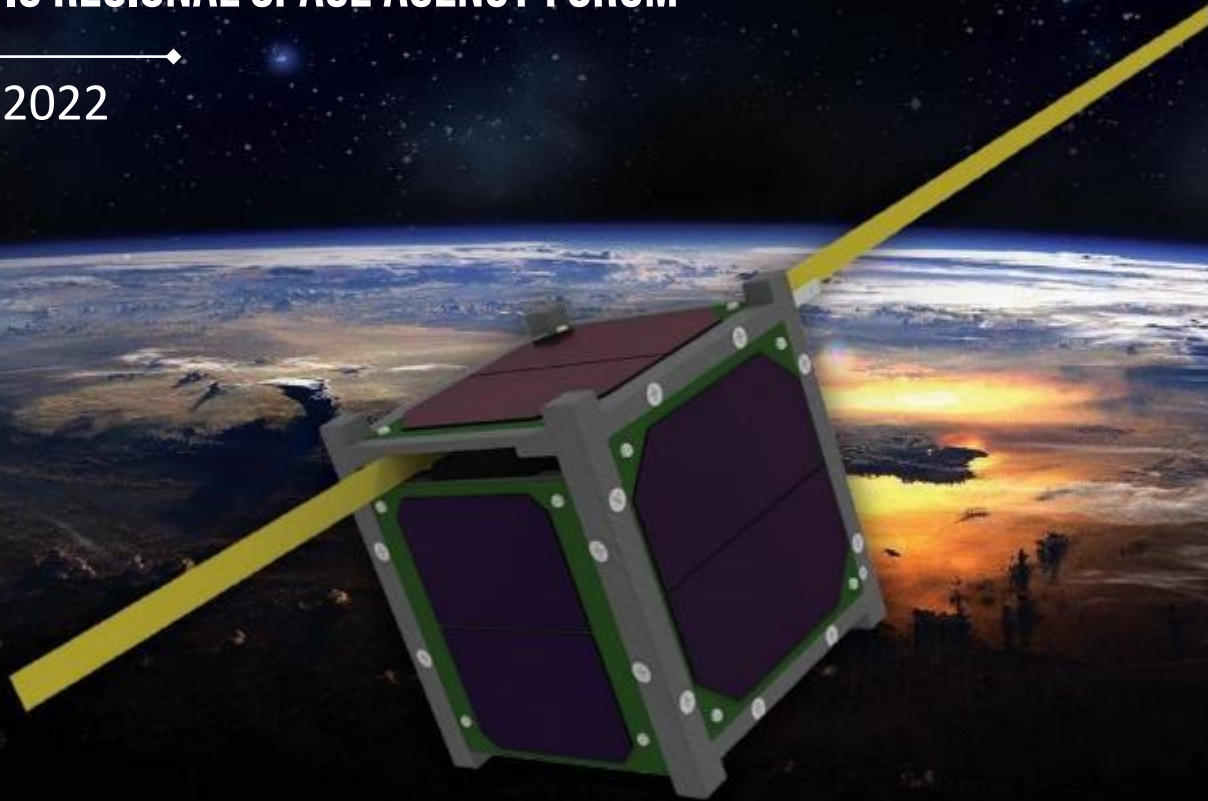


SURYA SATELLITE - 1

ON 28TH ASIA PACIFIC REGIONAL SPACE AGENCY FORUM

November 15th, 2022

Zulfa Dhiyaulhaq



UNITED NATIONS
Office for Outer Space Affairs



ORARI
Organisasi Amatir Radio Indonesia
Indonesia Amateur Radio Organization



PUDAK
SCIENTIFIC



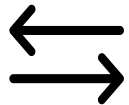
Outline



PROBLEM, SOLUTION, AND OBJECTIVE



MILESTONES AND RECENT UPDATES



BENEFIT AND IMPACT



Problem and Objective



Consist of 17.000+ Island

Located in Pacific Ring of Fire

Illegal Logging and Illegal Fishing



Mastery of satellite technology



Capacity building



Started from **Nanosatellite** at University Degree



2016 - APRSAF



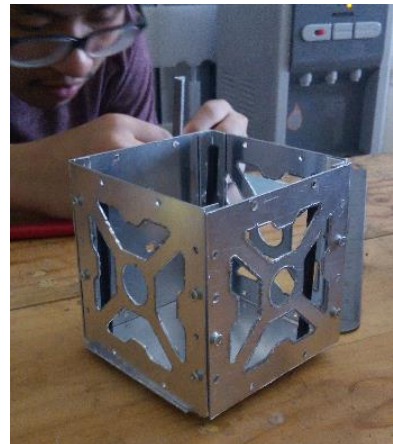
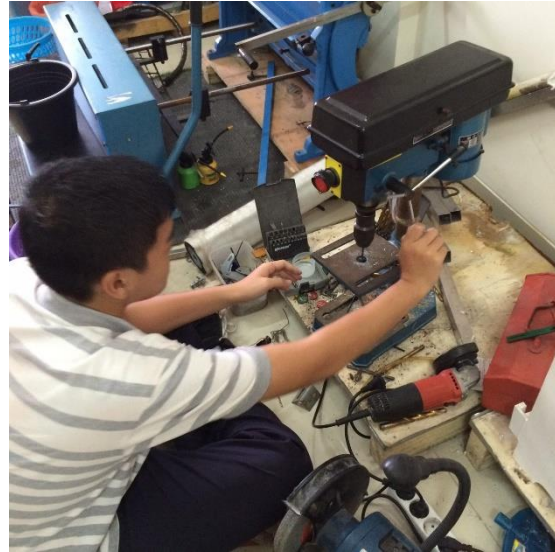
23RD
APRSAF

