



Verification Requirement above 1GHz

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Issues

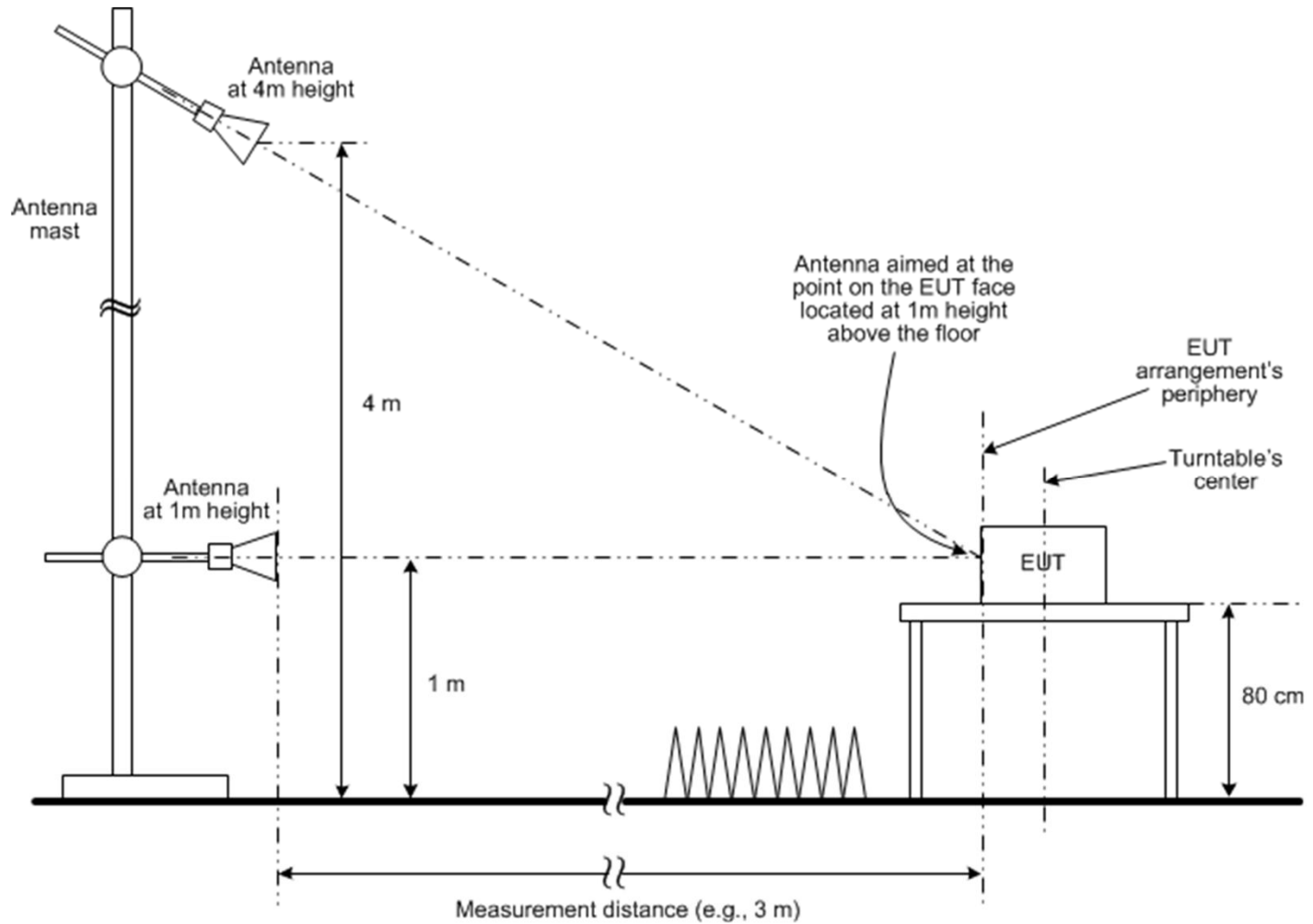
Problem Statement

Validation requirements do not cover aiming of antennas.

Proposed test methods above 1GHz

Aimed at 1m only
Limited absorber on the ground plan.
Measure distance, increases with antenna height

