



Enabling Industrial IoT



SNYPER-LTE Family

1) SNYPER-LTE: 4G/3G/2G Cellular Signal & Network Analyser

2) SNYPER-LTE Spectrum
4G/3G/2G Cellular Signal & Network
Analyser with liveSCAN Antenna Kit

User Manual

Rev 1.3

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Introduction

This document explains the operation of, and technical characteristics of the SNYPER-LTE family.

The SNYPER-LTE Family is an evolving range of GSM, UMTS and LTE cellular signal analysers, which have been designed for surveying cellular wireless systems.

NOTE: The use of these devices requires a 4G enabled SIM.

Overview

SNYPER-LTE

What's in the Box?

- 1 SNYPER-LTE signal and network analyser
- 2 Multi region power supply
- 3 Blue antenna - General purpose LTE(4G), UMTS(3G) & GPRS(2G) coverage
- 4 Silver antenna - For LTE 2600MHz only
- 5 USB cable
- 6 In car charger
- 7 Hard carrying case
- 8 Quick start guide

Figure 1. SNYPER-LTE case contents



Features

The SNYPER-LTE Family has been designed to survey the cellular network so that the characteristics of the network such as cell ownership, signal strength, location etc can be understood. With this knowledge, cellular equipment can be installed with confidence that the right antenna selection and placement has been made and the right network provider for the application chosen.

The SNYPER-LTE has the following features:

- » Measures and displays received network signal strength
- » Stores 1 survey
- » USB download of stored surveys to PC (.csv and .html format)
- » Large easy to read LCD display
- » Robust enclosure for equipment protection
- » Long life rechargeable battery gives up to 48 hours on one charge
- » Battery can last up to 2 months in standby mode
- » User defined screen settings - brightness, colours
- » Optional buzzer
- » USB based charging of battery
- » Multiple language options

SNYPER-LTE Spectrum

What's in the Box?

- 1 SNYPER-LTE Spectrum signal and network analyser
- 2 Multi region power supply
- 3 Blue antenna - General purpose LTE(4G), UMTS(3G) & GPRS(2G) coverage
- 4 Silver antenna - For LTE 2600MHz only
- 5 liveSCAN antenna
- 6 liveSCAN antenna cable
- 7 USB cable
- 8 In car charger
- 9 Hard carrying case
- 10 Quick start guide

Figure 2. SNYPER-LTE Spectrum case contents



SNYPER-LTE Spectrum Features

The liveSCAN high performance directional antenna has been specifically designed to complement the [SNYPER-LTE Spectrum](#) when performing live scans. By use of this directional antenna, the bearing of a base station may be estimated.

On top of the SNYPER-LTE features, the SNYPER-LTE Spectrum has the following features:

- » Lock onto a single provider to perform real time liveSCAN
- » liveSCAN data provided as real time graphical display
- » Typically last 50 surveys stored on [SNYPER-LTE Spectrum](#)
- » USB download of last 50 surveys to PC (.csv and .html format)
- » Up to 15 hours continuous liveSCAN use

Specifications

Table 1. Specifications of SNYPER-LTE Family

	SNYPER-LTE Family
2G supported bands:	900, 1800MHz
3G supported bands:	850, 900, 2100MHz
4G supported bands:	800, 1800, 2600MHz
Dimensions:	141 x 76 x 36mm
Weight:	Approx 210g including antenna
Antenna length:	89 ± 2mm
Operating temperature range:	-20 to +55°C
Storage temperature range:	-30 to +75°C
Operating humidity range:	45 to 85% RH non-condensing (60% RH above 50°C)
Antenna connector:	SMA female
Display:	2.4" QVGA 320 x 240 TFT with LED backlight
Battery life:	48 hours normal use*
Battery:	2000mAh Lithium Ion
Warm up time:	4s
USB connector:	USB Mini-B
Stored survey memory:	SNYPER-LTE: 1 survey SNYPER-LTE Spectrum: Up to 50 surveys
Maximum charge current:	500mA

*Based on 20 surveys in each 24 hours with automatic power off enabled

Operating Frequencies Detail

The operating frequencies in EGSM900, DCS1800 and WCDMA modes are set compliant to the 3GPP and WCDMA specifications.

Table 2. Operating frequencies detail

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels	TX - RX Offset
EGSM900	890.0 - 915	935.0 - 959.8	0 - 124	45MHz
	880.2 - 889.8	925.2 - 934.8	975 - 1023	45MHz
DCS1800	1710.2 - 1784.8	1805.2 - 1879.8	512-885	95MHz
WCDMA2100 - B1	1922.4 - 1977.6	2112.4 - 2167.6	Tx: 9612 - 9888 Rx: 10562 - 10828	190MHz
WCDMA850 - B5	826.4 - 846.6	871.4 - 891.6	Tx: 4132 - 4233 Rx: 4357 - 4458	45MHz
WCDMA900 - B8	882.4 - 912.6	927.4 - 957.6	Tx: 2712 - 2863 Rx: 2937 - 3088	45MHz
LTE1800 - B3	1710 - 1785	1805 - 1880	Tx: 19200 - 19949 Rx: 1200 - 1949	95MHz
LTE2600 - B7	2500 - 2570	2620 - 2690	Tx: 20750 - 21449 Rx: 2750 - 3449	120MHz
LTE800 - B20	832 - 862	791 - 821	Tx: 24150 - 24449 Rx: 6150 - 6449	41MHz