ASIA-PACIFIC REGIONAL
SPACE AGENCY FORUM
PHILIPPINES

First time getting full information of KiboCube
launch opportunity



2016 – 2017 : Design and Prototyping



2018 – KiboCube Program



UNITED NATIONS
Office for Outer Space Affairs



About Us ▾ Our Work ▾ Benefits of Space ▾ Information for... ▾ Events ▾ Space Object Register ▾ Documents ▾

For information only - not an official document

UNIS/OS/502
18 September 2018

PRESS RELEASE

Surya University of Indonesia selected for additional UNOOSA/JAXA KiboCUBE opportunity

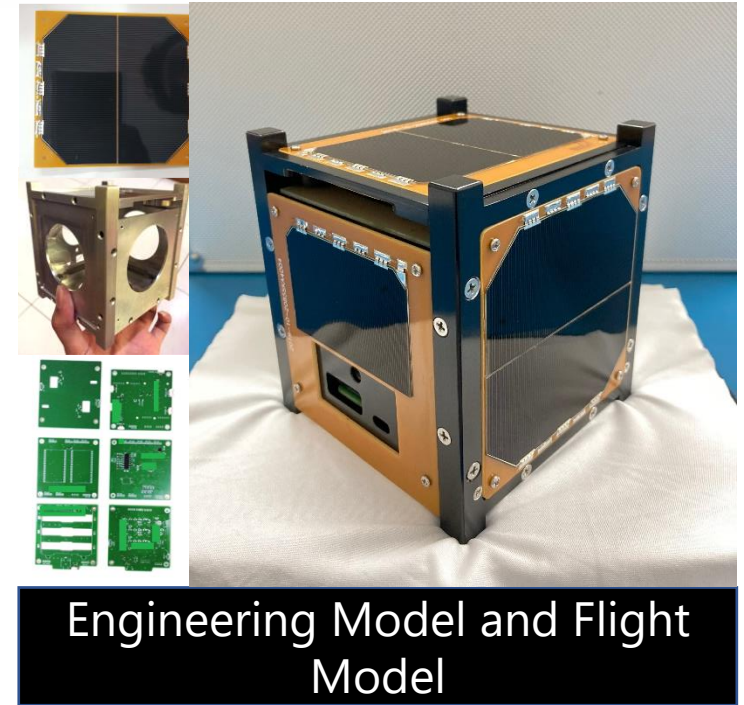
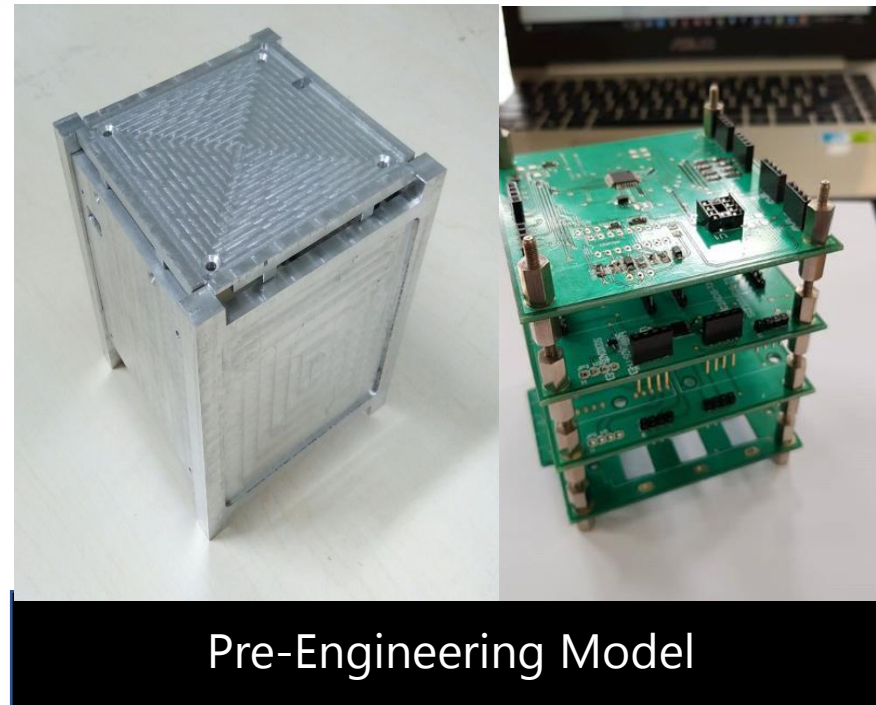
VIENNA, 18 September 2018 (UN Information Service) - The United Nations Office for Outer Space Affairs (UNOOSA) and the Japan Aerospace Exploration Agency (JAXA) have selected a team from Surya University in Indonesia for the UNOOSA-JAXA KiboCUBE programme.

The KiboCUBE programme was launched in 2015 by UNOOSA and JAXA to offer educational and research institutions from developing countries the opportunity to develop cube satellites (CubeSats) for deployment from the International Space Station (ISS).

SS-1 selected for KiboCube launch opportunity program.



