

# Input/coaxial coupler

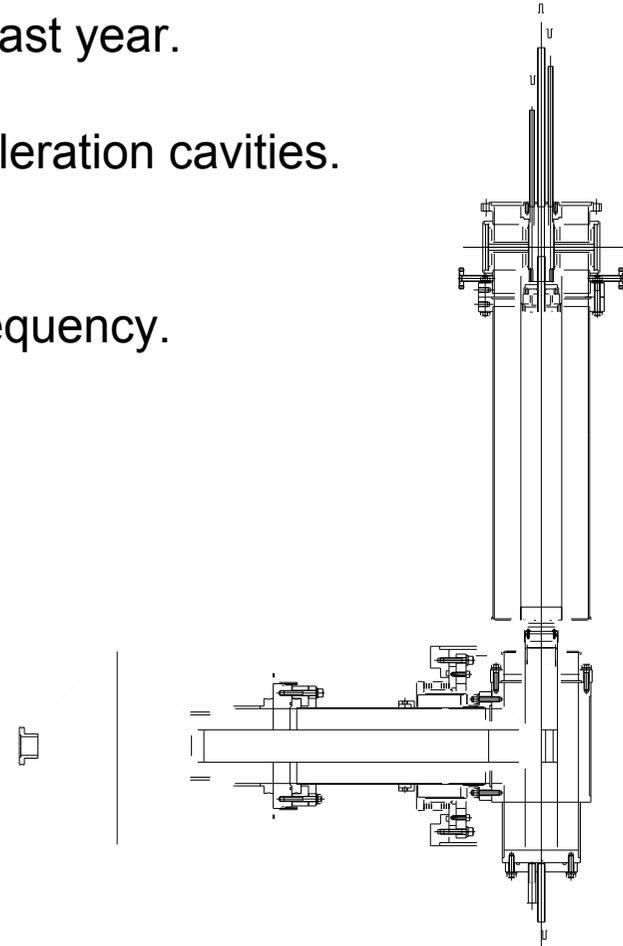
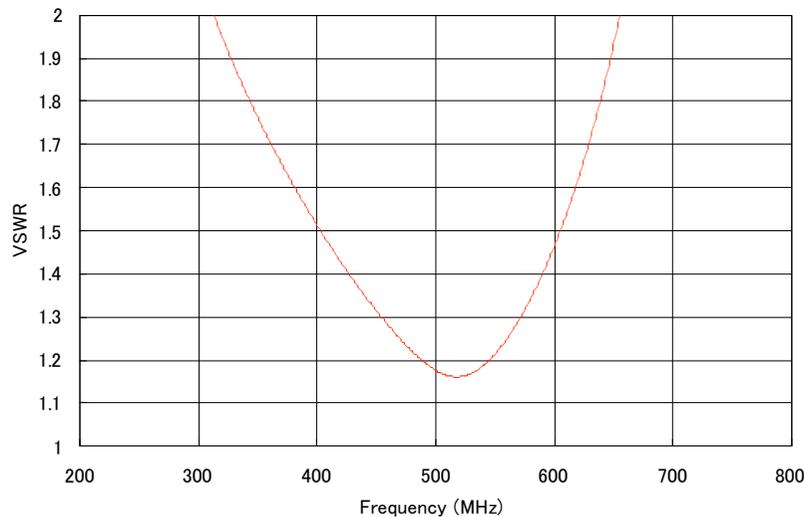
Kota NAKANISHI

KEKB Accelerator Review Committee      Feb 21, 2005

# Design of the input coupler

Detailed design of the input coupler was introduced last year.  
It's features are following.

- The RF window is used that was designed for acceleration cavities.
- The maximum input power is 100kW.
- The input coupler has T-stub structure.
- The pass-band of T-stub is adjusted to operation frequency.



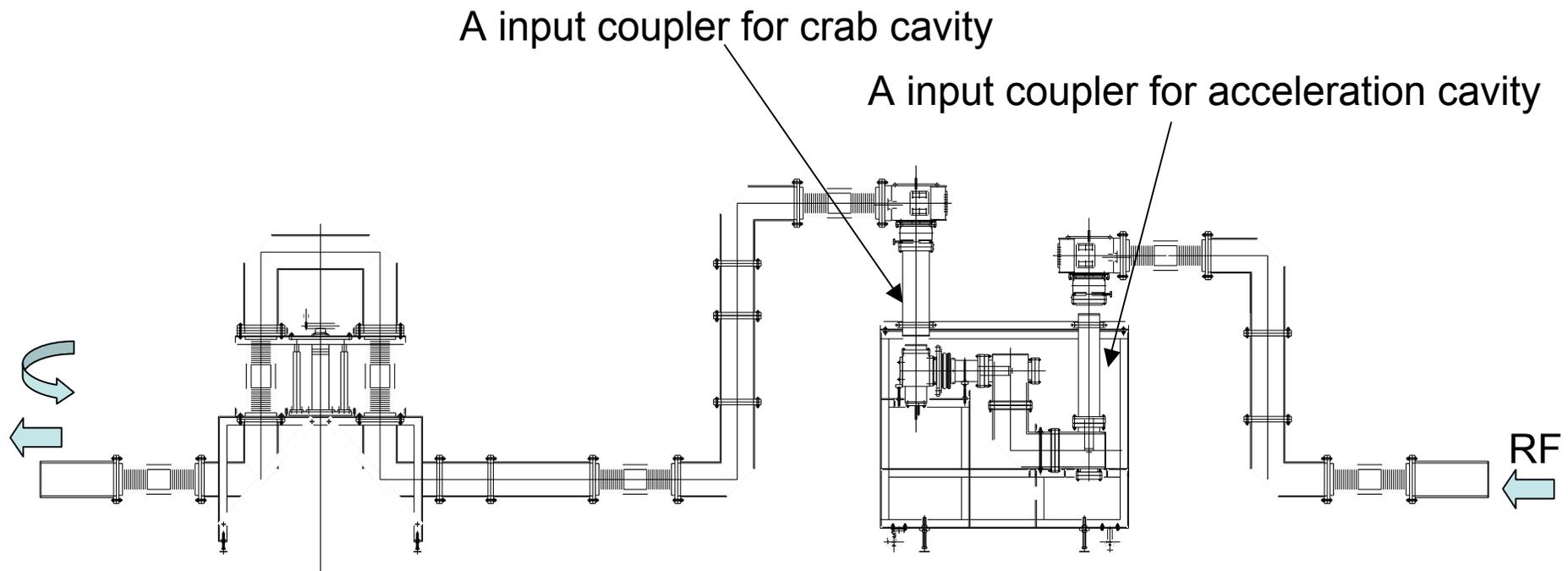
# Status of the input coupler

- A input coupler for prototype cryostat was made.
- We are preparing RF aging instruments.