Product Images

Figure 3. Front view of the SNYPER-LTE Product

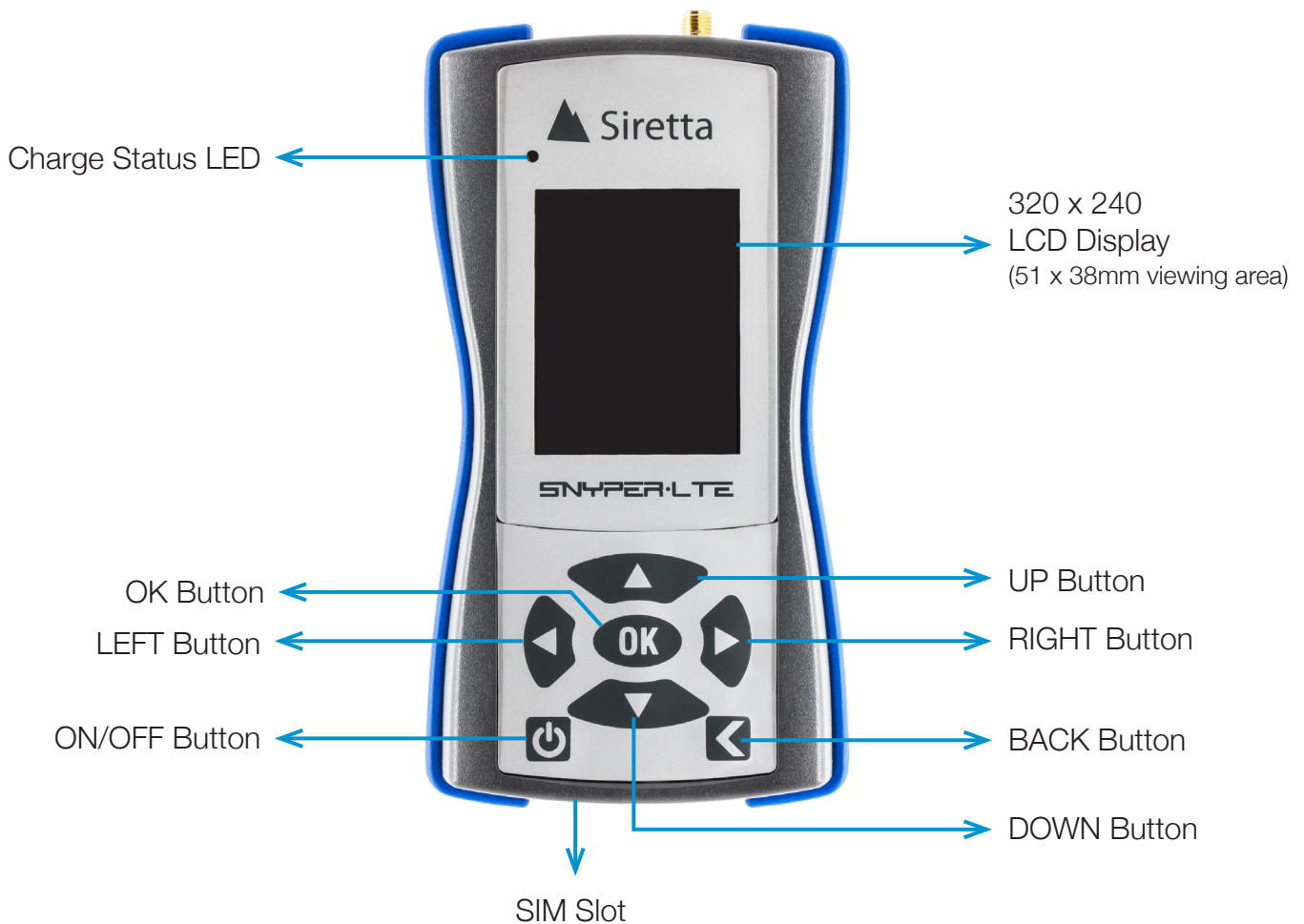


Figure 4. Bottom view of the SNYPER-LTE Product



Figure 5. Top view of the SNYPER-LTE Product (Without antenna)



First Time Use of SNYPER-LTE Family

- » Your SNYPER needs to be charged for 4 - 6 hours before initial use. To charge your SNYPER, connect to any convenient USB power source - the mains adaptor or car charging adaptors supplied, or a USB port on a device such as a computer using the supplied cable.
- » Ensure the antenna is screwed firmly into place on the device and isn't loose.
- » Insert a 4G SIM card into the SIM card slot as shown below in figure 6. The SIM needs to be fully pushed inside the case using a screwdriver until a click is heard.
- » To power up your SNYPER press the ON/OFF button. A welcome screen will be displayed briefly (as shown below in figure 7 - SNYPER-LTE, figure 8 - SNYPER-LTE Spectrum) before the main menu is displayed (as shown in figure 10.)

Figure 6. Insert SIM and power on



Figure 7. SNYPER-LTE power on message



Figure 8. SNYPER-LTE Spectrum power on message



Charging and Battery Status

Approximately 4 - 6 hours are needed to fully charge your SNYPER. The device will be charged when it is plugged into a USB power source - the supplied AC adaptor, the supplied car charge adaptor, or the USB host port on a PC or similar. The device's battery provides up to 15 hours continuous liveSCAN use and up to 2 months standby mode from a fully charged battery.

When the device is plugged into a charging supply, it will turn on if it is off so that the battery status bar is visible.

Figure 9. Charging and battery status

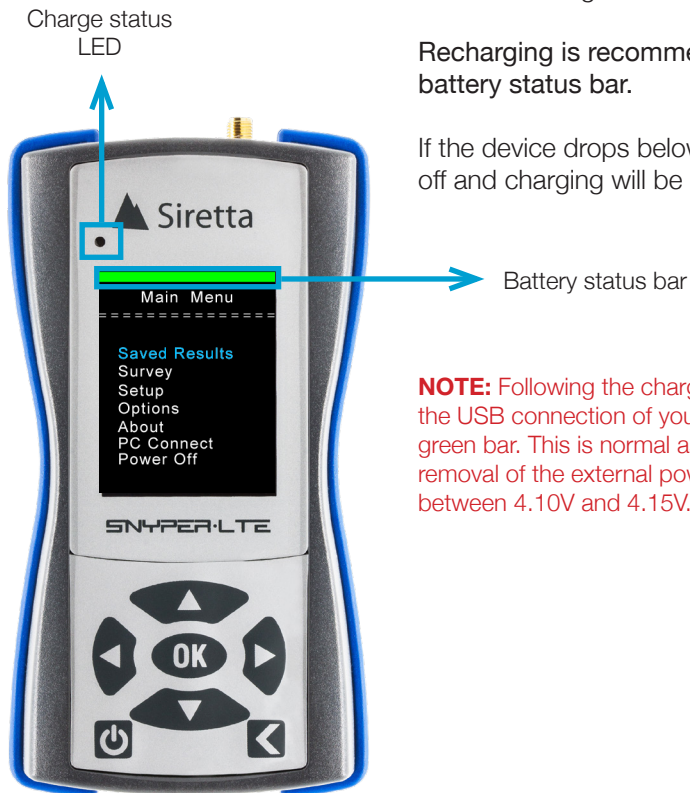
Charging and battery status bar:

A fully charged device is indicated by a green bar extending across the top of the display.

