$$\boxed{d = 8}$$

$$\Phi_{\mathbb{Q}}(8) \supseteq \left\{ \begin{array}{l} (3), (4), (5), (6), (7), (8), (9), (10), (12), (13), (15), (16), (17), (20), (21), (24), (30), (32), \\ (2,2), (2,4), (2,6), (2,8), (2,10), (2,12), (2,16), (2,20), (2,24), (3,3), (3,6), (3,12), (4,4), (4,8), (4,12), (5,5), (6,6) \end{array} \right\}$$

G	$\Phi_{\mathbb{Q}}(8, G) \setminus \{G\} \supseteq$
()	$\{(3), (5), (7), (9), (13), (15), (17), (3,3), (5,5)\}$
(2)	$\{(4), (6), (8), (10), (12), (16), (20), (24), (32), (2,2), (2,4), (2,6), (2,8), (2,10), (2,12), (2,16), (2,20), (2,24), (3,6), (3,12), (4,4), (4,8), (4,12), (6,6)\}$
(3)	$\{(15), (3,3)\}$
(4)	$\{(8), (12), (16), (20), (24), (32), (2,4), (2,8), (2,12), (2,16), (2,20), (2,24), (4,4), (4,8), (4,12)\}$
(5)	$\{(15), (5,5)\}$
(6)	$\{(12), (24), (2,6), (2,12), (2,24), (3,6), (3,12), (4,12), (6,6)\}$
(7)	$\{(21)\}$
(8)	$\{(16), (24), (32), (2,8), (2,16), (4,8)\}$
(9)	$\{\}$
(10)	$\{(20), (30), (2,10), (2,20)\}$
(12)	$\{(24), (2,12), (2,24), (4,12)\}$
(2,2)	$\{(2,4), (2,6), (2,8), (2,10), (2,12), (2,16), (2,20), (2,24), (4,4), (4,8), (4,12)\}$
(2,4)	$\{(2,8), (2,12), (2,16), (4,4), (4,8)\}$
(2,6)	$\{(2,12), (2,24), (4,12)\}$
(2,8)	$\{(2,16), (2,24), (4,8)\}$

$h_{\mathbb{Q}}(8) = 17$

Number of configurations: 275

Maximun conductor to obtain all the configurations: 277440

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
()	(3)	19a2
()	(9)	54a2
()	$(3), (5)$	11a2
()	$(3), (7)$	208d1
()	$(3), (13)$	2890d1
()	$(3), (15)$	50b3
()	$(3), (17)$	14450n1
()	$(3)^2, (3, 3)$	175b2
()	$(3), (5)^2$	18176b2
()	$(3), (5), (5, 5)$	275b2
()	$(3), (5), (15)$	50a2
()	$(3)^2, (5), (3, 3)$	121b1
()	$(3), (5)^2, (5, 5)$	99d2
()	$(3)^2, (5), (15), (3, 3)$	338d1
(2)	$(4), (2, 6), (4, 12)$	36a3
(2)	$(2, 2), (2, 4)^2, (2, 6)$	223494n1
(2)	$(4), (2, 6), (2, 12)^2$	80b1
(2)	$(4), (2, 6), (2, 12), (4, 12)$	1040g2
(2)	$(4), (6), (2, 2), (4, 4)$	128b1
(2)	$(6), (2, 2), (2, 4)^2$	200b2
(2)	$(4), (2, 2), (2, 4)^2, (2, 6)$	2205a2
(2)	$(4), (6), (2, 2), (2, 4)^2$	46a1
(2)	$(4), (6), (2, 2), (2, 4), (4, 4)$	128a1
(2)	$(4), (6), (2, 2), (2, 6), (4, 12)$	144a1
(2)	$(4), (6), (2, 10), (2, 20)^2$	450a3
(2)	$(6), (2, 2), (2, 4)^2, (2, 8)$	200b1
(2)	$(6), (8), (2, 2), (2, 4), (4, 8)$	294f1
(2)	$(6), (12), (2, 2), (2, 6), (4, 12)$	144a3
(2)	$(4), (6), (2, 2), (2, 4)^2, (2, 10)$	1014c2
(2)	$(4), (6), (2, 2), (2, 4), (2, 6), (2, 12)$	144a2
(2)	$(4), (6), (2, 2), (2, 4), (2, 8), (4, 4)$	49a1
(2)	$(4), (6), (8), (2, 2), (2, 4)^2$	128a2
(2)	$(4), (6), (8)^2, (2, 2), (4, 4)$	16810b2
(2)	$(4), (6), (10), (2, 2), (2, 4)^2$	576f2
(2)	$(4), (6), (10), (2, 2), (2, 4), (4, 4)$	2304h1
(2)	$(4), (6), (12), (2, 2), (2, 6), (4, 4)$	576a1
(2)	$(4), (10), (2, 2), (2, 4)^2, (2, 6)$	288a2