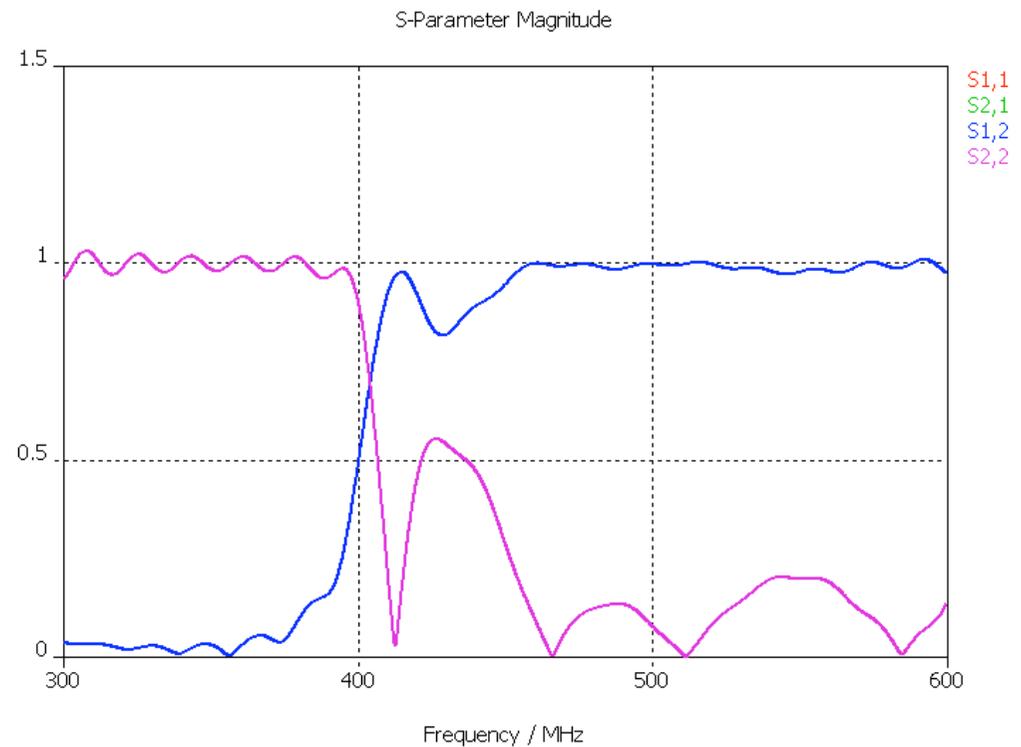
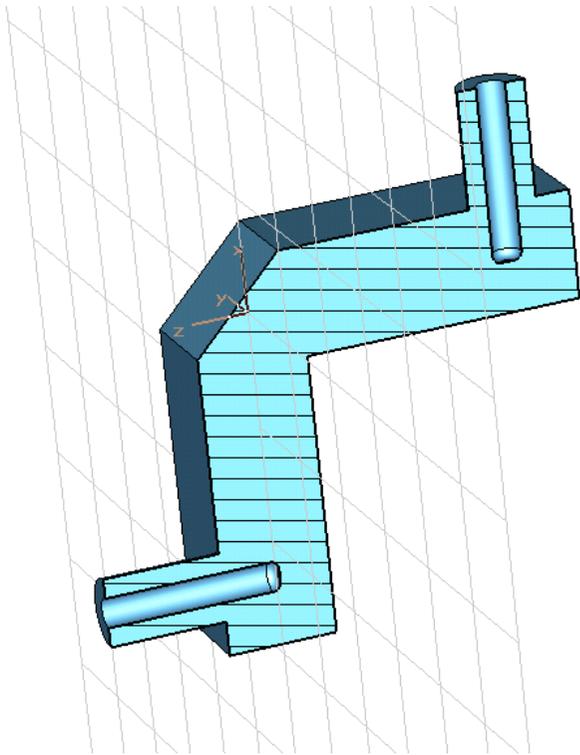


# Setup of the input coupler aging.

- Almost setups for acceleration cavities are available.
- Connection between two input couplers must be made.
- An aging test will be started at the end of march.



# Components to be made for the input coupler aging



# Coaxial coupler

Detailed design of coaxial coupler was introduced last year.

But it must be changed.

Because,

- Nb/Cu techniques can not be on time. → Bulk Nb
- Dipole parasitic mode damping is not enough.