As the device is used and the battery discharges, the battery status bar will shrink to the right of the display and change from green, to yellow, to red.

Recharging is recommended once red bars are displayed on the device battery status bar.

If the device drops below allowable low battery usage the unit will switch off and charging will be required.



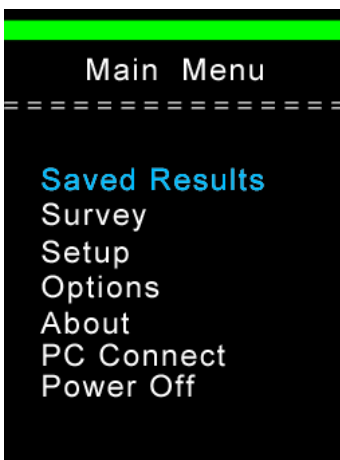
NOTE: Following the charging process and the removal of the charge cable from the USB connection of your SNYPER product, you will notice a drop back in the green bar. This is normal as the battery reaches a stabilised voltage following removal of the external power source. Battery voltage at full charge should be between 4.10V and 4.15V.

NOTE: To protect the battery from damage, charging is only allowed when the temperature is between 0 and 35°C.

Main Menu

Your SNYPER main menu has 7 menus (as shown below in **figure 10**), these can be selected using the UP/DOWN buttons. Once the chosen menu is highlighted, click OK. Press the BACK button to return to the main menu.

Figure 10. 'Main Menu' screen



Saved Results: Reviews previously saved survey.

Survey: Used to perform a new survey.

Setup: Allows personalisation of display and auto-power off.

Options: User options and factory reset.

About: Displays information about the device - model number, firmware versions, battery voltage and IMEI number.

PC Connect: Connects device to a PC as a memory stick to allow download of reports.

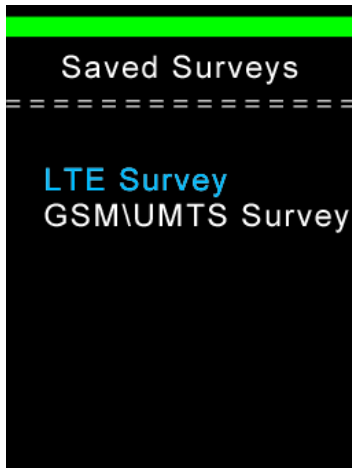
Power Off: Powers off the device.

Saved Results

The 'Saved Surveys' menu allows you to review saved survey results on your SNYPER product. SNYPER-LTE model can store 1 survey on the device. The [SNYPER-LTE Spectrum](#) can store up to 50 survey results.

Using the UP/DOWN buttons, select the survey type you want to view, press OK.

Figure 11. 'Saved Survey' screen



Viewing Saved LTE Survey Results

NOTE: Steps 1 & 2 are only valid for SNYPER-LTE Spectrum, see 'Show Results' over page for SNYPER-LTE.

Step 1. Select 'LTE Survey' from the saved survey menu.

Step 2. Select the survey you wish to view using the UP/DOWN and OK buttons.

Figure 12. Saved LTE results



Deleting a Saved Survey

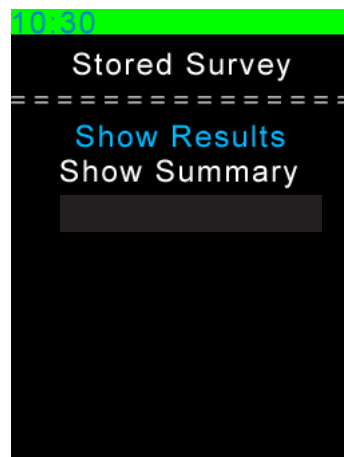
To delete a saved survey, highlight the survey you wish to delete and press the left navigation button. This will delete the survey.

NOTE: No warning is given prior to deleting a saved survey.

Viewing a Saved Survey

To view a survey, highlight it and press the OK or right navigation button. You will be taken to the 'Stored Survey' menu as shown below in figure 13.

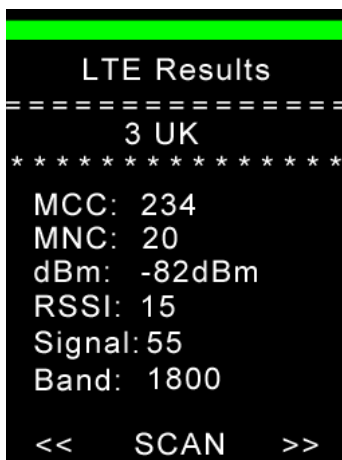
Figure 13. 'Saved Surveys' screen



Show Results

Highlight 'Show Results' and press OK. The SNYPER will display all results with numbered cells from strongest to weakest. To switch between all signals found in the survey, use the LEFT/RIGHT buttons.

Figure 14. Displaying survey results



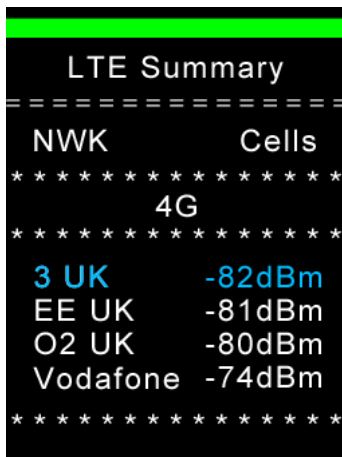
NOTE: With the SNYPER-LTE Spectrum ONLY, you are able to perform a liveSCAN on any cell seen within the saved survey results. If performing a liveSCAN using the saved results, be aware that these results are relevant for the location where the survey was performed. If you move to a different location and try to perform a liveSCAN on previously saved results, the liveSCAN might fail as it cannot locate the cell site or channel number in the new location. This is expected behaviour and care should be taken to ensure that liveSCAN logs are only performed using recent survey results in the same vicinity.

Show Summary

Highlight 'Show Summary' and press OK. The SNYPER will display the number of cells by each network in frequency bands. Use the LEFT/ RIGHT buttons to switch between signal strengths received on the device.

Press the DOWN button to view the summary of results in LTE.

Figure 15. Displaying survey results



NOTE: Two listings may be shown for one network operator. This listing is created by the MNC and is two different MNC's both associated with the same network operator.

Viewing Saved GSM\UMTS Survey Results

NOTE: Steps 1 & 2 are only valid for SNYPER-LTE Spectrum, skip to **step 3** for SNYPER-LTE.