2018 – 2022 Metamorph of the Satellite



Preliminary Design Model

COMPLETED

Engineering Model

COMPLETED

Pre-Engineering Model

COMPLETED

COMPLETED

Flight Model

Frequency Coordination



IZIN KHUSUS AMATIR RADIO DATA STASIUN AMATIR RADIO KHUSUS

NOMOR IZIN : K00000136A2010321
 NAMA PANGGILAN : YHIRES
 ALAMAT STASIUN : GRAND SERPONG MALL LT 1 UNIT F8 DAN F9 JLM THAMRIN KM 2.7 PANUNGGANGAN UTARA - PINANG
 DAYA PANCAR : MIN 15 WATT
 MAX 75 WATT
 PENGGUNAAN STASIUN : PENGEMBANGAN DAN EXPERIMEN
 BAND FREKUENSI : VHF 144 - 148 MHZ, UHF 430 - 438 MHZ
 MODE : FM, APRS, ASFK
 MASA LAKU : 22 Maret 2021 s/d 19 Maret 2022

DATA PENANGGUNG JAWAB

NAMA LENGKAP : MUHAMMAD ZULFA DHYAU'ULHAQ
 NAMA PANGGILAN (Callsign) : YG1AIF
 JENIS KELAMIN : LAKI-LAKI
 TEMPAT, TANGGAL LAHIR :
 PEKERJAAN : KARYAWAN SWASTA
 ALAMAT :



IZIN KHUSUS AMATIR RADIO DATA STASIUN AMATIR RADIO KHUSUS

NOMOR IZIN : K00000136L1000321
 NAMA PANGGILAN : YHISSS
 ALAMAT STASIUN : SATELIT ORBIT EKUATOR BUMI
 DAYA PANCAR : MIN 1 WATT
 MAX 5 WATT
 PENGGUNAAN STASIUN : SATELIT
 BAND FREKUENSI : PAYLOAD TX/RX : 145.825 MHZ, TT&C TX/RX : 435.825 MHZ
 MODE : FM, APRS, ASFK
 MASA LAKU : 20 Maret 2021 s/d 19 Maret 2022

DATA PENANGGUNG JAWAB

NAMA LENGKAP : SUHANDINATA
 NAMA PANGGILAN (Callsign) : YD1XBG
 JENIS KELAMIN : LAKI-LAKI
 TEMPAT, TANGGAL LAHIR :
 PEKERJAAN : KARYAWAN SWASTA
 ALAMAT :



Legal: Special Permit of Amateur Radio Station (IAR-Khusus) for Satellite and Ground Station have been obtained

COMPLETED



Hans P. Blondeel Timmerman, PB2T
 Satellite Advisor
 Nieuwe weg 21, 4031 MN Ingen, Netherlands
 Email: satcoord@iaru.org

Date: 10 September 2019

To Suhandinata YD1XBG

Dear Suhandinata,

In response to your request dated 1 August 2019 the IARU Satellite frequency coordination panel coordinated the following frequencies for **Nusantara-SS1-A (aka Surya Satellite-1)**.

- for APRS digipeater up- and downlink 145.825 MHz with emission designator 16K0F2D, EIRP 31.3 dBm
- for TT&C up- and downlink 435.825 MHz with emission designator 16K0F2D, EIRP 31.3 dBm

Planned launch date: March 2020.
 Licensing administration: Indonesia.
 Height and Orbit: Apogee 420 km, Perigee 380 km, inclination 51.71 degrees, period 1h 36min 26sec.
 Earth Command station: YHIRES

IARU has coordinated frequencies in bands allocated to the amateur satellite service. All frequencies in the amateur satellite service are shared frequencies.

Please inform me about the final launch date as soon as that information becomes available.

The IARU Satellite Frequency Coordination Panel encourages you to extend the service area of the satellite to outside Indonesia.

Best wishes for a successful project.

HP Blondeel PB2T

Hans Blondeel Timmerman
 IARU Satellite Advisor

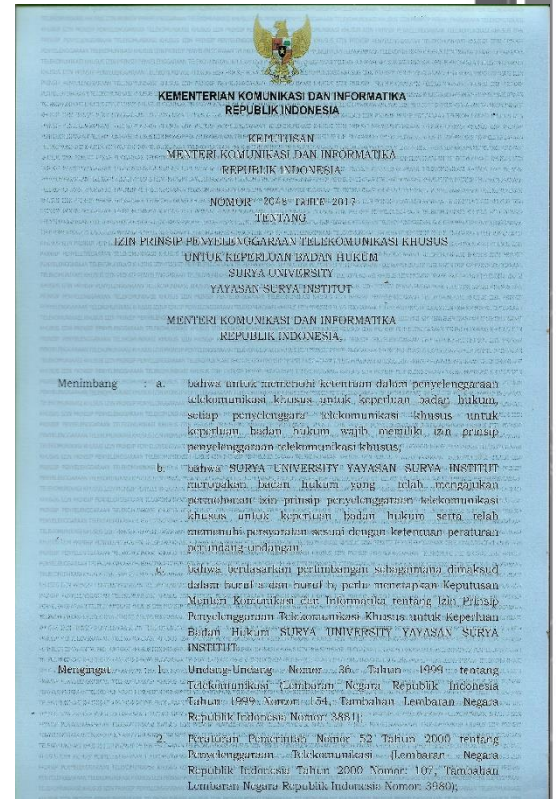


Visit www.iau.org/satellite

page 1

IARU Notification

COMPLETED



Izin Prinsip Telsus

COMPLETED

Satellite Filling Progress



UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
OFICINA DE RADIOCOMUNICACIONES

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RESEAU À SATELLITE SATELLITE NETWORK RED DE SATELITE		SECTION SPÉCIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N°	
NUSANTARA-SS1-A		APIA/12205	
BR IFIC / DATE BR IFIC / FECHA		2885 / 11.12.2018	
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	INS	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	NGSO
NOMBRE D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN		118545187	
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON INFORMATION RECIBIDA POR LA OFICINA EL			
28.09.2018			

Ces renseignements reçus par le Bureau des radiocommunications, en application du numéro 3.192 du Règlement des radiocommunications, sont publiés conformément au numéro 3.28.

