

IAF SPACE OPERATIONS SYMPOSIUM (B6)
Ground Operations - Systems and Solutions (1)

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EMIRATES MARS MISSION (GROUND SEGMENT) – ENABLING MAXIMUM SCIENCE RETURN
THROUGH THE EFFICIENT USE OF RE-TRANSMIT REQUESTS**Abstract**

The United Arab Emirates (UAE) announced the Emirates Mars Mission (EMM), the first deep space mission in the history of the Middle East and North Africa region in 2014. The mission targets making unique and important discoveries that contribute to the ongoing work of the global space science community, through sending an unmanned probe, called Hope Probe to Mars. The Hope Probe was launched on July 20th 2020 and entered the Mars Orbit on February 9th 2021. The Hope Probe carries three payloads to study the Martian atmosphere named EXI, EMUS, and EMIRS. Emirates eXploration Imager (EXI) is measuring the properties of water ice and abundance of ozone in Mars's lower atmosphere using a multi-band camera that captures images of Mars in the UV and visible bands. Emirates Mars Ultraviolet Spectrometer (EMUS) is far-ultraviolet imaging spectrograph that measures the variability of oxygen, hydrogen and carbon monoxide in the upper atmosphere of Mars. Emirates Mars Infrared Spectrometer (EMIRS) is an interferometric thermal infrared spectrometer that is measuring the global thermal structure and abundances of water ice, water vapor and dust in Mars's lower atmosphere. To ensure the maximum science return from the Hope Probe, the Mission Operations team developed a unique software tool, called Solid State Recorder (SSR) Accounting that accounts data received from the observatory after performing an SSR playback during a ground contact. The SSR Accounting tool performs the accounting process on SSR partitions by tracking incomplete or corrupted page addresses. The tool will subsequently generate a retransmit request, which is a command product that the Hope Probe will execute to replay missing page addresses. The generation process is designed to be in an optimized manner to prevent inefficient retransmitting.