



# Above 1GHz with/without absorber on turntable



Andy Griffin, Cisco Systems, Rev 1, 23 Aug 2018

# Problem statement

## Issue

If the above 1GHz measurement facility were true FARs, the expected variance when changing antenna height would be expected to be small. It isn't, the variance can be over 10 dB. This implies that reflections are occurring.

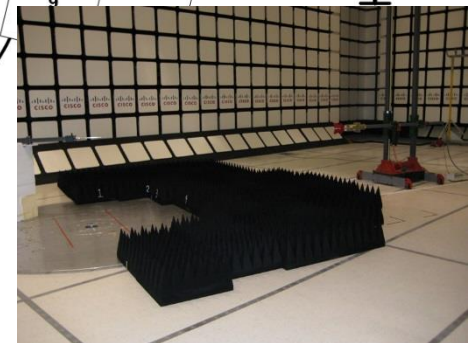
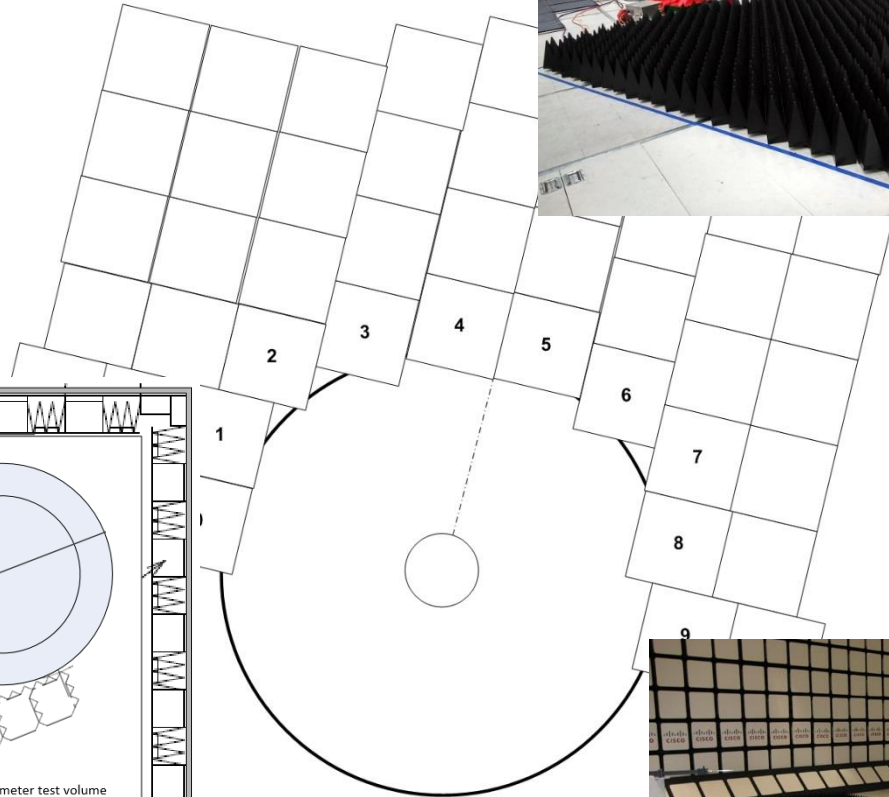
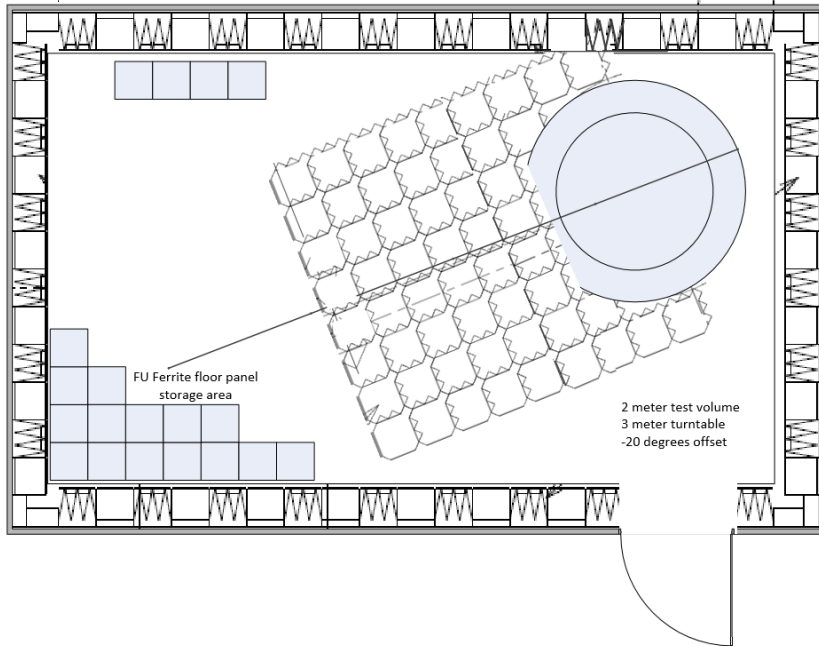
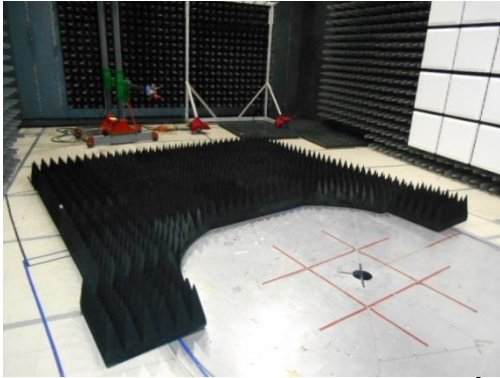
## Typical FSOATS setup

