

## **VIDEO TRANSMITTERS AND RECEIVERS - Item No.**

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Special Provision No. 683S04

September 2007

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### **1. SCOPE**

This Special Provision covers the requirements for the installation and testing of the Video Transmitters and Receivers. A Video Transmitter and Receiver shall be interconnected by optical fibre to form a video link.

The video link is to provide point-to-point transmission and reception of a full motion NTSC baseband video signal using an optical fibre as the transmission medium.

### **2. REFERENCES**

This Special Provision refers to the following standards, specifications or publications:

#### **Electronic Industries Alliance / Telecommunications Industry Association:**

EIA/TIA-250-C           Electrical Performance for Television Transmission Systems

EIA-310-D              Cabinets, Racks, Panels and Associated Equipment

### **3. DEFINITIONS – Not Used**

### **4. DESIGN AND SUBMISSION REQUIREMENTS**

#### **4.1 Submission Requirements**

The Contractor shall supply the specification sheets for the video transmitters and receivers, for approval prior to ordering.

### **5. MATERIALS**

#### **5.1 Video Transmitters**

##### **5.1.1 General**

5.1.1.1           The video transmitter shall accept any NTSC baseband video signal and convert it into a signal suitable for launching into an optical fibre.

5.1.1.2           The video transmitter shall accept a composite input video signal at a level of 1.0 V + 3 dB peak to peak referenced sync tip to reference white and shall continue to operate with an input level of 1.0 V + 6 dB.

5.1.1.3           The input impedance shall be 75 ohms and the return loss shall be at least 30 dB in compliance with EIA standard EIA/TIA-250-C for an unbalanced-to-ground connection.

5.1.1.4           The optical emitter shall be coupled to an ST style compatible coupling or panel mount receptacle mounted on the video transmitter.

- 5.1.1.5 The video transmitter shall have visible panel indicators for “Primary power ON” and “Power supply failed”.
- 5.1.1.6 The video transmitter shall include all mounting hardware and shelves necessary to mount it in the EIA standard 480 mm equipment rack in each cabinet.
- 5.1.1.7 The printed circuit boards shall be conformal coated or mounted in sealed containers.
- 5.1.1.8 The video transmitter shall accept the video input through a stainless steel bulkhead female BNC style electrical connector.
- 5.1.1.9 The video transmitter shall have an optical emitter, which shall have a centre wavelength at, or around 1310 nm at 25° C.
- 5.1.1.10 The video transmitter launch power shall be defined as the power launched into one metre of graded index optical fibre with a nominal core dimension of 62.5 µm, a nominal cladding dimension of 125 µm and a theoretical numerical aperture of 0.275.
- 5.1.1.11 The video transmitter shall include a power supply. The power supply may be external to the rest of the video transmitter components.
- 5.1.1.12 The power supply shall receive its power from a 120 VAC 60 Hz 5-15R power receptacle.
- 5.1.1.13 The power supply shall supply all voltages required by the video transmitter for operation.

## **5.1.2 Long Range Video Transmitters**

- 5.1.2.1 The long range video transmitter shall pulse frequency modulate (PFM) the baseband video signal onto an optical fibre for transmission to the long range video receiver.
- 5.1.2.2 The long range video transmitter launch power shall be at least 22 dB greater than the long range video receiver sensitivity.
- 5.1.2.3 The video transmitter shall operate in conjunction with the long range video receiver through an optical communication channel with an optical bandwidth of 70 MHz while maintaining the video receiver performance specifications.

## **5.1.3 Short Range Video Transmitters**

- 5.1.3.1 The short range video transmitter shall pulse frequency modulate (PFM) the baseband video signal onto an optical fibre for transmission to the short range video receiver.
- 5.1.3.2 The short range video transmitter launch power shall be at least 10 dB greater than the short range video receiver sensitivity.
- 5.1.3.3 A long range video transmitter may be substituted for a short range video transmitter if the short range video receiver is also substituted with a long range video receiver.

## **5.2 Video Receiver**

### **5.2.1 General**

- 5.2.1.1 The video receiver shall receive the optical signal launched into an optical fibre by the video transmitter.
- 5.2.1.2 The receiver shall be coupled to an ST style compatible connector or panel mount receptacle mounted on the video receiver.
- 5.2.1.3 The video receiver shall output an electrical baseband NTSC video signal through a BNC type connector.
- 5.2.1.4 The video receiver shall have a dynamic range of at least 10 dB and shall have an adjustable range of at least 15 dB, which may be complied with by use of optical attenuators.
- 5.2.1.5 The video receiver sensitivity shall be defined as the minimum optical power required to be received by the Video Receiver from the video transmitter to operate at or better than the minimum video link performance specifications.
- 5.2.1.6 Should the Contractor choose to power multiple video receiver cards from one power supply, a redundant power supply shall be provided. A redundant power supply shall consist of two individual power supplies designed so that if one supply fails the remaining power supply will automatically provide sufficient power to operate all modules.

**6. EQUIPMENT – Not Used**

**7. CONSTRUCTION**

- 7.1 Video transmitters and receivers shall be installed at the cabinet locations and at the TOC.
- 7.2 The Contractor shall connect the correct Drop Cable to the optical connector on the video transmitters and video receivers.
- 7.3 The drawings show the equipment space envelope allocated to the video transmitters for typical cabinet layouts. The Contractor shall coordinate the physical space required by the video transmitter with the allocated space.
- 7.4 The Contractor shall connect the video transmitter power supply to one of the 115 VAC 60 Hz power distribution panel receptacles reserved for communications equipment in the cabinet.
- 7.5. The fibre optic links for each video link shall have been tested and verified in accordance with the Contract prior to video receiver or video transmitter installation.
- 7.6 The Contractor shall neatly train all drop cables together when routing them along the same path and shall neatly train them along the support rails of the equipment rack.
- 7.7 No cables shall be installed with a bending radius less than the manufacturer's minimum recommended bending radius.
- 7.8 The Contractor shall integrate the video transmitter with the CCTV equipment and communication network.

7.9 The Contractor shall integrate the video receiver with the CCTV display equipment and communication network.

**7.10 Quality Control**

The Contractor is responsible for all testing and documentation required to establish approval and acceptance of installation and operation of this equipment. The framework of the approval process shall be as specified elsewhere in the Contract Documents.

The following table details the clauses within this Special Provision, which are to be validated through the PIT, POP, and SIT processes as indicated:

CLAUSE	PIT	POP	SIT
5.1.1.1	√	√	
5.1.1.2	√	√	
5.1.1.3	√		
5.1.1.5	√		
5.1.2.1	√	√	
5.1.2.2	√		
5.1.2.3	√	√	
5.2.1.1	√	√	
5.2.1.3	√	√	
5.2.1.4	√		
7.8			√
7.9			√

**8. QUALITY ASSURANCE – Not Used**

**9. MEASUREMENT FOR PAYMENT**

Measurement for each video transmitter and receiver pair is by Plan Quantity as may be revised by Adjusted Plan Quantity.

**10. BASIS OF PAYMENT**

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment and Material required to do the work including delivery, installation, testing and the production of all drawings, text and test results, except SIT which is paid for under a separate item.