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	$(4), (10), (12), (2,2), (2,4)^2$	288a1
(2)	$(6), (12), (2,2), (2,4), (2,6), (2,12)$	36a4
(2)	$(4)^2, (6), (8), (2,2), (4,4), (4,8)$	200c4
(2)	$(4)^2, (6), (8)^2, (2,2), (4,4)$	320a4
(2)	$(4)^2, (8), (2,6), (2,12)^2, (2,24)$	14400bo8
(2)	$(4)^2, (8)^2, (2,6), (2,12)^2$	450g1
(2)	$(4), (6), (2,2), (2,4)^2, (2,6), (6,6)$	726a1
(2)	$(4), (6), (2,2), (2,4), (2,8)^2, (4,4)$	768c2
(2)	$(4), (6), (8)^2, (2,2), (2,4)^2$	49a2
(2)	$(4), (6), (8)^2, (10), (2,2), (4,4)$	256b2
(2)	$(4), (6), (10), (2,2), (2,4)^2, (2,10)$	66c3
(2)	$(4), (6), (10), (2,2), (2,4), (2,8), (4,4)$	256b1
(2)	$(4), (6), (10), (2,2), (2,4), (2,10), (2,20)$	14400cg3
(2)	$(4), (6), (12), (2,2), (2,4)^2, (2,6)$	14a3
(2)	$(4), (6), (12), (2,2), (2,4), (2,6), (2,12)$	576a2
(2)	$(4), (6), (12), (2,6), (2,12)^2, (6,6)$	98a3
(2)	$(4), (8), (12), (2,2), (2,4), (2,12), (2,24)$	14400ef3
(2)	$(4), (8), (12), (24), (2,2), (2,4), (2,12)$	30a3
(2)	$(4), (12), (24), (2,2), (2,4), (2,12), (2,24)$	14400bo3
(2)	$(6), (8)^2, (16)^2, (2,2), (4,8)$	2880r6
(2)	$(6), (10), (20), (2,2), (2,4), (2,10), (2,20)$	450a4
(2)	$(6), (12), (24), (2,2), (2,4), (2,6), (2,12)$	1040g1
(2)	$(4)^2, (6), (8), (2,2), (2,4)^2, (2,8)$	153c1
(2)	$(4)^2, (6), (8), (2,2), (2,10), (4,4), (4,8)$	64a4
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4)^2$	120b1
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4), (4,4)$	153c4
(2)	$(4)^2, (8)^2, (2,6), (2,12)^2, (4,12)$	960o7
(2)	$(4), (6), (8)^2, (2,2), (2,4), (2,8), (2,16)$	576i4
(2)	$(4), (6), (8)^2, (2,2), (2,4), (2,8), (4,4)$	294f2
(2)	$(4), (6), (8)^2, (16), (2,2), (2,4), (2,8)$	126b1
(2)	$(4), (6), (8), (12), (2,2), (2,4)^2, (2,6)$	130a3
(2)	$(4), (6), (8), (16), (2,2), (2,4), (2,8), (4,8)$	144b1
(2)	$(4), (6), (8), (16), (32), (2,2), (2,4), (2,16)$	3150bk1
(2)	$(4), (6), (10), (20), (2,2), (2,4)^2, (2,10)$	150b3
(2)	$(4), (6), (12), (2,2), (2,4), (2,6), (2,12), (4,4)$	130a4
(2)	$(4), (8), (12), (24), (2,2), (2,4), (2,12), (2,24)$	960e3
(2)	$(4), (8), (12), (24), (2,2), (2,4), (2,12), (4,12)$	720j3

