
Frontline Soderaでの 受信信号強度の計測について

2019年3月27日

コーンズテクノロジー株式会社

はじめに

- 本資料では、Frontline Soderaを使用した受信信号強度の計測について記載いたします。

1. Frame Display でのRSSI表示

2. Coexistence Viewでの2.4Ghz帯スペクトラム表示

1. Frame Display でのRSSI表示

Frame Display でのRSSI表示①

Frame DisplayにてRSSIが表示されますので、各パケットの受信信号強度が把握可能です(単位:dBm)。

The screenshot shows the Wireshark interface with the Frame Display pane selected. The frame details for Frame 4,367 (Master) are shown, including the Baseband section where RSSI is displayed as -38.375 dBm (medium). A yellow arrow points from the RSSI value in the details pane to the expanded frame view below. The expanded view also shows the RSSI value in a red box. The packet list pane on the right shows the frame's structure: LMP version_req, LMP version_res, LMP features_req, and LMP features_req_ext.

B...	Frame#	Opcode	Original Opcode	LT_A...	Role	Initiat
	4,367	version_req		1	M...	mast
	4,368	version_res		1	Sl...	mast
	4,369	features_req		1	M...	mast
	4,370	features_req_ext		1	M...	mast

Frame 4,367: (Master) Len=32
Baseband:
RSSI: -38.375 dBm (medium)
Link: 2
Role: Master (0x28-52-e0-21-61-2d)

Frame Display でのRSSI表示②

RSSIフィールドをタブ画面にドラッグ&ドロップすることで、各パケットの受信信号強度の遷移が把握可能です。

The screenshot shows the Wireshark interface with the 'Frame Display' pane on the left and the 'Packet List' pane on the right. A red box highlights the 'RSSI: -37.750 dBm (medium)' field in the Baseband section of the selected frame (Frame 8,786). A yellow arrow indicates this field being dragged to the 'Packet List' pane, where a new column header '+RSSI (Baseband)' has been created. A red box highlights this new column header, and a red bracket groups the corresponding RSSI values for several packets in the list.

Frame 8,786: (Master) Len=624

Baseband:

- RSSI: -37.750 dBm (medium)
- Link: 5
- Role: Master (0x28-ab-c5-d8-01-34)
- Channel: 7 (2409 MHz)
- Clock: 0x04...a8
- Packet Status: OK
- FLOW: Go
- TYPE: 2-DH5
- Payload Data Rate: 2 Mbps
- LT_ADDR: 1
- SEQN: 0
- ARGN: 0
- L2CAP Flow: Go
- Logical Link ID: L2CAP start or no fragmentation
- Retransmission Status: Acknowledged
- Decrypted by Bluetooth ComProbe: Yes
- Payload Length: 598

L2CAP:

- Role: Master
- Address: 1
- PDU Length: 594
- Channel ID: 0x006b (AVDTP)

