



International Satellite Communication Workshop

"The ITU – Challenges in the 21st Century: Preventing Harmful Interference to Satellite Systems“

Implementation of the Carrier Identification Specification

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DVB and Carrier ID



DVB CM-BSS0007 Rev1.

(Final)

**Commercial Requirements
for a
Satellite Transmission Carrier Identification System**

- With the backing of satellite operators and equipment manufacturers, the DVB started the process to standardize Carrier ID in late 2011
- The commercial and technical requirements were adapted by the DVB Commercial Module early this year
- ETSI adapted it on 29 May 2013

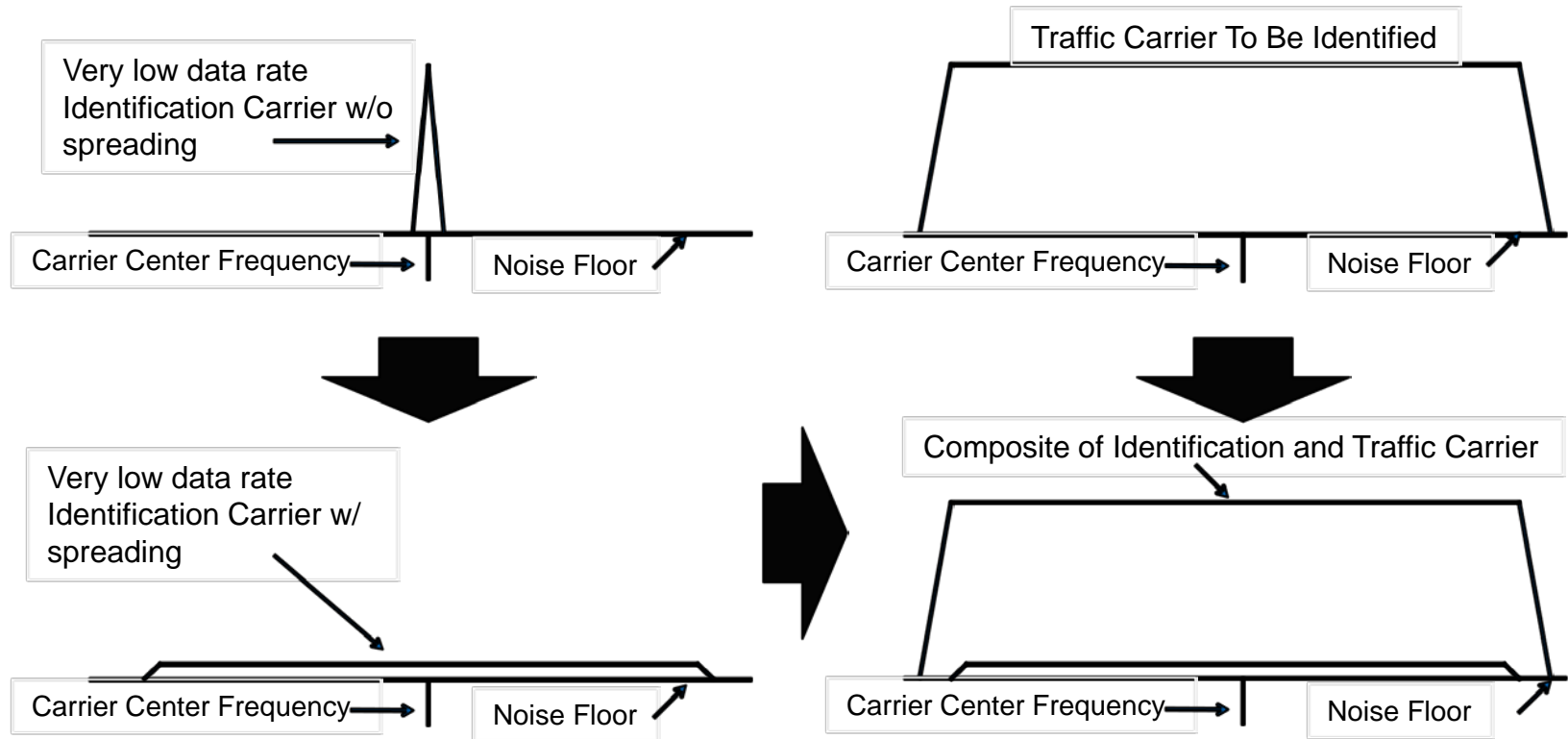
Value of Using Carrier ID

- Quick identification of an interfering carrier
 - A database will be created that contains the Carrier IDs, and would link it to the network operators' contact information
 - The Space Data Association has agreed to maintain this, but any satellite operator could also maintain one
 - Compared to current methods, money and time are saved by this process
- The Carrier ID could be the MAC address of the modulator or CID embedder
 - For IP enabled devices, a MAC address is unique, universal, and when transmitted, anonymous
- Some satellite operators may request the addition of Latitude/Longitude to the Carrier ID for mobile platform customers