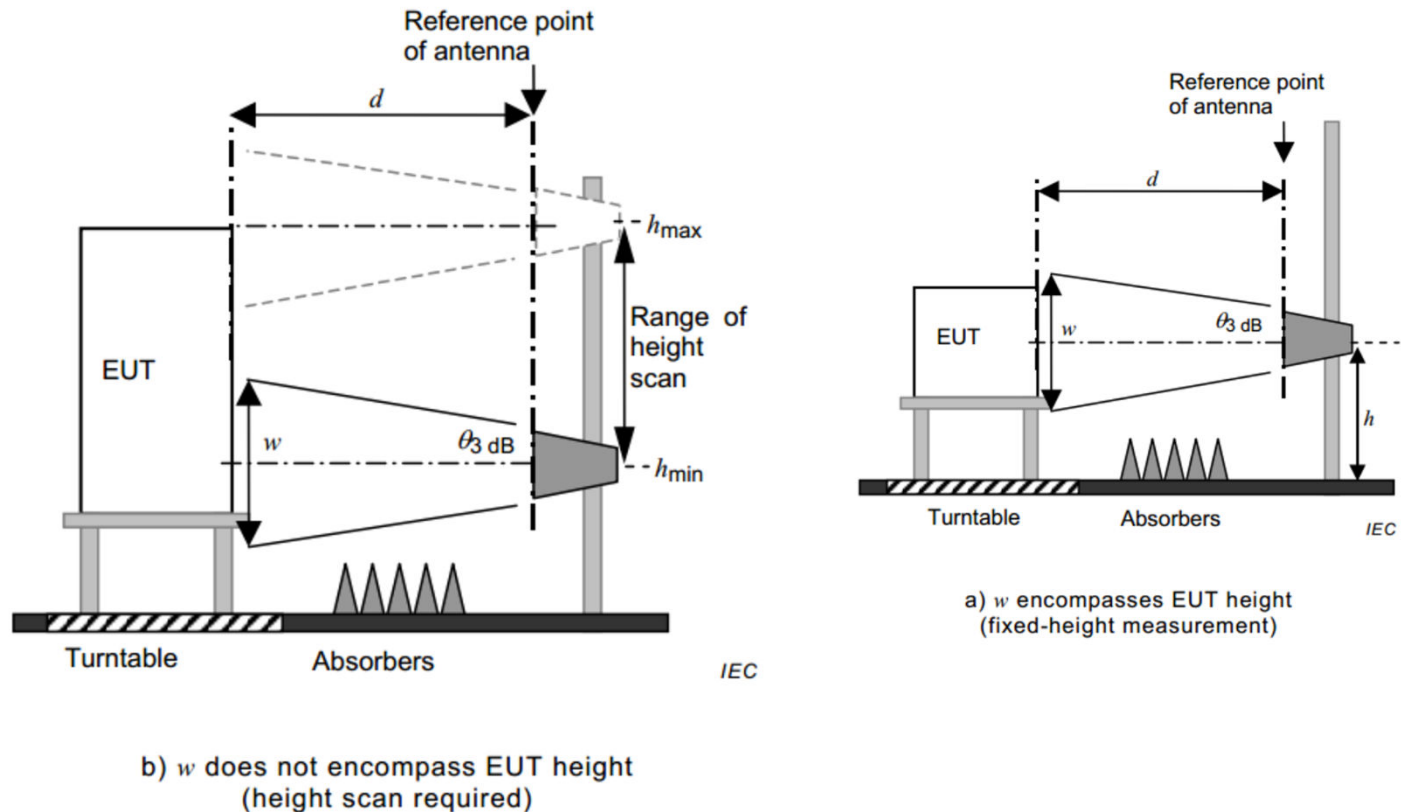
Aiming



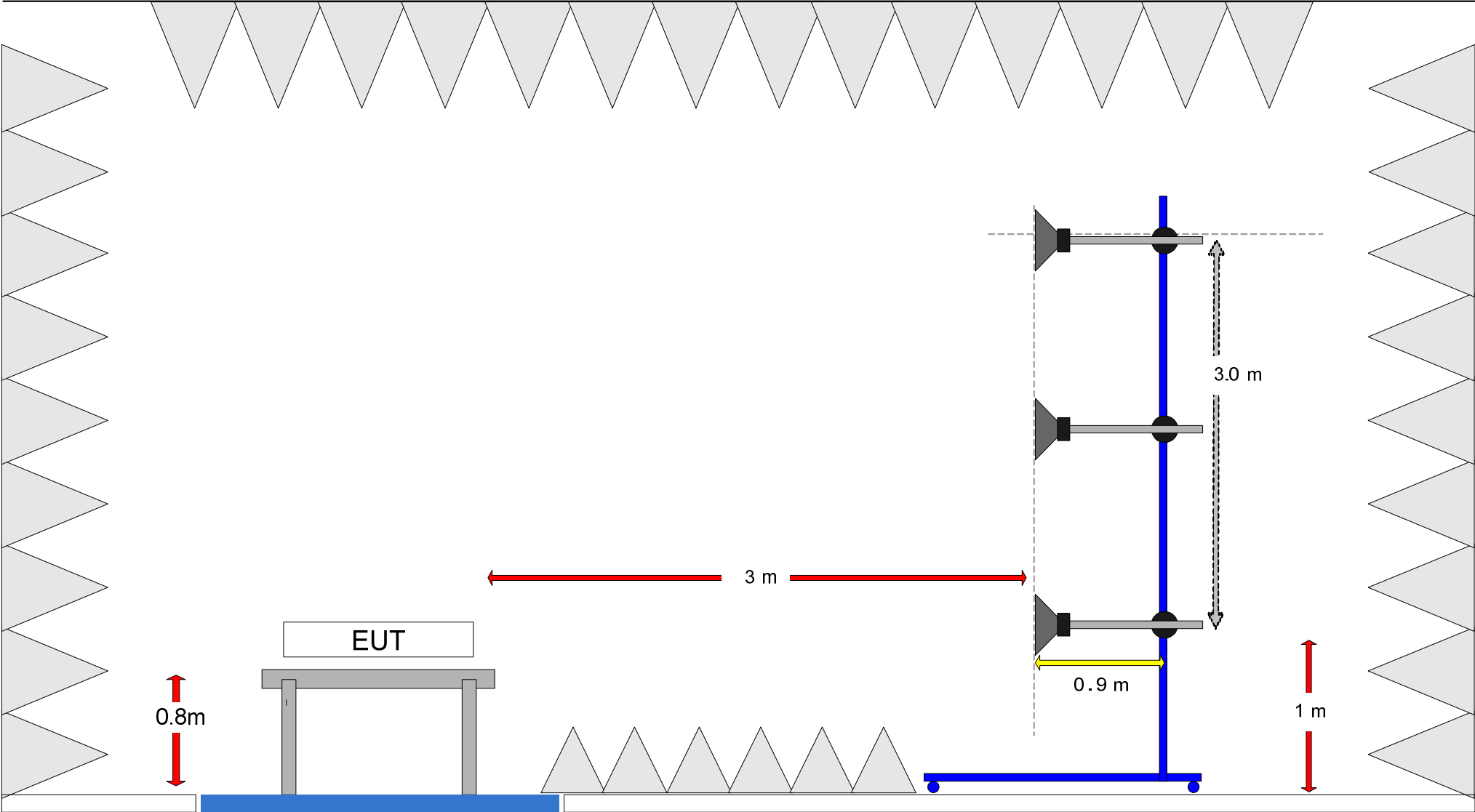
Proposed test methods above 1GHz

There have been proposal to, do a fixed height, and a planer scan.. But unlike CISPR 16, proposal to cover 1m-4m, ie $h_{max} = 4m$ independent of the height of the EUT,

Fixed Height
Or
Planar Scan



Planer Scan from 1m-4m



Calibration Method

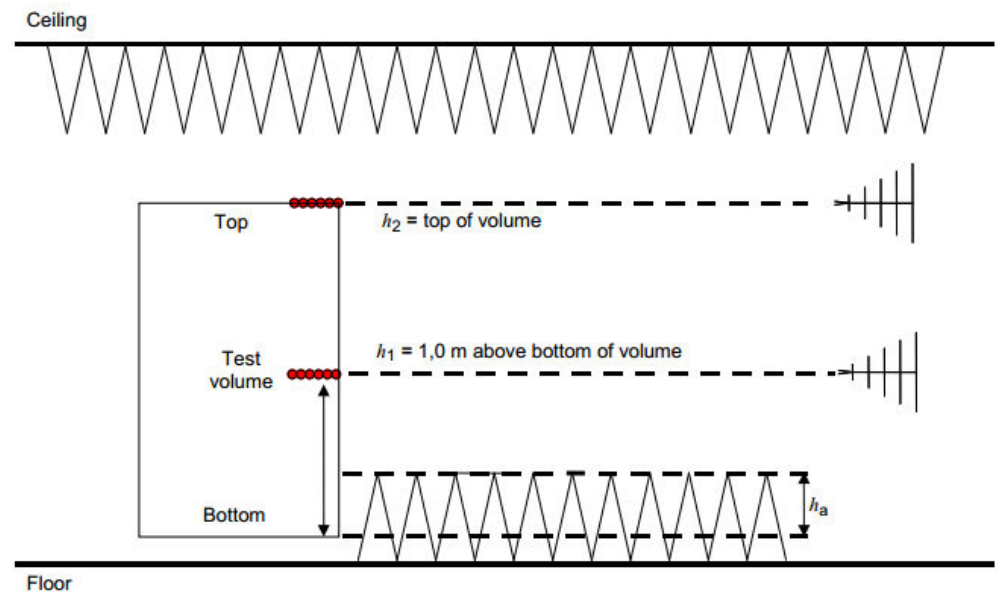
Calibration method

Should reflect the test set up and the antenna calibration should reflect use.

Below 1GHz, NSA and antenna calibration 'mimic' the test set up. These principles should be applied to above 1GHz.