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	$(6)^2, (2,2), (2,4)^2, (2,6)^2, (3,6)$	256a2
(2)	$(4)^2, (6), (2,2), (2,4)^2, (2,8)^2, (4,4)$	200c3
(2)	$(4)^2, (6), (8), (2,2), (2,4), (2,8)^2, (4,4)$	289a4
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4)^2, (2,8)$	33a2
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4)^2, (4,4)$	33a4
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4), (2,10), (4,4)$	576h1
(2)	$(4)^2, (6), (8), (10), (2,2), (2,4)^2, (2,8)$	288d2
(2)	$(4)^2, (8)^2, (12), (2,2), (2,4), (2,10), (4,4)$	288d4
(2)	$(4)^2, (8), (10), (12), (2,2), (2,4)^2, (2,8)$	288d3
(2)	$(4), (6)^2, (2,2), (2,4)^2, (2,6)^2, (3,6)$	1210a1
(2)	$(4), (6), (8), (2,2), (2,4), (2,8), (2,16)^2, (4,8)$	277440dv8
(2)	$(4), (6), (8)^3, (16), (2,2), (2,8), (4,8)$	45a6
(2)	$(4), (6), (8)^2, (16), (2,2), (2,4), (2,8), (2,16)$	45a1
(2)	$(4), (6), (8)^2, (16), (2,2), (2,4), (2,8), (4,8)$	24a6
(2)	$(4), (6), (8), (16), (2,2), (2,4), (2,8)^2, (4,8)$	1344g5
(2)	$(6)^2, (2,2), (2,4)^2, (2,6)^2, (2,8), (3,6)$	256a1
(2)	$(4)^2, (6), (8), (2,2), (2,4)^2, (2,8)^2, (4,4)$	17a3
(2)	$(4)^2, (6), (8)^3, (2,2), (2,4)^2, (2,8)$	306c5
(2)	$(4)^2, (6), (8)^4, (2,2), (4,4), (4,8)$	187200eh5
(2)	$(4)^2, (6), (20), (2,2), (2,4)^2, (2,8)^2, (4,4)$	64a2
(2)	$(4), (6)^2, (12), (2,2), (2,4)^2, (2,6)^2, (3,6)$	726a2
(2)	$(4), (6), (8)^3, (2,2), (2,8), (2,16)^2, (4,8)$	1200j6
(2)	$(4), (6), (8)^3, (16)^2, (2,2), (2,8), (4,8)$	225c6
(2)	$(4), (6), (8)^2, (16), (2,2), (2,4), (2,8)^2, (4,8)$	42a5
(2)	$(4), (6), (8)^2, (16)^2, (2,2), (2,4), (2,8), (2,16)$	630c1
(2)	$(4), (6), (8)^2, (16)^2, (2,2), (2,4), (2,8), (4,8)$	48a4
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4)^2, (2,8)^2, (4,4)$	600a4
(2)	$(4)^2, (6), (8)^4, (2,2), (4,4), (4,8)^2$	6150n6
(2)	$(4)^2, (6), (8)^3, (16), (2,2), (2,4)^2, (2,8)$	126b3
(2)	$(4)^2, (6), (8), (20), (2,2), (2,4)^2, (2,8)^2, (4,4)$	32a3
(2)	$(4), (6)^2, (12), (2,2), (2,4), (2,6)^2, (2,12), (3,6), (6,6)$	3136k3
(2)	$(4), (6), (8)^3, (16), (2,2), (2,8), (2,16)^2, (4,8)$	75b6
(2)	$(4), (6), (8)^3, (16)^3, (2,2), (2,8), (4,8)$	4800cd6
(2)	$(4), (6), (8)^2, (16), (2,2), (2,4), (2,8), (2,16)^2, (4,8)$	510e7
(2)	$(4), (6), (8)^2, (16)^2, (32), (2,2), (2,4), (2,8), (2,16)$	75b1
(2)	$(4), (6), (8), (16)^2, (2,2), (2,4), (2,8), (2,16)^2, (4,8)$	1470k3
(2)	$(6)^2, (12), (2,2), (2,4), (2,6)^2, (2,12), (3,6), (3,12), (6,6)$	98a4