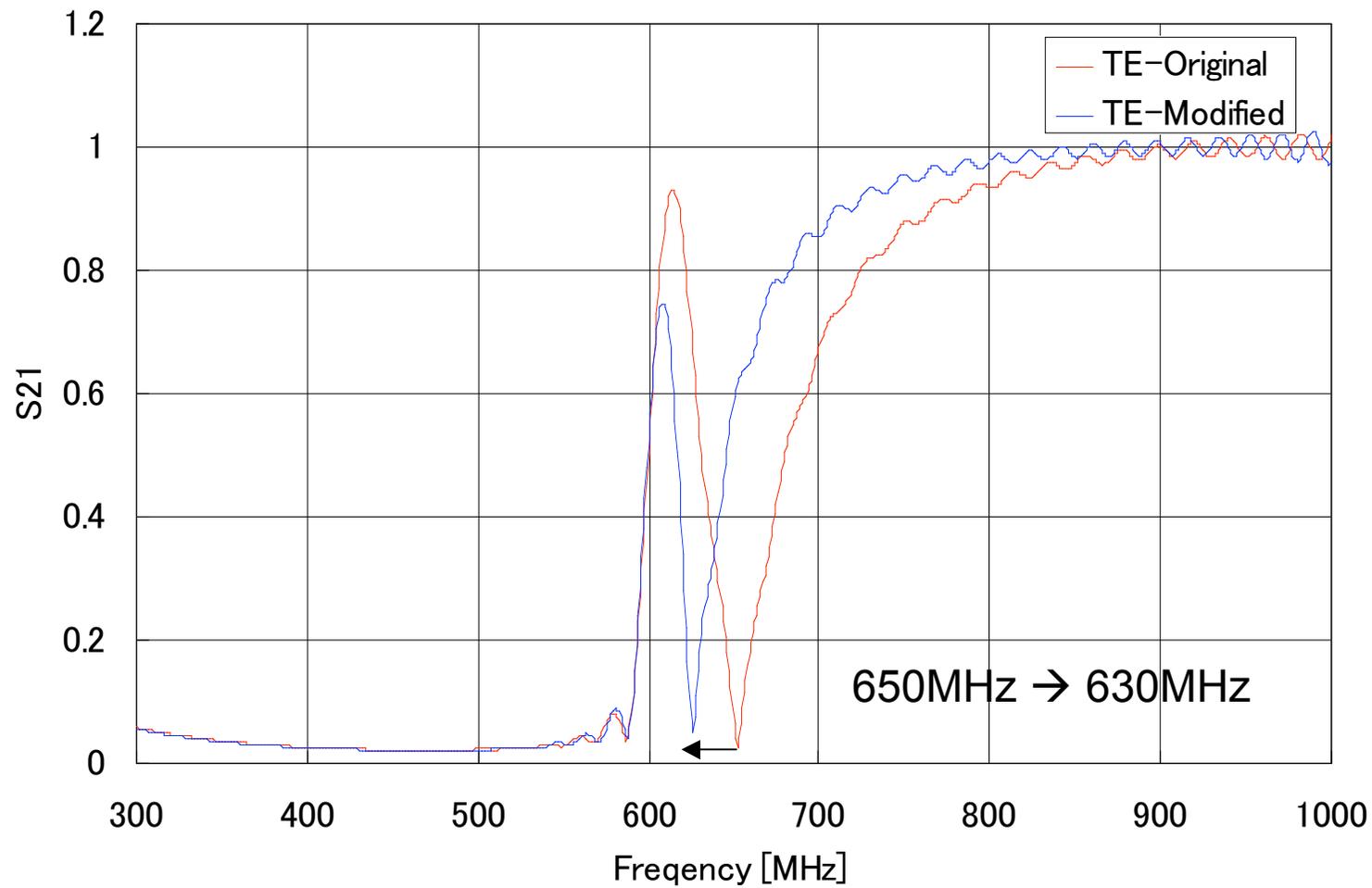
Parasitic modes to be dumped [MHz]

Monopole-like		Dipole-like	
TM110	413.3	TE101	650.6
TM310	670.6	TE011	677.6
TM111	946.6	TM120	686.5
TM510	967.2	TM410	792.9
:	:	:	:

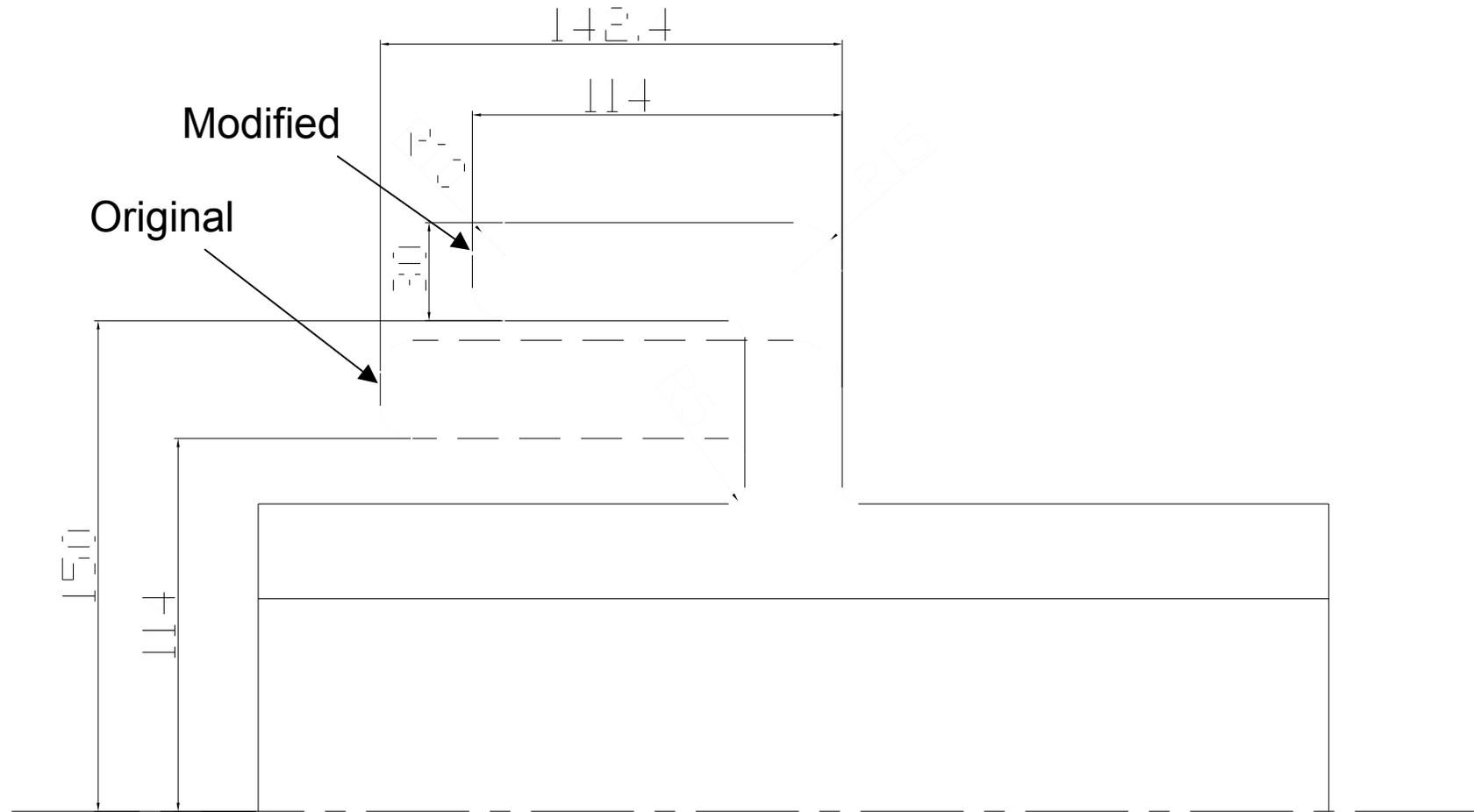
K.Akai et al. Proc. IEEE Part. Accel. Conf.,  
p.757 (1993)



