

Development steps of the eight-cavity E1189 magnetron

29 June 1940	Six-cavity E1189 No.1 and soon later the No.2, with oxide-coated cathode, start operating at about 1000 oersted, giving 1 kW pulses. In a few days, using an electro-magnet to increase the field to 1400 oersted, output power will raise to more than 10 kW.
8 July 1940	The Tizard Mission starts officially, based upon the early successful operation of the E1189 No.2. Three days later America accepts the British proposal. Likely at that date Megaw had already realized that the design had to be changed to eight-cavity to work efficiently at low magnetic field.
17 July 1940	Paterson writes of the CVD meeting. Part of the discussion deals with the 'Megaw's air-cooled low field magnetron'. There is a 'general demand for specimens'. While asking for samples of existing six-cavity type, the CVD approves the launch of the Megaw's eight-cavity review.
30 July 1940	Presumably our E1189 prototype, the first eight-slot one, starts operating while continuously pumped.
1 to 5 August	Around 1 August the second laboratory prototype starts oscillating. Likely on 4 August the third eight-slot unit is sealed and starts running on the test bench. It will be serialized as E1189 No.12. The fourth unit listed by Megaw, the E1189 No.13, starts running probably on 5 August.
6 August 1940	From the Paterson's diary: 'A crowd of visitors at GEC, including Oliphant, Randall and Ellis. The Megaw's improved 10 cm magnetron with eight chambers appears up to expectations'. Sir Paterson takes the picture of the official approval of the eight-slot E1189 review, based upon the successful operation of the four samples, which totaled about 200 hours. Tests are stopped all together once the decision is taken.
7 August 1940	Bowen is briefed on the construction details of the E1189. Then he is allowed to select the best performing sample in the batch tested by Megaw himself. It is the No.12. Megaw forgets to warn the briefer and the same Bowen that two samples are eight-slot. Maybe he is too busy with his latest achievement, arranging the endurance test on the very early prototype and the complete performance characterization on the sample No. 13. On 11 August Bowen is back to pick his sample and blueprints of the E1189 design. The No.12 leaves GEC and begins its travel to America.
6 Octob. 1940	E1189 No.12 is powered at Bell, delivering about 15 kW RF pulses at 1100 gauss. On 7 October E1189 No.12 is X-rayed at Bell unveiling its eight-slot structure