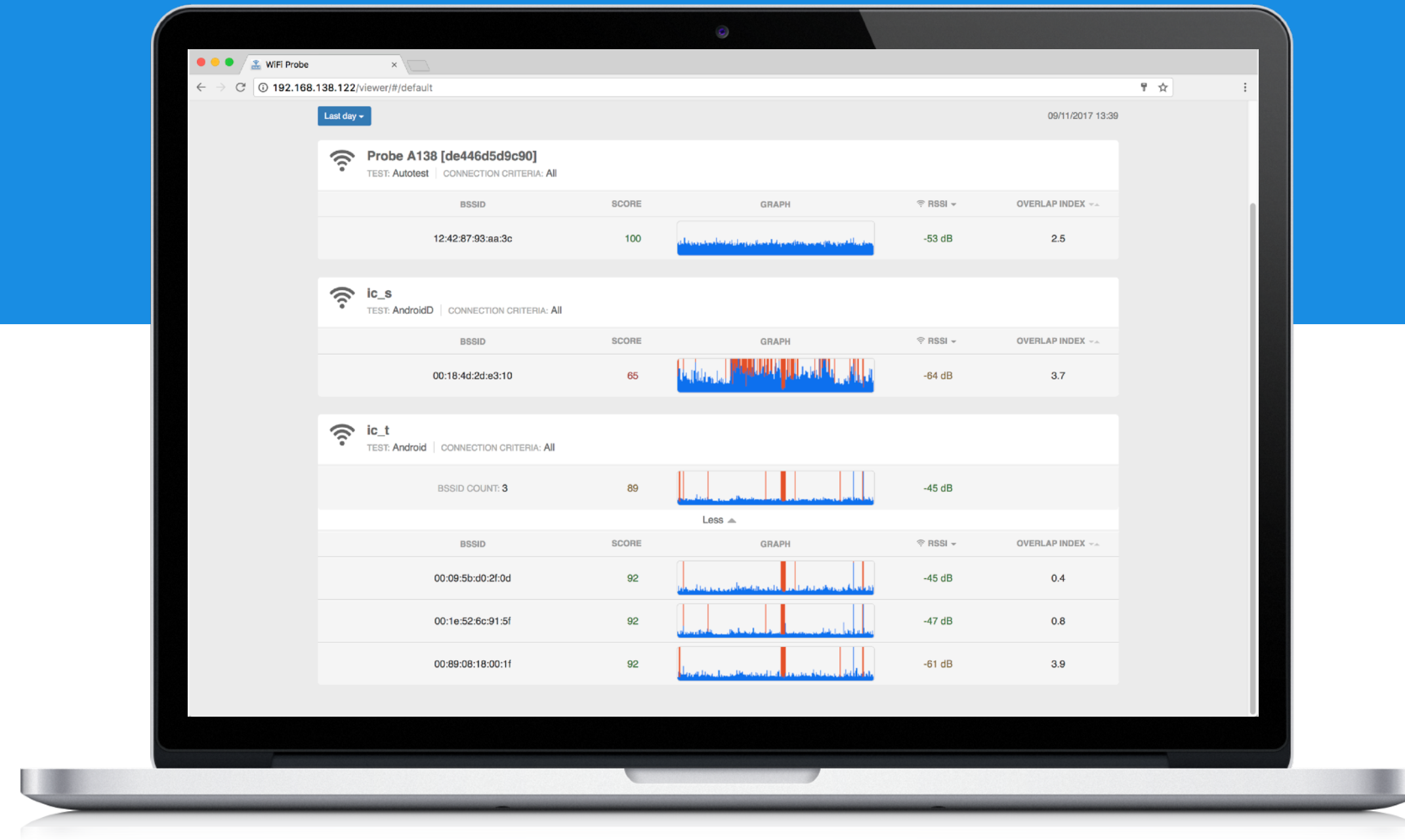


WiFiProbe Numeric Indicators



Numeric Indicators

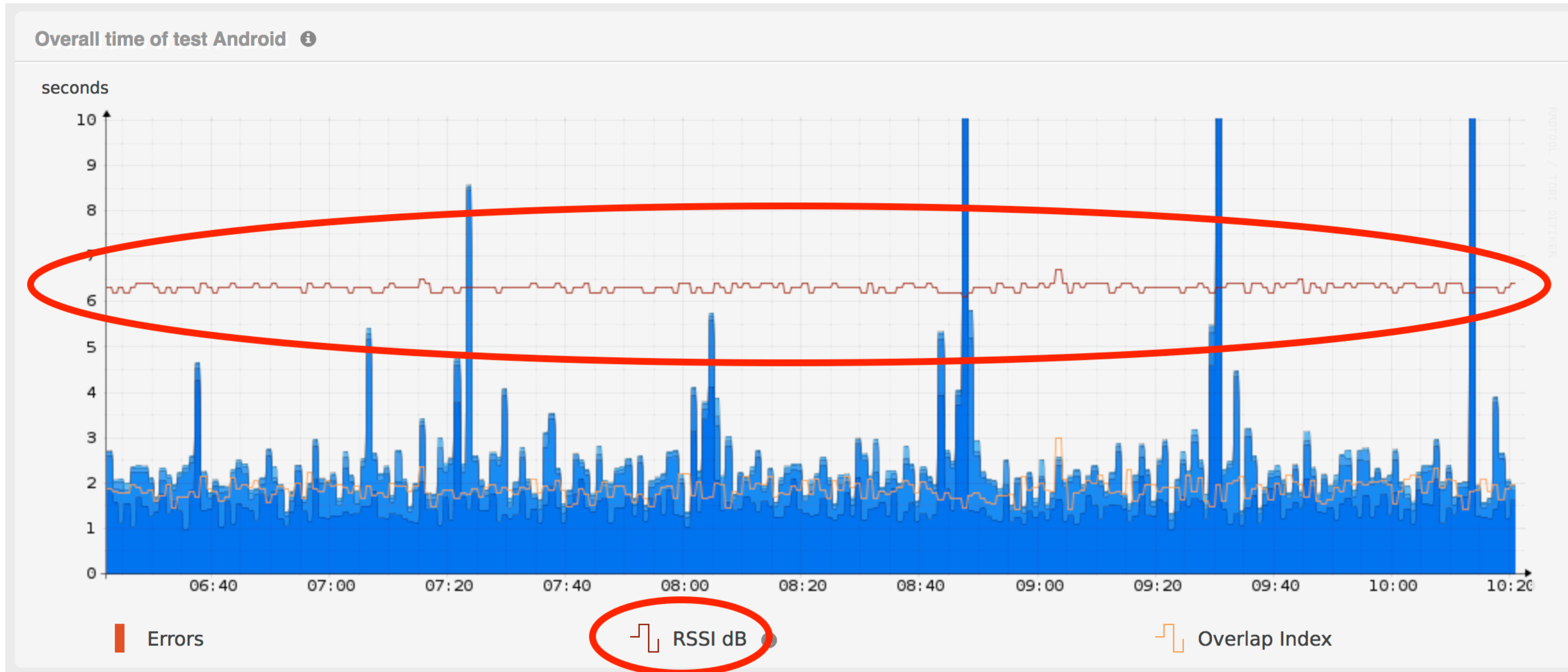
- Besides the summary graphs and the detailed logs of the system activities, a set of numeric indicators are computed and collected:
 - RSSI: Received Signal Strength Indication
 - SCORE: indicates the service level of the ESSID/BSSID
 - OVERLAP INDEX: indicates the overlapping on the channel frequency with other Wi-Fi networks

RSSI

- The received signal strength indicator (RSSI) measures the power present in the radio signal received from the given ESSID/BSSID
- RSSI is expressed in negative dBm (decibels in relation to a milliwatt)
- The lower is the RSSI, i.e. closer it is to zero, the stronger the signal is
- RSSI dBm as seen from the WiFiProbe depends from the antenna model and its gain, generally the range goes from -20 to -80 dBm, where:
 - -20 dBm to -40 dBm is a very close access point with very good signal
 - -70 dBm and more is a far away barely visible access point

RSSI graph

[Y axis = $\text{abs}(\text{RSSI}/10)$]



SCORE