The information, received by the Radiocommunication Bureau pursuant to No. 3.192 of the Radio Regulations, is published in accordance with No. 3.28.

Esta información, recibida por la Oficina de Radiocomunicaciones en aplicación del número 3.192 del Reglamento de Radiocomunicaciones, es publicada de acuerdo con el número 3.28.


Une administration qui estime que des brouillages incompatibles peuvent être causés à ses réseaux ou à ses systèmes de satellites existants ou en projet contre ceux de l'administration ou à l'occasion de la publication des renseignements, ses observations, après copie au Bureau des radiocommunications, dans le délai indiqué ci-dessous.

Any administration which believes that unacceptable interference may be caused to its existing or planned satellite networks or systems shall communicate its comments to the publishing administration, with a copy to the Radiocommunication Bureau by the deadline indicated below.

Cualquier administración que estime que se podría causar interferencia perjudicial a sus redes o sistemas de satélites existentes o planificados deberá comunicar sus comentarios a la administración que publica, con copia a la Oficina de Radiocomunicaciones, en el plazo que se indica más abajo.

DATE LIMITE POUR LA RECEPTION DES COMMENTAIRES EXPIRY DATE FOR THE RECEIPT OF COMMENTS FECHA LIMITE PARA LA RECEPCION DE LOS COMENTARIOS	11.04.2019
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UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
OFICINA DE RADIOCOMUNICACIONES

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RESEAU À SATELLITE SATELLITE NETWORK RED DE SATELITE		SECTION SPÉCIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N°	
NUSANTARA-SS1-A		API/B/1061	
BR IFIC / DATE BR IFIC / FECHA		2896 / 28.05.2019	
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	INS	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	NGSO
NOMBRE D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN		118545187	
RÉFÉRENCE DE LA SECTION SPÉCIALE (BR IFIC / DATE) SPECIAL SECTION REFERENCE (BR IFIC / DATE) REFERENCIA DE LA SECCIÓN ESPECIAL (BR IFIC / FECHA)			
APIA/12205 (BR IFIC 2885 / 11.12.2018)			
1. La présente Section spéciale est publiée conformément au numéro 3.3 du Règlement des radiocommunications et concerne la demande de coordination publiée dans la Section spéciale APIA indiquée ci-dessous.			
1. The Special Section is published in accordance with No. 3.3 of the Radio Regulations, in respect of the request for coordination published in the APIA Special Section referenced above.			
1. Esta Sección Especial se publica de conformidad con lo dispuesto en el número 3.3 del Reglamento de Radiocomunicaciones, en lo que respecta a la solicitud de coordinación publicada en la Sección Especial APIA antes citada.			
2. Les administrations qui ont soumis des observations au titre du numéro 3.3 dans le délai de quatre mois suivants la date de publication de la Section spéciale APIA publiée, sont indiquées ci-dessous et le tableau contient un résumé de ces observations.			
2. Administrations that have submitted comments under No. 3.3 within four months of the date of publication of the mentioned APIA Special Section are listed below and the table contains a summary of the comments.			
2. Las administraciones que han presentado comentarios conforme al número 3.3 dentro de un plazo de cuatro meses a partir de la fecha de publicación de la Sección Especial APIA mencionada, se indican a continuación y en el cuadro se presenta un resumen de los comentarios.			
ALG, AUS, CZE, D, E, EGY, F, IRN, J, KAZ, OMA, PAK, QAT, RUS, USA, VTN			

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On progress of submission of Form Part 1S

