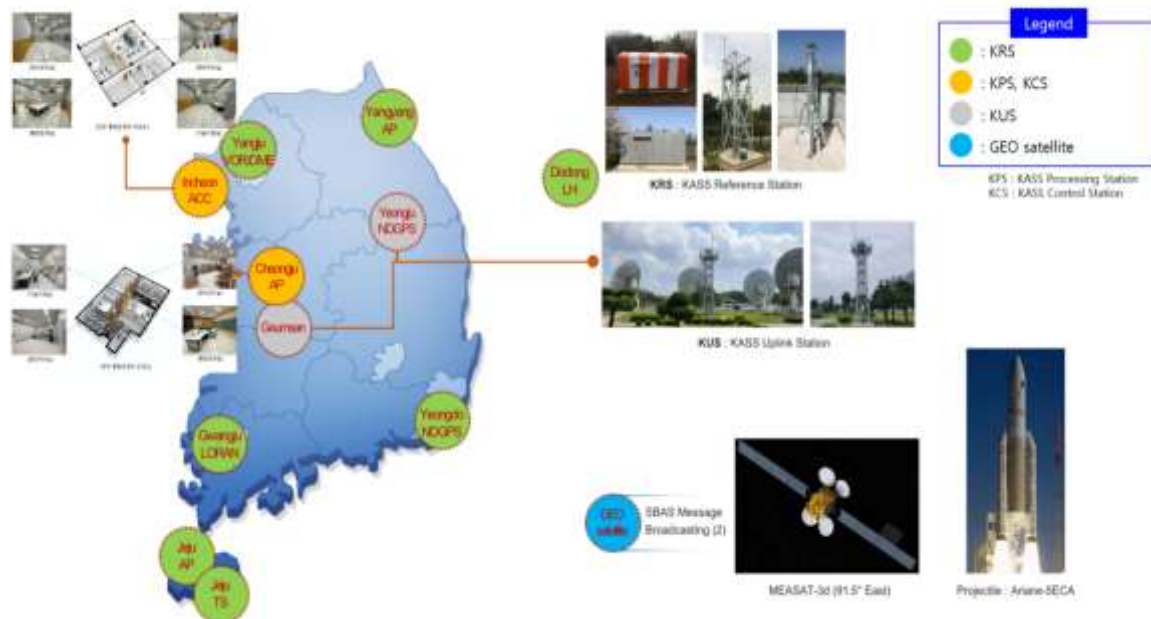


Figure 2. KASS system configuration.

3. KASS IMPLEMENTATION STATUS

3.1 In August 2013, Korean Government decided to launch the Korean SBAS Program. In October 2014, KARI was awarded as the management body for the program and the KASS Program Office (KPO) was officially established in December, 2014.

3.2 In June 2018, PRN 134 has been allocated to the first KASS GEO. And in July 2020, the amendment 92 to the ICAO SARPs Annex 10, Volume I has introduced a new SBAS service provider ID 6 allocated to KASS.