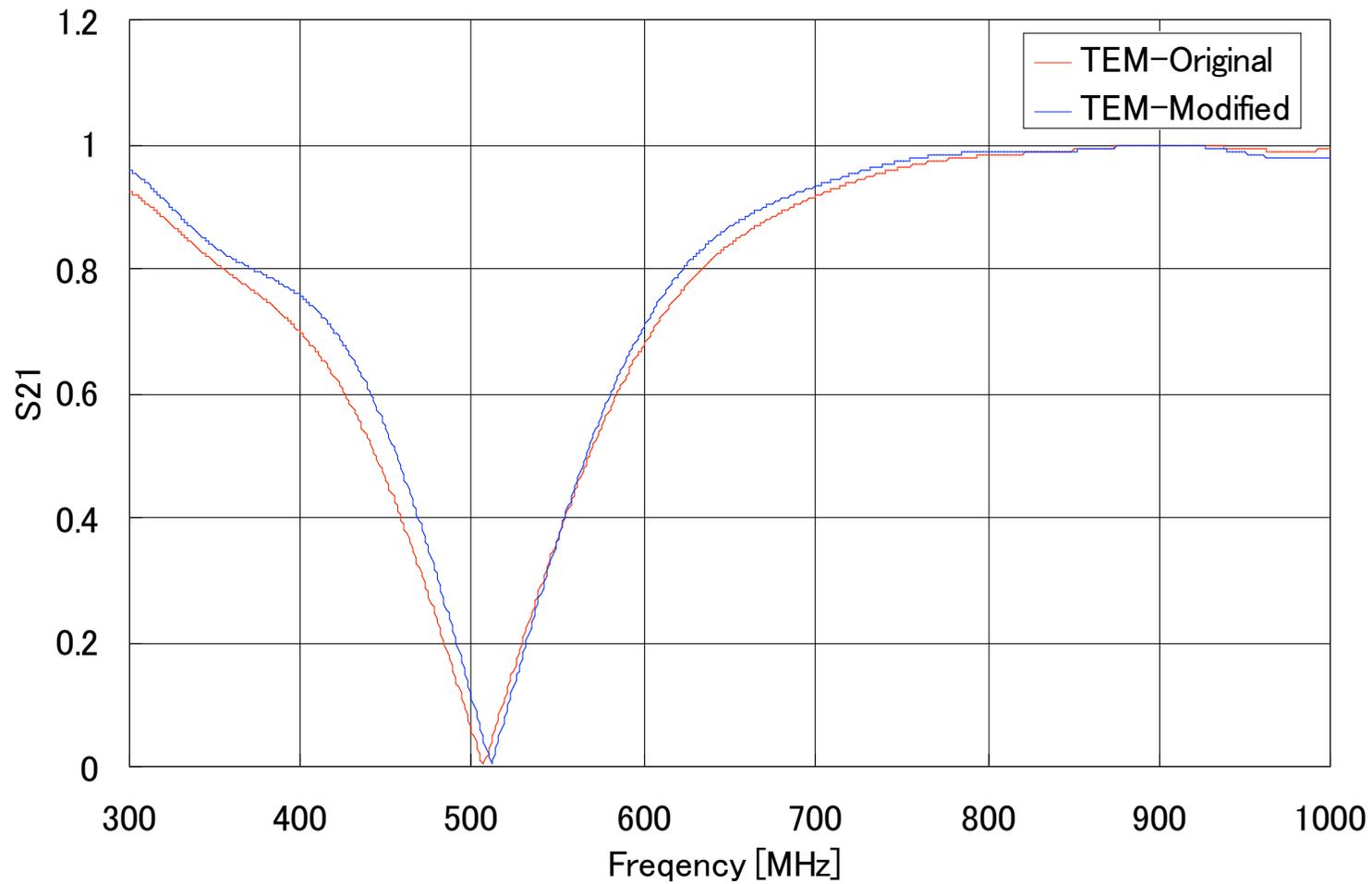
# Spectrums for TE-mode (notch filter)