Step 1. Select 'GSM\UMTS Survey' from the saved survey menu.

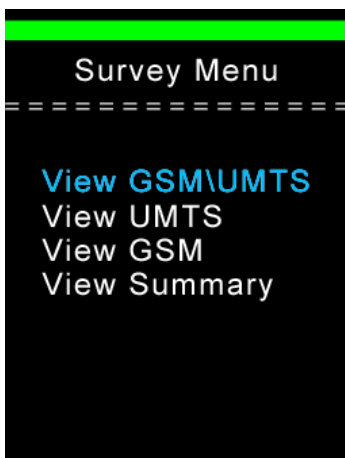
Step 2. Select the survey you wish to view using the UP/DOWN and OK buttons.

Figure 16. Saved LTE results



Step 3. Once you have selected the saved survey you wish to view, the 'Survey Menu' will be displayed as shown in figure 17 below.

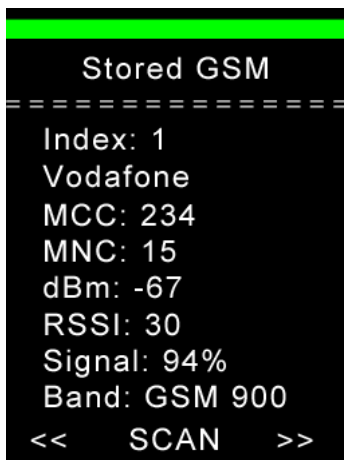
Figure 17. 'Survey Menu' screen



Show Results

Highlight the results you require to be displayed and press OK. The SNYPER will display all results with numbered cells from strongest to weakest. To switch between all signals found in the survey, use the LEFT/RIGHT buttons.

Figure 18. Displaying survey results



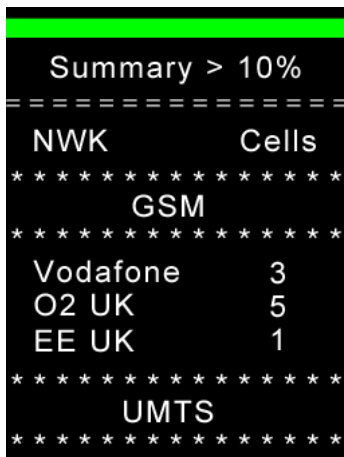
NOTE: With the SNYPER-LTE Spectrum ONLY, you are able to perform a liveSCAN on any cell seen within the saved survey results. If performing a liveSCAN using the saved results, be aware that these results are relevant for the location where the survey was performed. If you move to a different location and try to perform a liveSCAN on previously saved results, the liveSCAN might fail as it cannot locate the cell site or channel number in the new location. This is expected behaviour and care should be taken to ensure that liveSCAN logs are only performed using recent survey results in the same vicinity.

Show Summary

Highlight 'Show Summary' and press OK. The SNYPER will display the number of cells by each network in frequency bands. Use the LEFT/ RIGHT buttons to switch between signal strengths received on the device.

Press the DOWN button to view the summary of results in GSM and UMTS.

Figure 19. Displaying survey results



NOTE: Two listings may be shown for one network operator. This listing is created by the MNC and is two different MNC's both associated with the same network operator.

Survey Menu

The SNYPER-LTE Family has 2 operational modes for performing surveys.

- » **Single Survey:** A single, complete survey of the cellular environment as seen by the SNYPER. The survey result is available as a .csv file, with a .htm summary file.
- » **liveSCAN:** (Only available with SNYPER-LTE Spectrum) liveSCAN can be performed in two ways, directional or site survey liveSCAN. liveSCAN is a continuous survey where the SNYPER-LTE Spectrum is locked onto a user specified channel frequency. The SNYPER-LTE Spectrum graphically displays the received signal strength of that channel on a continuously updated rolling display until cancelled.

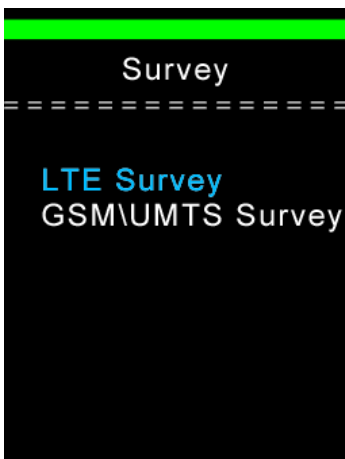
Performing a Single Survey

To perform a single survey on your SNYPER, follow the steps below:

Step 1. Select 'Survey' from the main menu and press OK.

Step 2. Use the UP/DOWN buttons to select what survey you would like to perform and press OK.

Figure 20. Selecting survey to perform

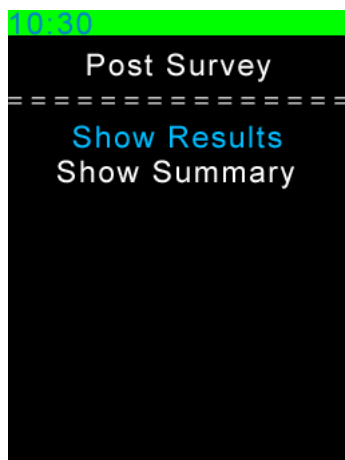


LTE Survey: Performs a survey for the LTE network only.

GSM/UMTS Survey: Performs a survey for the GSM and UMTS network.

Step 3. Press OK to be taken to the post survey menu as shown below in figure 21.

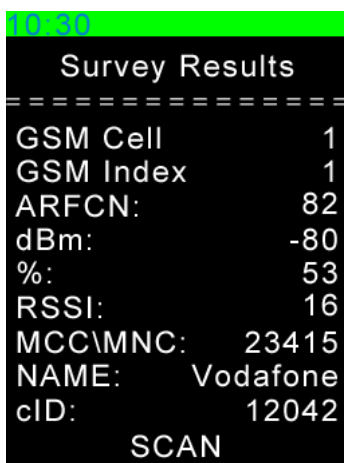
Figure 21. Selecting survey to perform



Show Results

Highlight the results you require to be displayed and press OK. The SNYPER will display all results with numbered cells from strongest to weakest. To switch between all signals found in the survey, use the LEFT/RIGHT buttons.

