



FAQ: Base Broadcast Correction Types

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Thesis

If you want to use all available constellations and signals in your RTK FIXED solutions, then you need to choose a Base Broadcast Message Type that includes all signals and satellites:

For devices with Trimble engines, the Base Broadcast Message Type must be RTCM3.2, CMRX or SCMRX (Scrambled CMRX).

For all other devices, the Base Broadcast Message Type must be RTCM3.2 or another proprietary message type.

The other supported message types are available for extended compatibility with older receivers and some Ag equipment.

This FAQ shows the effects of choosing a variety of message types by looking at the status screens of the internal OEM engines in an iG8 receiver.

All of our user manuals stress the importance of this setting; however, we repeatedly get complaints of inferior tracking because other message types have been selected. For the iGage iG8 and iG9 receivers, please adhere to the highlighted rule above. SCMRX (aka SCMR in Carlson SurvXX products) is best and preferred.

Setup

The illustrations below were captured using a BD990 Base and a BD970 Rover. Both receivers have high quality choke ring antennas and are configured to track to 0 degrees.

For each screenshot pair, the correction type broadcast from the BD990 Base is shown on the left and the resulting Used satellites are shown on the right.

RTCM 2.2 used 9 of 30 (GPS ONLY)

RTCM

Enabled Version: 2.2 Type: DGNSS

Advanced Settings

Ephemeris Holdoff: Off

Record Type 1: 1 Sec.

Record Type 31: Off

Record Type 3: 10 Sec.

Record Type 32: Off

GLONASS Datum: PZ90

Record Type 2:

Other Record Types:

CR/LF:

Satellites Used:9

GPS(9): 4, 5, 7, 8, 9, 14, 20, 27, 30

Satellites Tracked:30

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS (8): 1, 2, 3, 11, 12, 13, 21, 22

Galileo (6): 7, 8, 19, 21, 27, 30

BeiDou (5): 11, 12, 23, 24, 25

SBAS (1): 131



RTCM2.3 used 9 of 30 (GPS ONLY)

RTCM

Enabled Version: 2.3 Type: DGNSS

Advanced Settings

Ephemeris Holdoff: Off

Record Type 1: 1 Sec.

Record Type 31: Off

Record Type 3: 10 Sec.

Record Type 32: 10 Sec.

GLONASS Datum: PZ90

Record Type 2:

Other Record Types:

CR/LF:

Satellites Used:9

GPS(9): 4, 5, 7, 8, 9, 14, 20, 27, 30

Satellites Tracked:30

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS (8): 1, 2, 3, 11, 12, 13, 21, 22

Galileo (6): 7, 8, 19, 21, 27, 30

BeiDou (5): 11, 12, 23, 24, 25

SBAS (1): 131



RTCM 3.x used 18 of 30 (GPS and GLO ONLY)

RTCM

Enabled Version: 3 (legacy) Type: RTK

Bandwidth limit :

Advanced Settings

Record Type 1004: 1 Sec.

Record Type 1012: 1 Sec.

Record Type 1019: Off

Record Type 1020: Off

Fugro Type 4087 Variants:

Measurements from Unhealthy SVs:

Reference Station Records:

L2 Signal: Legacy with L2 - CS fallback

Satellites Used:18

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22

Satellites Tracked:30

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS (8): 1, 2, 3, 11, 12, 13, 21, 22

Galileo (6): 7, 8, 19, 21, 27, 30

BeiDou (5): 11, 12, 23, 24, 25

SBAS (1): 131

RTCM 3.3 MSM used 25 of 30

RTCM

Enabled Version: 3.3 (MSM) Type: RTK

Bandwidth limit :

Advanced Settings

Fugro Type 4087 Variants:

Measurements from Unhealthy SVs:

Reference Station Records:

L2 Signal: Legacy with L2 - CS fallback

Multiple Signal Message Settings

MSM Records: MSM4 Streaming Mode:

GPS:

GLONASS:

Galileo:

QZSS:

BeiDou:

IRNSS:

Satellites Used:25

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22

Galileo(5): 7, 8, 21, 27, 30

BeiDou(2): 11, 12

Satellites Tracked:30

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30

GLONASS (8): 1, 2, 3, 11, 12, 13, 21, 22

Galileo (6): 7, 8, 19, 21, 27, 30

BeiDou (5): 11, 12, 23, 24, 25

SBAS (1): 131

RTCM 3.3 MSM7 used 25 of 30

RTCM

Enabled Version: 3.3 (MSM) Type: RTK

Bandwidth limit :

Advanced Settings

Fugro Type 4087 Variants:

Measurements from Unhealthy SVs:

Reference Station Records:

L2 Signal: Legacy with L2 - CS fallback

Multiple Signal Message Settings

MSM Records: MSM7 Streaming Mode:

GPS:

GLONASS:

Galileo:

QZSS:

BeiDou:

IRNSS:

Satellites Used:25

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22
 Galileo(5): 7, 8, 21, 27, 30
 BeiDou(2): 11, 12

Satellites Tracked:30

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS (8): 1, 2, 3, 11, 12, 13, 21, 22
 Galileo (6): 7, 8, 19, 21, 27, 30
 BeiDou (5): 11, 12, 23, 24, 25
 SBAS (1): 131



For RTK applications, MSM7 more than doubles the byte count of a correction stream. There may not be enough bandwidth at 9600 baud to transfer corrections. Stick with MSM4.

For IP based streams, there is no disadvantage to MSM7 streams.

CMR used 18 of 31 (GPS and GLO only)

CMR

CMR Delay: 0 msec

Satellites Used:18

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22

Satellites Tracked:31

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS (9): 1, 2, 3, 11, 12, 13, 20, 21, 22
 Galileo (6): 7, 8, 19, 21, 27, 30
 BeiDou (5): 11, 12, 23, 24, 25
 SBAS (1): 131

CMR+ used 18 of 31 (GPS and GLO only)

CMR

CMR+ Delay: 0 msec

Satellites Used:18

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22

Satellites Tracked:31

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
 GLONASS (9): 1, 2, 3, 11, 12, 13, 20, 21, 22
 Galileo (6): 7, 8, 19, 21, 27, 30
 BeiDou (5): 11, 12, 23, 24, 25
 SBAS (1): 131

Satellites Used:25

GPS(10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
GLONASS(8): 1, 2, 3, 11, 12, 13, 21, 22
Galileo(5): 7, 8, 21, 27, 30
BeiDou(2): 11, 12

Satellites Tracked:31

GPS (10): 4, 5, 7, 8, 9, 14, 16, 20, 27, 30
GLONASS (9): 1, 2, 3, 11, 12, 13, 20, 21, 22
Galileo (6): 7, 8, 19, 21, 27, 30
BeiDou (5): 11, 12, 23, 24, 25
SBAS (1): 131

CMR

sCMRx Delay: 0 msec