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**PLAN FOR DEVELOPING CHINESE FY-2C  
GEOSTATIONARY METEOROLOGICAL SATELLITE**

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**Summary and purpose of paper**

To inform CGMS that China is continuing with FY-2 satellite program. FY-2 C will be launched at the end of 2003.

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## **PLAN FOR DEVELOPING CHINESE FY-2C GEOSTATIONARY METEOROLOGICAL SATELLITE**

### **1 Introduction**

The geo-stationary meteorological satellite FY-2C will replace FY-2B that was launched on June 25, 2000 and stationed at 105<sup>0</sup>E. It is planned that FY-2C will be launched at the end of 2003.

The mission of FY-2C is similar to FY-2B:

- Acquiring visible, infrared and water vapor cloud images;
- Re-transmitting S-VISSR images and low resolution images;
- Data collection;
- Space environment monitoring.

### **2 Major improvement for FY-2C**

#### **2.1 The number of spectral channels of Visible and Infrared Spin Scan Radiometer (VISSR) will be increased from 3 to 5.**

- The infrared long wave window 10.5-12.5•m will be split into two channels:10.3-11.3•m and 11.5-12.5•m, so as to improve the capability of detecting and calculating water vapor contents, to support semi-transparent ice cloud detecting, and to have a better accuracy of atmospheric absorption correction in order to improve sea temperature estimation.
- To increase the temperature resolution of the infrared channels and the signal/noise ratio of the visible channels, and to support the application of the split window.
- To have an additional 3.5-4.0•m mid-infrared window channel. As this channel is less affected by water vapor contents, when it combines with IR long wave window channel, more accurate surface temperature can be acquired. The channel is sensitive to heat temperature therefore it is helpful for detecting warm targets on surface. It is also used to obtain information of low-level cloud and fog. It is a good help to distinguish low-level cloud and ice and snow coverage.
- The data quantization level of the IR channel will be increased from 256 to 1024, the WV channel remains 256.

#### **2.2 Power supply of the satellite will be increased to support the eclipse management.**

#### **2.3 The S-Fax broadcasting function will be cancelled and the frequency of 1699.5 MHz will not be used.**

#### **2.4 WEFAX will be replaced by LRIT.**

### 3. Specifications of VISSR of FY-2C

S-VISSR format is compatible with FY-2A and FY-2B

The spin rate of FY-2C is changed from 100rpm (of FY-2A and 2B) to 98rpm in order to have enough time to transfer the raw data and S-VISSR in a cycle. The data format of S-VISSR is completely compatible with FY-2A and FY-2B. The users of MDUS and SDUS need not to do any change to receive the 3 channels of FY-2C directly. If users want to get completely the 5 channels' data, they should only modify the processing software. The full disk data will take 25.5 minute, rather than 25 minute.

#### 3.1 Spectral channels of VISSR are shown in table 1.

**Table 1. The spectral channels of VISSR**

Channel	Wavelength (•m)	
	FY-2 A,B	FY-2 C
VIS	0.50-1.05	0.50-0.75
IR1	10.5-12.5	10.3-11.3
IR2		11.5-12.5
IR3		3.5-4.0
WV	6.3•7.6	6.3-7.6

#### 3.2 Major characteristics of VIS channels are shown in table 2.

**Table 2. The characteristics of VIS channels of VISSR**

Item	Characteristics	
	FY-2 A, B	FY-2 C
Wavelength (•m)	0.50-1.05	0.50-0.75
FOV(•r)	40	35
Space resolution (km)	1.44	1.25
Dynamic range	0-95%	0-98%
S/N	6.5 (2.5%)	1.5 (0.5%)
	43 (95%)	50 (95%)
Number of detectors	4 (main) + 4 (alternate)	4 (main) + 4 (alternate)
Quantization level	64	64
Calibration	Cool-space images and solar image to realize in-orbit calibration	Same as FY-2 A,B

### 3.3 Major characteristics of IR, WV channels are shown in table 3.

**Table 3. The characteristics of IR, WV channels of VISSR**

	FY-2 A,B		FY-2 C			
	IR	WV	IR1	IR2	IR3	WV
Wavelength(•m)	10.5-12.5	6.3-7.6	10.3-11.3	11.5-12.5	3.5-4.0	6.3-7.6
FOV (•r)	160	160	140	140	140	140
Space resolution(km)	5.76	5.76	5	5	5	5
Dynamic range	180•330K	190•290K	180•330K			180-280K
Temperature resolution	0.6K	1.0K	0.4-0.2K	0.4-0.2k	0.5-0.3k	0.6-0.5k
Number of detectors	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)
Quantization level	256	256	1024	1024	1024	256
Calibration	On board blackbody calibration, once every 3 disks		The ground calibration accuracy is 1K.Cool space and planet calibration is used for on-board calibration, once every 2 disks.			

#### 4. FY-2C Planned for 2003

The manufacture of FY-2C has been carried out since May 2001. It is scheduled to leave the factory in December 2003 and to be launched in spring of 2004.