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(2)	$(4)^2, (6), (8)^2, (2,2), (2,4)^2, (2,8)^3, (4,4)$	63a6
(2)	$(4)^2, (6), (8)^3, (2,2), (2,4)^2, (2,8)^2, (4,4)$	231a5
(2)	$(4)^2, (6), (8)^4, (2,2), (2,4), (2,8)^2, (4,4)$	975a6
(2)	$(4)^2, (6), (8)^4, (16)^2, (2,2), (4,4), (4,8)$	4410r6
(2)	$(4)^2, (6), (8)^3, (16)^2, (2,2), (2,4)^2, (2,8)$	45a7
(2)	$(4)^2, (6), (8)^2, (12)^2, (2,2), (2,4)^2, (2,6), (2,12)$	210a3
(2)	$(4)^2, (6), (8)^2, (12)^2, (2,2), (2,4), (2,6), (2,12)^2$	30a8
(2)	$(4)^2, (6), (8), (12)^2, (2,2), (2,4)^2, (2,6), (2,8), (2,12)$	14400bo1
(2)	$(4)^2, (6), (8), (12)^2, (2,2), (2,4), (2,6), (2,8), (2,12)^2$	14400ef8
(2)	$(4)^2, (6), (8), (12)^2, (24), (2,2), (2,4)^2, (2,6), (2,12)$	30a7
(2)	$(4)^2, (6), (8), (16)^2, (2,2), (2,4)^2, (2,8)^2, (4,4)$	40a2
(2)	$(4)^2, (6), (12)^2, (24), (2,2), (2,4)^2, (2,6), (2,8), (2,12)$	14400ef7
(2)	$(4)^2, (6), (12)^2, (24), (2,2), (2,4), (2,6), (2,8), (2,12)^2$	14400bo7
(2)	$(4), (6)^2, (12)^2, (2,2), (2,4)^2, (2,6)^2, (3,6), (6,6)$	112c3
(2)	$(4), (6), (8)^2, (16)^2, (2,2), (2,4), (2,8), (2,16)^2, (4,8)$	1680p1
(2)	$(4)^2, (6), (8)^3, (2,2), (2,4)^2, (2,8)^3, (4,4)$	21a6
(2)	$(4)^2, (6), (8)^4, (16), (2,2), (2,4), (2,8)^2, (4,4)$	7605p6
(2)	$(4)^2, (6), (8)^3, (16), (2,2), (2,4)^2, (2,8)^2, (4,4)$	21a5
(2)	$(4)^2, (6), (8)^3, (16)^3, (2,2), (2,4)^2, (2,8)$	45a3
(2)	$(4)^2, (6), (8)^2, (16)^2, (2,2), (2,4)^2, (2,8)^2, (4,4)$	192c5
(2)	$(4)^2, (6), (8)^4, (16)^2, (2,2), (2,4), (2,8)^2, (4,4)$	630c6
(2)	$(4)^2, (6), (8)^3, (16), (2,2), (2,4)^2, (2,8)^3, (4,4)$	48a2
(2)	$(4)^2, (6), (8)^3, (16)^2, (2,2), (2,4)^2, (2,8)^2, (4,4)$	42a6
(2)	$(4)^2, (6), (8)^2, (12)^2, (2,2), (2,4)^2, (2,6), (2,12)^2, (4,4)$	90c4
(2)	$(4)^2, (6), (8)^2, (12)^2, (24), (2,2), (2,4)^2, (2,6), (2,8), (2,12)$	90c5
(2)	$(4)^2, (6), (8)^2, (12)^2, (24), (2,2), (2,4), (2,6), (2,8), (2,12)^2$	1050k4
(2)	$(4)^2, (6), (8)^2, (16)^2, (2,2), (2,4)^2, (2,8)^3, (4,4)$	75b7
(2)	$(4)^2, (6), (8), (12)^2, (24), (2,2), (2,4)^2, (2,6), (2,12)^2, (4,4)$	960e7
(2)	$(4)^2, (6), (8), (12)^2, (24)^2, (2,2), (2,4)^2, (2,6), (2,8), (2,12)$	720j7
(2)	$(4)^2, (6), (8), (12)^2, (24)^2, (2,2), (2,4), (2,6), (2,8), (2,12)^2$	150c8
(2)	$(4)^2, (6), (12)^2, (24)^2, (2,2), (2,4)^2, (2,6), (2,12)^2, (4,4)$	150c7
(2)	$(4)^2, (6), (8)^4, (16)^3, (2,2), (2,4), (2,8)^2, (4,4)$	1470k6
(2)	$(4)^2, (6), (8)^3, (16)^3, (2,2), (2,4)^2, (2,8)^2, (4,4)$	195a7
(2)	$(4)^2, (6), (8)^4, (16)^4, (2,2), (2,4), (2,8)^2, (4,4)$	6720cd6
(2)	$(4)^2, (6), (8)^3, (16)^3, (2,2), (2,4)^2, (2,8)^3, (4,4)$	15a5
(2)	$(4)^2, (6), (8)^3, (16)^4, (2,2), (2,4)^2, (2,8)^2, (4,4)$	15a6
(2)	$(4)^2, (6), (8)^3, (16)^4, (2,2), (2,4)^2, (2,8)^3, (4,4)$	210e7

