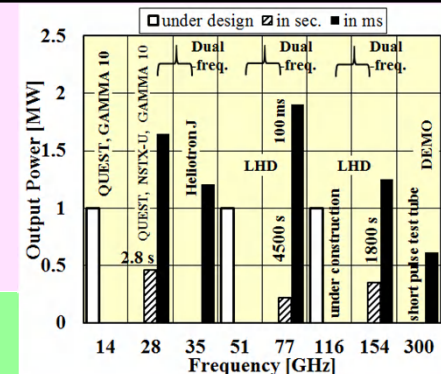


# Development of High Power Gyrotrons for Advanced Fusion Devices and DEMO

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Univ. of Tsukuba has been developing over 1 MW gyrotrons of **14GHz to sub-THz** for Fusion Devices and for Demo in collaboration with Kyushu-U., NIFS, QST, Kyoto-U., PPPL and TETD, based on 2 MW level result on the LHD 77 GHz gyrotron.



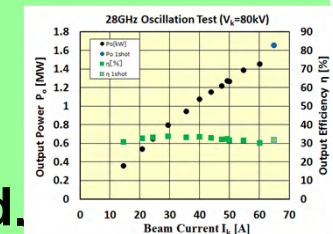
## 1. 14 GHz Gyrotron for GAMMA 10/PDX, QUEST

- The detailed designs of a 14 GHz 1 MW gyrotron have begun. For a 14 GHz RF beam with high divergence, a calculated **transmission efficiency of 94 %** was initially obtained with the **built-in corrugated waveguide structure**.

## 2. 28/35 GHz, 77/51 GHz Dual-freq. Gyrotron

for GAMMA 10/PDX, QUEST, Heliotron J, NSTX-U, LHD.

- 28.04 GHz, 1.65 MW** and **34.83 GHz, 1.21 MW** were obtained.
- 77/51 GHz design for LHD progressed, indicating 1.5 MW output.



## 3. Sub-Terahertz Gyrotron for DEMO.

- In the experimental test of a **300 GHz** gyrotron, **0.62 MW** was obtained.
- First trial design study of a 240 GHz gyrotron have been performed. **240 GHz** oscillation power of **1.5 MW** is expected. **200 GHz** oscillation power of 1 MW is expected.