

## B. Link Transmission Formats

### B.1 AWS (Austrian Weather Service) Format

This format uses an 8-bit data stream and can transmit an image of and rectangular product up to 256 pixels high with compression for horizontal runs of the same data. For flexibility, IRIS supports a mapping table to convert the IRIS product color levels to the transmitted levels. Note the expanded color scales with more than 16 colors are not available for link outputs. Throughout this discussion, hexadecimal notation is often used, and those numbers are denoted with a suffix of "h." For example, 12h means 12 base 16, or 18 base 10. Also for this discussion, all line and pixel numbers are origin 1. The upper left pixel is line 1, pixel 1.

All picture transmissions begin with a station ID code, followed by a time code, followed by the data section, followed by the end-of-image code. The data section consists of a series of line number codes, followed by compressed data. Data for a line ends when the next line number code is encountered. All unfilled pixels are assumed to be of the value 0. If a line is repeated in the data stream, any new data overwrites old data. If a line number code is never transmitted, the line is assumed to be filled with zeros.

The meaning of a byte is generally found by looking at the upper 4-bits. If those bits are a value between 0h and Eh, insert the data value in the low 4-bits between 1 and 15 times. If those bits are an Fh, it can be interpreted as one of the following special commands.

#### **FFh — Line number follows in the next byte**

The following byte contains one less than the line number for data that follows. For example, FFh 0Ch means line 13 follows. This command also implies that the previous line is zeroed from the current position to the end.

#### **FEh — Extended data repeat command, information in next two bytes**

This command is the same as the normal data repeat command, except that the repeat count is 12 bits. The high 8 bits of the repeat count are in the following byte, and the low 4 bits are in the high 4 bits of the third byte. The data value is in the low 4 bits of the third byte. For example, FEh 12h 34h means insert the data value 4 292 times.

#### **FBh — Station identifier follows in next byte**

The station identifier is configured from the **setup** utility. If multiple FBh commands are received for a given image, the last one takes effect. There must be at least one FBh command in each image. This command allows data from multiple sites to be merged on one transmission line. IRIS transmits only host site data.

### **FAh — Date and time follows in next 18 bytes**

This command specifies the time of the data in the current image. If multiple FAh commands are received for a given image, the last one takes effect. There must be at least one FAh command in each image. The 18-byte string contains a text version of the time, such as "10-MAY-91 15:45:00." There is one space between the year and hours, and all numeric fields are two digits, with leading zeros, if required. The month contains the first three letters of the English month name.

### **F8h — End-of-Image**

This indicates that an image has been completely sent. Any future transmissions relate to another image. After an F8h command and before an FFh command, only FBh, FAh commands are processed. All other commands are ignored.

## **B.2 HKO (HongKong Observatory) Format**

This format uses an 8-bit data stream and can transmit an image of and rectangular product up to 255 pixels high with compression for horizontal runs of the same data. For flexibility, IRIS supports a mapping table to convert the IRIS product color levels to the transmitted levels. Note the expanded color scales with more than 16 colors are not available for link outputs. Throughout this discussion, hexadecimal notation is often used, and those numbers are denoted with a suffix of "h." For example, 12h means 12 base 16, or 18 base 10. Also for this discussion, all line and pixel numbers are origin 1. The upper left pixel is line 1, pixel 1.

All picture transmissions begin with a picture type ID code, followed by a header code, followed by the data section, followed by the end-of-image code. The data section consists of a series of line number codes, each followed by compressed data. Data for a line ends when the next line number code is encountered. All unfilled pixels are assumed to be of the value 1. If a line is repeated in the data stream, any new data overwrites old data. If a line number code is never transmitted, the line is assumed to be filled with ones.

The only use of a zero byte is to immediately proceed on the the commands below. This make it easy to sync up to the data stream.

## 00h 01h — Picture type follows in the next byte

**Table B-1: HKO Picture types**

1	All PPIs			
2	CAPPI	>2.5 km height	<96 km range	data not velocity
3	CAPPI	all heights	<96 km range	data is velocity
4	CAPPI	<2.5 km height	<96 km range	data not velocity
5	CAPPI	>2.5 km height	96<range<192	data not velocity
6	CAPPI	all heights	96<range<192	data is velocity
7	CAPPI	<2.5 km height	96<range<192	data not velocity
8	CAPPI	all heights	>192 km range	data not velocity
9	CAPPI	all heights	>192 km range	data is velocity
10	All other products			

## 00h 02h — Header follows in the next 40 bytes

The format of the header is “HHPPPPPPPPPPPhh:mm DD-MM-YYYY “. Where “HH” is the CAPPI height in km, “PPPPPPPPPPPP” is the product name. All numeric fields are two digits, with leading zeros, if required.

## 00h 03h — Line number follows in the next byte

The following byte contains the origin 1 line number in the range 1–255. This is followed by a variable length string of bytes containing a data number followed by a repeat count. Data numbers are in the range 1 through 16.

## 00h 04h — End-of-Image

This indicates that an image has been completely sent. Any future transmissions relate to another image.