- The "SCORE" is a indicator designed to summarise the availability of a Wi-Fi over a period of time, with single value that goes from 100 (alway available) to 0 (practically unusable)
- The value 100 is assigned to a Wi-Fi network (ESSID/BSSID) where the scripted test never returns an error and it computed duration always takes less than 10 second
- For each 1% of error of the scripted test on the given period, the SCORE is decremented by 3
- For each 1% of tests that take more then 10 sec on the given period, the SCORE is decremented by 1
- The SCORE goes to 0 for a Wi-Fi network where the test time is always more than 10 sec or has more the 1 failure every 3 tests, or a bad enough combination of the two

SCORE as sort criteria

BSSID	SCORE ▾	GRAPH	📶 RSSI ▲	OVERLAP INDEX ▾▲
00:23:ea:00:54:4e	100		-62 dB	3.0
00:23:ea:7f:f8:6e	100		-58 dB	1.2
00:3a:98:29:5a:f1	100		-56 dB	0.3
00:3a:98:29:5a:fe	100		-51 dB	0.3
00:23:ea:00:8b:ae	96		-70 dB	1.9
00:23:ea:00:54:41	96		-67 dB	0.1
00:23:ea:7f:f8:61	95		-64 dB	0.2
00:23:ea:00:8f:be	80		-70 dB	2.0
00:23:ea:00:99:6e	0		-72 dB	10.6