The typical FSOATS is constructed from an OATS with absorber placed on the floor to stop the reflected wave. CISPR16 requirements can be achieved without placing absorber on the turntable. This is desirable because it makes managing the EUT.

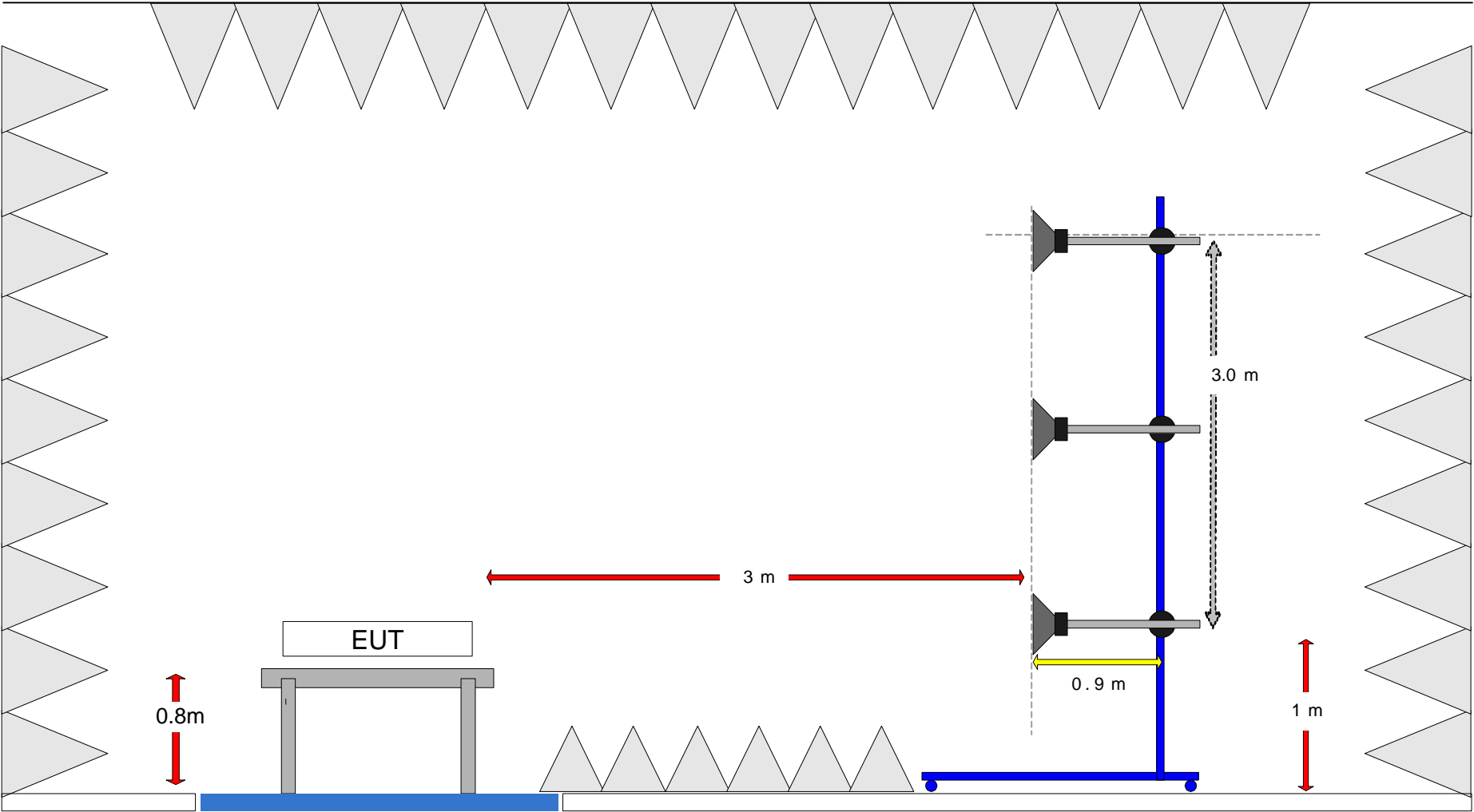
On a recent survey of the US TAG for CISPR I, all respondents stated they used this type of facility. Not complete FARs but FSOATS.