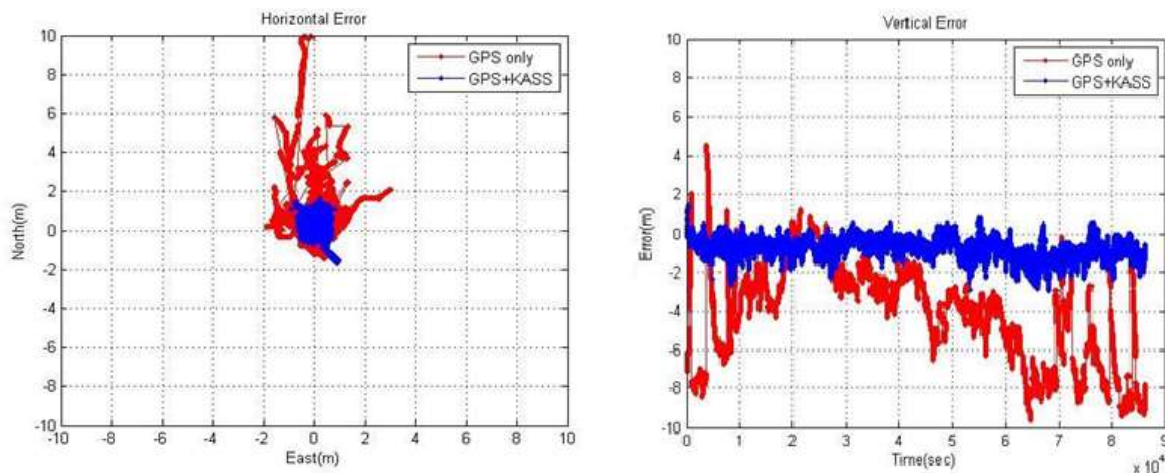
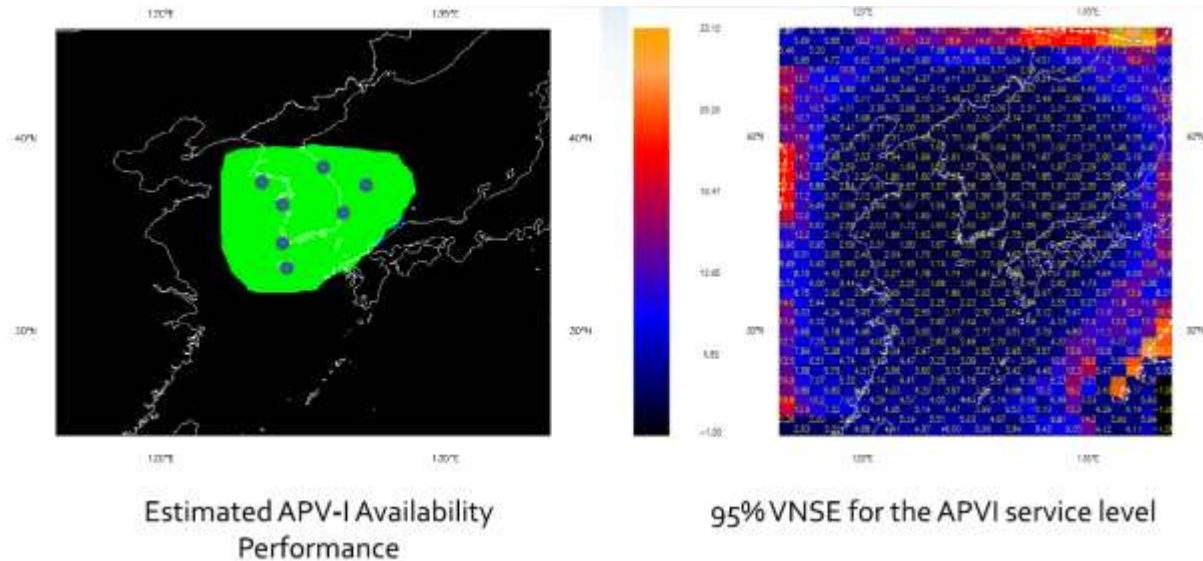
3.4 In December 2020, The KRS subsystem equipment deployment was completed with Site Acceptance Tests (SAT) and maintenance activities have been being performed periodically.

3.5 In February 2021, the Korea Air navigation Satellite Center (KANSC) as a KASS Service Provider was established under MOLIT and will manage the KASS service.

3.6 First KASS GEO satellite (Measat-3D with SBAS Payload, PRN: 134) was launched in June 2022 and the integration test between KASS uplink systems and a GEO satellite was completed. The KASS test messages (MT 0/0) had transmitted from 15th Dec., 2022.

3.7 In 2023, the last SAT and Operational Readiness Review was completed successfully and KASS signal (OS, Open Service) has been broadcast using MT0/2 officially since 26th July, 2023.

3.8 In KASS service simulation result, landmass area meets the APV-I availability is more than 99%. KARI currently monitors KASS services continuously in Daejeon which can be considered the center of South Korea, and it shows an average horizontal position error of 1.0 meter and a vertical position error of 1.6 meters.



Accuracy of KASS: 10-11 December 2022

4. FUTURE PLANS OF KASS PROGRAM

4.1 In September 2023, flight test for APV-I will be conducted and The KASS System Qualification Review (SQR) is planned in Nov, 2023, thereafter, the certification process which began in 2017 will be completed for the provision of the Safety of Life (SoL) service across the designated coverage (Incheon FIR). The broadcast of the Sol service signal is expected from the end of December 2023.

4.2 Korean government is planning to carry forward KDAS (KASS Data Access Service) to supplement the radio shadow area where the KASS signal may be weak, and is planning to develop and implement the KDAS officially from the first half of 2024.

4.3 In the first half of 2025, the second KASS GEO satellite (Koreasat-6A) will be launched. ROK will go through the development for LPV-200 Service which will be given in 2026.

5. ACTION BY THE MEETING

5.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate.