Figure 22. Displaying survey results



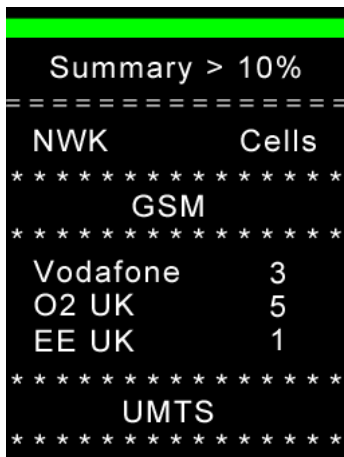
NOTE: With the SNYPER-LTE Spectrum ONLY, you are able to perform a liveSCAN on any cell seen within the saved survey results. If performing a liveSCAN using the saved results, be aware that these results are relevant for the location where the survey was performed. If you move to a different location and try to perform a liveSCAN on previously saved results, the liveSCAN might fail as it cannot locate the cell site or channel number in the new location. This is expected behaviour and care should be taken to ensure that liveSCAN logs are only performed using recent survey results in the same vicinity.

Show Summary

Highlight 'Show Summary' and press OK. The SNYPER will display the number of cells by each network in frequency bands. Use the LEFT/ RIGHT buttons to switch between signal strengths received on the device.

Press the DOWN button to view the summary of results in GSM, UMTS and LTE.

Figure 23. Displaying survey results



NOTE: Two listings may be shown for one network operator. This listing is created by the MNC and is two different MNC's both associated with the same network operator.

Save Results

With default settings, it is not necessary to save the results as this is automatically done at the completion of the survey. However, if you have selected the user option to turn off automatic saving of results, you will need to highlight 'Save Results' and press OK to save results to the SNYPER.

Performing a liveSCAN (Only available with SNYPER-LTE Spectrum)

liveSCAN works by locking the SNYPER-LTE Spectrum to a selected base station channel and the cell it is operating on. Once the SNYPER-LTE Spectrum locks to a channel, a continuous update of the received signal strength of that cell will be reported.

liveSCAN can be used in two modes:

- » **Directional liveSCAN:** When conducting liveSCAN with a directional antenna, moving the antenna horizontally will show the direction with the highest signal strength. A directional antenna covering all frequencies is supplied with the SNYPER-LTE Spectrum to perform this task
- » **Omnidirectional:** When conducting liveSCAN with an omnidirectional antenna, moving the SNYPER-LTE Spectrum to different areas in a building will show "hotspots" with the highest signal strength.

Users are encouraged to use their own antennas when performing a survey or liveSCAN on the SNYPER-LTE Spectrum.

Using the antenna which is intended to be used in the proposed installation will give the best indication of how the equipment will perform. Placing the antenna in potential mounting locations and orientations will allow the operator to make an informed choice about what the best antenna placement is for that installation.

To perform a liveSCAN on your SNYPER-LTE Spectrum, follow the steps below:

Step 1. Conduct a survey of any type using an omnidirectional antenna.

Step 2. When the survey is complete view the results acquired. Use the LEFT/RIGHT buttons to find the survey results you wish to liveSCAN.

Step 3. Remove the connected omnidirectional antenna and connect a directional antenna, or the intended antenna for your installation (recommended).

Step 4. Press OK to initiate liveSCAN.

Figure 24. Cell result prior to engaging liveSCAN

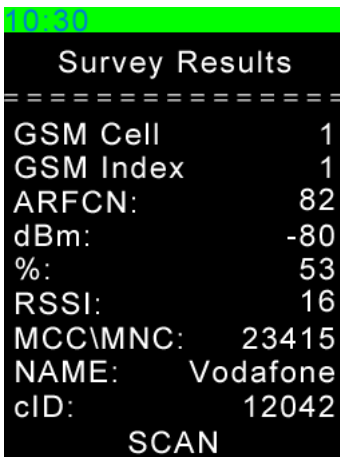
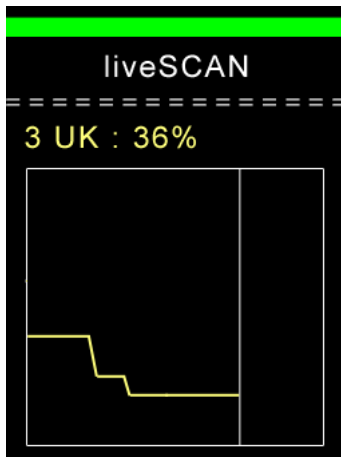


Figure 25. liveSCAN in progress



The default liveSCAN view shows the active signal strength as a %, and the average of all readings taken (again as a %).

The vertical white line scrolls from left to right across the screen and indicates the current measurement position. The green line shows the actual and historical liveSCAN measurement data.

Use the UP/DOWN buttons to switch between display modes:

- » Average reading
- » Number of readings
- » Elapsed time
- » Network operator

The active signal strength reading is shown at all times.

IMPORTANT: Starting a liveSCAN from saved results will result in unpredictable behaviour, as the initial survey may have been performed under different circumstances.

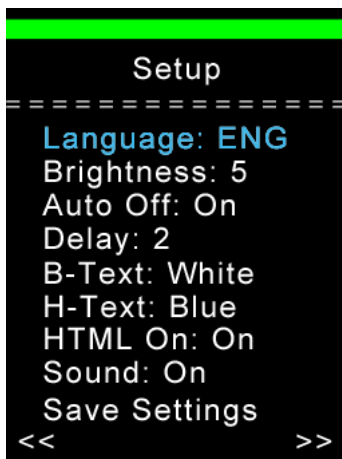
Siretta recommends to conducting a survey first and then running liveSCAN from that survey.

Press the BACK button to abort liveSCAN – the SNYPER-LTE Spectrum will return to the Survey Results screen. A further liveSCAN can be conducted by selecting different cells from the survey results

Setup Menu

By selecting 'Setup' from the main menu, the following setup changes can be made (as shown below in **figure 26**). To select a sub menu use the UP/DOWN button until relevant menu is highlighted, then use the LEFT/RIGHT buttons to amend preference.

Figure 26. 'Setup' screen



Language: Language selection of your SNYPER product.

There are 6 language settings: ENG (English), DEU (German), FRE (French), DAN (Danish), NOR (Norwegian), ITA (Italian).
Default = ENG

Brightness: SNYPER LCD brightness.

The screen brightness has 6 settings, 0 (lowest) - 5 (highest).

Auto Off: Automatic power off of the SNYPER.

The auto off has 2 settings, on or off.

Delay: Time in minutes the SNYPER stays on after last button press. The delay has 5 settings, 1 minute - 5 minutes.