The CISPR 16 calibration requirements allow for a 6dB variance in the response within the chamber.

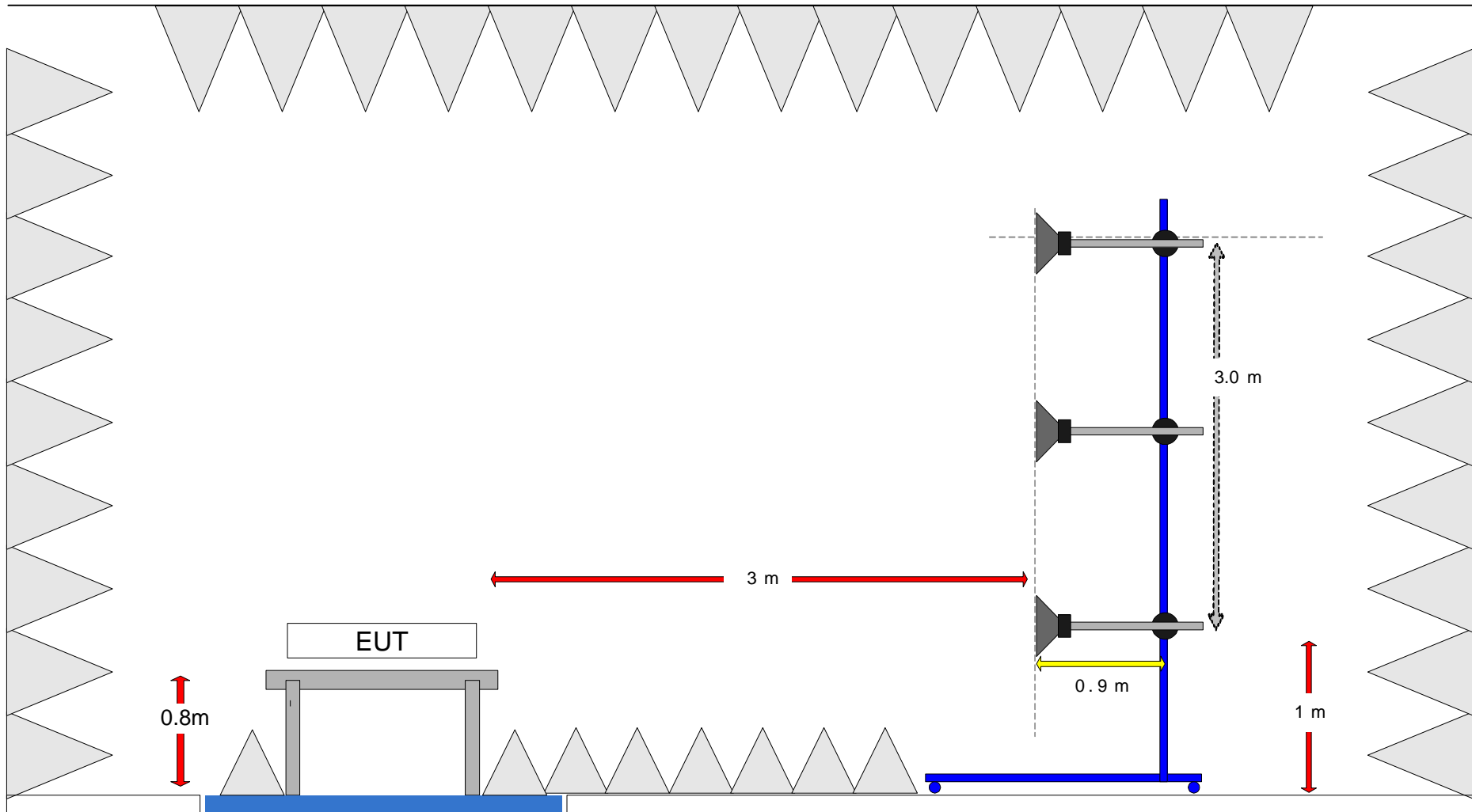
# Typical Absorber Placement



# Planer Scan from 1m-4m

