

DGPS MESSAGE FORMATS:

By Brian Keyte, G3SIA.

In reply to a question from Giorgio, Alan recently sent us details of the various types of Message Formats in use, and also a list of 'phantom' messages from SkySweeper which look genuine, but aren't. The following is a summary of Alan's list:

GENUINE MESSAGE TYPES:

Message Type	: 1 Differential GPS Correction
Message Type	: 3 GPS Reference Station Parameters
Message Type	: 6 GPS Null Frame
Message Type	: 7 DGPS Radiobeacon Almanac
Message Type	: 9 GPS Partial Correction Set

'PHANTOM MESSAGES' (produced by Skysweeper incorrectly decoding them):

Message Type	: 0 Undefined
Message Type	: 4 Reference Station Datum
Message Type	: 12 Pseudolite Station Parameters
Message Type	: 24 Undefined
Message Type	: 25 Undefined
Message Type	: 46 Undefined
Message Type	: 54 Undefined
Message Type	: 57 Undefined

Giorgio had queried this one:

MessageType	: 35 GLONASS Radiobeacon Almanac
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During my session last evening, I came across a few more examples. All the following are extra 'dummy' messages I received. They are caused by a weak signal and/or interference and/or the tuning being slightly off and/or the baud rate set to the wrong speed, etc.

Message Type	: 11 C/A-Code L1, L2 Delta Corrections
Message Type	: 21 RTK/High-Accuracy Pseudorange Corrections
Message Type	: 29 Undefined
Message Type	: 32 Differential GLONASS Ref Station Parameters
Message Type	: 40 Undefined
Message Type	: 63 Multipurpose Message

(it looks like the Message Types, valid and not valid, are decoded in the range 0 - 63. The text for 'Type 21' seems to have spelling mistakes in SkySweeper's look-up list)

All Messages, genuine and dummy ones, had a first line:

Preamble	: 102
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All the 'dummy' ones had a 'Message Word' list at the end E.g.:

Message Word 1	: 0893123215
Message Word 2	: 0285973413
Message Word 3	: 0624576087
- - etc.	

(followed by:
Message Contains Parity Errors)

Sometimes the Station Number shown with these dummy message type numbers and with a 'Message Word' list seems to fit a real # number on that frequency - if that happens I think it is probably just a coincidence, not real evidence of reception.

The valid Message Types often also give 'Message Contains Parity Errors' at the end, but the Station Number then has always seemed to be OK in my tests.

The following one COULD be an extra genuine Message Type 2? - the Station Number and frequency matched 285 kHz, Cabo Machicaco, ESP, but maybe that was just by chance as it was followed by a 'Message Word' list.

Preamble	: 102
Message Type	: 2 Delta Differential GPS Correction
Station Number	: 500
Z Count	: 990

73 Brian