B-Text: Colour of body text on the LCD screen.

The SNYPER has 10 body text colour settings.

H-Text: Colour of highlighted text on the LCD screen.

The SNYPER has 9 highlighted text colour settings.

HTML: Generate HTML report.

The HTML on has 2 setting, on or off.

Sound: Notification sound, this can be set to ON or OFF.

Save Settings: Saves setup menu changes.

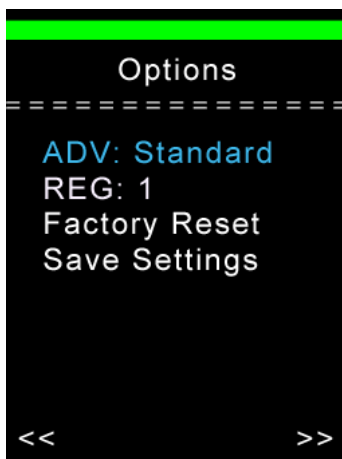
Saves any changes made to the setup menu.

NOTE: The SNYPER doesn't automatically save new settings.

Options Menu

By selecting 'Options' from the main menu, the following options can be selected (as shown below in **figure 27**). To select a sub menu use the UP/DOWN button until relevant menu is highlighted, then use the LEFT/RIGHT buttons to amend preference.

Figure 27. 'Options' screen



ADV: The SNYPER can report results in Standard, Advanced, Engineer or Debug mode. See 'ADV' section below.

REG: ITU Region. Set to appropriate region.

Factory Reset: Resets the SNYPER-LTE Graphyte to factory settings.

NOTE: Performing factory reset will delete all saved files from the SNYPER.

Save Settings: Saves setup menu changes.*
Saves any changes made to the setup menu.

NOTE: The SNYPER doesn't automatically save new settings.

ADV

The 'ADV' option determines the operation mode of your SNYPER when performing a survey. There are 4 options: Standard, Advanced, Engineer or Debug - each will display a different range of results once a survey has been performed.

Standard Mode - Standard mode receives and displays a basic range of results and is the factory default operation mode.

Advanced Mode - Advanced mode receives and displays a more advanced range of results in addition to the results displayed in Standard mode.

Engineer Mode - Engineer mode receives and displays a more advanced range of results in addition to the results displayed in Standard and Advanced mode.

Debug Mode - Debug mode for the SNYPER.

NOTE: ONLY USE THIS MODE WHEN INSTRUCTED BY SIRETTA SUPPORT.

See **table 3** over page for breakdown of information provided.

For full description of survey parameters, see SNYPER Survey Terminology:
<https://www.siretta.com/snyper-survey-terminology>

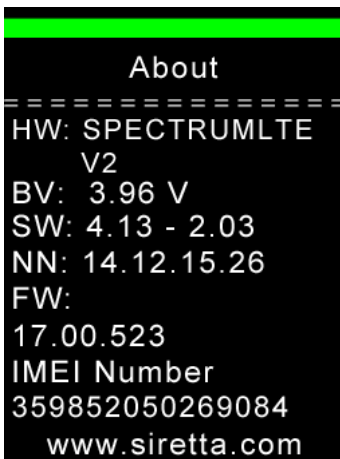
Table 3. Breakdown of information provided

	Standard	Advanced	Engineer
Index - Base station number assigned by your SNYPER			
Network - Name of the network provider			
MCC - Mobile Country Code being received			
MNC - Mobile Network Code being received			
dBm - Signal strength being received (Signal strength ranges from -40 to -115dBm, the lower the number the higher the signal strength.)			
RSSI - Received Signal Strength Indicator (Values range from 0 - 31, the higher the number the higher the signal strength.)			
Signal - Percentage signal received (Values range from 0% - 100%, the higher the number the higher the signal strength.)			
Band - Frequency band being received			
CID - Unique ID of the network cell being received (if available)			
ARFCN - Absolute Radio Frequency Channel Number being received			
UARFCN - UTRA Absolute Radio Frequency Channel Number being received			
SCR - Scrambling Code			
LAC - Location Area Code			
BSIC - Base Station Identity Code			
DL - Signal download frequency			
UL - Signal upload frequency			

About Menu

By selecting 'About' from the main menu, information about your SNYPER product will be displayed (as shown below in figure 28).

Figure 28. 'About' screen



HW: SNYPER-LTE+ Family model hardware version.

BV: Battery voltage.

SW: Current application and loader software versions running on your SNYPER.

NN: The current list of global network names stored on your SNYPER product as of the displayed date (dd.mm.yy).

FW: SNYPER firmware version

IMEI Number: The unique IMEI number of your SNYPER.

PC Connect

The PC Connect feature allows you to download all stored surveys onto your PC.

The data is downloaded to your PC in CSV and HTML format. The downloaded data will include GSMUMTS survey results.

To download data from your SNYPER follow the steps below:

Step 1. Connect supplied USB cable to your SNYPER and PC.

Step 2. Select 'PC Connect' from the main menu, and use the RIGHT button to enable PC Connect.

Windows Explorer will open automatically. If Windows explorer does not open automatically, open it by pressing and holding the Windows key and 'e'. A new drive will be visible, containing one directory with the same name as the files saved.

Figure 29. Prepare for data download

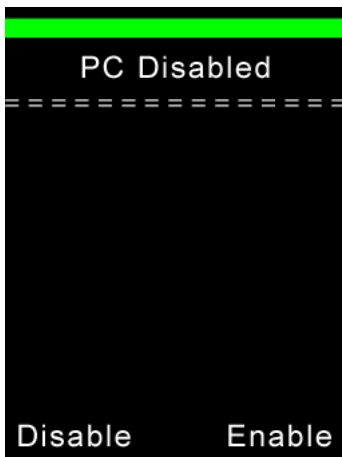
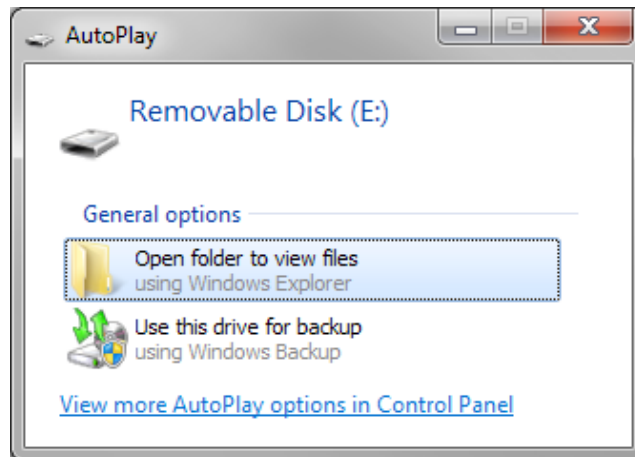


Figure 30. Downloading your SNYPER product data to PC



Step 3. Use copy and paste to transfer files from the SNYPER to the desired location on your PC.