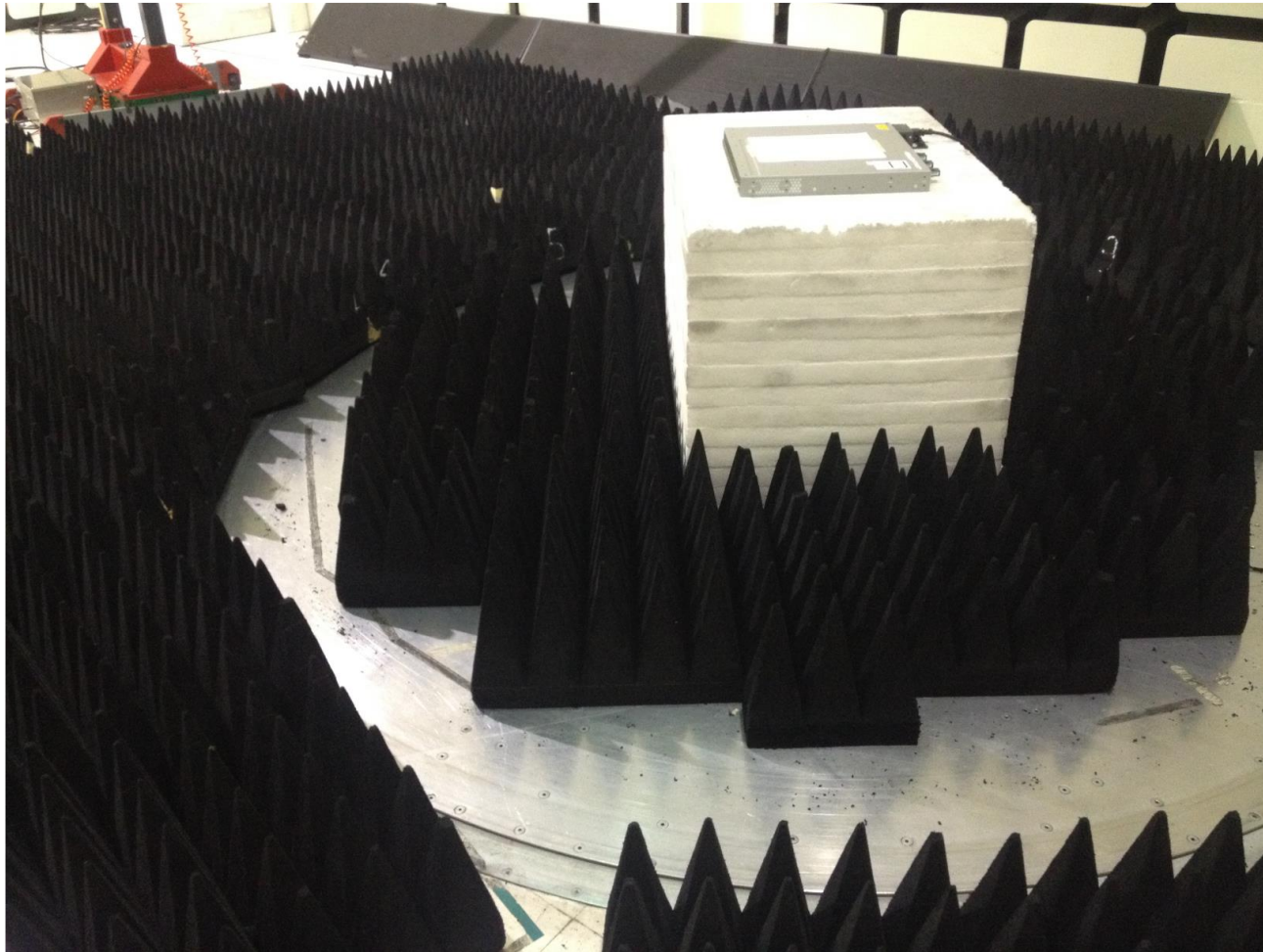


# Planer Scan from 1m-4m (more absorber)



To investigate the impact of the turntable, run a test with and with additional absorber on the turntable

