

# KEK Cavity Preparation for S1-G

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1. **Cavities and Surface Preparation**
2. **Status of Vertical Tests**
3. **Outlook for S1-Global**
4. **Summary**



# Five Cavities for S-1 Global

STF-BL #5 Cavity (MHI-05)  
STF-BL #6 Cavity (MHI-06)

STF-BL #7 Cavity (MHI-07)  
STF-BL #8 Cavity (MHI-08)  
STF-BL #9 Cavity (MHI-09)



Delivery in 2008' March

Delivery in 2009' March



# Surface Preparation for S1-G Cavities

No Barrel Polishing, EP + HPR + Assembly @ STF

preEP(5 $\mu$ m) + First EP (20+100 $\mu$ m) + HT at 750°C for 3 h

--- Surface Inspection in each step ---

MHI-05 ; I. EP(50)+H<sub>2</sub>O<sub>2</sub> II. EP(50)+H<sub>2</sub>O<sub>2</sub> III. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

MHI-06 ; I. EP(50)+H<sub>2</sub>O<sub>2</sub> II. EP(50)+H<sub>2</sub>O<sub>2</sub> III. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

IV. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

V. EP(20)+Degrease

MHI-07 ; I. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

II. EP(20)+Degrease

MHI-08 ; I. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

II. EP(20)+Degrease

MHI-09 ; I. EP(20)+C<sub>2</sub>H<sub>5</sub>OH

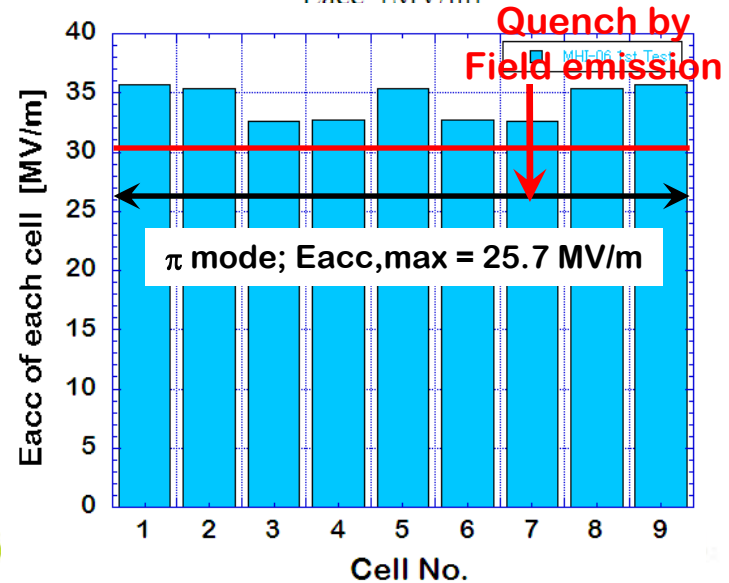
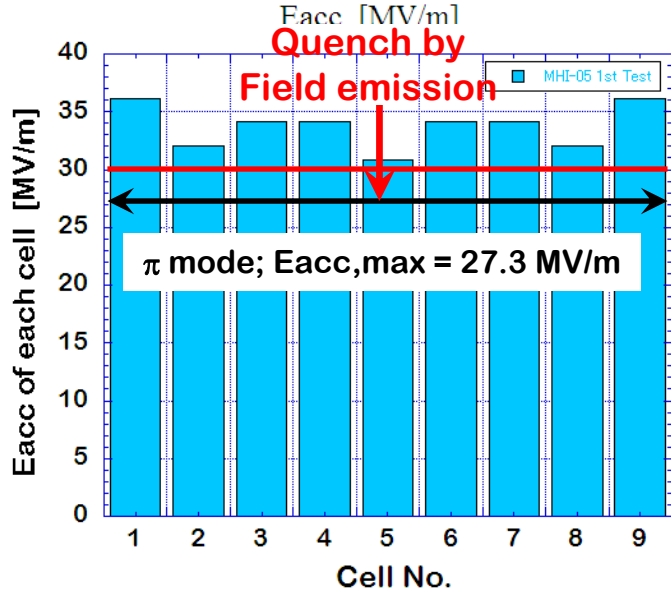
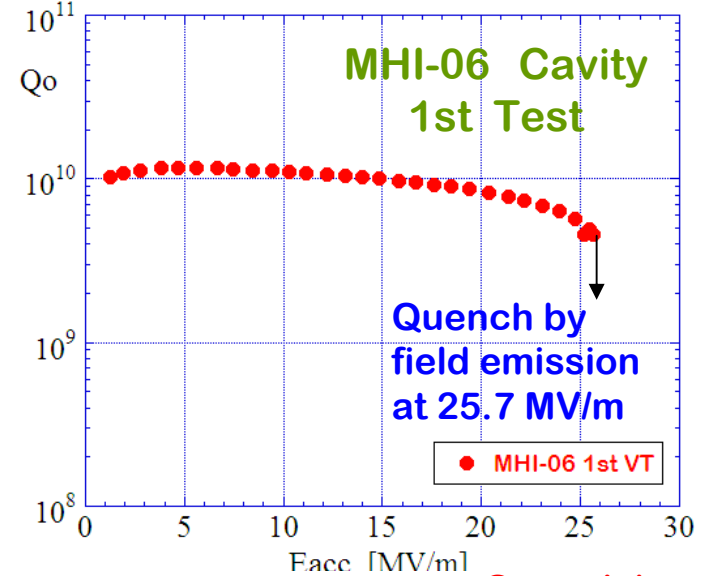
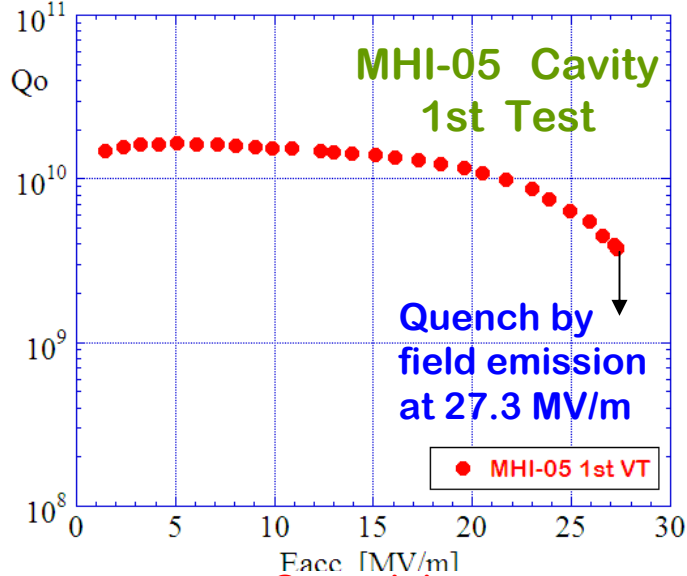
II. EP(20)+Degrease