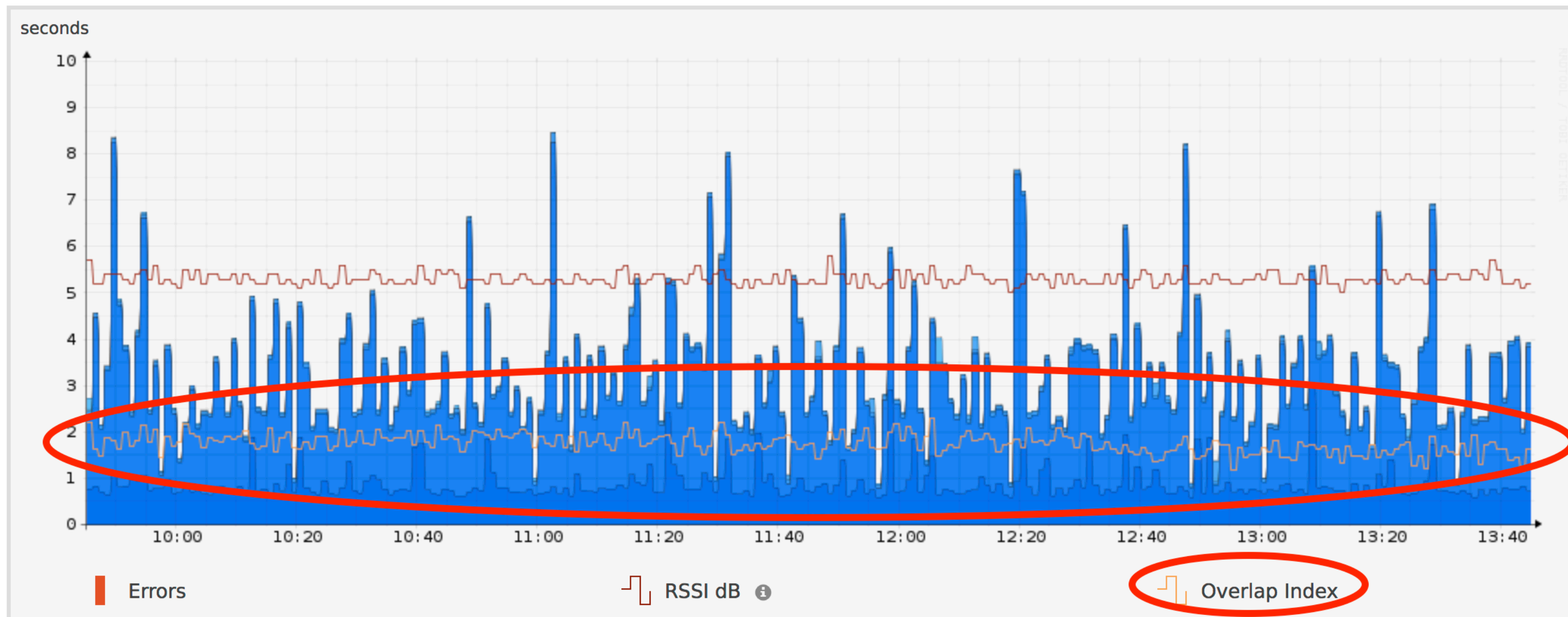
OVERLAP INDEX

- The presence of other Access Points using the same channel frequencies can lead to slow Wi-Fi speeds and interference
- The OVERLAP INDEX is a value that allows to assess and monitor the danger of interference by Wi-Fi networks managed by other Access Points than the one being tested
- The OVERLAP INDEX can go from zero for no overlapping with other Wi-Fi networks to tops in the range of tens
- The OVERLAP INDEX computing does not consider as overlapping the Wi-Fi networks managed in multi-SSID mode by the same physical Access Point being tested

OVERLAP INDEX computing

- The OVERLAP INDEX is computed as the sum of all the adjusted frequency overlap between the measured Wi-Fi network with all the other active Wi-Fi:
$$\text{OverlapIndex} = \sum(x\text{OverlapAdj})$$
- To get the base overlap (xOverlapBase), the frequency range of every Wi-Fi network (x) is considered against the frequency range of the measured Wi-Fi network, to get the a value ranging from 0 (no overlap) to 1 overlap on the complete frequency range of the measured Wi-Fi network
- The xOverlapBase value is adjusted considering the RSSI difference (RSSIdiff) between the Wi-Fi network (x) and the measured Wi-Fi network using the formula:
$$x\text{OverlapAdj} = x\text{OverlapBase} * (1 + \text{abs}(0.33 * \text{RSSIdiff})) \text{ for positive RSSIdiff}$$
$$x\text{OverlapAdj} = x\text{OverlapBase} / (1 + \text{abs}(0.33 * \text{RSSIdiff})) \text{ for negative RSSIdiff}$$
Basically every 3dBm of difference in either way, the overlap is halved or doubled

OVERLAP INDEX graph and detail



BANDWIDTHS OVERLAP

☺ Index

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📊 Chart

MHz

DemoProbe [de446dbfd27]	2462 MHz	-52 dB
IGAP	2427 MHz	-64 dB
LUKS [de446db39c42]	2462 MHz	-69 dB
Vodafone-30547000	2462 MHz	-70 dB
ISPAP	2462 MHz	-71 dB
IWPAP	2462 MHz	-71 dB
Meditur	2462 MHz	-73 dB
IMMI_SABELT	2462 MHz	-73 dB
Black1_testAlfa [de446df8f3ac]	2462 MHz	-73 dB

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