Calibration method CISPR16-2-3 Section 8.3

The Svswr method uses planar antennas



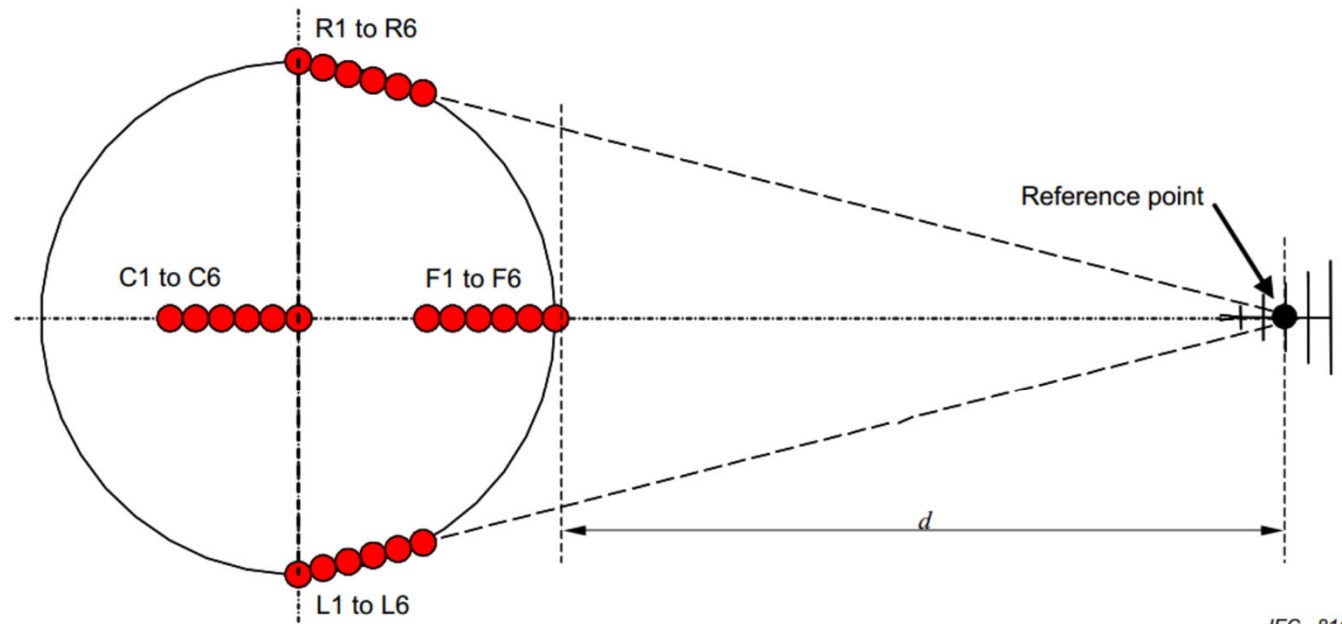
IEC 812/10

Calibration requirements above 1GHz..

Calibrate at the Classic positions....

If you tried to do this doing aiming, what be the test distance, esp. because the distances between each position is so precise.

**Above 1GHz
calibration
positions.**



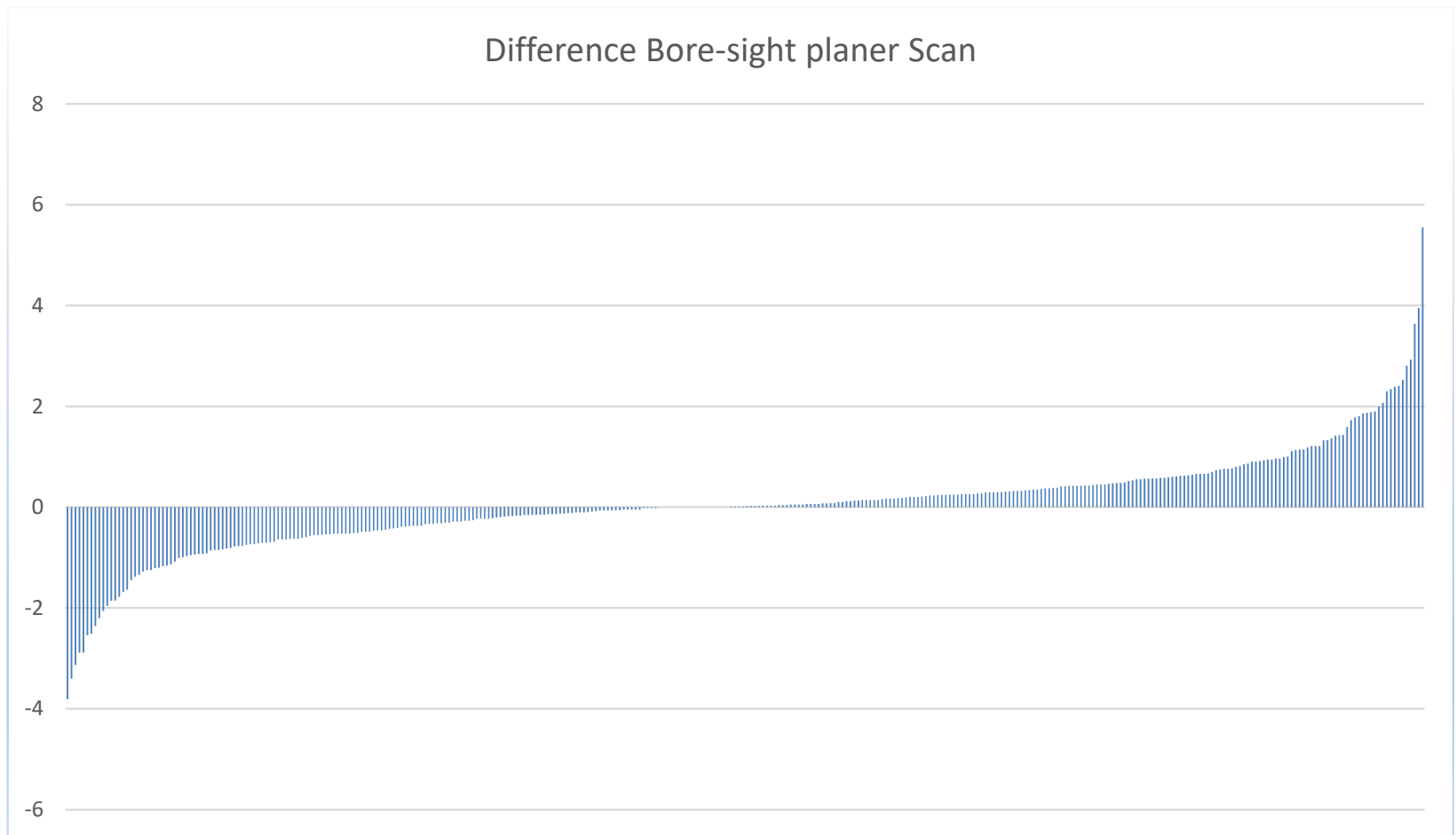
IEC 811/10

Key
 d test distance

Results of Aiming / Planer Below 6GHz

These are the results from 17 different EUTs. 95% emission are with 2dB. Sometimes linear (1m-4m) is worst case, sometimes aiming is worse.