not yet tested.

Comparison of Rinsing Effect by H<sub>2</sub>O<sub>2</sub>, C<sub>2</sub>H<sub>5</sub>OH, Degrease



# MHI-05, MHI-06 Cavity, 1<sup>st</sup> VT

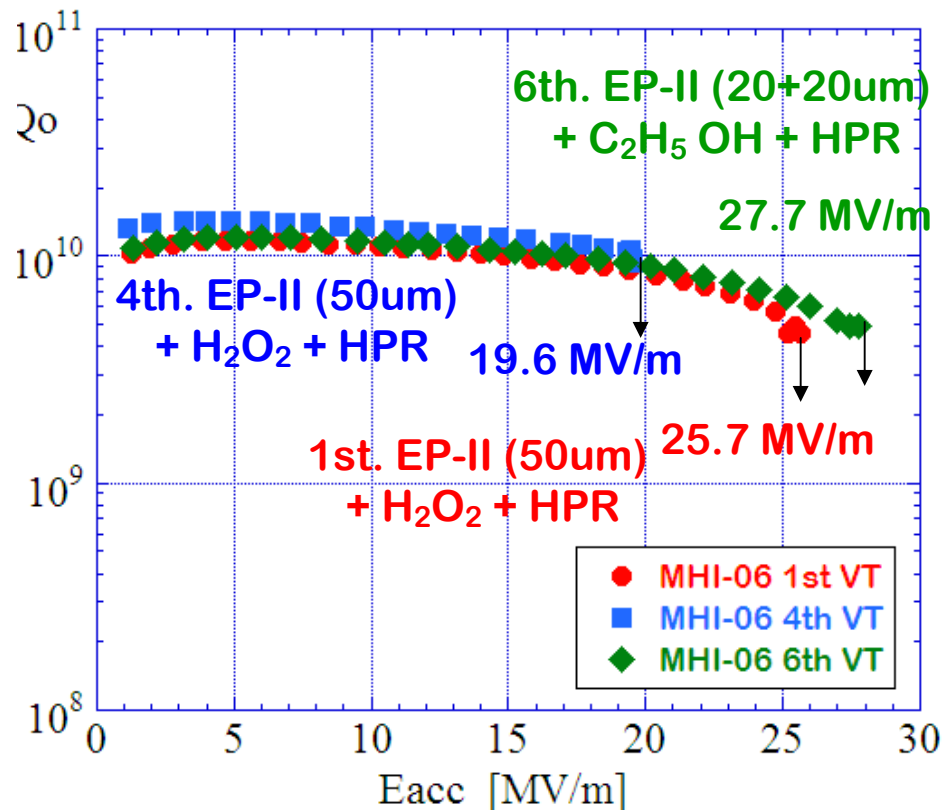
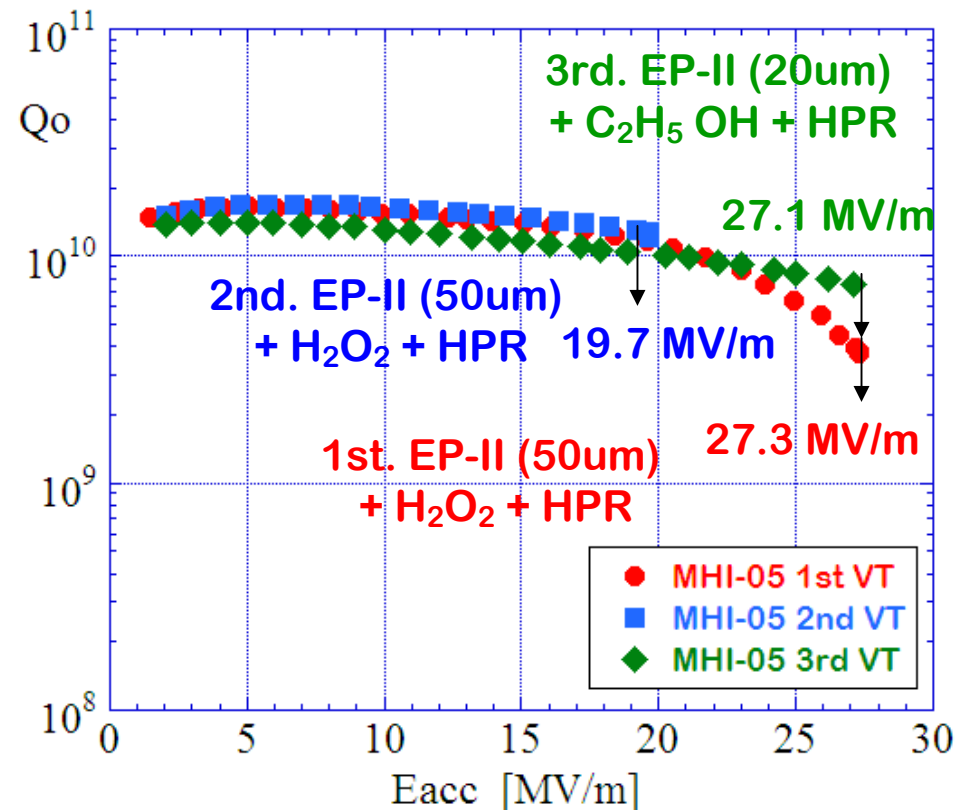




