



# Adding Checksum on Beacon

SARSAT Beacon Manufacturers Workshop 2021

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# Topics That Will Be Covered

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- Background of checksum
- Checksum history
- RGDB checksum information message
- Future of checksum



# Background of Checksum

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- The 2009 Lady Mary incident prompted the 2011 implementation of several 15-character hex ID validations. One of them was the beacon ID checksum, conceived by NOAA and NASA.
- The checksum is derived by processing the 15-character hex ID through an algorithm, resulting in a 5-character hexadecimal number (consisting of the letters A-F and numbers 0-9) .
- The checksum algorithm is available to all manufacturers.
- The checksum is nearly unique for each beacon ID and helps to ensure that the correct beacon ID is registered.
- Checksums are primarily used for serialized protocol beacons, but can be used for all beacon ID protocols.



# Checksum History

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- In 2011, manufacturers were asked to *voluntarily* provide the checksum value on new registration forms. Many manufacturers immediately implemented this request either by placing labels on the enclosed registration forms or by pre-printing the UIN on the blank form.
- Standard NOAA correspondence templates (email messages/letters) were updated to prompt an owner to check their registered 15-character beacon ID against the 15-character UIN labeled on their beacon itself.
- With the launch of the new RGDB in 2016, NOAA started periodically sending verification emails and letters to owners whose beacons had a beacon ID/checksum mismatch.
- The RGDB was updated in 2017 to automatically send verification emails and letters to owners a few days after a beacon ID/checksum mismatch is identified.



# RGDB Checksum Information Message

- When an owner registers with a mismatch beacon ID/checksum, they see the following warning:

**Beacon Information**

Beacon ID 2DCC55555FFBFF

Checksum (Optional)

Serial Number (Optional)

Manufacturer\*

Model Number\*

[Click here for checksum information](#)

**Model: 399**  
UIN: 2DCE8 [REDACTED] FFBFF  
S/N: 2528 CHK: 99D8A

*Example Label Only. Checksum in example picture is 99D8A*

The checksum is a 5-character hexadecimal number (consisting of the letters A-F and numbers 0-9) that helps to ensure that the correct beacon ID is recorded. Typically the checksum is only provided on the manufacturer-supplied registration form included in a new beacon's packaging. If you cannot locate a checksum to enter here, you may leave this field blank and continue with your registration. However, if you leave the field blank, our system cannot further verify that your beacon ID has been entered correctly. If you cannot enter a checksum value, we strongly recommend that you very carefully verify that the beacon ID you entered is correct.

⚠️ The checksum you entered does not match your beacon ID. Please click on checksum information link below for more information.

*Because owners may incorrectly enter a serial number or other non-checksum numbers in the checksum field, the RGDB accepts registrations even when the beacon ID and checksum do not match, following up with an automated email or letter addressing the issue.*



# Future of Checksum

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The goal of the checksum program is to help identify beacon ID errors and thereby save lives. Therefore NOAA is considering *requiring* that the checksum value be included along with the beacon ID on the beacon label. Currently, the checksum is only provided on manufacturer-supplied registration forms included with new beacons. This is inadequate because:

- Reached the point in the phased approach where its time to require the checksum.
- Some owners do not refer to the manufacturer-supplied form when registering online, instead preferring to read the ID off the beacon.
- The manufacturer-supplied registration form is almost never included when an owner re-sells their beacon, which means that validation is lost. Most of our incorrect and duplicate IDs are discovered through our change of ownership process.



# Contact Information

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