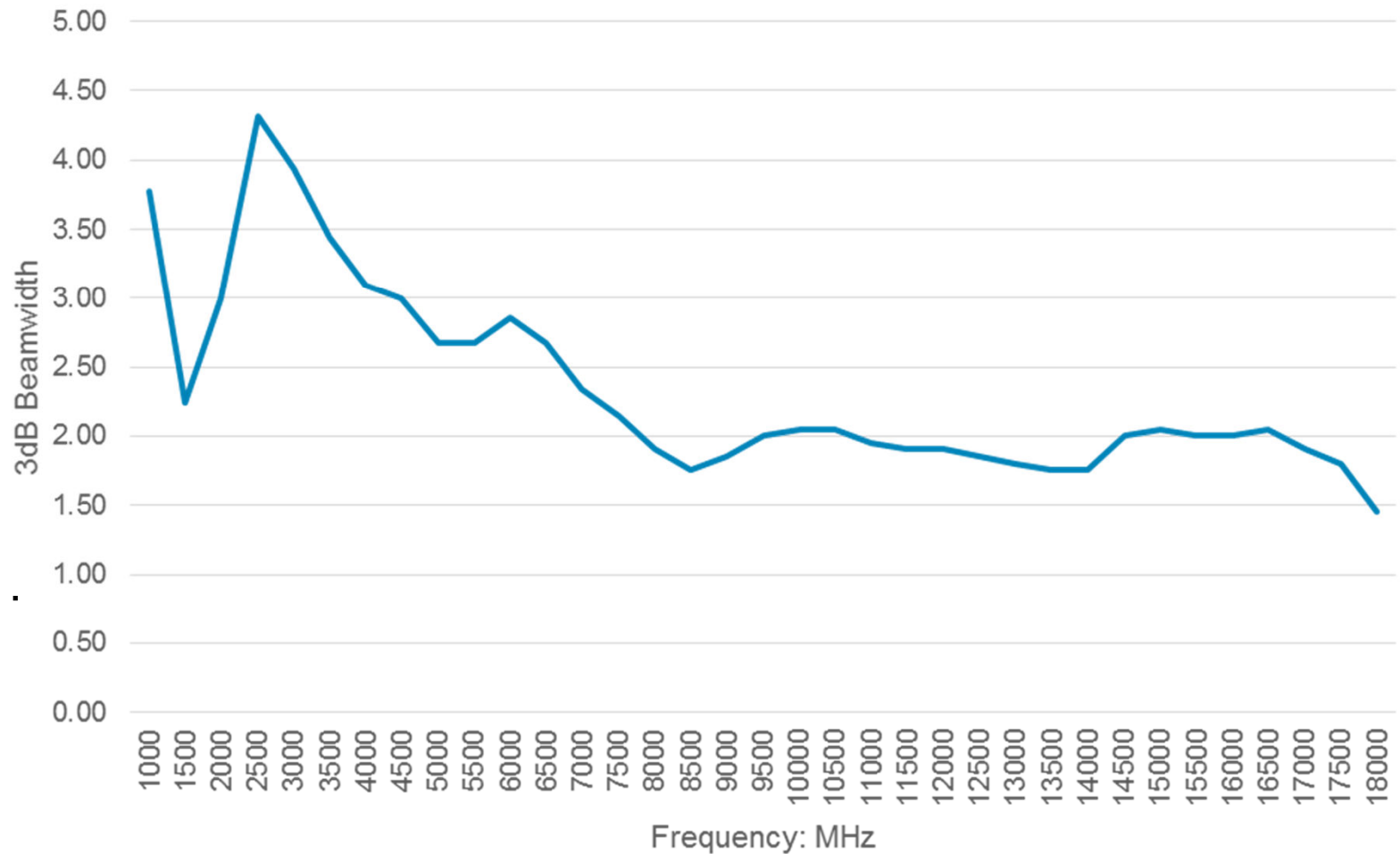
**Results
of 17
EUTs**



3 dB considerations

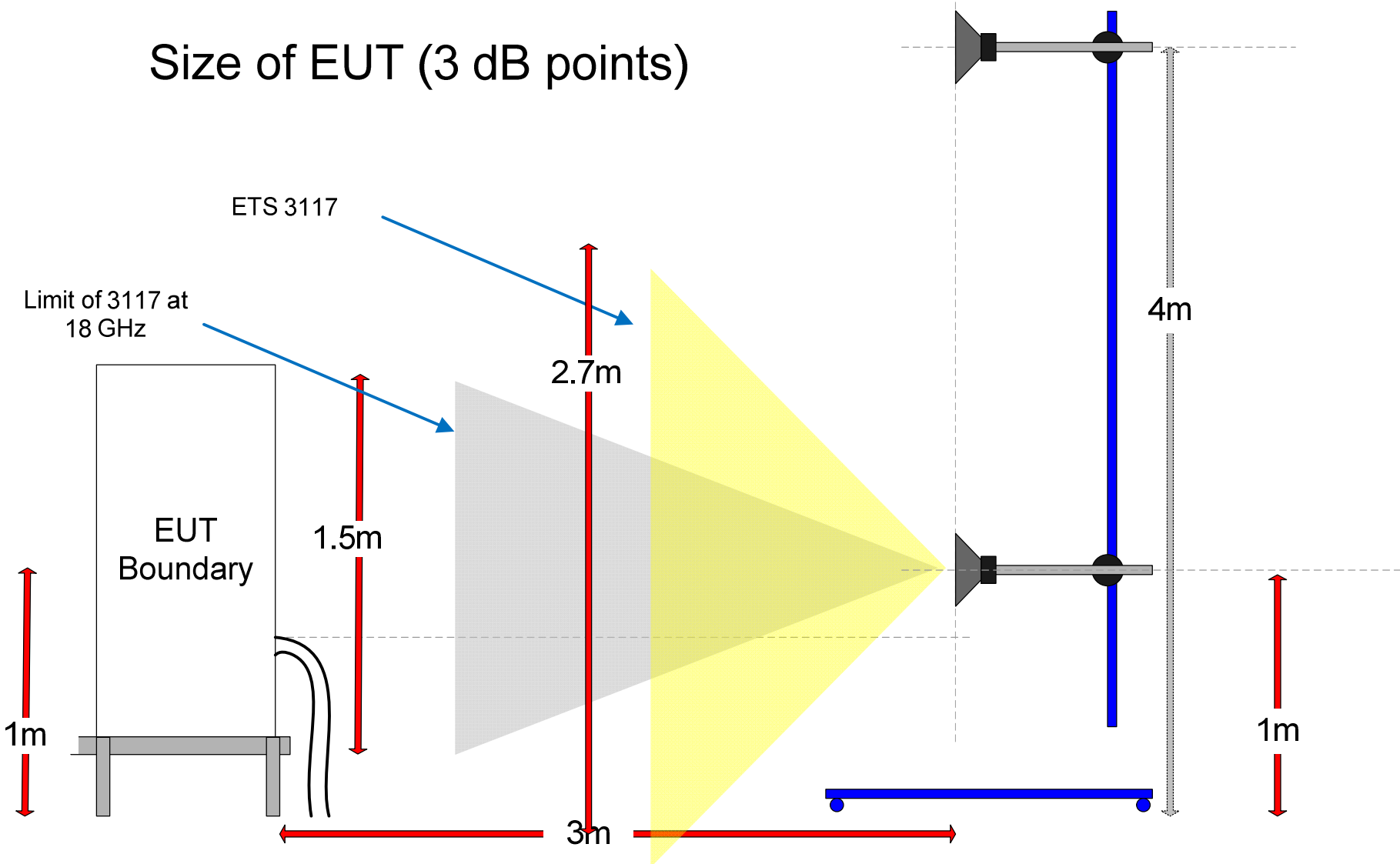
3117 has the following performance... above 7 GHz is it is limited to 2m. Between 17.5 GHz and 18 GHz