## Additional Absorber



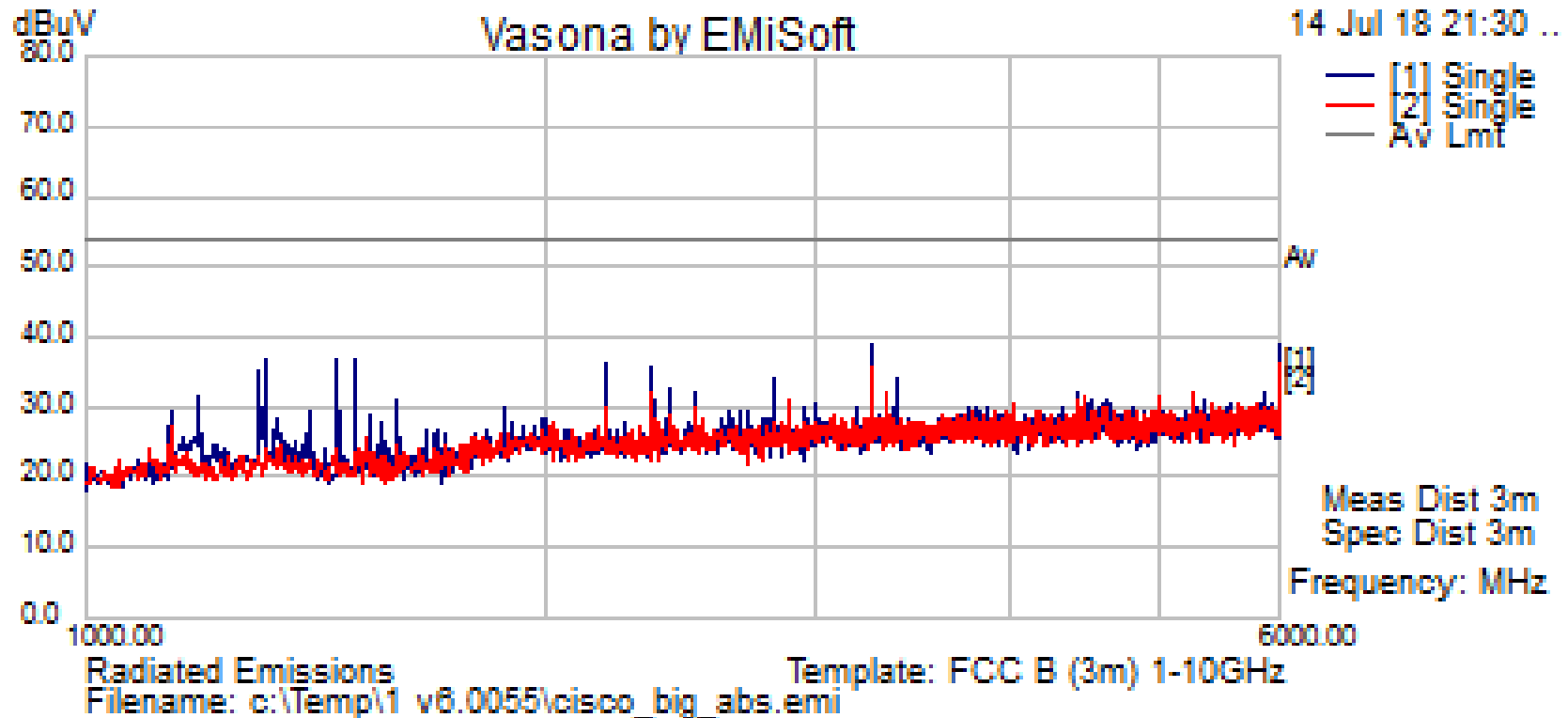
# Process

Highlighting major emissions from a prescan

During tower/turntable rotation, set video bandwidth to 500 Hz, to remove impacts of modulation.

1. Select frequency, set to zero span.
2. EUT Rotate thru 360, go back to worst case.
3. Changing antenna height (scanned) from 1 m to 4 m.