Selecting GSM/UMTS Results

If you wish to view the GSM/UMTS results stored on your SNYPER product, select the '0-UMTS.csv' (CSV format) or '0-umts.htm' (HTML format) files.

Figure 31. 0-umts.csv data download

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NUM	ARFCN	BSIC	RXLEV	Percent	RSSI	BER	MCC	MNC	LAC	CELLID	NAME	DL	UL	
1	116	45	-80	58	16	0	234	10	13532	0	O2 UK	958.2	913.2	
2	692	0	-82	55	15	0	234	30	2186	0	EE UK	1841.19	1746.19	
3	122	0	-88	46	12	0	234	10	13532	37198	O2 UK	959.4	914.4	
4	106	0	-90	44	11	0	234	10	21496	0	O2 UK	956.2	911.2	
5	102	0	-90	44	11	0	234	10	13532	13773	O2 UK	955.4	910.4	
6	113	0	-91	42	11	0	234	10	13532	0	O2 UK	957.59	912.59	
7	63	0	-91	42	11	0	234	15	37	0	Vodafone	947.59	902.59	
8	79	0	-92	40	10	0	234	15	146	5302	Vodafone	950.79	905.79	
9	77	0	-92	40	10	0	234	15	37	0	Vodafone	950.4	905.4	
10	89	0	-95	34	9	0	234	15	706	9244	Vodafone	952.79	907.79	
11	73	0	-97	30	8	0	234	15	706	12468	Vodafone	949.59	904.59	
12	95	0	-100	24	6	0	234	15	179	8796	Vodafone	954	909	
13	17	0	-102	20	5	0	234	15	883	5918	Vodafone	938.4	893.4	
2G Summary														
=====														
Name	Type	NETID	> 85%	> 70%	> 55%	> 40%	> 25%	> 10%						
#O2 UK	2G	23410	0	0	1	4	5	5						
#EE UK	2G	23430	0	0	0	1	1	1						

Figure 32. 0-umts.htm data download

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SNYPER Network Survey Results

GSM (2G) Survey Results

Survey	ARFCN	RXLEV	Percent	RSSI	MCC/MNC	DL/UL	BER	CELLID	LAC	NETNAME
1	116	-81	58	16	234/10	958.2/913.2	0.00	0	13532	O2 UK
2	692	-82	55	15	234/30	1841.19/1746.19	0.00	0	2186	EE UK
3	122	-88	46	12	234/10	959.4/914.4	0.00	37198	13532	O2 UK
4	106	-80	44	11	234/10	956.2/911.2	0.00	0	21496	O2 UK
5	102	-90	44	11	234/10	955.4/910.4	0.00	13773	13532	O2 UK
6	113	-91	42	11	234/10	957.59/912.59	0.00	0	13532	O2 UK
7	63	-91	42	11	234/15	947.59/902.59	0.00	0	37	Vodafone
8	79	-92	40	10	234/15	950.79/905.79	0.00	5302	146	Vodafone
9	77	-92	40	10	234/15	950.4/905.4	0.00	0	37	Vodafone
10	89	-95	34	9	234/15	952.79/907.79	0.00	9244	706	Vodafone
11	73	-97	30	8	234/15	949.59/904.59	0.00	12468	706	Vodafone
12	95	-100	24	6	234/15	954.0/909.0	0.00	8796	179	Vodafone
13	17	-102	20	5	234/15	938.4/893.4	0.00	5918	883	Vodafone

GSM (2G) Summary Results

NETNAME	ID	85	70	55	40	25	10
O2 UK	23410	0	0	1	4	5	5
EE UK	23430	0	0	0	1	1	1
Vodafone	23415	0	0	0	0	6	7

UMTS (3G) Survey Results

Survey	UARFCN	RXLEV	Percent	RSSI	MCC/MNC	DL	SCRCODE	CELLID	LAC	NETNAME
1	10712	-78	60	17	234/20	2122.39	3232	3555953	1232	EE UK
2	10761	-85	50	14	234/30	2152.19	6784	8601922	1077	EE UK
3	10786	-91	42	11	234/30	2157.19	6784	8604201	1077	EE UK
4	10564	-92	40	10	234/20	2112.80	3232	8565985	1232	O2 UK
5	2963	-93	38	10	234/10	592.59	4720	30357017	21463	O2 UK
6	10588	-94	36	9	234/20	2117.60	3232	8565835	1232	O2 UK
7	2938	-94	36	9	234/15	587.59	4864	30407774	53	Vodafone
8	10661	-105	12	3	234/10	2132.19	2160	46813469	21714	O2 UK
9	10712	-106	12	3	234/15	2142.39	4800	30405097	53	Vodafone
10	10637	-106	12	3	234/10	2127.39	2160	46820696	21714	O2 UK

Selecting LTE Results

If you wish to view the LTE results stored on your SNYPER product, select the '0-LTE.csv' (CSV format) or '0-LTEhtm' (HTML format) files.

Figure 33. 0-lte.csv data download

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	LTE Survey Results														
2															
3	=====														
4															
5	NUM	dBm	Percent	RSSI	MCC	MNC	CELLID	TAC	DRX	RSVP	EARFCN	BAND	DL	UL	Network
6															
7	1	-75	65	19	234	30	67	10771	128	-113	1667	3	1851.69	1756.69	EE UK
8															
9	2	-78	60	17	234	15	000014F	24701	64	-113	6300	20	806.0	847.0	Vodafone
10															
11	3	-80	58	16	234	20	68	5088	128	-113	6175	20	793.5	834.5	3 UK
12															
13	4	-86	49	13	234	10	000014F	16448	128	-113	6400	20	816.0	857.0	O2 UK
14															
15															

Figure 34. 0-lte.htm data download

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SNYPER Network Survey Results

LTE (4G) Survey Results

Survey	EARFCN	RXLEV	Percent	RSSI	MCC	MNC	DRX	CELLID	TAC	BAND	NETNAME
0	1667	-75	65	19	234	30	128	0000067	10771	3	EE UK
1	6300	-78	60	17	234	15	64	000014F	24701	20	Vodafone
2	6175	-80	58	16	234	20	128	0000088	5088	20	3 UK
3	6400	-86	49	13	234	10	128	000014F	16448	20	O2 UK

Power Off

After use, remember to power off your SNYPER. The device can be powered off in the following 2 ways:

- » Selecting the 'Power Off' option from the main menu. The device will display a power off message as shown below in **figure 36**.

