

How to get RSSI and SNR values from SATELLAR radio network via WEB browser

RSSI = Received Signal Strength Indicator

SNR = Signal to Noise Ratio (received signal quality indicator)

Note! The monitored RMAC number for the RSSI shall be set to each device in the radio network according to the network design plan before executing this task. Modem Settings → Testing and Calibration → RSSI RMAC Address (default: 4096 for monitoring all SATELLAR RMAC addresses). SATEL NETCO configuration software sets these values automatically by default to the radio router settings in the assist –phase.

1. Enter the WEB user interface of SATELLAR
2. Go to Tools –tab → NMS Value
3. Enter the value/values to fetch from the radio modem:
 - o 1.111 for current RSSI value
 - o 1.122 for current SNR value

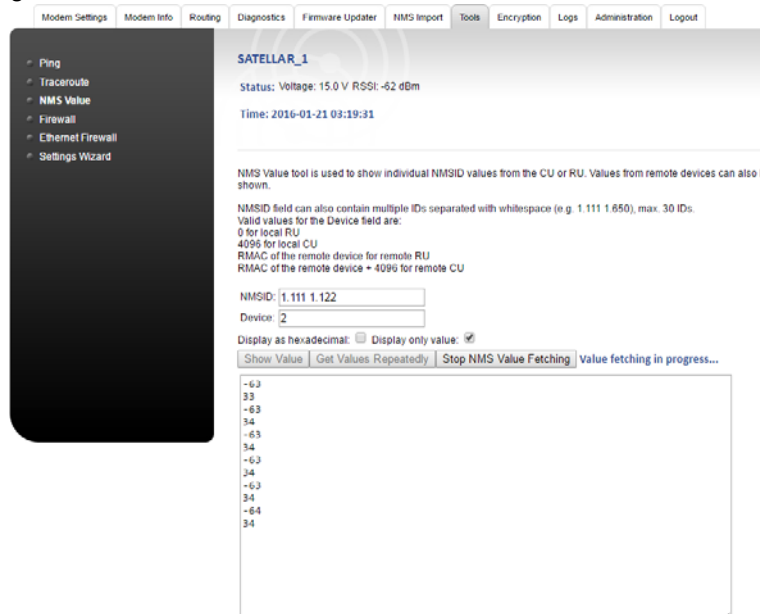
Note! Separate the values with whitespace when entering and fetching both values simultaneously. See picture below.

4. Set the RMAC address that the values are fetched from.

Note! Fetching the values from locally connected device, set the Device –selection in to numeric value “0”. The data traffic must be continuous to be able to read the RSSI and SNR value reliably. Fetching the values from the local device “0”(typical use case: SNR value measurement for the local device), the data traffic shall be created manually to other SATELLAR radio modems in order to fetch reliable readings for the RSSI and SNR values.

By setting the remote RMAC address to the Device –selection, the values are fetched from the remote radio modem via air interface, thus creating the necessary data traffic for RSSI and SNR value measurements.

5. Press the “Get Values Repeatedly” and wait for at least 10 values read from the device in order to have measurement fluctuation of the environment. Stop the process by pressing “Stop NMS Value Fetching”.



Fetching both, RSSI and SNR values repeatedly from RMAC 2.

Setting the tick box “Display only value”, the command lines for SATELLAR are hidden and only measured values displayed.

Advanced:

SNR (Signal to Noise Ratio) value is an indication of signal quality in SATELLAR radio routers. On the contrary to SATELLINE radio modems, in SATELLAR radio modems this is not a calculated value from the background noise level, but an actual indication of signal quality.

Background noise (i.e. noise level) consist of interference signals to radio network that can't be utilized in SATELLAR. Signal quality measurement can be fetched only from local device, all data traffic in the radio network shall be disabled during the measurement. Set the NMS ID value 1.111 for "Last RSSI" and Device -setting to "0" for local device and start the value fetching procedure according to section 5.