3117
3 dB

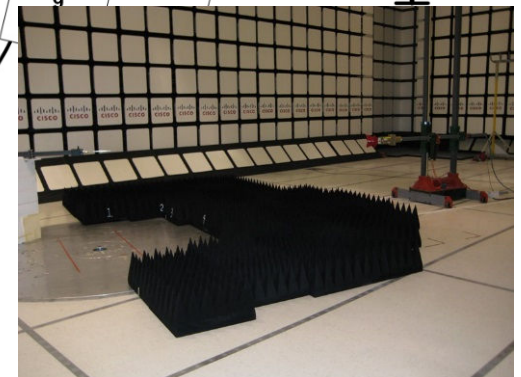
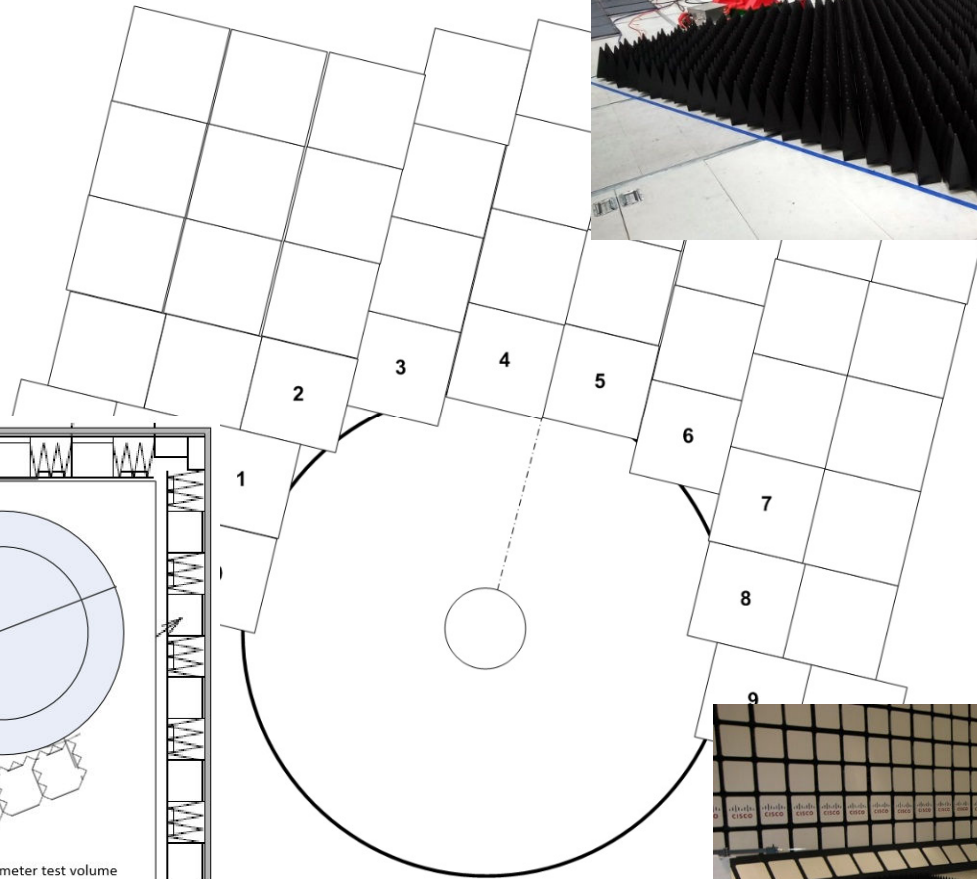
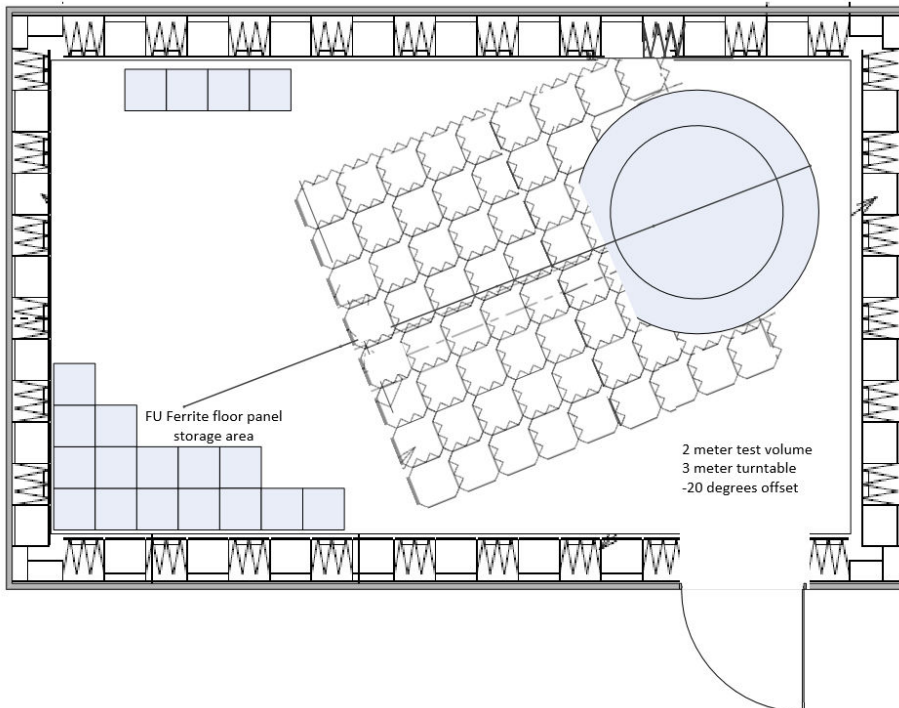
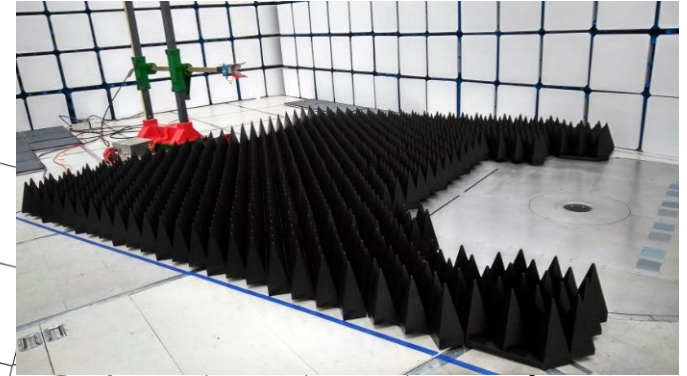
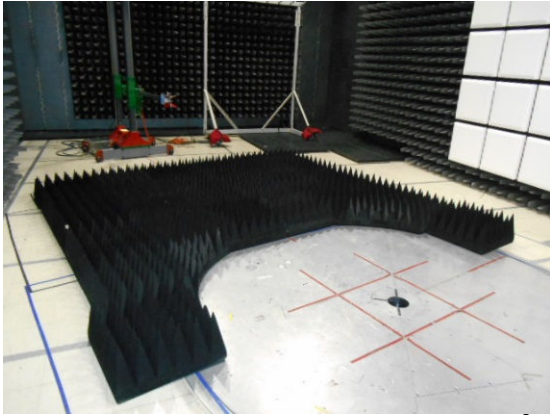