4. Repeat step 1-3, with additional absorber on the groundplane.
5. Show the difference in amplitude results..

# Prescan

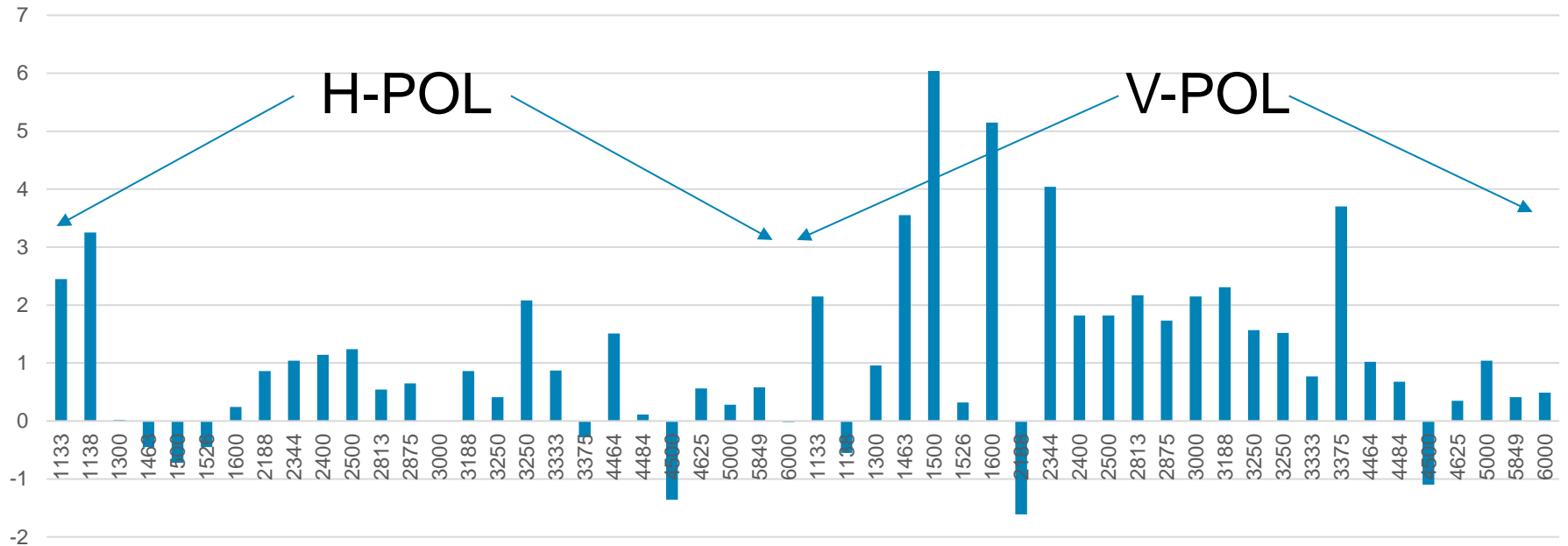


Results of the Prescan. To note that during the tower measurements, the video bandwidth is reduced which reduces the noise floor dramatically.