6. Check that the readings are in the required levels for reliable radio communication according to the tables below.

SATELLAR XT 5RC, QAM model

| Radio modulation | Air rate (bps) @ 6,25kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR level (min.) |
|------------------|-----------------------------|-------------------------|-------------------------|---------------------------|
| 2-QAM | 4680 | -121dBm | -118dBm | 11dBm |
| 4-QAM | 9360 | -118dBm | -115dBm | 14dBm |
| 8-QAM | 14040 | -115dBm | -112dBm | 17dBm |
| 16-QAM | 18720 | -111dBm | -119dBm | 20dBm |
| 32-QAM | 23400 | -108dBm | -106dBm | 23dBm |
| 64-QAM | 28080 | -105dBm | -102dBm | 27dBm |
| Radio modulation | Air rate (bps) @ 12,5kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR level (min.) |
| 2-QAM | 10080 | -118dBm | -116dBm | 11dBm |
| 4-QAM | 20160 | -115dBm | -113dBm | 14dBm |
| 8-QAM | 30240 | -113dBm | -109dBm | 17dBm |
| 16-QAM | 40320 | -110dBm | -106dBm | 20dBm |
| 32-QAM | 50400 | -107dBm | -103dBm | 23dBm |
| 64-QAM | 60480 | -104dBm | -100dBm | 27dBm |
| Radio modulation | Air rate (bps) @ 25kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR level (min.) |
| 2-QAM | 20160 | -117dBm | -114dBm | 11dBm |
| 4-QAM | 40320 | -114dBm | -111dBm | 14dBm |
| 8-QAM | 60480 | -111dBm | -108dBm | 17dBm |
| 16-QAM | 80640 | -108dBm | -105dBm | 20dBm |
| 32-QAM | 100800 | -105dBm | -102dBm | 23dBm |
| 64-QAM | 120960 | -101dBm | -98dBm | 27dBm |

Table 1, RSSI and SNR requirement table.

NOTE! At least 15dBm fading margin ("radio link budget") shall be taken into account from the given values in order to maintain reliable and steady radio link.

SATELLAR XT 5RC, FSK model

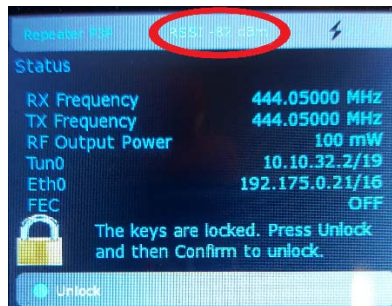
| Radio modulation | Air rate bps @ 12,5kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR rate (min.) |
|------------------|---------------------------|-------------------------|-------------------------|--------------------------|
| 4- FSK | 9600 | -119dBm | -114dBm | 20dBm |
| 8- FSK | 14400 | -112dBm | -105dBm | 26dBm |
| 16- FSK | 19200 | -104dBm | -97dBm | 32dBm |
| Radio Modulation | Air rate bps @ 25kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR rate (min.) |
| 4- FSK | 19200 | -116dBm | -108dBm | 20dBm |
| 8- FSK | 28800 | -108dBm | -102dBm | 26dBm |
| 16- FSK | 38400 | -102dBm | -94dBm | 32dBm |
| Radio Modulation | Air rate bps @ 150kHz | Sensitivity (BER 10E-3) | Sensitivity (BER 10E-6) | Required SNR rate (min.) |
| 4- FSK | 115200 | -104dBm | -97dBm | 20dBm |
| 8- FSK | 172800 | -96dBm | -89dBm | 26dBm |
| 16- FSK | 230400 | -88dBm | -82dBm | 32dBm |

Table 2, RSSI and SNR requirement table.

NOTE! At least 15dBm fading margin (“radio link budget”) shall be taken into account from the given values in order to maintain reliable and steady radio link.

SATELLARs equipped with LCD:

- Last RSSI (NMS ID 1.111) value of the received data is stored in the memory of SATELLAR and shown in the LCD UI for 15 seconds. After this the value “-127dBm” is displayed in the LCD UI if no data in the radio network is not available.
- If the RSSI RMAC Address –setting is set to default value (4096), the actual noise level measurement is shown in the device if no data in the radio network is not available.
- The RSSI Value shown in the LCD UI of the SATELLAR devices is updated once in every 30 seconds.



Current RSSI/noise level shown in the LCD UI of SATELLAR.