# Vertical Test Results of MHI-05, MHI-06

## MHI-05 Cavity

## MHI-06 Cavity

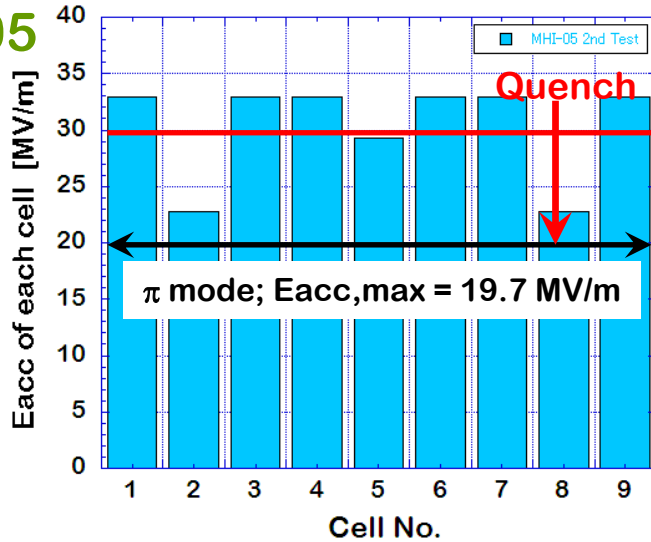


**MHI-05 and MHI-06 cavities are candidates for S1-G.**

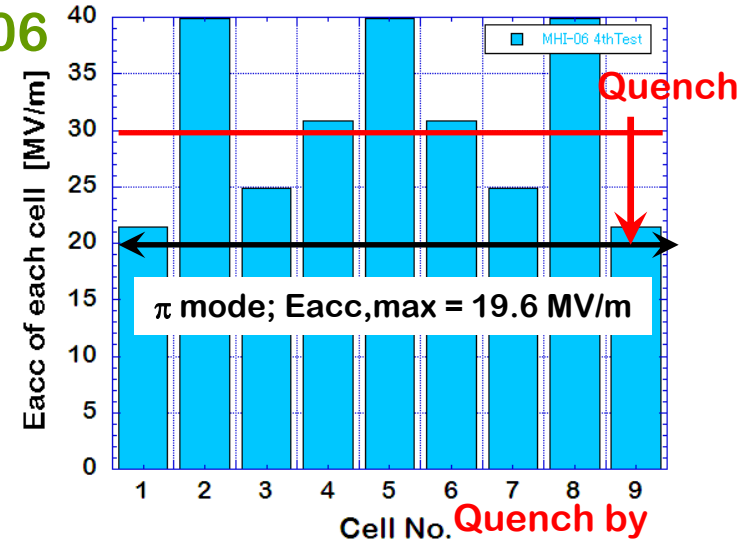