API-A has been obtained

API-B has been obtained

Launch Notification

API-A

COMPLETED

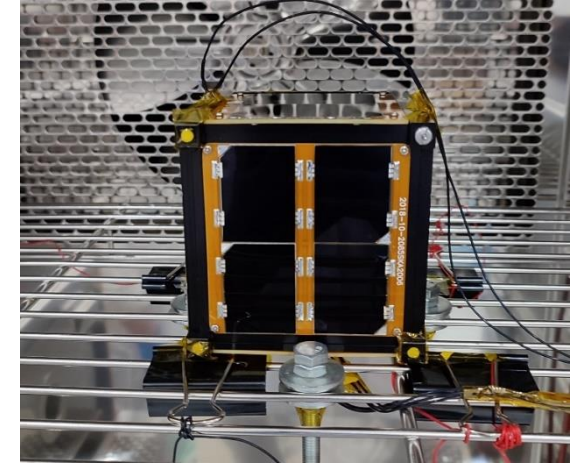
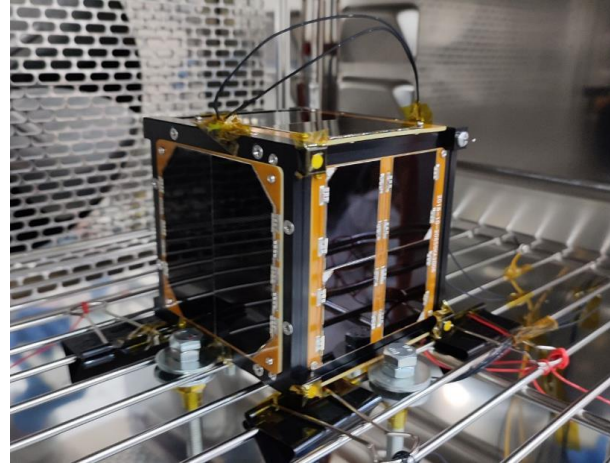
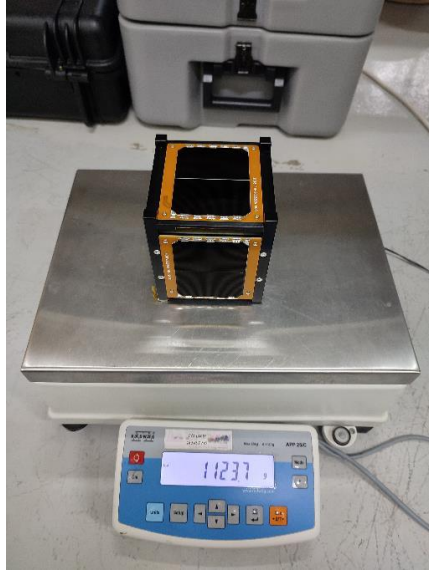
Launch Notification

COMPLETED

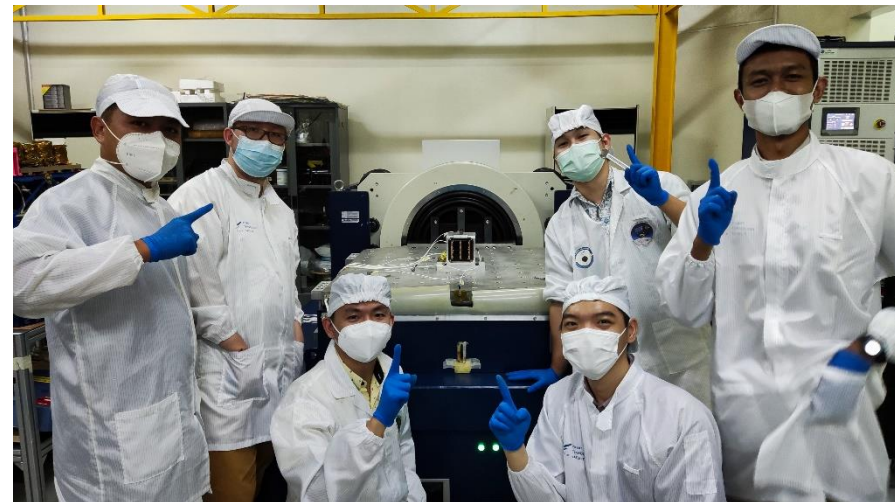
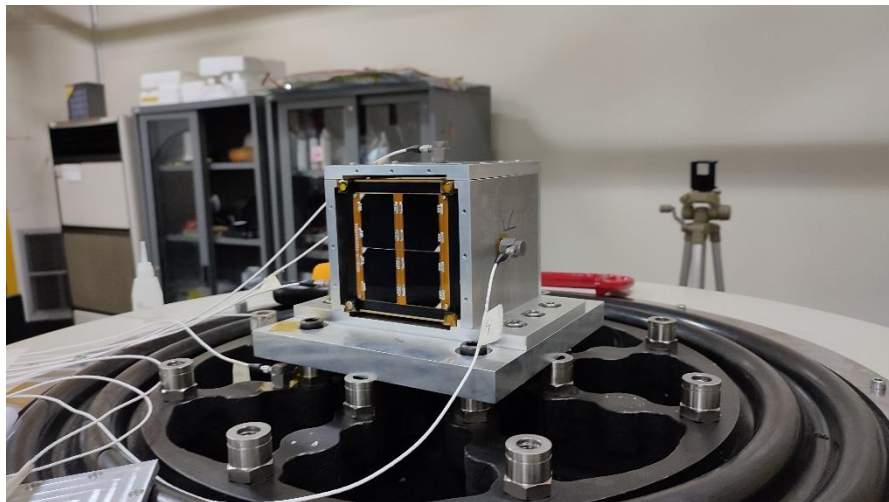
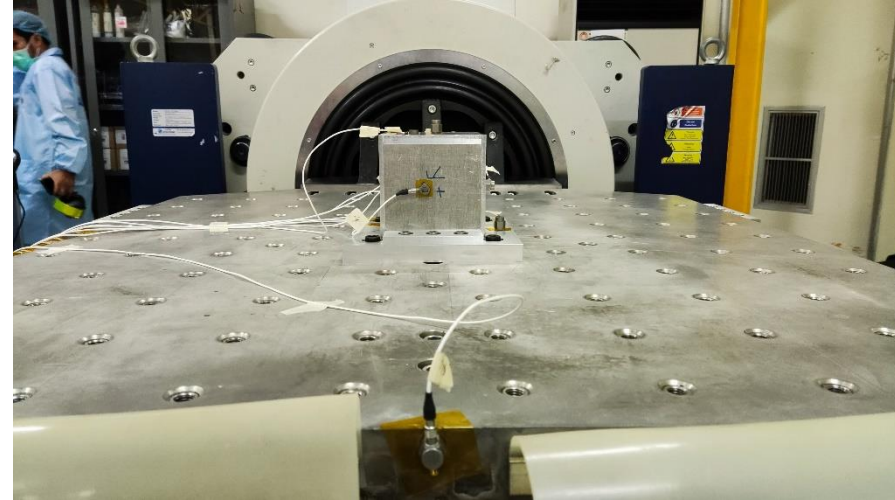
API-B