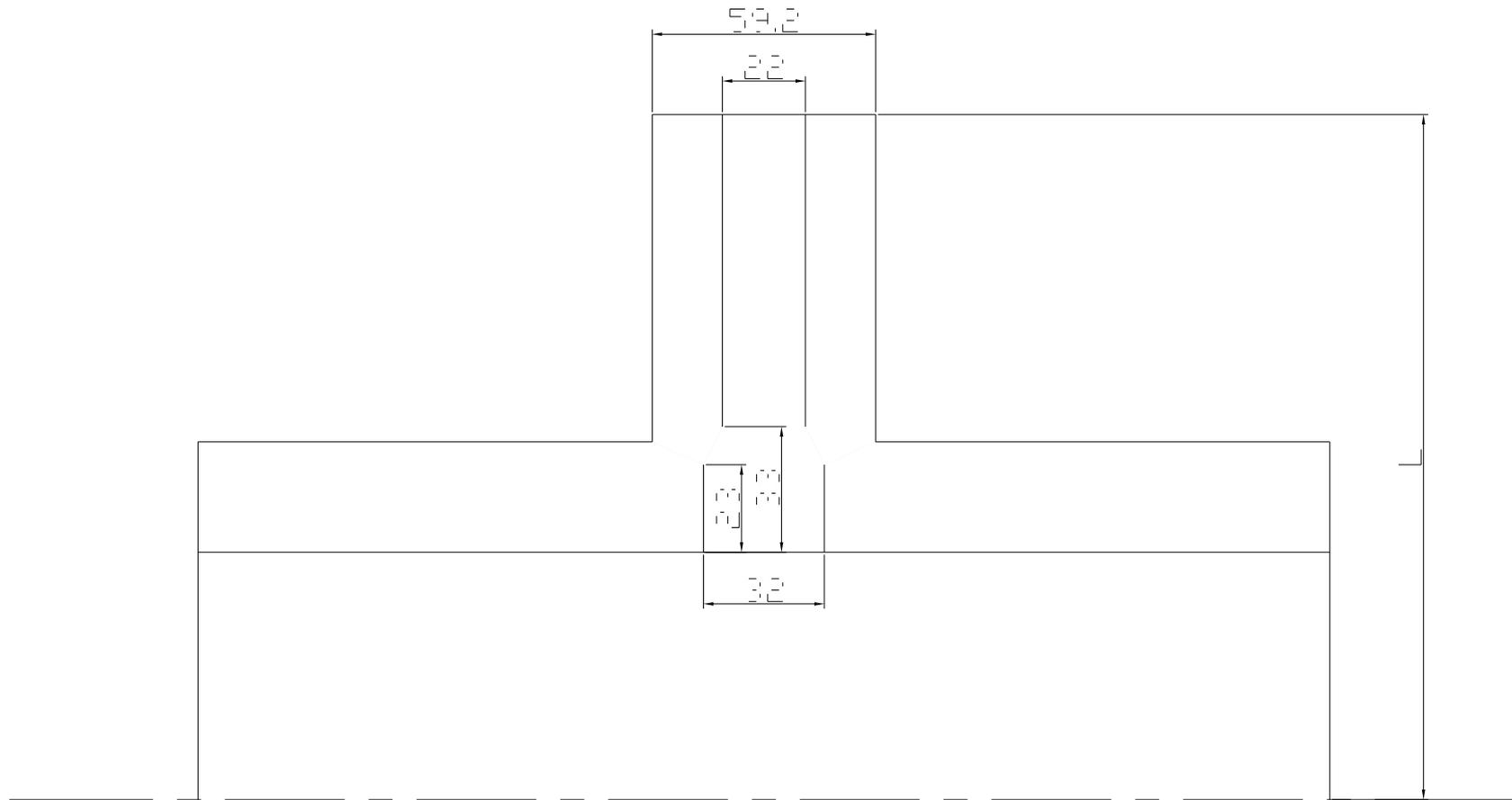
# Design of notch filter



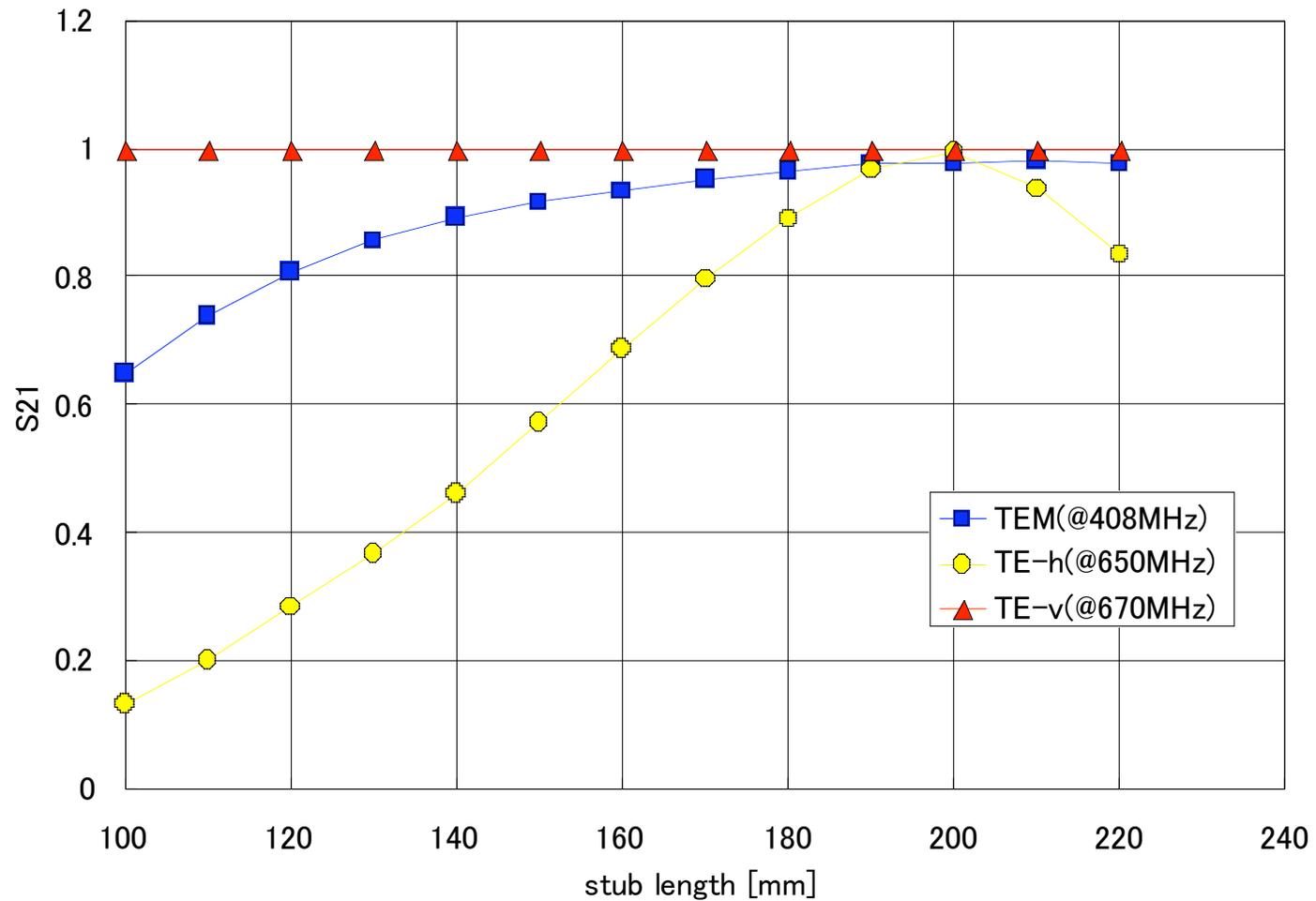
# Spectrums for TEM-mode (notch filter)