# Eacc,max (cell) by Passbands modes Meas.

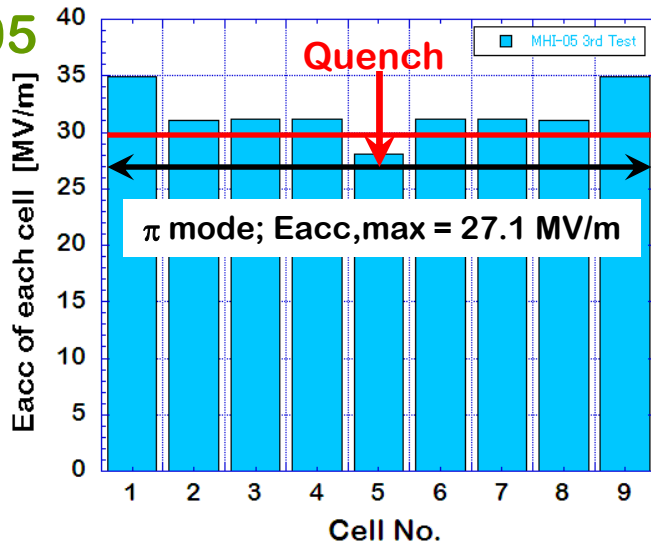
MHI-05  
2nd



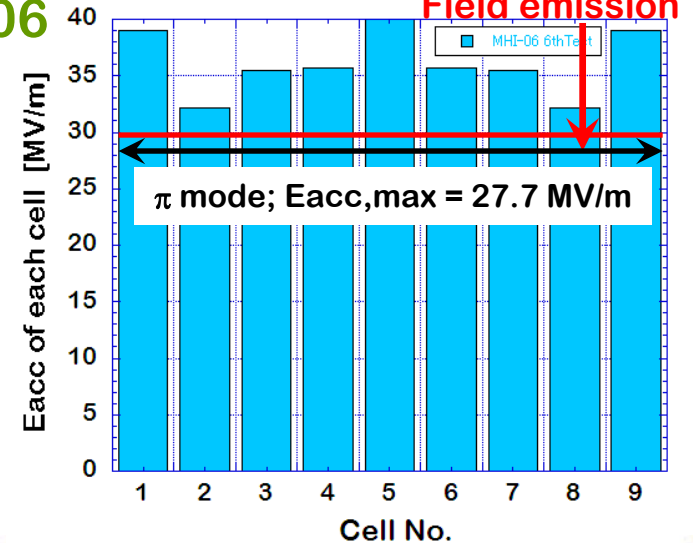
MHI-06  
4th



MHI-05  