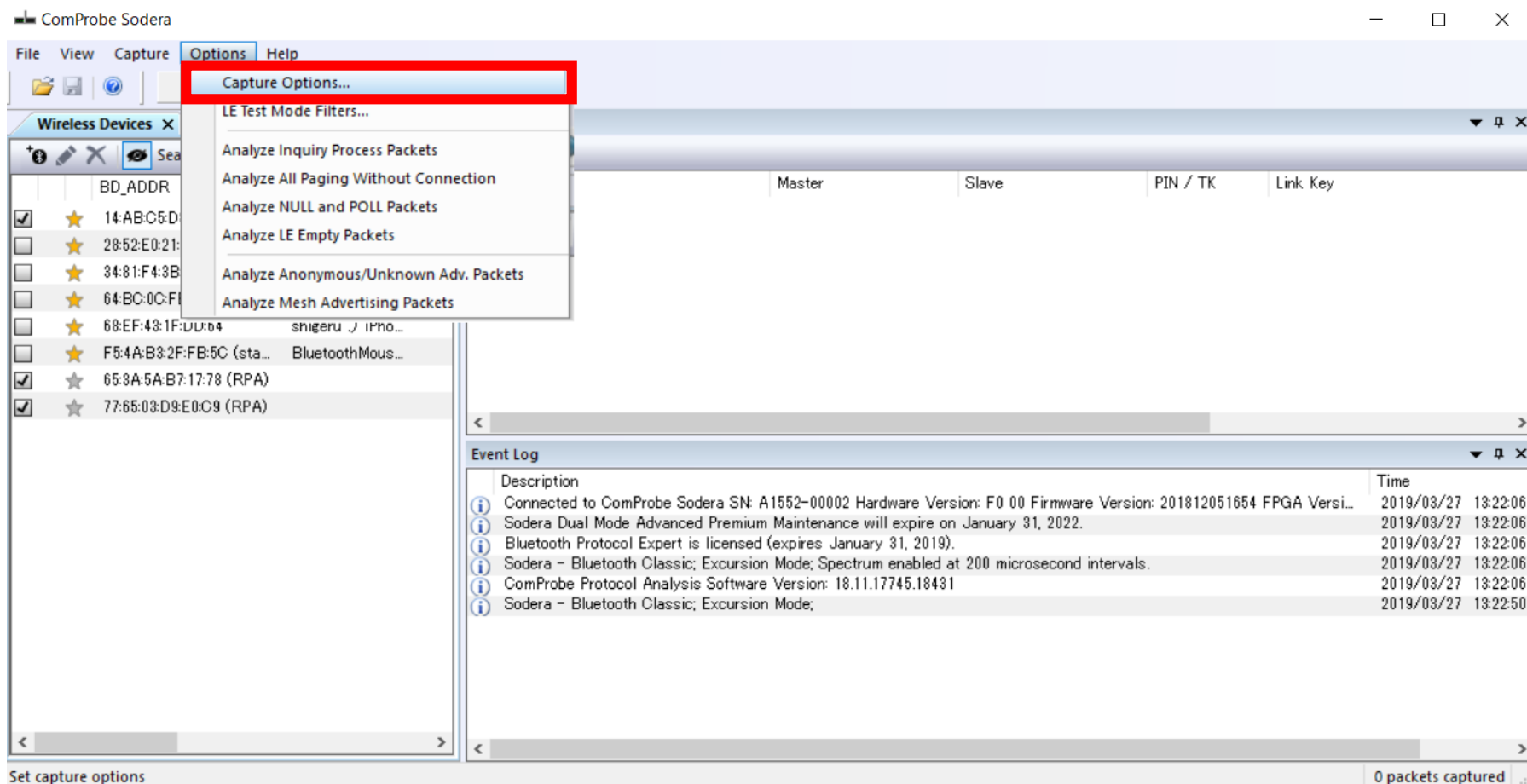
AVDTP:

B. Frame#	+RSSI (Baseband)	Role
8,774	-37.275 dBm (strong)	M (Audio Sc
8,780	... dBm (strong)	M (Audio Sc
8,783	... dBm (strong)	M (Audio Sc
8,786	-37.750 dBm (medium)	M (Audio Sc
8,789	...625 dBm (strong)	M (Audio Sc
8,791	...63.250 dBm (strong)	M (Audio Sc
8,797	-35.125 dBm (strong)	M (Audio Sc
8,802	-35.375 dBm (strong)	M (Audio Sc
8,807	-37.250 dBm (medium)	M (Audio Sc