DVB Carrier ID Specification

- A spread spectrum carrier separate from the traffic carrier that contains an identifier of the transmitting entity
- The identification carrier is embedded at or near the center frequency of the traffic carrier using spread spectrum techniques, without adding appreciable noise to the traffic carrier
- It is completely waveform agnostic:
 - The:
 - Modulation type
 - FEC
 - Encryption
 - Etc.
 - Do not matter
- This version is primarily for video and SCPC carriers

Spread Spectrum Identification Carrier Overlay



The Identification Carrier is placed at least 22 dB below the peak of the carrier it is identifying, at the center frequency of the traffic carrier

How Will Carrier ID Be Used?

Step #1 – Recording and Storage

Satellite Operators Call for Use of Carrier ID On All New Carriers

Satellite Operators
Record Carrier ID
at Line-Up (or
before)

New Carrier ID
Stored in Satellite
Operator
Database and the
Database of the
Space Data
Association

How Will Carrier ID Be Used?

Step #2 – During Interference Events

Situation; A Legitimate Carrier Operator Has Degraded Service and Suspects Interference

Their Satellite Operator Uses Their Carrier Monitoring System to Observe the Legitimate Carrier

If an Interferer is Observed, Detection of its Carrier ID is Attempted

If Carrier ID is Detected, the Satellite Operators Database is Used to Determine Its Identity

If the Interferer's Carrier ID Does Not Belong to a Carrier from the Satellite Operator, the Space Data Association is Consulted

How Will Carrier ID Be Used?

Step #3 – During Interference Events

Situation; A Satellite Operator Has Detected a Carrier ID From an Unknown Operator

The Space Data Association Determines the Satellite Operator and Carrier User Identity from Its Database

The Space Data Association Contacts the Interferer's Satellite Operator and Alerts Them to the Interference Issue

The Interferer's Satellite Operator Contacts the Interferer to Resolve the Interference Issue

Carrier ID Frequently Asked Questions, Part 1

Question	Answer
What equipment and/or sub systems must a company obtain to enable CID?	The modem, encoder/modulator, or stand-alone modulator needs to be able to support the Carrier ID feature and function.
What do I ask an equipment supplier when seeking CID capabilities?	<p>The questions to ask are:</p> <ol style="list-style-type: none"> a. Does the modem, encoder/modulator or stand-alone modulator that I am purchasing support C ID? If not, when will it? b. Does my existing modem, encoder/modulator or stand-alone modulator that I previously purchased from you support CID? If not, when will it?
What information is available in CID, and who has access to CID information?	<p>CID consists of both mandatory and optional data fields. The mandatory fields consist of a DVB CID Global Unique Identifier (fixed by the manufacturer and not editable by the user) and the CID format revision code. The DVB CID Global Unique Identifier is based on the IEEE-defined 64-bit extended unique identifier (EUI-64). It can be derived from a 48 bit MAC address or a 48 bit Space Data Association modulator identifier. The CID format code is a revision code that anticipates possible changes in the number and possible content of the fields in the content ID table.</p> <p>The content ID table provides for the following optional information to be added by a user: latitude and longitude, telephone number, user defined data fields (7 total) for other information as determined by a user and their satellite operator.</p> <p>Only satellite operators will govern and have access to this carrier ID information.</p>
Who is responsible for reporting CID information?	This information will be gathered by the satellite operator during the earth station line-up procedure. It is the responsibility of the modem, encoder/modulator or stand-alone modulator operator to have the proper information available and pre-loaded.

Carrier ID Frequently Asked Questions, Part 2

Question	Answer
When will CID be available, and when will I have to implement CID?	The pending DVB-CID ETSI TS 103 129 Standard is expected to be finalized soon and will be available in new modulators from manufacturers. CID is required at this time only by EUTELSAT. A timeline for a CID by all other satellite providers has not been determined.
Can the use of CID impair the transport stream from being received and decoded?	No. The Carrier ID technology does not modify the transport stream and was designed specifically to not create interference either with the carrier it is referencing, or to adjacent carriers.
Can the use of CID restrict usable “bits” in a transport stream?	No. The Carrier ID technology does not modify or affect the transport stream.
Will the use of CID prevent all occurrences of Satellite Interference	“No.” <u>NOT ALL</u> satellite interference can be prevented. CID is meant to greatly decrease and significantly mitigate the elapsed time when an interference event transpires. Also, a heightened awareness and demand for accuracy when uplinking and an increased and expanded requirement for higher levels of training should help to reduce the actual number of RFI events. No matter how stringent the requirements regarding CID for ground services, there are going to be some who do not comply. There are approximately 15,000 to 25,000 interference events a year for all satellite carriers.



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