3rd



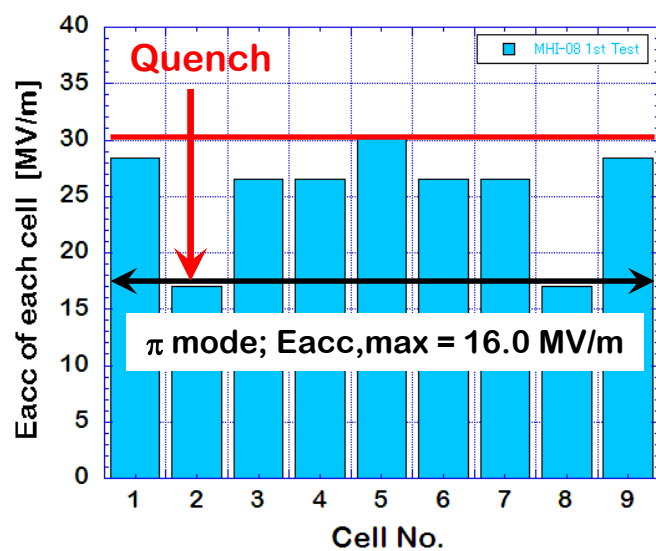
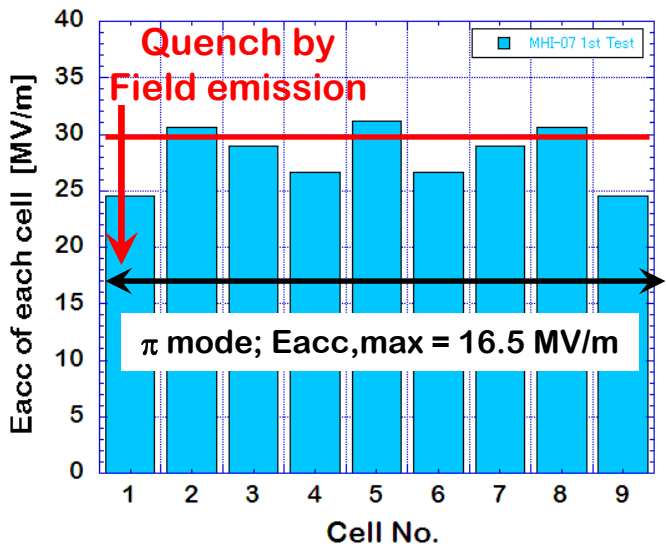
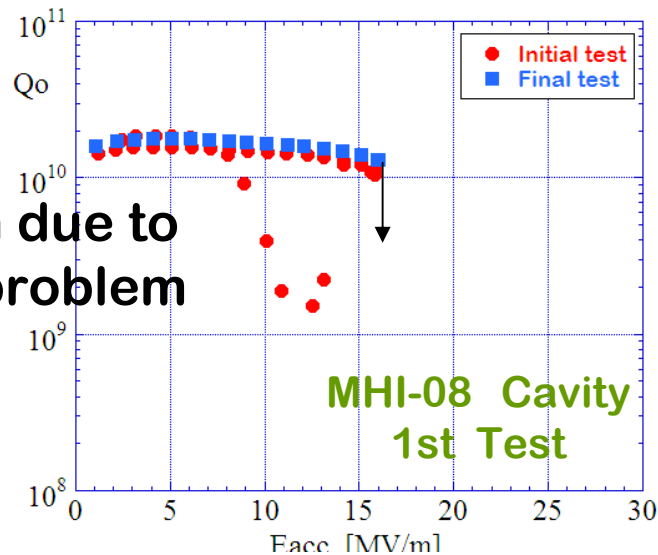
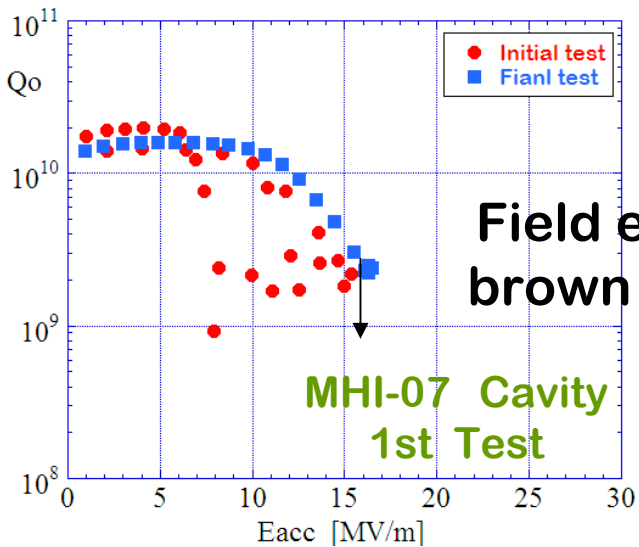
MHI-06  
6th