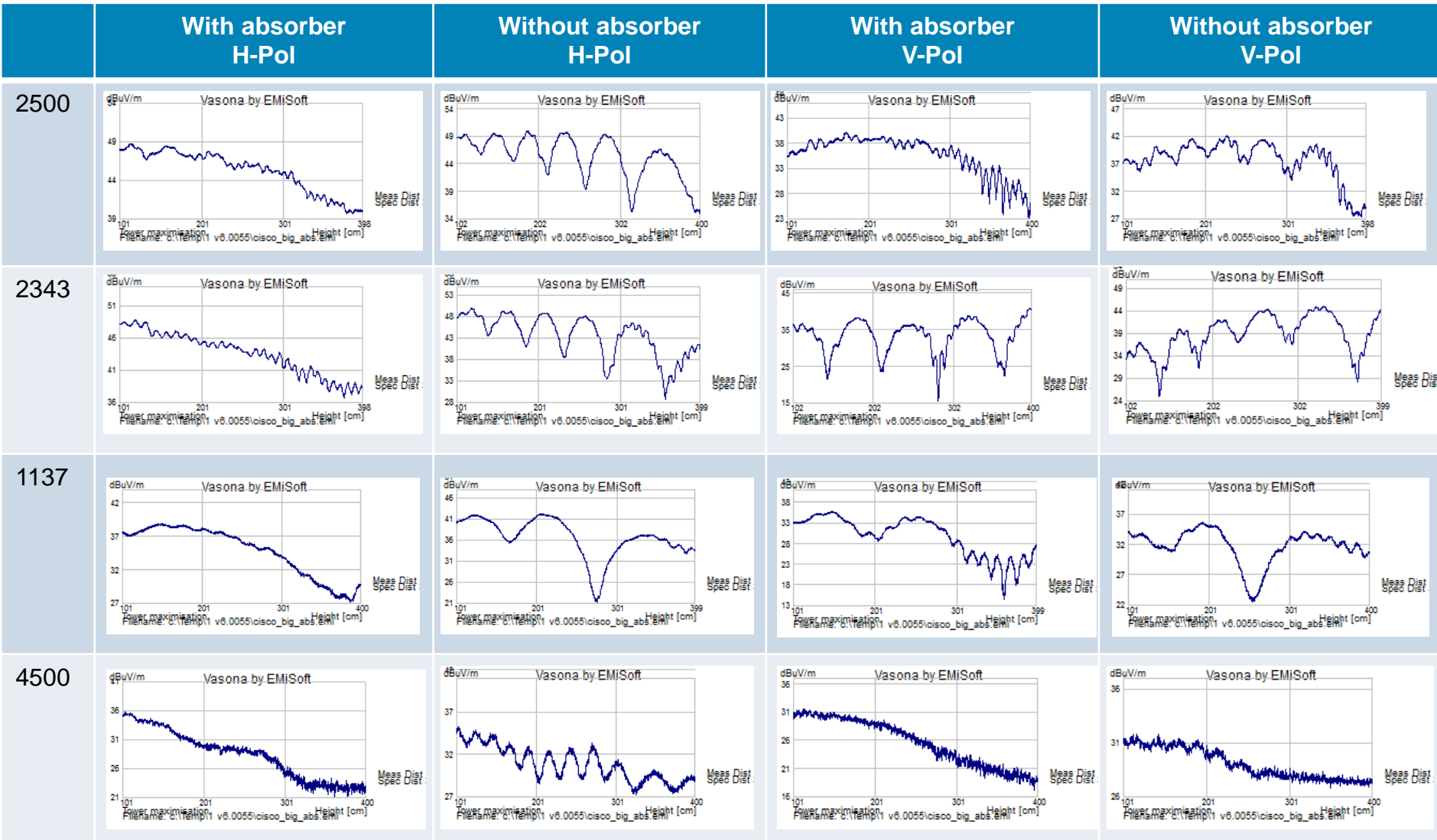


# Amplitude results

With/Without Absorber on Turntable



The results which are positive, means the amplitude is higher without the absorber.



The results clearly shows that additional absorber effectively reduced most of the variations.