2. Coexistence Viewでの2.4Ghz帯 スペクトラム表示

スペクトラム表示の有効化

Sodera Datasource ウィンドウ画面でメニューバーから [Options] → [Capture Options...]を選択します。

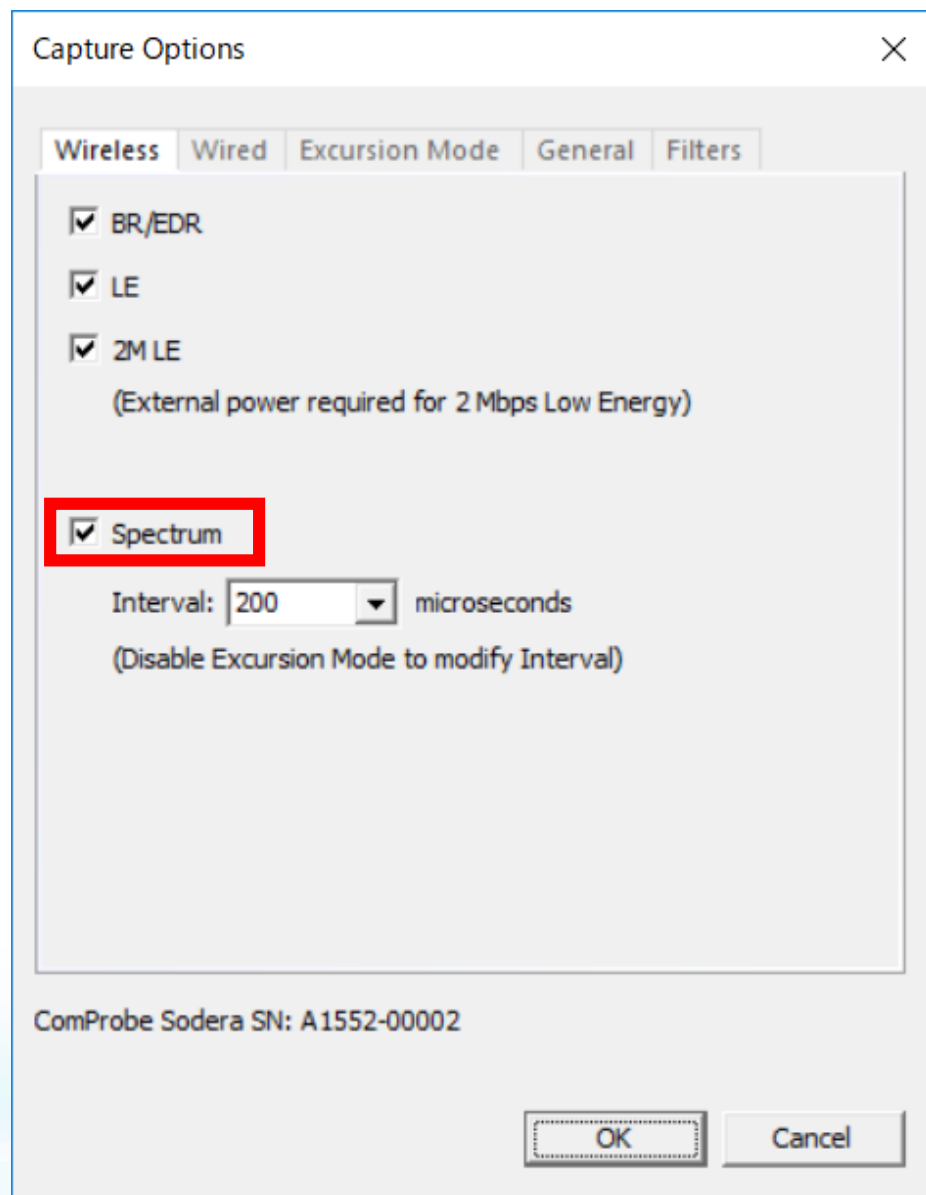


Set capture options

0 packets captured

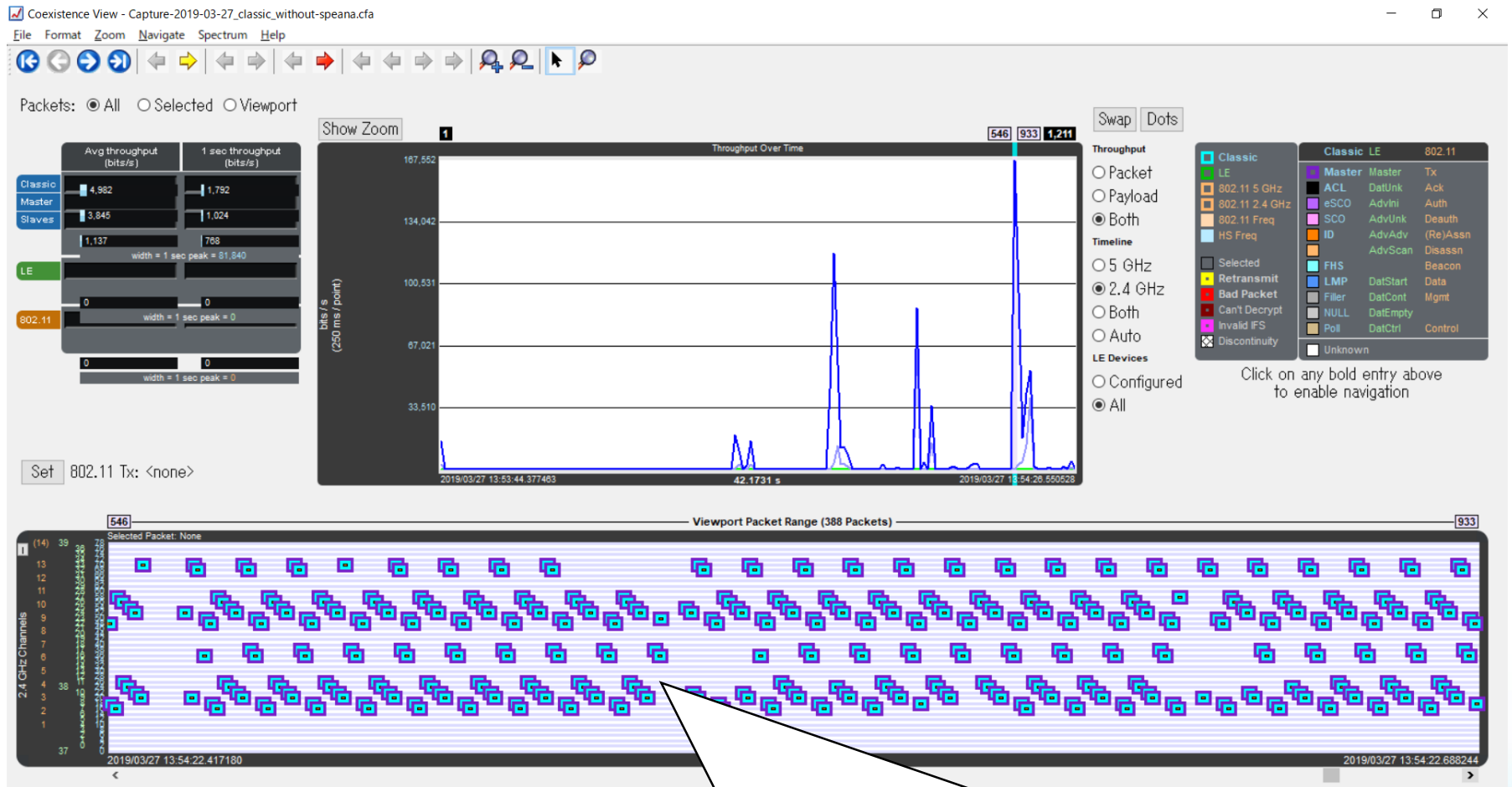
スペクトラム表示の有効化

Capture Options 画面で、
[Spectrum]にチェックを入れます。



COBVAER

Coexistence View 表示 (スペクトラム表示有効にしていない場合)



キャプチャーしたパッケージが、各チャンネルに割り当てられて表示されます(■部分)。

Coexistence View 表示 (スペクトラム表示有効にしている場合)

The screenshot displays the Coexistence View interface in Wireshark. At the top, the title bar reads "Coexistence View - Capture-2019-03-27_133816.cfa". Below the title bar is a menu bar with "File", "Format", "Zoom", "Navigate", "Spectrum", and "Help". A toolbar contains various navigation and zooming icons. Below the toolbar, there are radio buttons for "Packets: All", "Selected", and "Viewport".

On the left side, there are two summary tables. The first table shows throughput statistics:

	Avg throughput (bits/s)	1 sec throughput (bits/s)
Classic	7,050	864
Master	5,561	560
Slaves	1,488	304
width = 1 sec peak = 71,816		
LE	0	0
width = 1 sec peak = 0		
802.11	0	0
width = 1 sec peak = 0		

The second table shows the "Set 802.11 Tx: <none>" status.