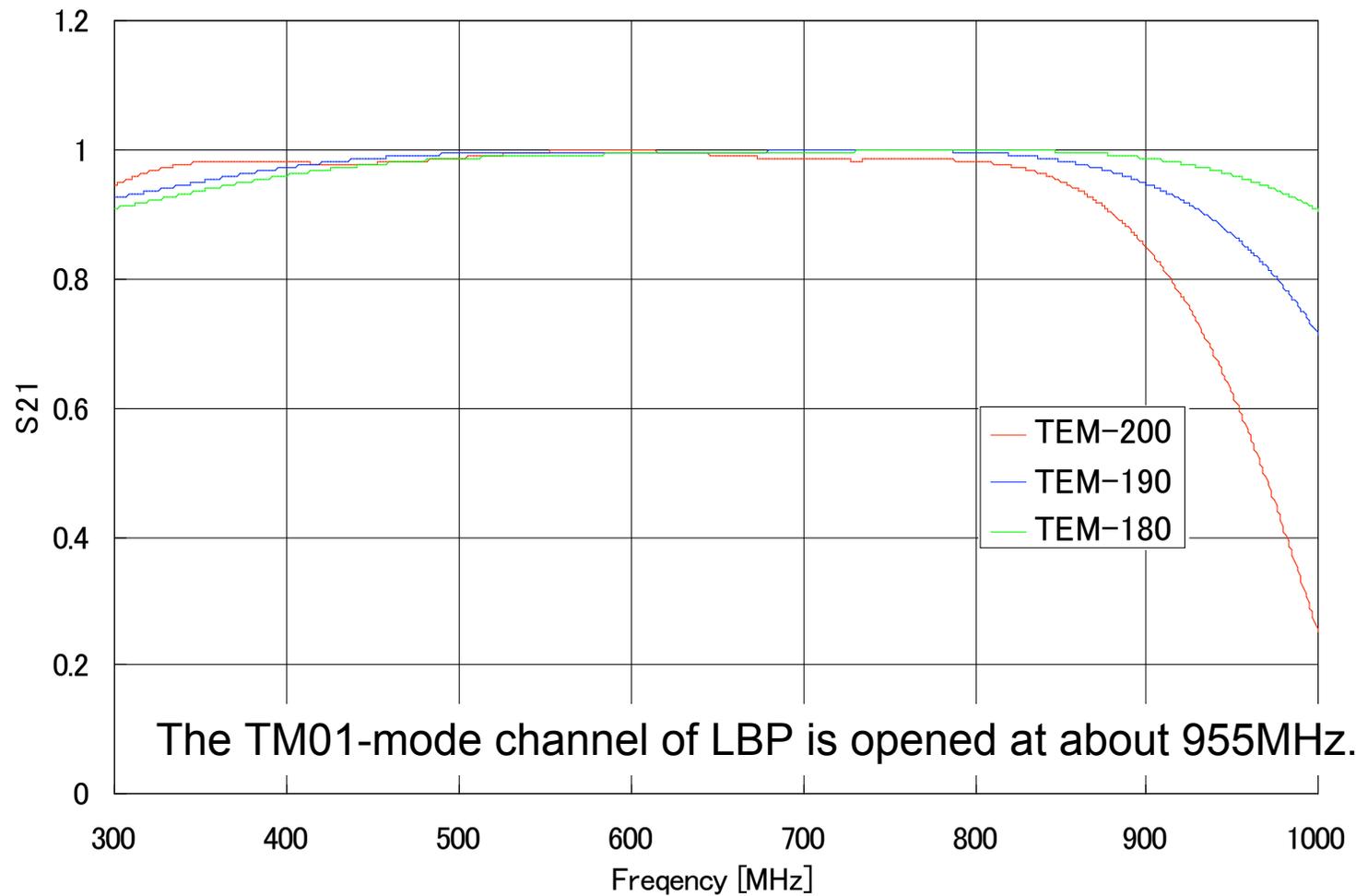
# Design of stub support



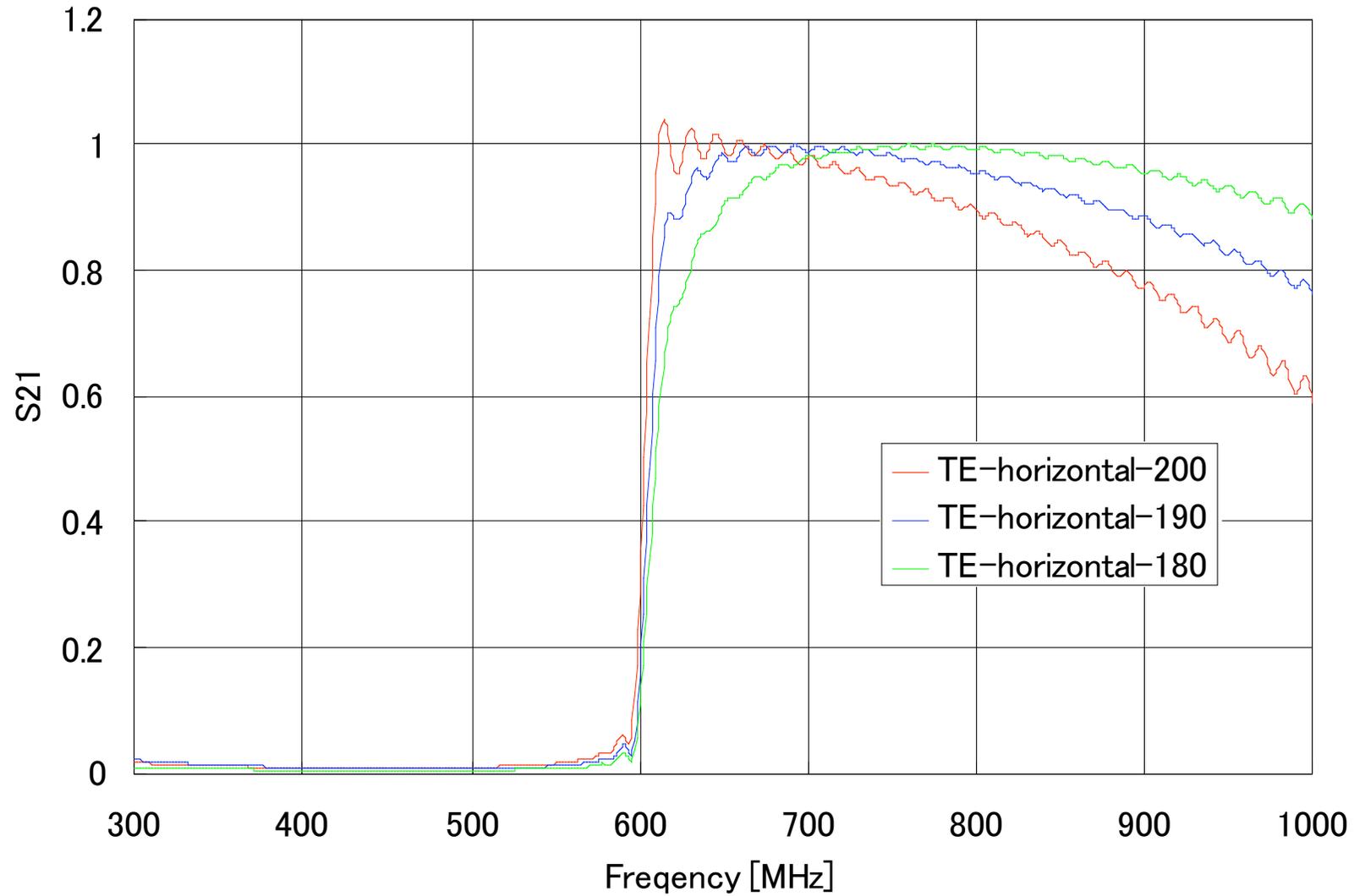
# Transmittance of stub support