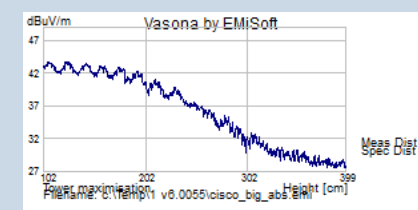
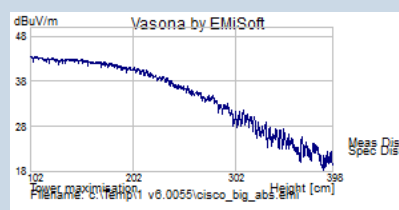
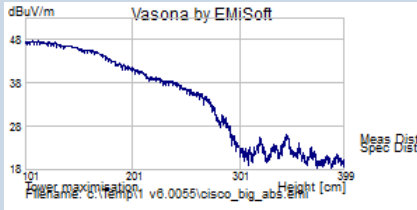
**With absorber  
H-Pol**

**Without absorber  
H-Pol**

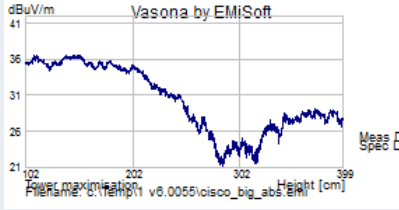
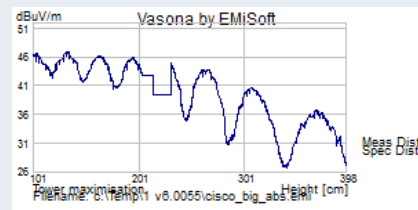
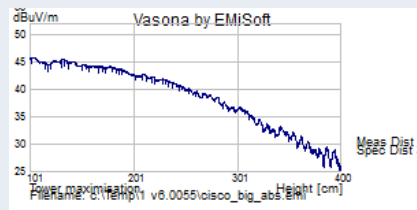
**With absorber  
V-Pol**

**Without absorber  
V-Pol**

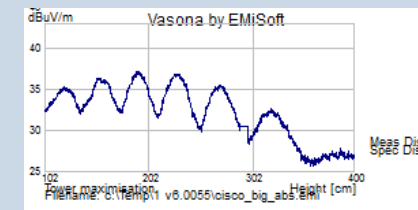
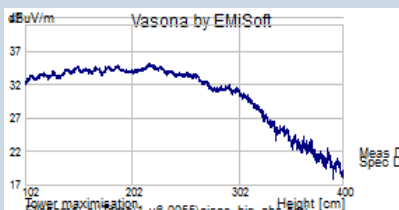
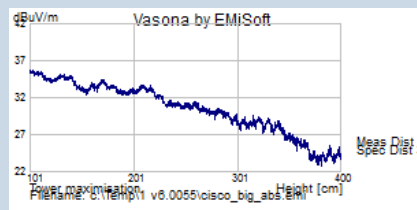
6000



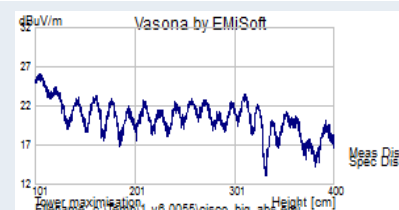
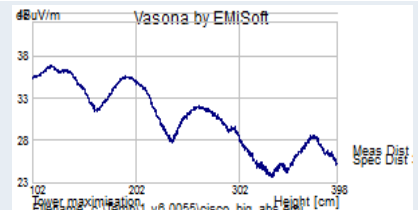
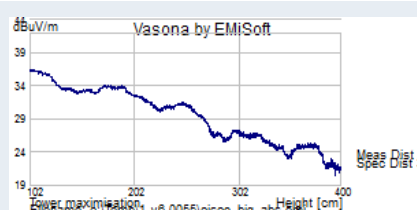
3333



2875



1600



# Conclusion

Whilst the chamber satisfies CISPR 16 calibration requirements, there is an allowance for a 6dB variance.

The results show that the turntable still provides an effective reflective path, hence with the constructive interference there is a significant increase in amplitude.

These types of facilities are typically used, because of their dual use.

This further justifies why the limits should be increased by 4dB in the range from 1-3GHz. It also states that some increase should be applied to the 3-6GHz range.

These results need to be provided to CISPR A for comment.



**CISCO**