Band 1, 3dB Points

Size of EUT (3 dB points)



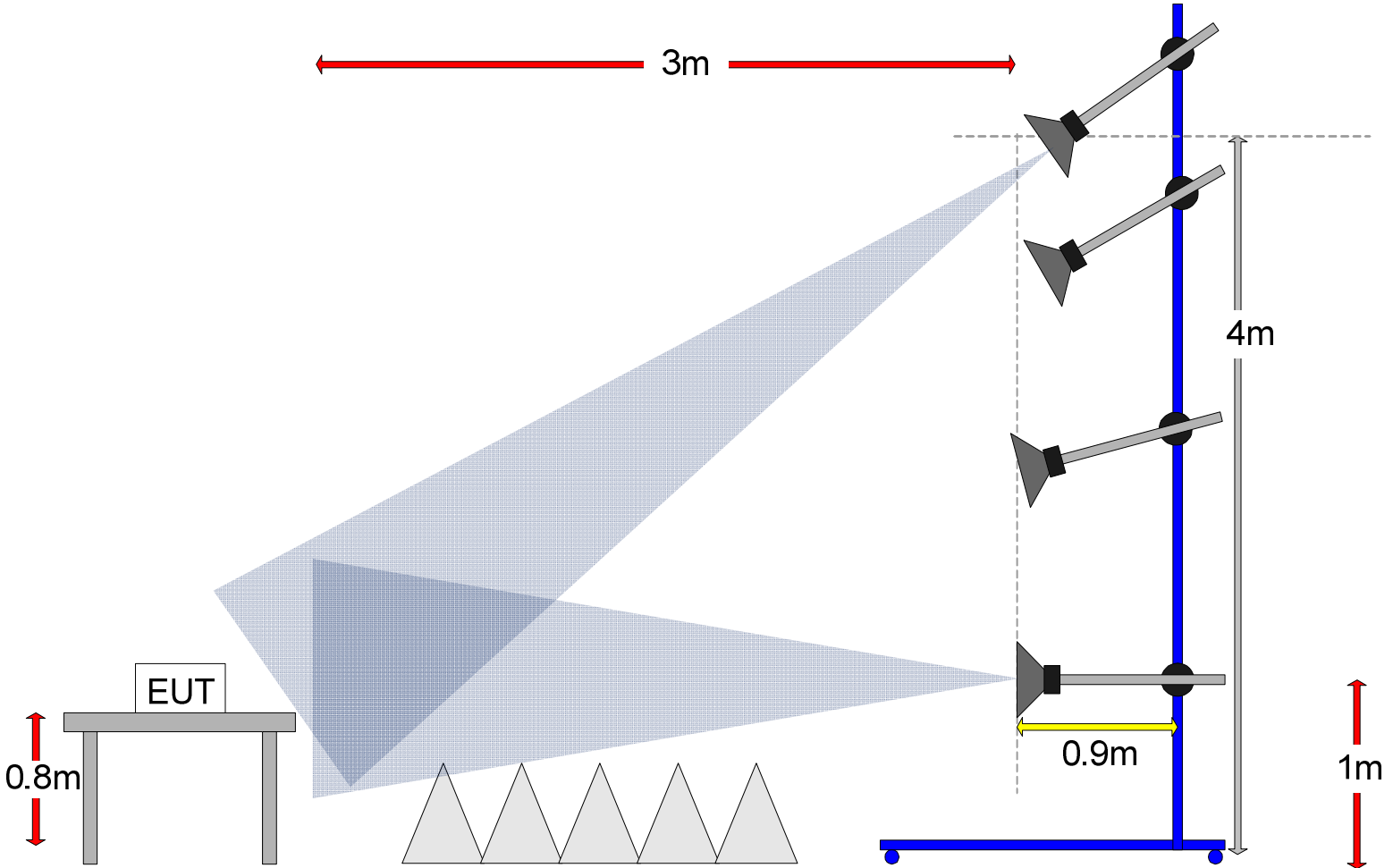
Typical Absorber Placement



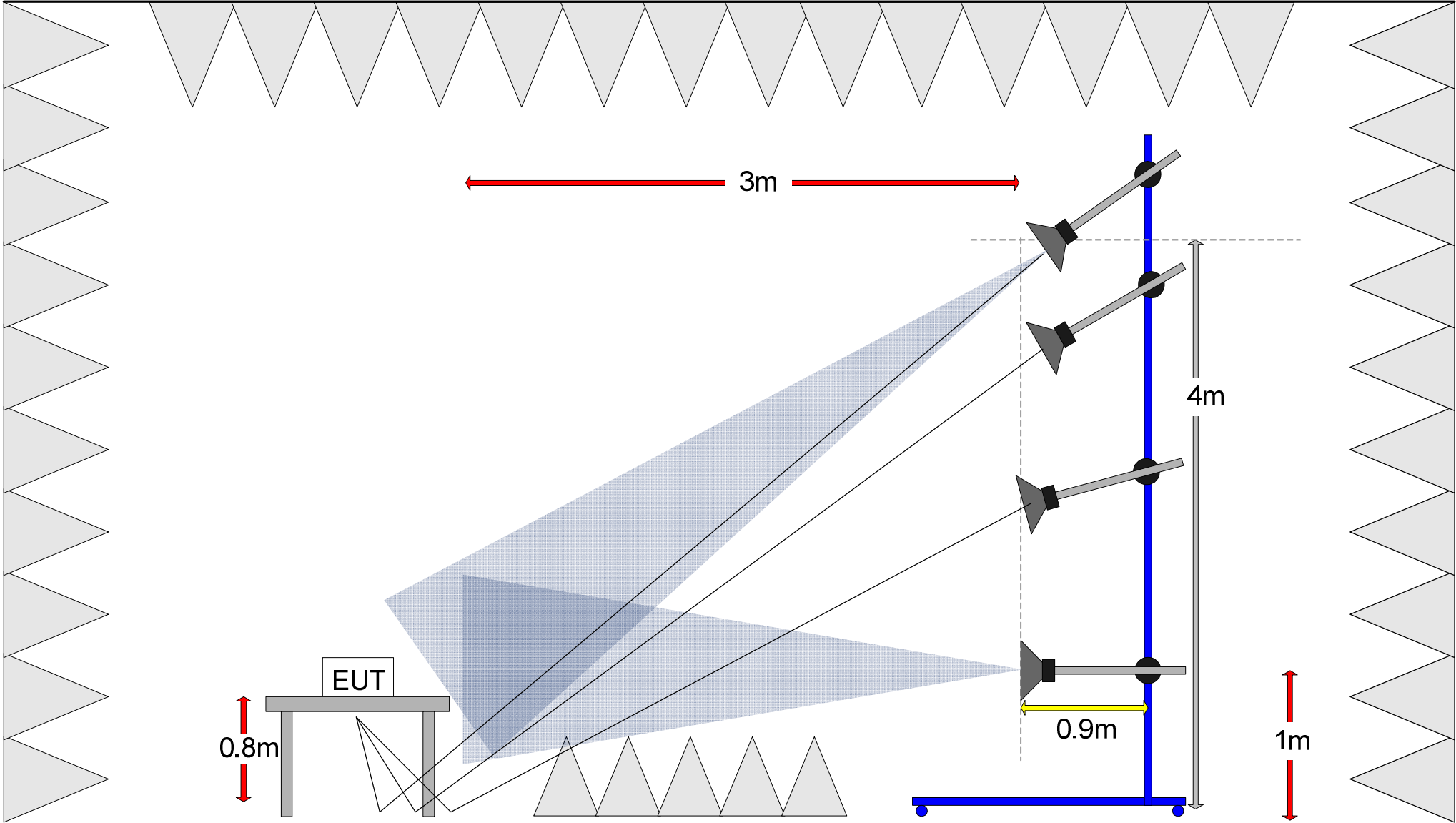
Problems

Only a limited amount of absorber is needed to satisfy the calibration requirements. Test labs use the minimum amount because of storage and management issues. If there is insufficient absorber on the groundplane a FSOATS will revert to an OATS. (ie there the reflection off the turntable / floor)