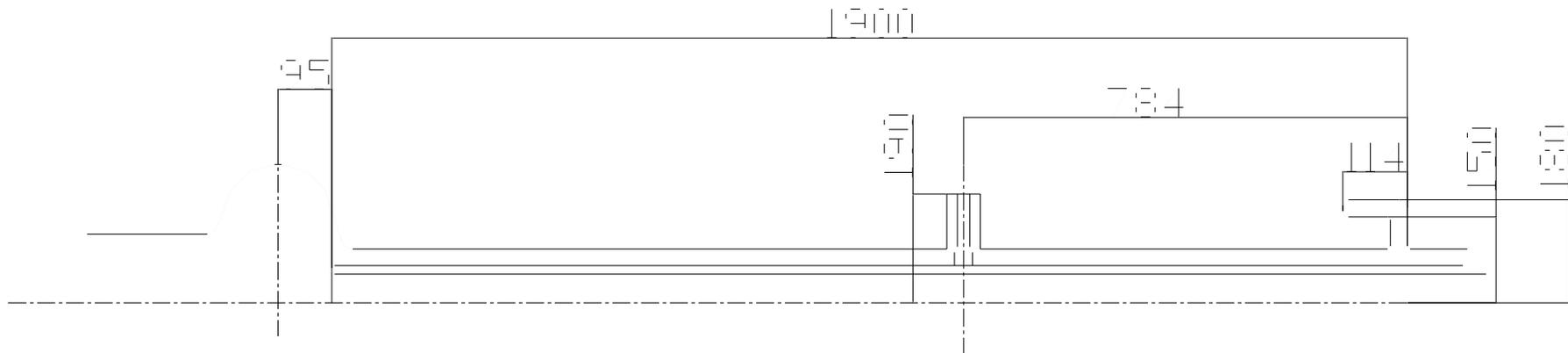
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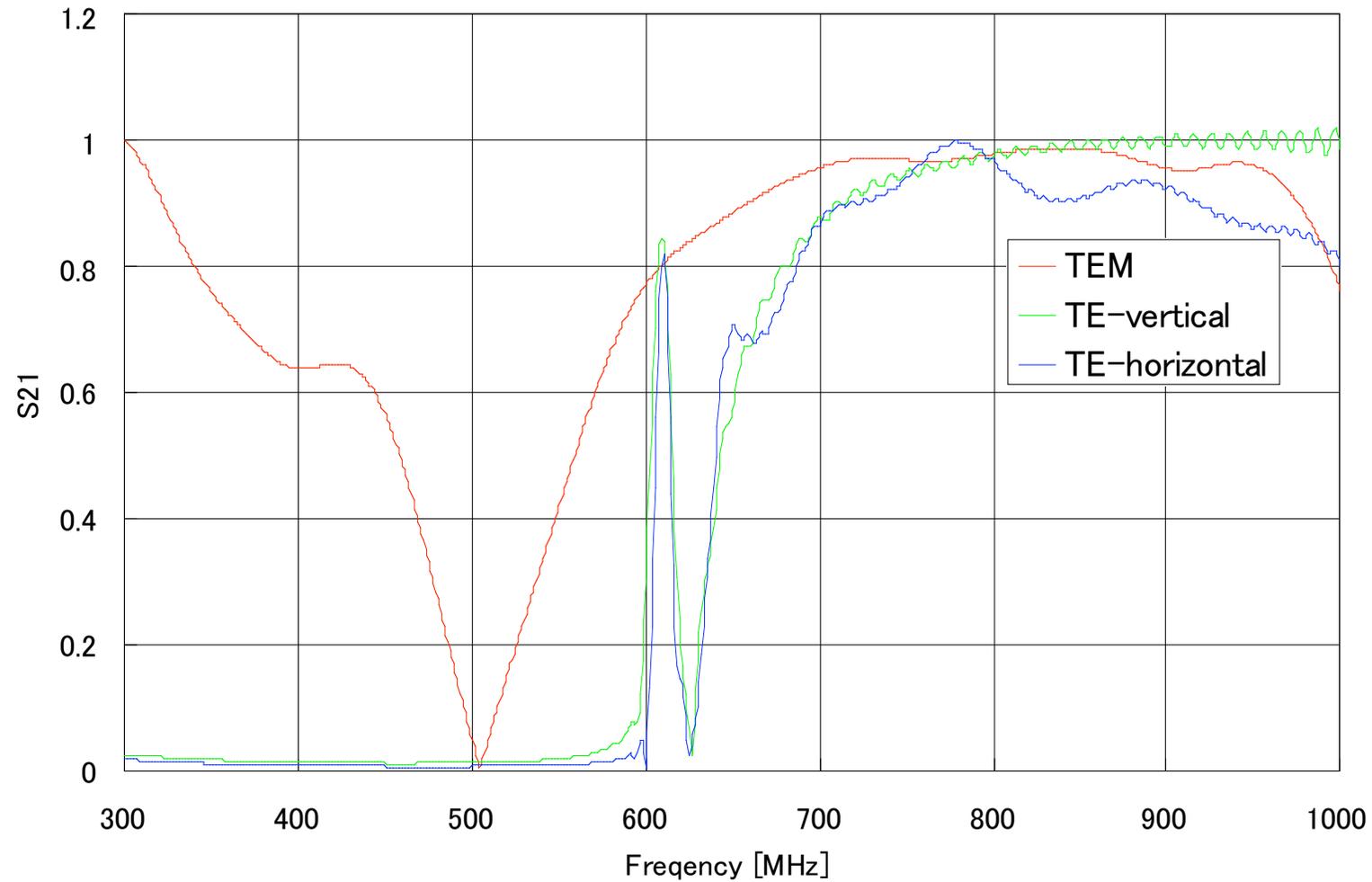
# Spectrums for TE-mode (stub support)



