I. General
1. The Remote Utility Monitoring System (RUM) is a wireless monitoring system with the primary purpose of monitoring utility consumption at power stations, including, but not limited to electricity, water consumption and ground fault stray current.
2. The RUM system is comprised of (4) four integral components: Base Station, Repeater, Transponder and Web-based Software. These components, when installed to manufactures specifications, provide accurate and reliable transmission of metering data from meters conforming to ANSI C12.1 to a secure, high availability database and accurate measurement of stray current.
3. Base Station: The RUM Base Station is a transceiver, serving at the communication hub for the RUM system. The base station manages and synchronizes data between monitored devices (transponders) onsite and the cloud-based database. The Base Station utilizes GSM (Cellular) network connectivity, using GPRS data protocol, via hard coded, secured and encrypted VPN tunnel. The RUM base Station does not require or connect to phone line, wired network or Wi-Fi internet connectivity. ALL BASE STATION COMMUNICATIONS ARE CONTROLLED USING CELLULAR DATA TRANSMISSION, ENSURING UNINTERUPTED 2-WAY COMMUNICATION BETWEEN FACILITY AND CLOUD-BASED SERVERS.
   a. Base Station power requirements: 120/220V 1PH 50/60Hz (5A) electrical supply.
   b. Base Station confirms to FCC part 15 requirements.
   c. Base Station can monitor up to 1600 Transponders.
   d. Base Station is supplied within a non-metallic NEMA 4X (IP 66) UL/CSA listed enclosure, with stainless steel pad lockable latches.
   e. Base Station is rated for indoor or outdoor installation.
   f. Base Station is supplied with an integral GSM antenna and removable High Gain RUM network antenna for local network communication. An optional extension cable is available for remote mounting of the high gain antenna.
   g. Base station is factory supplied with integral uninterrupted power supply (UPS) offering 4 hours of uninterrupted service in the event of a power loss. In the event of power loss, alert notifications will automatically be sent to system administrator.
   h. Base station is factory supplied with LED indicator lights to provide visual system status without the need to log into web-based software or opening panel door.
   i. A detailed site survey is provided to end users prior to delivery, confirming all equipment and mounting locations.
   j. 2-Year Warranty
4. **Transponder**: The RUM transponder is a wireless transceiver with onboard non-volatile memory used to record and transmit counts from pulse output devices (meters) and actively monitor imbalances of current flow. The transponder can be mounted within or adjacent to the service pedestal. The transmitter records and transmits data to the cloud-based database through the Base Station / Repeater. The transponder utilizes bi-directional, high powered (RF) signal to securely communicate with base station and repeater infrastructure. Each RUM transponder is capable of monitoring 4 independent inputs (pulsed), (1) current transformers for ground fault management and includes options for tamper-detection and expanded control features. A relay control module is available to offer switching capabilities for utilities.

   i. Transponder operates at 12-24VDC.
   ii. Transponder are provided with a Class 2, IP67 External Power Supply, Input Voltage 100-240V 1PH 50/60Hz (.55A) with UL and CE approvals.
   iii. Transponder conforms to FCC part 15 requirements.
   iv. Circuit boards a conformal coated for rugged marine environment.
   v. Transponder are housed in non-metallic IP rated enclosure
   vi. Transponder utilizes an embedded antenna within its enclosure or external depending on environment.
   vii. Transponder is factory sealed and serialized.
   viii. Transponder includes LED indicator light providing visual system status
   ix. Transponder includes quick-connect electrical connections.
   x. Transponders can be retrofitted or installed as a factory option with pedestal manufacturers.

5. **Repeater**: The RUM repeater is a signal amplifier designed to extend range of the MarineSync RUM network. Repeaters may be required based on site survey provided by MarineSync. A site survey is available by MarineSync at no cost. The repeater is a stand-alone device which requires only an AC power source and should be post mounting in an elevated location designated by site survey.

   i. Repeater power requirements: 120/220V 1PH 50/60Hz (5A) electrical supply
   ii. Repeater conforms to FCC part 15 requirements.
   iii. Repeater is housed within a non-metallic NEMA 4X (IP 66) UL /CSA listed enclosure.
   iv. Repeater is rated for outdoor installation.
   v. Repeater is supplied with an integral high-gain network antenna for Transponder / Base Station communication.
   vi. Repeater is factory supplied with integral uninterrupted power supply (UPS) ensuring up to 4 hours runtime in the event of a power loss. Power loss automatically alerts system administrators.
   vii. 2-Year Warranty

6. **Web-Based Software**: RUM software is web-based and accessible from any web-enabled computer or device, and does not require a dedicated workstation. Users are provided login credentials upon system activation. Password protection and standard-based security measures are observed to protect the validity of user and prevent unauthorized access. Annual subscription plan is required prior to activation.
i. Meter readings available by date range
ii. Meter readings available by location (Slip/Space)
iii. Daily historical usage graph by date range
iv. Real-time “get now” meter reading functionality
v. Value synchronization with meters to ensure data continuity
vi. Data export to universal formats (i.e. .csv)
vii. Print features for individual meter data
viii. Intuitive setup wizard
ix. Status of transponders displayed in Real-time
x. Link Quality Status displayed for all Transponders
xi. Configurable naming of Slip/Space to match software export fields
xii. Supports export with most marina management and billing software
xiii. Technical and User support included