

SARSAT 2026 BMW



RTCM SC110 Update

SC110 Chair: Chris Hoffman

RTCM a “Beacon for Maritime Communications and Navigation”

SC110 - Emergency Beacons

History

- RTCM Special Committee SC105 – Performance Standards for Maritime Telecommunications Equipment – was established in August 1984 to develop performance standards for the US SOLAS Working Group to IMO for FGMDSS devices (including EPIRBs).
- In 1985 the US submitted a draft 406 MHz EPIRB Performance Standard to the IMO Radiocommunications COM.30 meeting, which eventually became IMO Resolution A.611(15) published 19 Nov 1987, a year before IMO adopted GMDSS and set an EPIRB carriage date of 1993.
- SC105 also established there was a lack of standards related to EPIRB requirements, other than those related to 406MHz electrical performance.
- Due to the need to address 406 MHz EPIRBs as well as 121.5/243 ones and the growing international nature of the work, the RTCM Board established SC110 on EPIRBs in September 1986.
- The original RTCM 406 MHz EPIRB standard was published on July 31, 1987.



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Today

- It is now 40 years since SC110 was established. The EPIRB standard has been revised 4 times and has undergone numerous Amendments. The first RTCM PLB standard was published in 2002 and has been revised 3 times with Amendments in between and an SSAS standard was first published in 2004 and was revised in 2009.
- RTCM is also nowadays an active participant in the work of Cospas-Sarsat and has been instrumental in the development of ELT(DT)s, the RLS Service, TWCs and SGBs for several years now and continues to support these new beacon types going forward.
- Today SC110 participants number over 50 member organisations from around the world and 150 individuals, including 14 current beacon manufacturers of ELTs, EPIRBs and PLBs, a prospective manufacturer, beacon component manufacturers, a C/S test facility, related device manufacturers and various government and quasi government organisations.



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Update Summary

- Since the last BMW meeting SC110 has:
 - Written / posted 46 SC110 papers, posted various related supporting papers (e.g. C/S, IMO) and run 30 Basecamp Message threads
 - Participated in the JC-39, CSC-73/OPN and EWG-1/2026 (TWCs Testing) Cospas-Sarsat meetings
 - Is busy preparing for the upcoming JC-40 meeting
 - Drafted and submitted 10 papers to two of these meetings (1 of which was a joint submission) and so far, has submitted 5 papers to JC-40
 - Participated in the informal CWGs on TWCs, Opening/Closing Frequency Channels and T.018/T.021
 - Started working on a TWCs Interface Standard in support of C/S work
- The current 406 MHz EPIRB standard is 11000.5 Amd 1 published on 14 April 2022
- The current 406 MHz PLB standard is 11010.4 Amd 1 published on 17 March 2023
- The current 406 MHz SSAS standard is 11020.1 from 2009, which is unsurprisingly out of date, no requests have been received to update it or include an SGB SSAS beacon



JC-40 Papers

- RTCM submitted the following papers to JC-40:
 - JC-40/3/2 – FGB MEOSAR Sat Qual Test
 - JC-40/3/3 – Further TWCs Tests in C/S T.021
 - JC-40/3/6 – Externally Powered Beacons
 - JC-40/3/7 – TWCs Back and Skip Functions
 - JC-40/3/8 – Nav Script Results with ARINC inputs
 - JC-40/3/11 – GNSS Self-Test (with Others)
 - JC-40/3/xx – T Series Docs Updates (with Secretariat)
- RTCM plans to submit the following response papers to JC-40
 - Paper on TWCs Enable / Disable (3/4)
 - Paper on Remote Database Registration (10/1)
 - Paper on TWCs Interfaces (3/9)
 - Paper on ELT(DT) 0 0 Alerts (6/9)



RTCM 11000.5 Amd 1 EPIRB Standard

- RTCM 11000.5 on EPIRBs was published October 2021, it addresses:
 - Two Categories of EPIRB (Float-free and Manual)
 - Three Temperature Classes (as per C/S Classes 0, 1 and 2)
 - Three Groups (Group 1 – with a 121.5 MHz Homer, Group 2 – with an AIS transmitter and Group 3 – with both of these)
- The RTCM standard is based on IEC 61097-2 Ed4.0 and simply details additions and exceptions to it
- The RTCM standard includes an Annex on US EPIRB Coding
- RTCM have petitioning the FCC to adopt this new standard into Part 80 of its Rules
- Amendment 1 to the above standard was published in April 2022 to modify the US Coding Annex to add new sections on coding EPIRBs with RLS capability, which supported the introduction of RLS in the USA.



RTCM 11010.4 PLB Standard

- Published on 1 June 2022
- The changes are largely editorial, but are extensive, the main ones being:
 - Added BDS (BeiDou) as a GNSS option
 - Redefined what is an acceptable GNSS system
 - Modified the definition of the 121.5 MHz duty cycle on/off regime, but kept 33% minimum
 - Aligned the SGB cancellation and GNSS timing requirements with the latest C/S requirements
 - Modified the 406 and GNSS indicator requirements
 - Changed the Altitude requirement
 - Added a SAR (Specific Absorption – Radiation Exposure) requirement
 - Added the option to use defined Symbols for Controls and Indicators (similar to EPIRBs)
 - Simplified the labelling requirements
 - Modified the sequence of tests to match what's in IEC 61097-2 Ed4.0
 - Removed the option to relax the AIS transmission rates after 6 hours
 - Updated the US PLB Coding requirements annex to match the RTCM EPIRB standard
- RTCM has petitioning the FCC to adopt this new standard into Part 95 of its Rules.



RTCM 11010.4 Amd 1 PLB Standard

- Published on 17 March 2023
- The changes are extensive in some places, the main ones being:
 - Modified the ITU regulations footnote to emphasis that PLBs are types of EPIRB
 - In support of the above change designed to differentiate PLBs from AMRDs, changed the AIS identity from an MOB to an EPIRB by making it 974xyyyyy instead of 972xyyyyy and changed the related Message 14 texts accordingly
 - Inserted new sections on the testing of single and multi-constellation GNSS receivers
 - The multi-constellation test includes a primary constellation set of tests and a multi-constellation test that requires location solutions using combinations of all the declared GNSS constellations
 - Updated the GNSS test scenarios to better support multi constellation testing
 - Made many other editorial corrections throughout the standard



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Further Changes Needed to Address ITU AIS Changes

- Both the RTCM EPIRB and PLB standards need updating to incorporate changes to the AIS locating signals as a result of the publication of ITU-R M.1371-6
- This work should be coordinated with IEC and ETSI
- The primary changes are:
 - Adding an EPIRB OFF Message 14 when the EPIRB is manually deactivated
 - Adding an EPIRB CANCEL Message 14 when the cancel function (if available) on the EPIRB is used
 - Adding additional identity information “mpp” to the end of Message 14
- Potential Issues
 - OFF and CANCEL transmission sequences are not defined
 - FGBs don't transmit a 406MHz cancellation message





Thank you!

SC110 Contact Information

Chris Hoffman

Email: chris.hoffman@acrartex.com

Phone: +44 1489 880 326

RTCM Contact Information

Email: info@rtcm.org

Phone: +1 703.527.2000

Website: www.rtcmm.org

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