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(3)	$(3, 3)$	19a1
(3)	(15)	50a1
(4)	$(8), (2, 12), (2, 24)^2, (4, 12)$	150c3
(4)	$(8), (12), (2, 4), (2, 8), (4, 8)$	2880be6
(4)	$(8), (12), (4, 4), (4, 8)^2$	40a4
(4)	$(12), (2, 4), (2, 8)^2, (4, 4)$	200c1
(4)	$(8), (12), (2, 4), (2, 8)^2, (4, 4)$	17a1
(4)	$(8), (12), (2, 4), (2, 20), (4, 4), (4, 8)$	32a1
(4)	$(8), (12), (2, 8), (2, 16)^2, (4, 8)$	192c6
(4)	$(8), (12), (16), (2, 4), (2, 8), (4, 8)$	72a1
(4)	$(12), (20), (2, 4), (2, 8)^2, (4, 4)$	64a3
(4)	$(8), (12), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	144b4
(4)	$(8), (12), (2, 4), (2, 8), (2, 16)^2, (4, 8)$	277440dv7
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (4, 4)$	63a5
(4)	$(8), (12), (16), (2, 8), (2, 16)^2, (4, 8)$	294c1
(4)	$(8), (12), (20), (2, 4), (2, 8)^2, (4, 4)$	32a4
(4)	$(12), (24), (2, 4), (2, 8), (2, 12), (2, 24), (4, 4)$	960o8
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8), (4, 8)$	24a4
(4)	$(8), (12), (16), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	75b8
(4)	$(8), (12), (16)^2, (2, 4), (2, 8)^2, (4, 4)$	40a3
(4)	$(8), (12), (24), (2, 4), (2, 8)^2, (2, 12), (4, 4)$	90c1
(4)	$(8), (12), (24), (2, 4), (2, 8)^2, (2, 12), (4, 12)$	720j8
(4)	$(8), (12), (24), (2, 4), (2, 8), (2, 12), (2, 24), (4, 4)$	1050k1
(4)	$(8)^2, (12), (16), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	24a3
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4)$	120a1
(4)	$(8)^2, (12), (16)^2, (2, 8), (2, 16)^2, (4, 8)$	240d6
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (2, 16), (4, 4)$	21a4
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4), (4, 8)$	195a6
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (4, 4), (4, 8)^2$	510e6
(4)	$(8)^2, (12), (16)^3, (2, 4), (2, 8)^2, (2, 16), (4, 4)$	195a1
(4)	$(8)^2, (12), (16)^3, (2, 4), (2, 8), (2, 16)^2, (4, 8)$	1230f4
(4)	$(8)^2, (12), (16)^2, (2, 4), (2, 8)^2, (2, 16)^2, (4, 4), (4, 8)$	210e6
(4)	$(8)^2, (12), (16)^3, (32), (2, 4), (2, 8)^2, (2, 16), (4, 4)$	15a7
(5)	(15)	11a3
(5)	$(15), (5, 5)$	11a1
(6)	$(12), (2, 6), (4, 12)$	36a1
(6)	$(12), (2, 6), (2, 12)^2$	14a4