ON GOING

Vacuum and Thermal Test



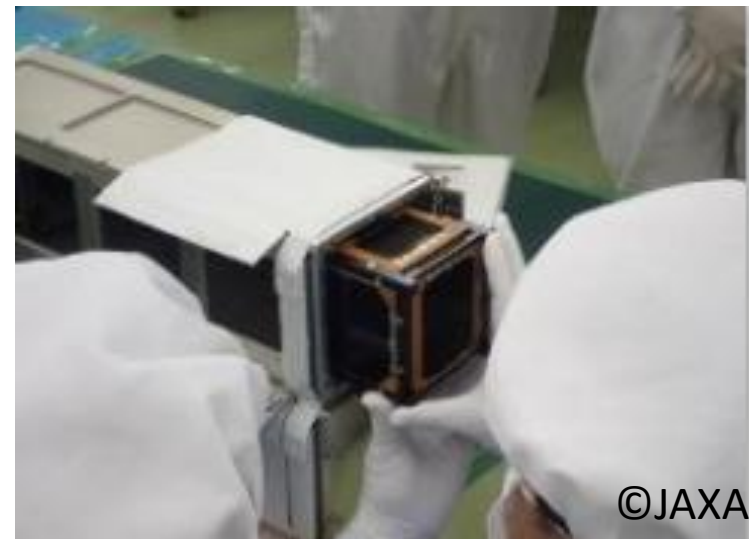
Vibration Test



↔ Satellite Handover

- The satellite Hand over : July 8th
- Installment to J-SSOD : July 8th

Successfully accepted and comply to launch by JSSOD Sub-Con (IHI) and JAXA

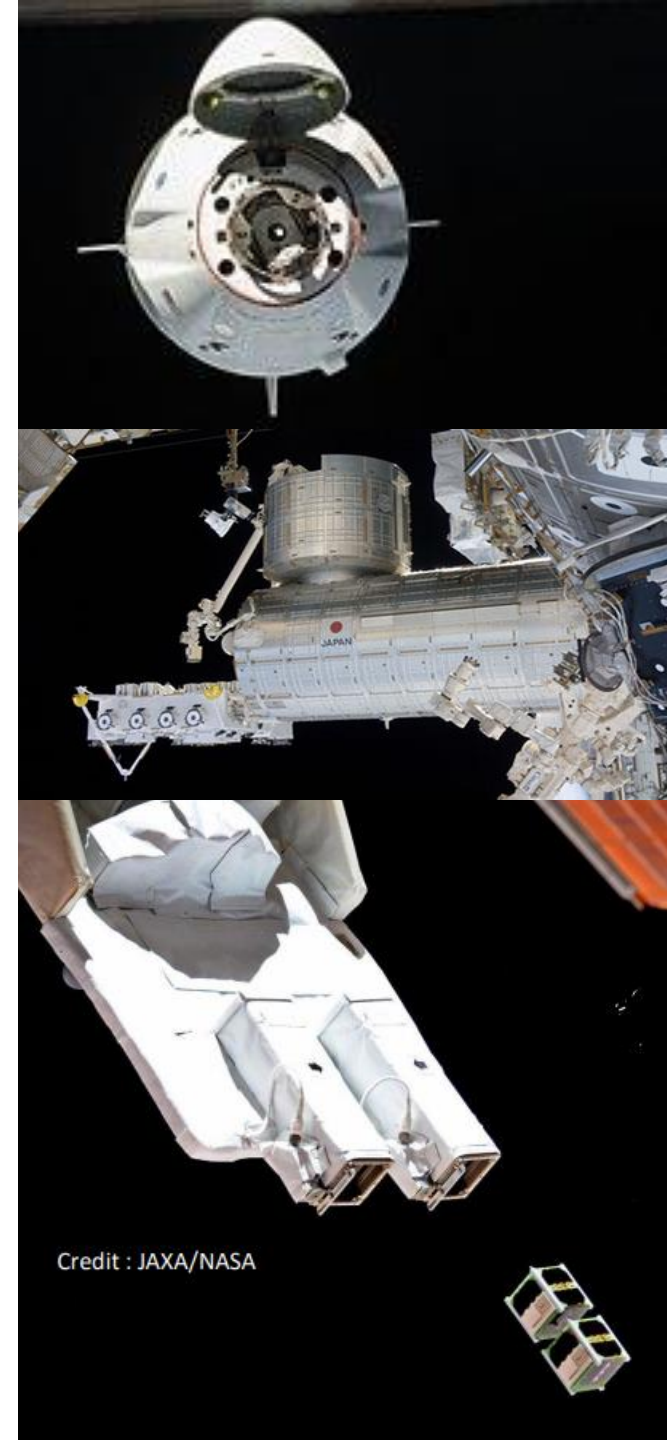




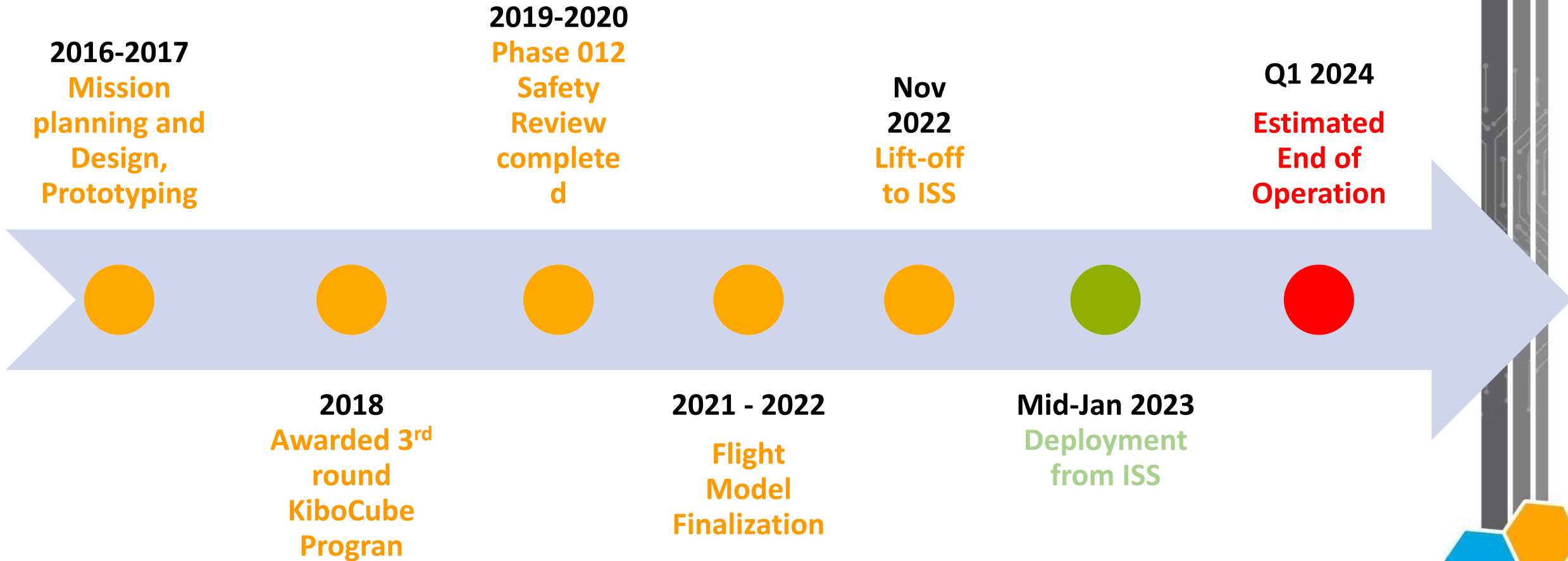
Launch and Deployment

Update 10 Nov 2022

- Flight : SpaceX CRS-26
- Spacecraft/Rocket : Cargo Dragon/Falcon 9
- Launch site : Kennedy Space Center, LC-39A
- Important dates:
 - 21 Nov 2022** : Satellite Launch from USA to ISS
 - Mid Jan 2023** : Deployment from ISS



Milestone



↔ Satellite Early Orbit Phase (EOP) Plan



Progress

- Total 10 ground station listed as potential satellite signal receiver
- EOP planned to be done in 21 days (telemetry monitoring + in-orbit testing)
- Preliminary test-procedure has been drafted

Next step

- To plan deployment event preparation (both technical and ceremonial)