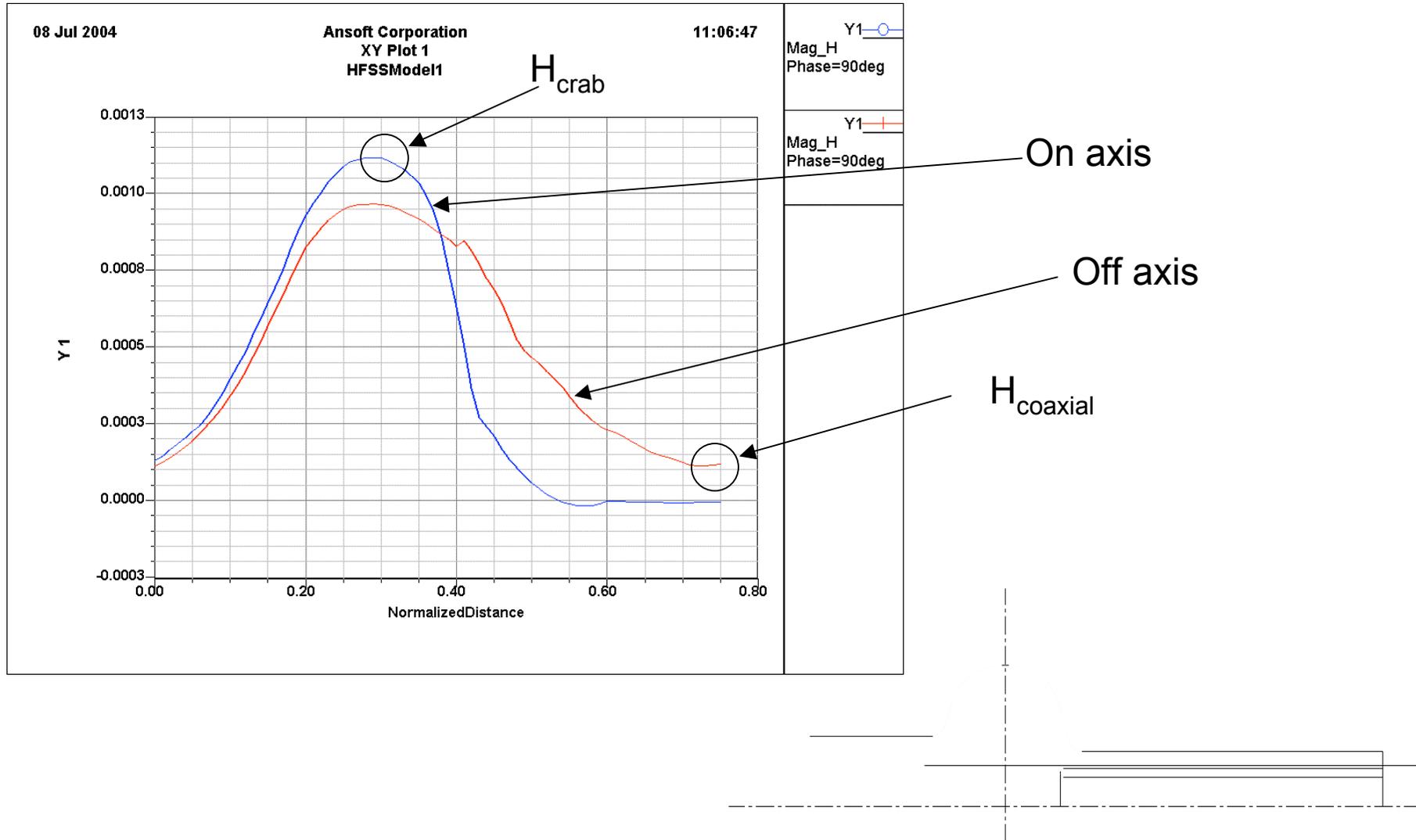
# Design of the coaxial coupler



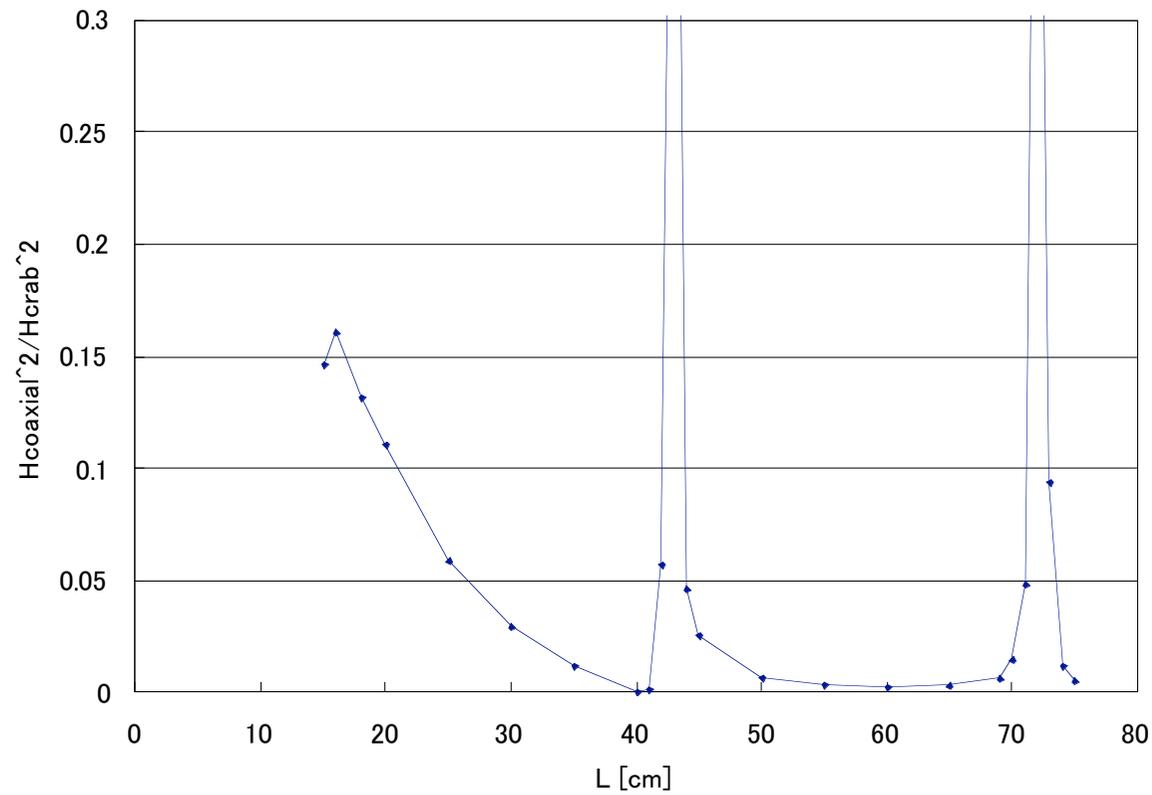
# Spectrum of the coaxial coupler



# Distribution of magnetic field



# Standing wave strength in coaxial coupler



In present design,  
 $L=55.6\text{cm}$ .  
It avoid dangerous point.