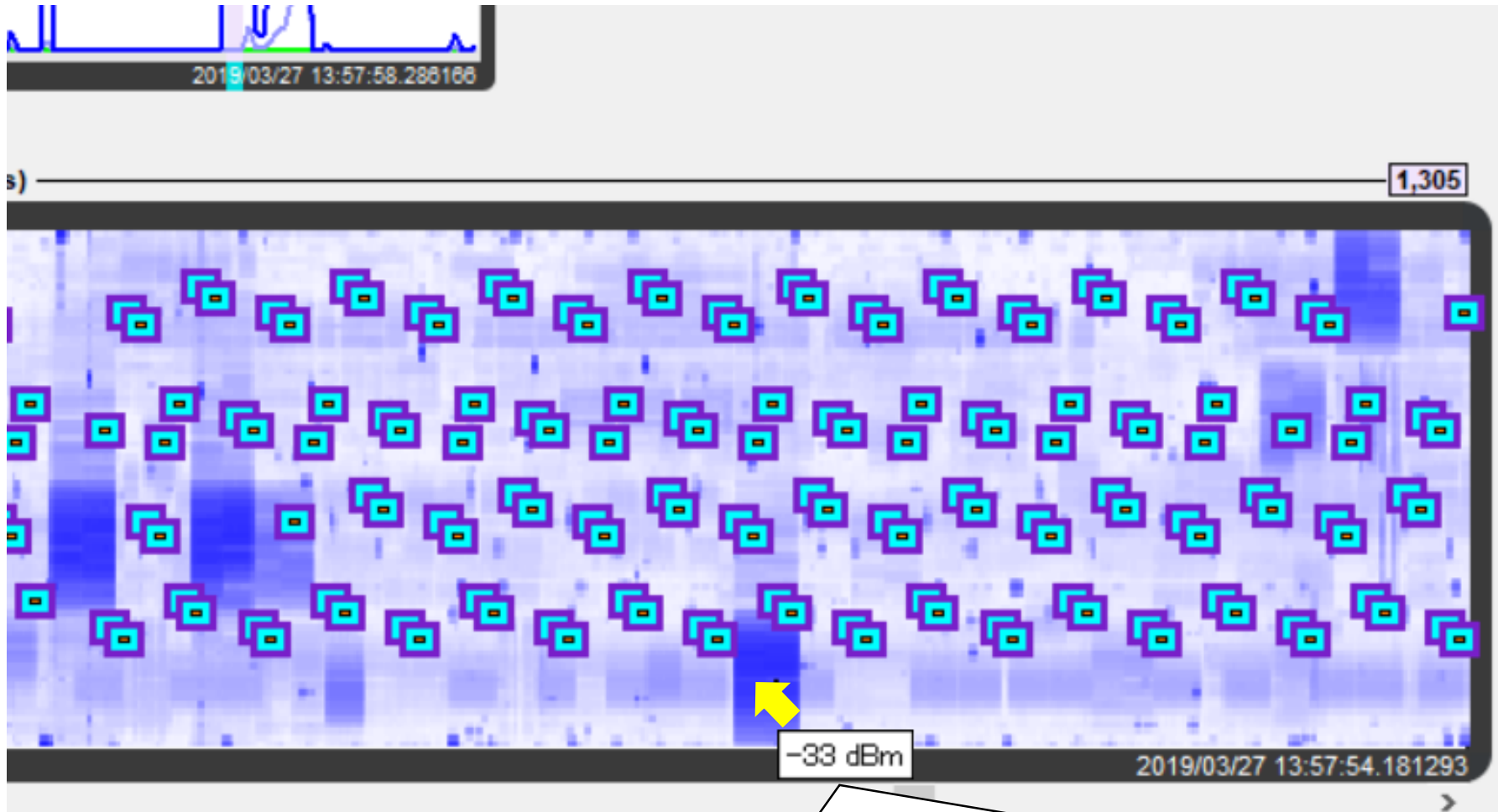
The main area is divided into two panels. The top panel, titled "Throughput Over Time", shows a line graph of throughput in bits/s over time. The y-axis ranges from 0 to 208,896 bits/s. The x-axis shows time from 2019/03/27 13:57:30.389488 to 2019/03/27 13:57:58.286166. A prominent peak is visible at approximately 13:57:54. The bottom panel, titled "Viewpoint Packet Range (396 Packets)", shows a heatmap of the 2.4 GHz channels (37-39) over time. The x-axis is the same as the top panel. The heatmap shows signal strength across the channels, with a callout box highlighting a specific area.

On the right side, there are several control panels. The "Throughput" panel has radio buttons for "Packet", "Payload", "Both", "5 GHz", "2.4 GHz", "Both", "Auto", and "LE Devices". The "Timeline" panel has radio buttons for "Configured" and "All". The "LE Devices" panel has radio buttons for "Configured" and "All". Below these panels is a legend for "Classic LE 802.11" with various protocol entries and their corresponding colors.

At the bottom right, there is a status bar showing "Packets: #1666 - 100%".

キャプチャーしたパケットの表示に加えて、
2.4GHz帯の電界強度が背後に表示されます。

Coexistence View 表示 (スペクトラム表示有効にしている場合)



マウスカーソルを置くと電界強度がdBmで表示されます。
青が濃い＝電界強度が強い
青が薄い＝電界強度が弱い