Ground Station



SWR Measurement – 30 August 2022



Antenna Construction - 5 September 2022

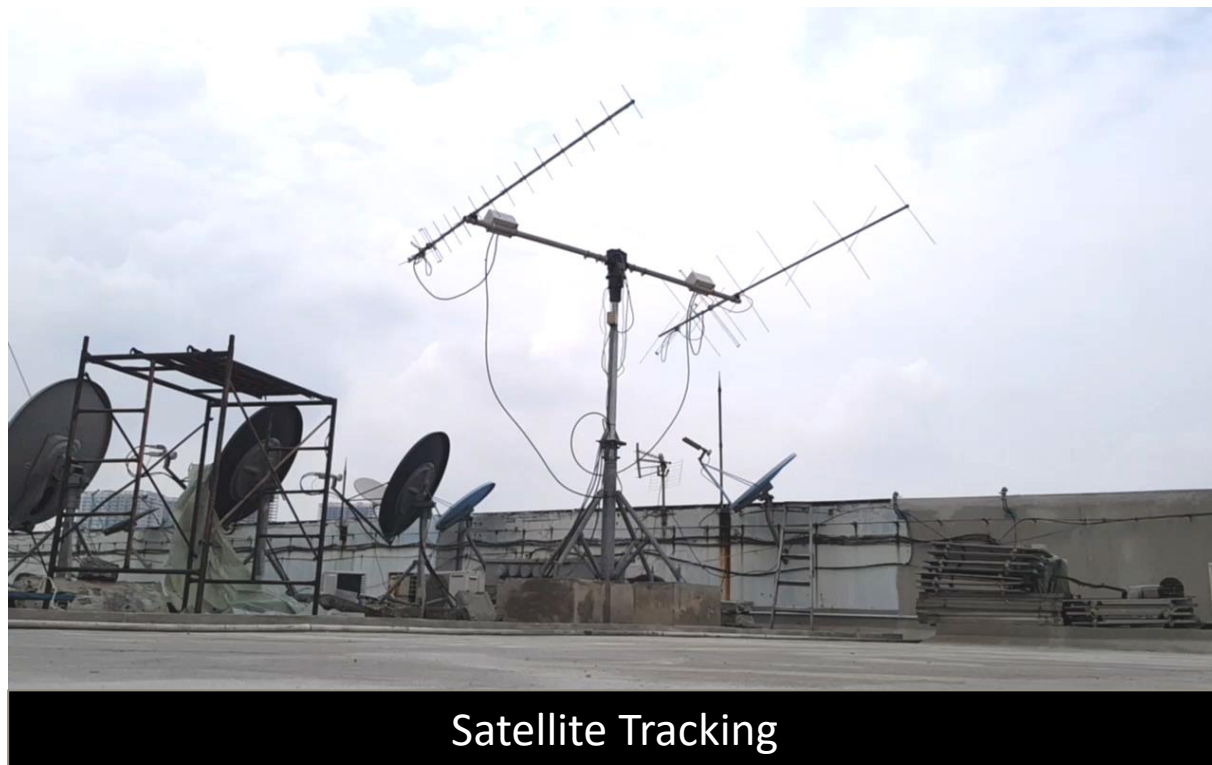


Antenna Installed – 13 September 2022





Ground Station



Satellite Tracking

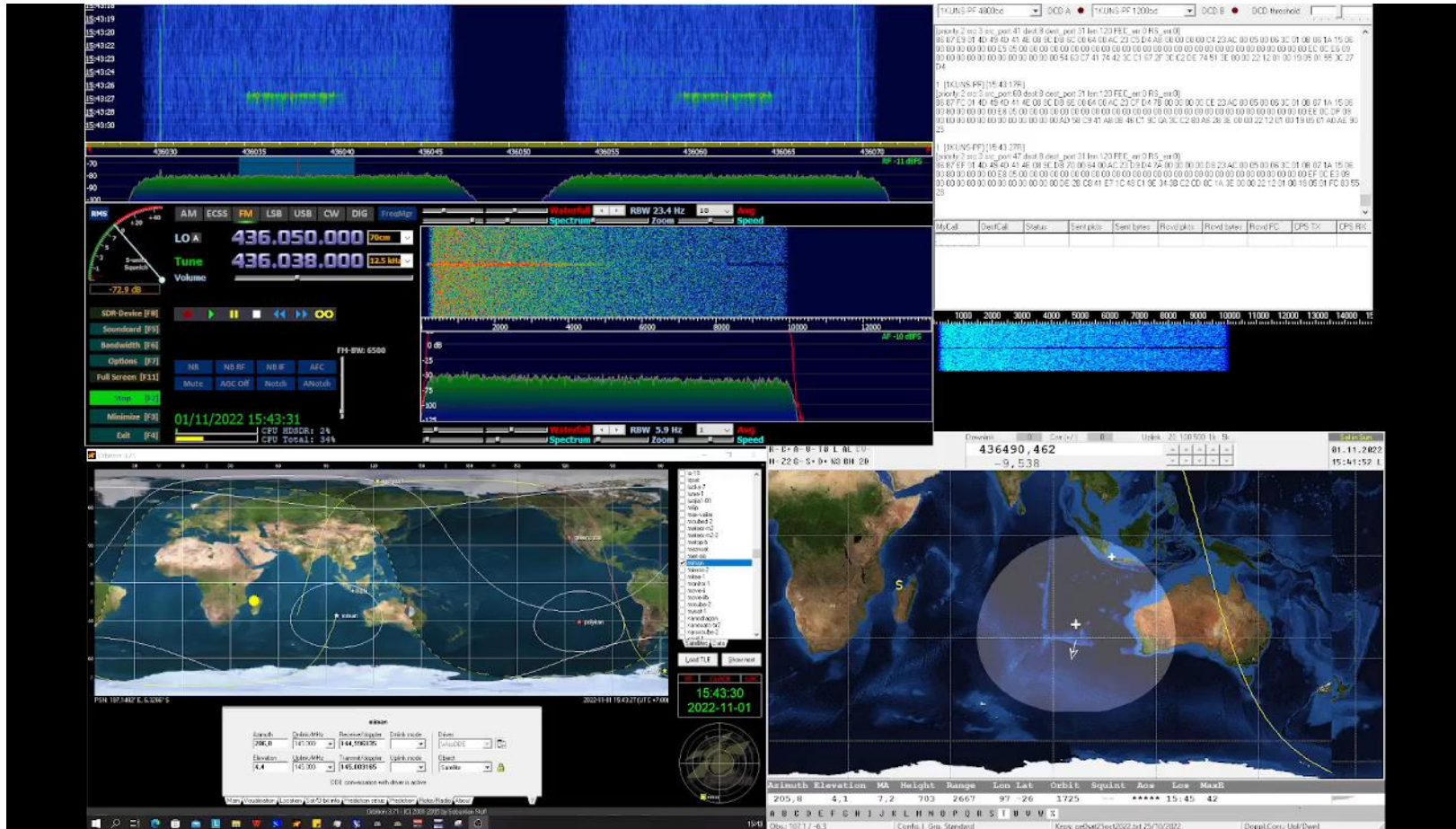


AMSAT-ID visit





Ground Station



Ground station has been able to consistently receive satellite signal
So far 33 satellite attempt successfully received and 5 satellites have been successfully decoded MIMAN, RANDEV, IRIS-A, CUTESAT, LEDSAT, GREENCUBE



THANK YOU



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Office for Outer Space Affairs



ORARI
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Indonesia Amateur Radio Organization