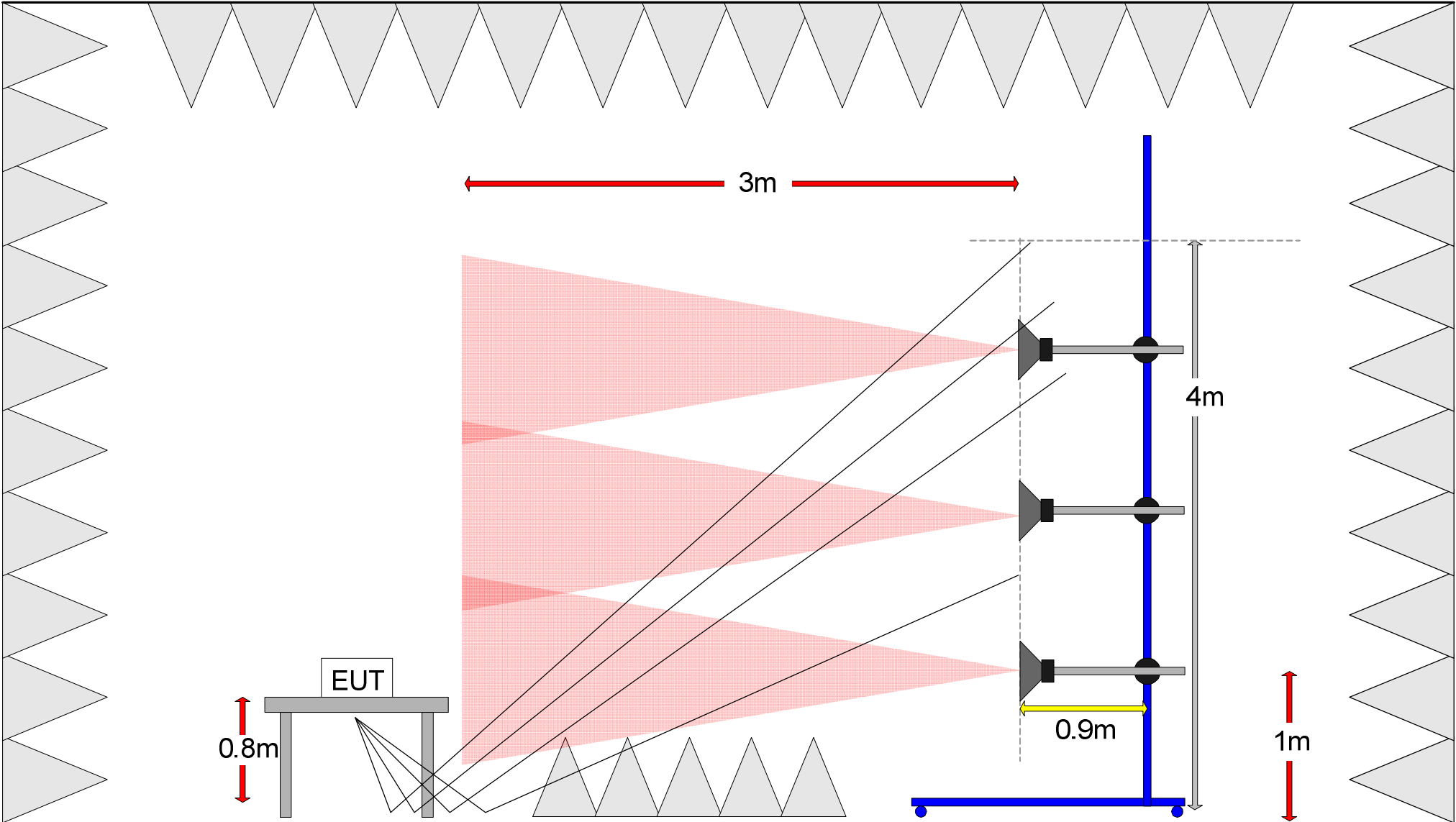
Reflection off turntable



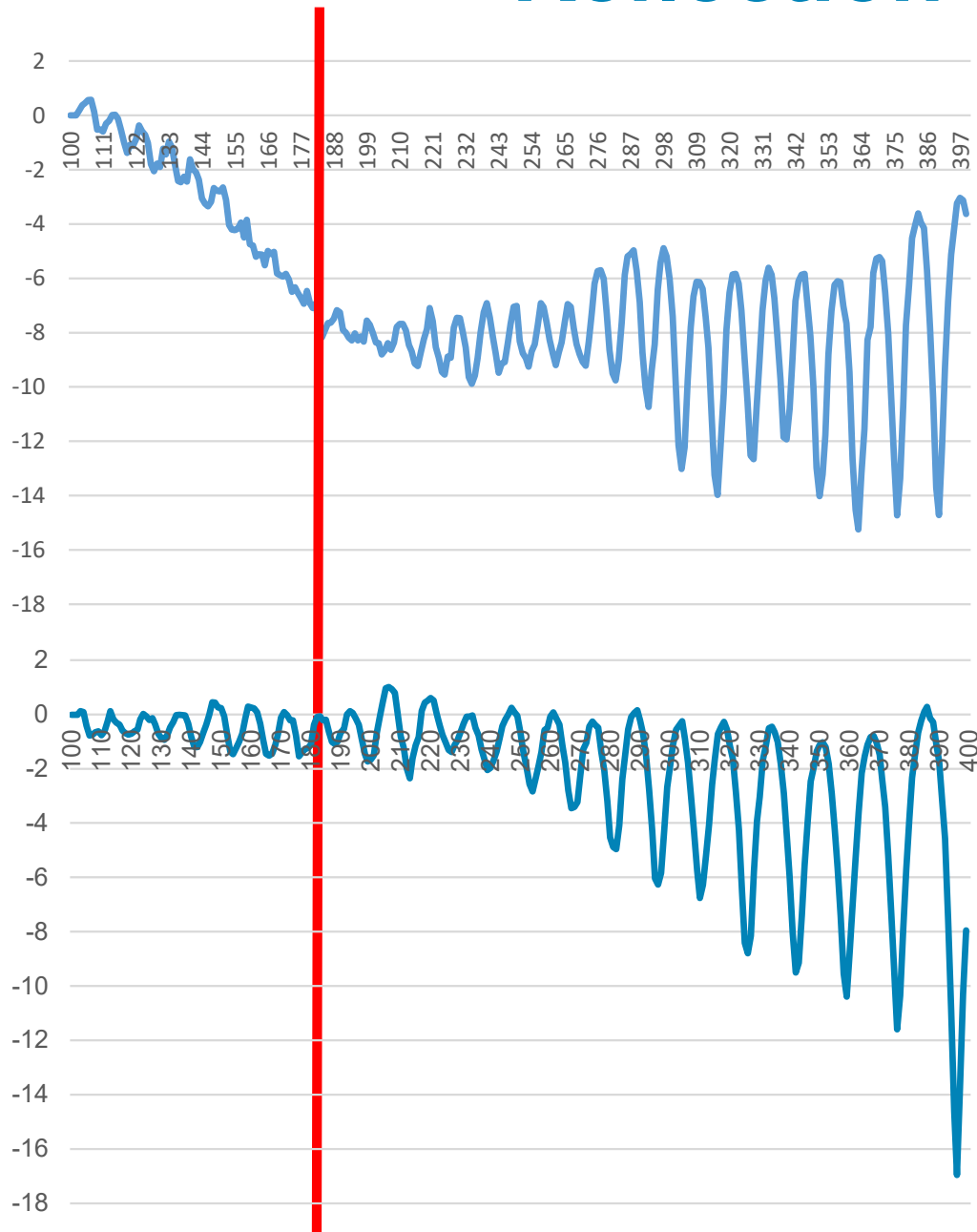
Reflection off turntable



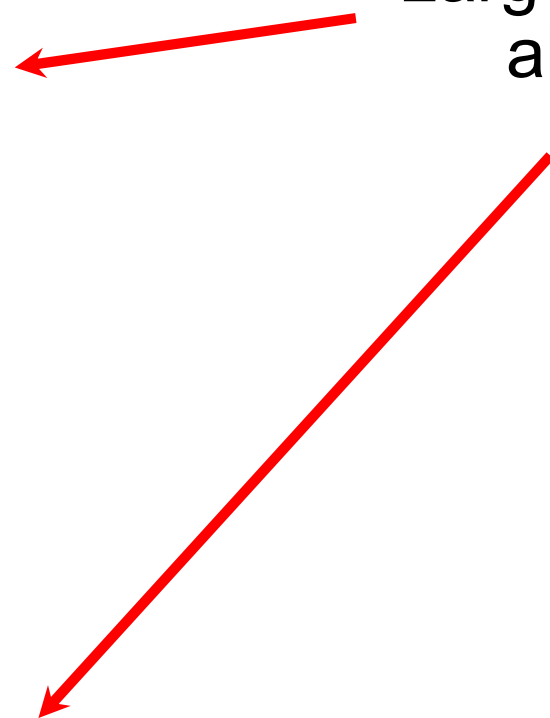
Reflection off turntable



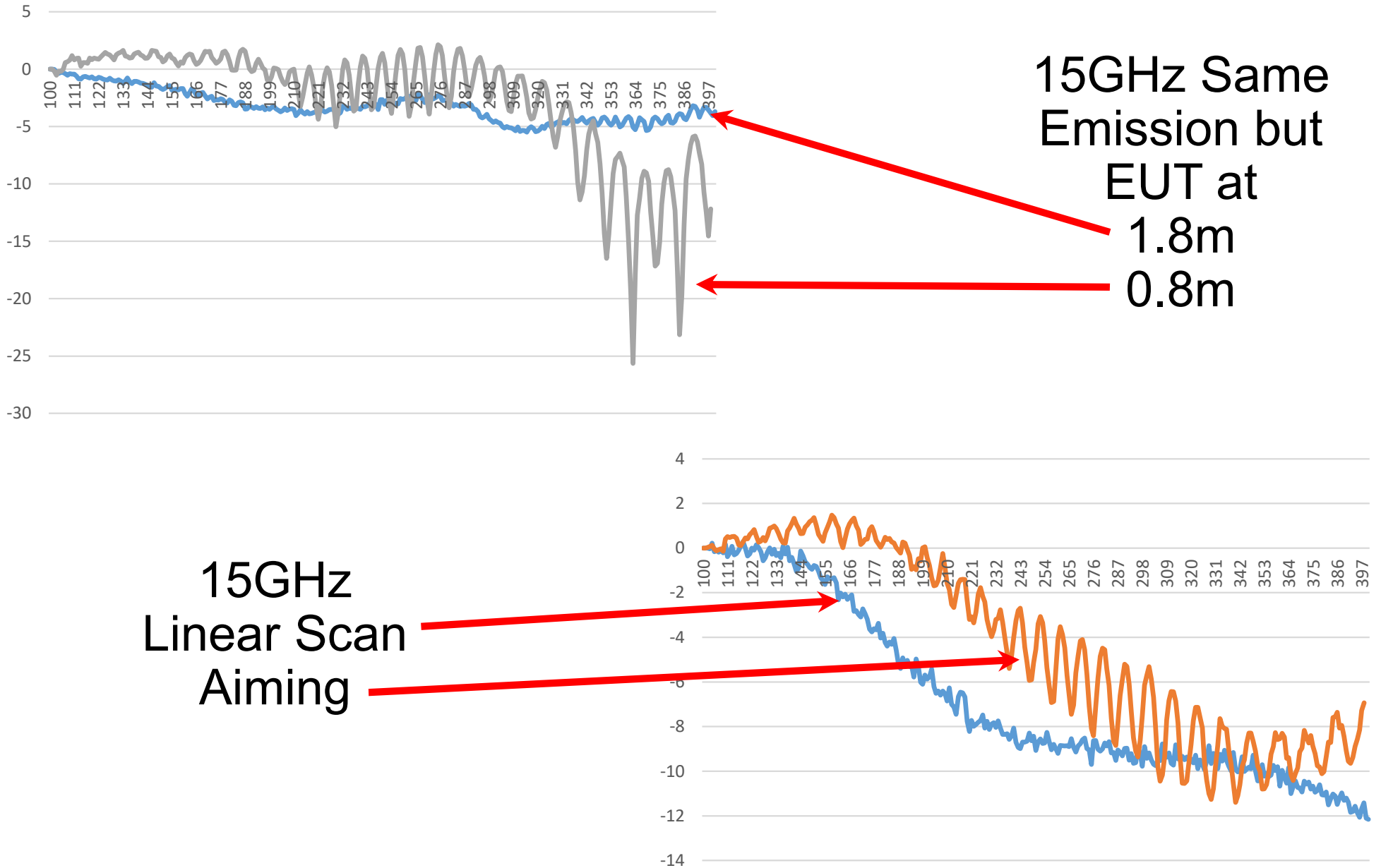
Reflection off turntable



15GHz Aiming
Large resonances
above 2m..



Reflection off turntable



FCC supports Linear Scanning

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As a reminder to August's meeting minutes, I stated as record that the FCC was in support of Andy's proposal for linear scanning above 1GHz.

I have discussed linear scanning, internally, with Bill Hurst and a few others here at the lab, and we are still of the opinion that linear scanning could serve as an alternative approach to harmonize towards CISPR.

Thanks Michael for your input!

R/
Chad Beattie
FCC OET Laboratory
Technical Research