Figure 35. Select 'Power Off'

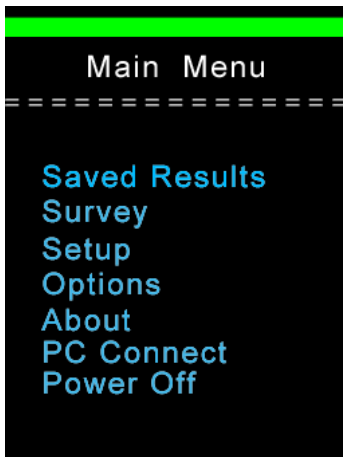


Figure 36. Power off message



- » Press and hold the ON/OFF button on the device for >2 seconds. The screen will display a power off message as shown below in **figure 38**.

Figure 37. ON/OFF button



ON/OFF Button

Figure 38. Power off message



Updating the SNYPER Software

From time to time Siretta may make software updates available for the SNYPER-LTE Family. Normally, these software updates will be made available as a complimentary service on the Siretta website. Updated software may contain improvements and/or new features.

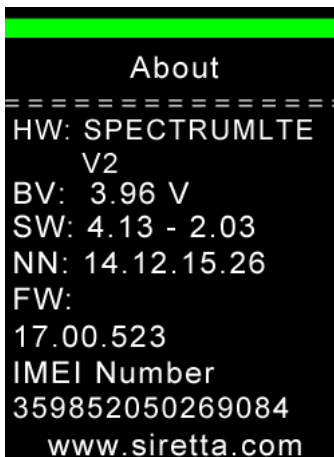
WARNING: The software update procedure does require the SNYPER to be factory reset. If the settings have been changed from default, make a note of them before starting the firmware upgrade procedure.

To perform a software update, follow the steps below:

Step 1. Go to www.siretta.com/software-library/ and download and save latest SNYPER software.

Step 2. Verify that the new software is an update before proceeding further. You can do this by checking the 'About' menu on the SNYPER.

Figure 39. Current software version

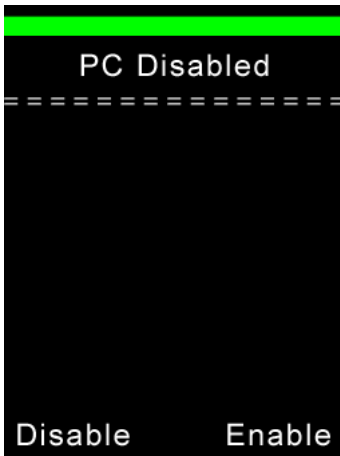


Step 3. Connect supplied USB cable to your SNYPER and PC.

Step 4. Select 'PC Connect' from the main menu, and use the RIGHT button to enable PC Connect.

Windows Explorer will open automatically. If Windows explorer does not open automatically, open it by pressing and holding the Windows key and 'e'.

Figure 40. Enabling PC connect



The SNYPER will turn on its serial port and appear as a USB drive named on the PC.

Step 5. Using Windows, copy the new software file to the SNYPER USB drive.

Step 6. Disconnect the SNYPER from the PC by clicking the LEFT button, this will disable the USB drive connection.

Step 7. Press the back button to initiate software update.

Step 8. You will be prompted to confirm the software update. Click the RIGHT button to confirm performing a software update.

Figure 41. Confirm software update



Once you have confirmed the software update, the process will begin automatically.

Once the software update is complete, the SNYPER will turn off for approximately 70 seconds then power itself on.

On power up, a white spinning symbol will be displayed for approximately a minute and then the SNYPER will display the main menu.

Step 9. Confirm the software has updated by checking the 'About' menu. If successful, your SNYPER is now ready for use.

If the software update was not successful, please contact your Siretta support representative.

Safety and Product Care

General Precautions

- » Do not exceed the environmental and electrical limits as specified.
- » Avoid exposing your SNYPER product to lit cigarettes, naked flames or to extreme hot or cold temperatures.
- » Never try to dismantle your SNYPER product. There are no components on your SNYPER product that can be serviced by the user. If you attempt to dismantle your SNYPER product, you will invalidate the warranty.
- » Do not connect any incompatible component or product to your SNYPER product signal analysers.

Safety Recommendations

PLEASE READ CAREFULLY

Be sure the use of this product is allowed in the country intended and the environment required. The use of this product may be dangerous and has to be used with caution in the following areas:

- » Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc
- » Where there is risk of explosion such as gasoline stations, oil refineries, gas works etc

It is responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product, any mark of tampering will compromise the warranty.

Should there be any doubt, please refer to the technical documentation and the regulations in force.

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Copyright Declaration

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Please refer to the Siretta Ltd website for the latest firmware and documents.

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Definitions

Term	Definition
2G	2nd Generation Mobile Telecommunications
3G	3rd Generation Mobile Telecommunications
4G	4th Generation Mobile Telecommunications
ARFCN	Absolute Radio Frequency Channel Number
Band	Identifies the frequency band of the cellular signal
BER	Bit Error Rate
BSIC	Base Station Identity Code
CID	Cell Identity
dBm	Measured signal strength of the network in dBm
DL	Downlink
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
IMEI	International Mobile Equipment Identity
LAC	Location Area Code
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LTE	Long Term Evolution
MCC	Mobile Country Code
MNC	Mobile Network Code

MNO	Mobile Network Operator
RSSI	Received Signal Strength Indicator
SCR	Basestation Scrambling Code
SIM	Subscriber Identity Module
SMA	Sub Miniature version A
TAC	Tracking Area Code (Assigned by MNO)
UARFCN	UTRA Absolute Radio Frequency Channel Number
UL	Uplink
UMTS	Universal Mobile Telecommunications System (Same as 3G)
USB	Universal Serial Bus

For full list of SNYPER glossary terms see:

<https://www.siretta.com/snyper-glossary>



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