

**STUDY FOR THE FUTURE GMS/MTSAT  
DATA COLLECTION SYSTEM(DCS)**

This document refers to the action 26.32 and 26.33 of CGMS XXVI.

It is informed that the studies for the possible reconfiguration of the GMS-DCS to narrowed bandwidth channels and for the development of higher-rate DCP on GMS/MTSAT were started.

Action Required:

None

## **STUDY FOR THE FUTURE GMS/MTSAT DATA COLLECTION SYSTEM (DCS)**

### **1 THE POSSIBLE RECONFIGURATION OF THE GMS/MTSAT-DCS TO NARROWED BANDWIDTH CHANNELS**

JMA started to study the possible reconfiguration of the GMS-Data Collection System (DCS) with narrowed bandwidth channels in accordance with the action 26.32 in CGMS XXVI.

This study aims at narrowing bandwidth from 3.0 kHz to 1.5 kHz per channel. The number of GMS DCP channels would be double, if 1.5 kHz DCP bandwidths would be introduced on GMS/MTSAT DCS.

It is very important that the transmit frequency of each DCP with narrowed bandwidth channel is accurate and stable. The local frequency of a receiver should also be stable.

If Temperature Control Crystal (X'tal) Oscillator (TCXO) mounted on DCPs supports the transmit frequency stability of  $1.5 \times 10E-7$ , it would be possible to allocate a required occupied bandwidth of 1.38 kHz in 1.5 kHz bandwidths under the condition that the frequency tolerance in a spacecraft can be canceled by ground system at CDA station. Here, the frequency tolerance covers both the dizziness of transmit frequency and local frequency stability of a receiver in a spacecraft transponder.

### **2 THE DEVELOPMENT OF HIGHER-RATE DCP ON GMS/MTSAT**

The USA presented the second draft of "300/1200 bps GOES DCP Certification Standard" in CGMS XXVI. JMA studied the possibility of the DCP transmission with 300/1200 bps data rates on GMS Data Collection System (DCS) in accordance with the action 26.33 in CGMS XXVI.

This study is based on the CGMS XXVI JPN-WP-18 "DCP relay system operating at higher data rates". As a result of the study, JMA confirmed that the DCP with 300/1200 bps data rates on GMS/MTSAT DCS had no problem on the link budget for GMS/MTSAT DCS.

Regarding an impact on the GMS/MTSAT ground system, it was confirmed that an existing computer system can follow 300 bps data rates, but not 1200 bps data rates. JMA also needs to replace the DCP demodulation equipment to follow also 300/1200 bps data rates.

As a demand of higher-data rate DCP users is increasing lately, JMA will continue further study for the development of higher-rate DCP on GMS/MTSAT DCS.