Best Vicinity Finder Feature

A new feature has been added to the SEMS: "Best vicinity finder". This function is mainly intended for finding "quieter" frequencies around the wanted points present in a list or a scan table.
This is very beneficial particularly when the receiving unit is kept out of the shielded room thus exposed to external unknown signals which may reduce the actual dynamic range, jeopardizing thus the results.

There is nothing special to activate this optional feature as it is mainly done automatically. Here is a short explanation how to use it.

Choose the list or scan table you would like to use, as usual, from the menu "Cal".
Now the display shows:

> (press) "Cal to proceed"
> (press) "**HiDyn** to find Best Vicinity"

asking you to make a choice between the two options:

1. "Cal"   This selection starts the usual calibration procedure.
2. "**HiDyn**"   This choice, instead, operates as follows:
   o Turns On the transmitter and aligns Rx to Tx.
   o Turns off the transmitter.
   o For every frequency present in the table two additional side frequencies are added: the lower is f*0.99 (-1%) and the higher is f*1.01 (+1%)
   o All the frequencies are then tuned on RX unit, while the TX unit is kept OFF, and for each the noise floor is recorded.
   o At the end of this step, for each triplet the frequency point which shows lower noise floor is taken while the remaining two are discarded. In this way now a new table, same in number of point as the original one, is created.
   o All noise floor figures are recorded apart for future reference.
   o From now on the standard calibration procedure takes place (tuning frequency by frequency and recording each value for attenuation reference).

As described above, "**HiDyn**" is a very effective way to avoid noisy points which could restrict the use of RX when not in a shielded room. It helps therefore to reach a dynamic range similar to the one it would be when RX unit is placed in the room.

However, this is not the only benefit introduced by this function. Indeed, for each frequency both noise floor and full signal magnitude is recorded. As a result the **dynamic range** for each point is **known** and it is known **immediately**.
This means that the user can decide before anything else if the setup is sufficient for the test.
The system gives the user two ways to be aware of the dynamic range: **setting a minimum dynamic range warning** or **browsing it frequency by frequency**.

Setting a threshold for a **minimum dynamic range warning** can be done from the menu "Stp" as for the Beep function. Select the figure required and activate it.
When the Beep function is activated, during "**HiDyn**" calibration, as soon as the dynamic range is below the threshold, the SEMS bleeps and stops calibrating showing the current figure. The user has then the option to abort calibration or ignore the warning and go forward anyway.

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Another way to check for the dynamic range is **browsing it frequency by frequency** which effectively allows the user to look through the stored results. Indeed, immediately after a "**HiDyn**" calibration, under the menu "Show" the new menu choice "Dyn" is present (as opposed to "Last" as usual). By choosing this menu all figures can be seen as it would be for a standard test.
In this way the user can check the dynamic range for every single frequency. Note that these data fly away as soon as a test is done (the menu "Dyn" is replaced by "Last").

But there is further **advantage** of this feature. As the SEMS knows, for each frequency, how much the **noise floor** is, it can also show whether a measured point is <u>at the floor</u> or <u>above it</u>. In the first case it means that the attenuation could be better than the shown value while the latter case would say that the shown figure is the actual attenuation.

This feature is available under the only condition that the number of frequencies is lower than 30. As it does not take very much longer than the standard calibration procedure, unless the frequencies for whatever reason have to be as for the exact supplied list, the use of "HiDyn" calibration is warmly recommended at all times.

As described above, at the end of "**HiDyn**" calibration the new table contents is standard, therefore all functions for measuring are still available as for the standard calibration mode.

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