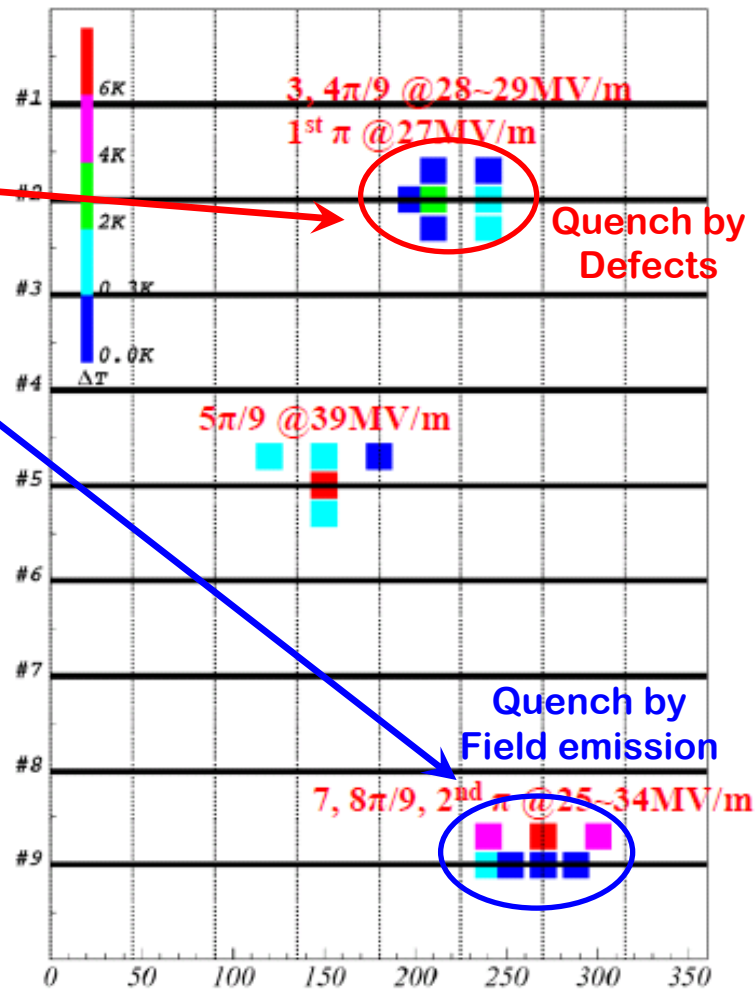
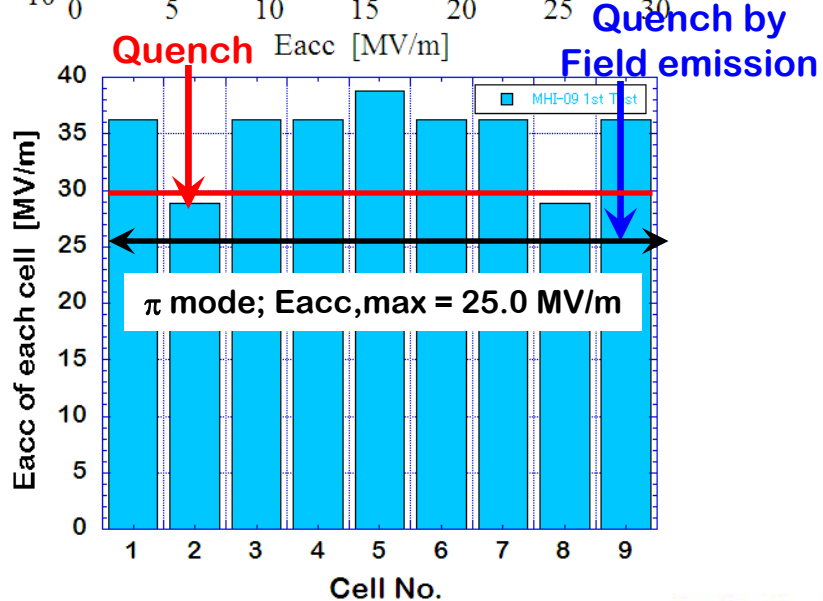
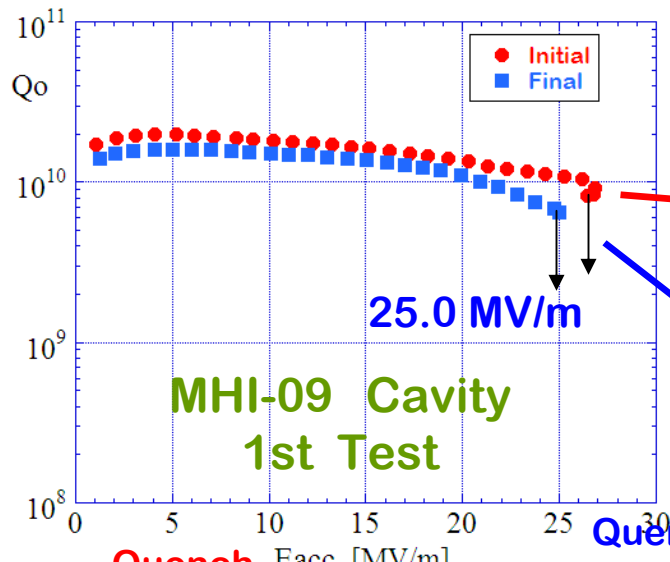
# MHI-07, MHI-08 Cavity, 1<sup>st</sup> VT







