Plan for Tower XL project

1. IEC baflle measurement of all drivers

- drivers flush mounted in insert.

- DC resistance voice coil with multimeter.

- SPL on axis, mls 1Vrms, microphone at 1m on axis at same position for the 3 drivers .

- Impedance measurement at 1 Vrms, swept sine, low sweet rate (about 5 seconds), 20 - 20000 Hz, tweeter 200 - 20000Hz.

- SPL horizontal off axis one side: 15, 30, 45, 60 degrees.

- if possible: horizontal off axis one side: 75 and 90 degrees.

- if possible: vertical off axis one side: 15 – 30 – 45 – 60 (– 75 – 90) degrees.

- nearfield measurement at 5 mm from driver cone, low voltage, low sweep rate (about 5 seconds).

- AC measurement t.b.d. Trying to compare absolute start time impulse response of each driver at same distance from IEC baffle.

2. Make infinite baffle driver models using the IEC baffle measurements

To be done in Leap or other software. Compare all responses with datasheet values. Calculate the AC offsets.

3. In cabinet measurement of all drivers

- condition: cabinet in room or outdoors, as far as possible from all reflecting planes.

- drivers flush mounted in cabinet.

- SPL on axis, mls 1Vrms, microphone at 1m on axis of each driver.

- impedance measurement at 1 Vrms, swept sine, low sweet rate (about 5 seconds), 20 - 20000 Hz for woofer and midrange. No need for tweeter.

- SPL horizontal off axis one side: 15, 30, 45, 60 degrees.

- if possible: horizontal off axis one side: 75 and 90 degrees.

- if possible: vertical off axis one side: 15 – 30 – 45 – 60 (– 75 – 90) degrees.

4. In cabinet response simulations of all drivers

To compare with the "in cabinet measurements". Using Leap or other software.

5. Create SPL and impedance curves (and frd's) for X-over design

Using TSP data and measured cabinet responses and do some splicing. To be done in Leap or other software.

6. Design of X-over

To choose filter concepts some digital designs can be done at first, using miniDSP or other digital processing.

Starting with a passive filter is possible too.

To be done in Leap or other software.

7. In cabinet measurement of filtered drivers

- condition: cabinet in room or outdoors, as far as possible from all reflecting planes.

- SPL on axis, mls 1Vrms, microphone at 1m on axis of each filtered driver.

- SPL horizontal off axis one side: 15, 30, 45, 60 degrees of each filtered driver.

- if possible: horizontal off axis one side: 75 and 90 degrees of each filtered driver.

- if possible: vertical off axis one side: 15 – 30 – 45 – 60 (– 75 – 90) degrees of each filtered driver.

8. In cabinet measurement of the sum response

- condition: cabinet in room or outdoors, as far as possible from all reflecting planes.

- SPL on axis, mls 1 Vrms, microphone at 1m (or more far if possible) on axis between midrange and tweeter for sum response.

- impedance measurement at 1 Vrms, swept sine, low sweet rate (about 5 seconds), 20 - 20000 Hz at the input of the X-over.

- SPL horizontal off axis one side: 15, 30, 45, 60 degrees at height between midrange and tweeter of sum

- if possible: horizontal off axis one side: 75 and 90 degrees at height between midrange and tweeter of sum.

- if possible: vertical off axis one side: 15 – 30 – 45 – 60 (– 75 – 90) degrees at height between midrange and tweeter of sum.

9. Listening, tweaking and measurement checks

10. Build passive filter if not done yet.

- Check SPL on axis of each driver and the sum response, impedance at input of X-over

- listening test.