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
(6)	$(12), (2, 6), (2, 12), (4, 12)$	130a2
(6)	$(12), (24), (2, 6), (2, 12)^2$	130a1
(6)	$(12), (2, 6), (2, 12)^2, (3, 6), (3, 12), (6, 6)$	14a1
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2$	30a1
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2, (2, 24)$	90c8
(6)	$(12)^2, (24)^2, (2, 6), (2, 12)^2, (4, 12)$	90c7
(7)	(21)	26b1
(8)	$(16), (24), (2, 8), (2, 16)^2, (4, 8)$	15a4
(8)	$(16)^2, (24), (32)^2, (2, 8), (2, 16)^2, (4, 8)$	210e1
(10)	$(20), (30), (2, 10), (2, 20)^2$	66c1
(12)	$(24), (2, 12), (2, 24)^2, (4, 12)$	90c3
$(2, 2)$	$(2, 4)^3, (2, 6)$	120b2
$(2, 2)$	$(2, 4), (2, 6), (2, 8), (4, 4)$	289a2
$(2, 2)$	$(2, 4)^3, (2, 6), (4, 4)$	153c2
$(2, 2)$	$(2, 4)^3, (2, 6), (4, 8)$	14400dq3
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8), (4, 8)$	277440dv6
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 12), (4, 12)$	14400ef6
$(2, 2)$	$(2, 4)^2, (2, 12), (2, 24), (4, 12)$	960o6
$(2, 2)$	$(2, 4), (2, 6), (2, 8), (4, 4), (4, 8)$	200c2
$(2, 2)$	$(2, 4), (2, 6), (2, 12)^2, (4, 12)$	14400bo6
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 8), (4, 4)$	33a1
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 8), (4, 8)$	600a3
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 10), (4, 4)$	288d1
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4)$	17a2
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 8)$	1200j4
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8), (2, 16), (4, 8)$	63a2
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8), (4, 4), (4, 8)$	2880be3
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 12)^3$	30a6
$(2, 2)$	$(2, 4), (2, 6), (2, 8), (2, 10), (4, 4), (4, 8)$	64a1
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 8)^2, (4, 4)$	306c2
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 8)^2, (4, 8)$	192d2
$(2, 2)$	$(2, 4)^3, (2, 6), (2, 12)^3$	210a6
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8)^3, (4, 4)$	1287e4
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8)^2, (2, 16), (4, 8)$	1344g2
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8)^2, (4, 4), (4, 8)$	40a1
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8), (2, 12)^2, (4, 12)$	720j6
$(2, 2)$	$(2, 4)^2, (2, 6), (2, 8), (2, 16)^2, (4, 8)$	75b2