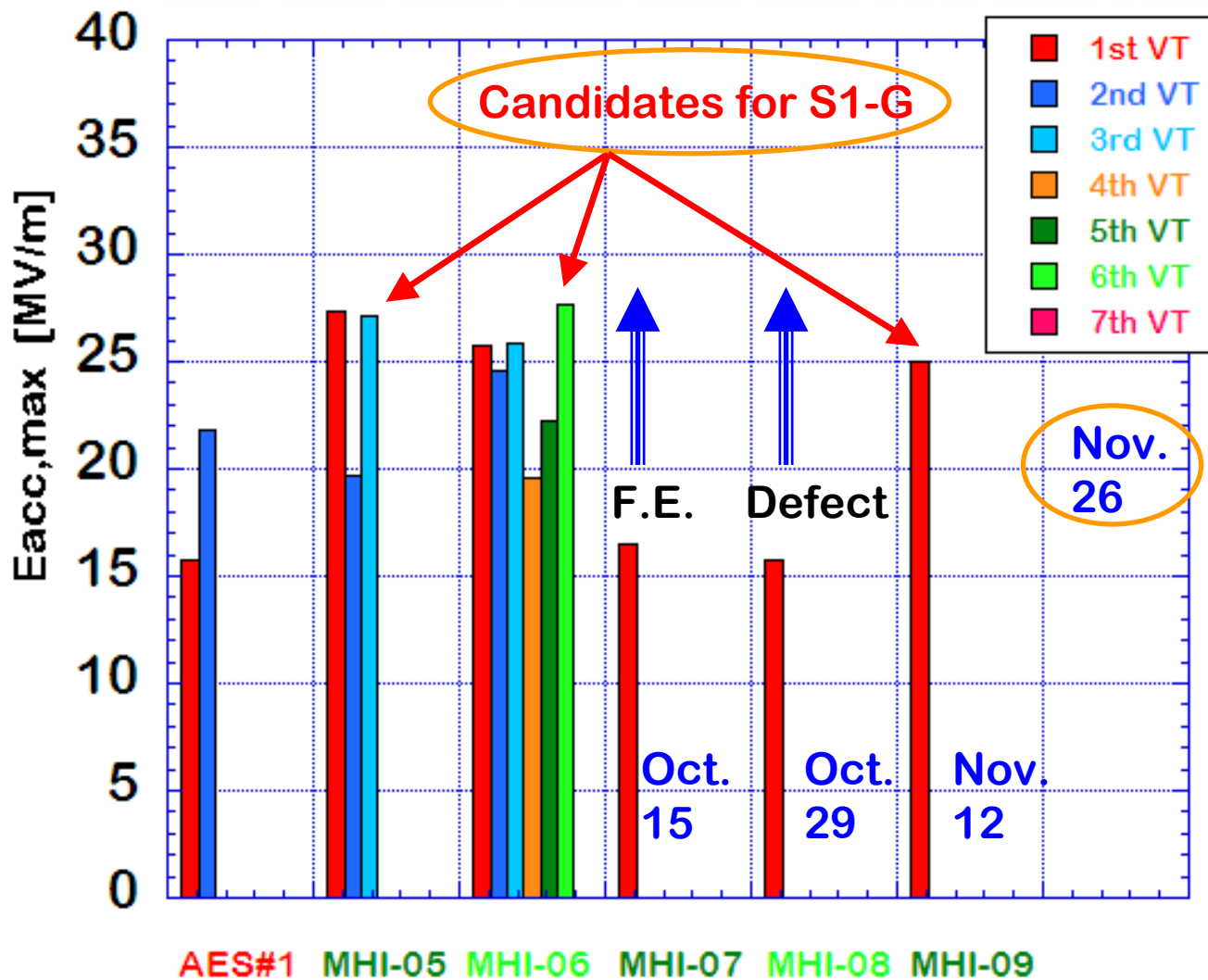
# MHI-09 Cavity, 1<sup>st</sup> VT



by Y. Yamamoto



# Summary of VT at STF (MHI-05 ~ 09)



Sept, 2009

Best 4 cavities for S1-G cryomodule will be selected till the end of Nov.



# Schedule of V.T for S-1 Global

New EP acid  
Brown Stains Problem

Assembly for S1-G starts in Jan. 2010.

Schedule of V.T (9-cell/2cell Cavities)		Symbol	EP1	EP1/STF	EP2	EP2/STF	VT	VT/STF	Anl	Aneal	Ins	Inspection	Tur	Pretuning	MHI	MHI																									
	Year	2009																																							
	Month	4			5			6			7			8			9			10			11			12															
	Week	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
STF-BL#1	STF Phase-1																																								
STF-BL#2	STF Phase-1																																								
STF-BL#3	STF Phase-1																																								
STF-BL#4	STF Phase-1																																								
STF-BL#5	for S1-Global	Tur	EP2	VT																																					
STF-BL#6	for S1-Global																																								
STF-BL#7	for S1-Global	Ins	Tur	EP1	Anl	Ins																																			
STF-BL#8	for S1-Global																																								
STF-BL#9	for S1-Global																																								
MHI-#0	old 9cell																																								
STF-BL#10	for S0																																								
STF-BL#11	for S0																																								
STF-BL#12	for Capture Cavity																																								
STF-BL#13	for Capture Cavity																																								

Target in V.T for S1-G

$E_{acc,max} > 30 \text{ MV/m}$

Today

Time limit for welding He Jacket

- Infrastructure for the vertical test at STF was completed in July 2008, and have been operated routinely.
- Vertical tests of 5 cavities for S1-G cryomodule have been continuing to achieve  $E_{acc,max} > 30$  MV/m, till the end of November.
- Average max. gradient of 4 cavities for S1-G will be expected to be nearly 30 MV/m.