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
$(2,2)$	$(2,4)^2, (2,6), (2,8), (2,20), (4,4), (4,8)$	32a2
$(2,2)$	$(2,4)^2, (2,6), (2,8), (4,4), (4,8)^2$	72a2
$(2,2)$	$(2,4), (2,6), (2,8)^3, (2,16), (4,8)$	75b3
$(2,2)$	$(2,4), (2,6), (2,8)^2, (2,16)^2, (4,8)$	1470k2
$(2,2)$	$(2,4), (2,6), (2,8), (2,12)^3, (4,12)$	150c6
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (4,4)$	45a5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (4,8)$	144b3
$(2,2)$	$(2,4)^3, (2,6), (2,8)^2, (2,16), (4,4)$	585f2
$(2,2)$	$(2,4)^3, (2,6), (2,8)^2, (2,16), (4,8)$	45a2
$(2,2)$	$(2,4)^3, (2,6), (2,8), (2,16)^2, (4,8)$	1200j2
$(2,2)$	$(2,4)^3, (2,6), (2,12)^3, (4,4)$	14400bo2
$(2,2)$	$(2,4)^2, (2,6), (2,8)^4, (4,4)$	2925g3
$(2,2)$	$(2,4)^2, (2,6), (2,8)^4, (4,8)$	6150n3
$(2,2)$	$(2,4)^2, (2,6), (2,8)^3, (2,16), (4,8)$	294c4
$(2,2)$	$(2,4)^2, (2,6), (2,8)^3, (4,4), (4,8)$	63a4
$(2,2)$	$(2,4)^2, (2,6), (2,8)^2, (2,16)^2, (4,8)$	4800cd5
$(2,2)$	$(2,4)^2, (2,6), (2,8)^2, (2,16), (4,4), (4,8)$	225c2
$(2,2)$	$(2,4)^2, (2,6), (2,8)^2, (4,4), (4,8)^2$	144b2
$(2,2)$	$(2,4)^2, (2,6), (2,8), (4,4), (4,8)^3$	1200j5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (4,4)$	231a3
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (4,8)$	192c2
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (2,16), (4,4)$	225c5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (4,4), (4,8)$	120a3
$(2,2)$	$(2,4)^3, (2,6), (2,8)^2, (4,4), (4,8)^2$	24a2
$(2,2)$	$(2,4)^3, (2,6), (2,8), (2,12)^3, (4,4)$	90c2
$(2,2)$	$(2,4)^2, (2,6), (2,8)^4, (4,4), (4,8)$	975a3
$(2,2)$	$(2,4)^2, (2,6), (2,8)^3, (2,16)^2, (4,8)$	1680p2
$(2,2)$	$(2,4)^2, (2,6), (2,8)^3, (4,4), (4,8)^2$	45a4
$(2,2)$	$(2,4)^2, (2,6), (2,8)^2, (4,4), (4,8)^3$	75b5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (2,16), (4,4)$	1470k5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (4,4), (4,8)$	21a2
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (4,4), (4,8)^2$	42a3
$(2,2)$	$(2,4)^2, (2,6), (2,8)^4, (2,16), (4,4), (4,8)$	3150bk4
$(2,2)$	$(2,4)^2, (2,6), (2,8)^4, (4,4), (4,8)^2$	630c4
$(2,2)$	$(2,4)^2, (2,6), (2,8)^3, (4,4), (4,8)^3$	1470k4
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (2,16), (4,4), (4,8)$	1230f5
$(2,2)$	$(2,4)^3, (2,6), (2,8)^3, (4,4), (4,8)^3$	15a2

G	$\mathcal{H}_{\mathbb{Q}}(8, E)$	Label
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (2,16)^2, (4,4), (4,8)$	240d2
$(2,2)$	$(2,4)^3, (2,6), (2,8)^4, (4,4), (4,8)^3$	210e5
$(2,4)$	$(2,8)^2, (2,12), (4,4)$	231a2
$(2,4)$	$(2,8)^2, (2,12), (4,4), (4,8)$	120a2
$(2,4)$	$(2,8)^2, (2,12), (2,16), (4,4), (4,8)$	21a1
$(2,4)$	$(2,8)^2, (2,12), (4,4), (4,8)^2$	24a1
$(2,4)$	$(2,8)^2, (2,12), (2,16)^3, (4,8)$	1230f2
$(2,4)$	$(2,8)^2, (2,12), (2,16)^2, (4,4), (4,8)$	15a3
$(2,4)$	$(2,8)^2, (2,12), (2,16), (4,4), (4,8)^2$	42a2
$(2,4)$	$(2,8)^2, (2,12), (4,4), (4,8)^3$	195a3
$(2,4)$	$(2,8), (2,12), (2,16), (4,4), (4,8)^3$	15a1
$(2,4)$	$(2,8)^2, (2,12), (2,16)^3, (4,4), (4,8)$	510e2
$(2,4)$	$(2,8)^2, (2,12), (2,16)^2, (4,4), (4,8)^3$	210e3
$(2,6)$	$(2,12)^3$	30a2
$(2,6)$	$(2,12)^3, (2,24), (4,12)$	90c6
$(2,8)$	$(2,16)^2, (2,24), (4,8)$	210e2