$$\boxed{d = 20}$$

$$\Phi_{\mathbb{Q}}(20) \supseteq \left\{ \begin{array}{c} (3), (4), (5), (6), (7), (8), (9), (10), (11), (12), (13), (15), (16), (20), (22), (24), (25), (33), \\ (2,2), (2,4), (2,6), (2,8), (2,10), (2,12), (2,16), (2,22), (3,3), (3,6), (4,4), (4,8), (5,5), (5,10), (5,15), (6,6) \end{array} \right\}$$

G	$\Phi_{\mathbb{Q}}(20, G) \setminus \{G\} \supseteq$
$()$	$\{(3), (5), (7), (9), (11), (13), (15), (25), (33), (3,3), (5,5), (5,15)\}$
(2)	$\{(4), (6), (8), (10), (12), (16), (20), (22), (24), (2,2), (2,4), (2,6), (2,8), (2,10), (2,12), (2,16), (2,22), (3,6), (4,4), (4,8), (5,10), (6,6)\}$
(3)	$\{(15), (3,3), (5,15)\}$
(4)	$\{(8), (12), (16), (24), (2,4), (2,8), (2,12), (2,16), (4,4), (4,8)\}$
(5)	$\{(15), (25), (5,5), (5,15)\}$
(6)	$\{(12), (24), (2,6), (2,12), (3,6), (6,6)\}$
(7)	$\{\}$
(8)	$\{(16), (2,8), (2,16), (4,8)\}$
(9)	$\{\}$
(10)	$\{(20), (2,10), (5,10)\}$
(12)	$\{(24), (2,12)\}$
$(2,2)$	$\{(2,4), (2,6), (2,8), (2,12), (2,16), (4,4), (4,8)\}$
$(2,4)$	$\{(2,8), (2,16), (4,4), (4,8)\}$
$(2,6)$	$\{(2,12)\}$
$(2,8)$	$\{(2,16), (4,8)\}$

$h_{\mathbb{Q}}(20) = 9$

Number of configurations: 149

Maximun conductor to obtain all the configurations: 14400

G	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
()	(3)	19a2
()	(7)	208d1
()	(9)	54a2
()	(11)	121a1
()	(13)	2890d1
()	$(3)^2$	1210d1
()	$(5)^2$	99d2
()	$(5), (5, 5)$	75a2
()	$(3)^2, (3, 3)$	175b2
()	$(3)^2, (11)$	1089e1
()	$(5)^2, (5, 5)$	38b2
()	$(5)^2, (25)$	99d1
()	$(3)^2, (5)^2$	338d1
()	$(3)^2, (11), (33)$	121b2
()	$(3), (5)^2, (15)$	400b1
()	$(3), (5), (15), (5, 5)$	50a4
()	$(3), (5), (15)^2$	450d2
()	$(5), (25)^2, (5, 5)$	275b1
()	$(3)^2, (11), (33)^2$	121b1
()	$(3), (5)^2, (15), (5, 5)$	50a2
()	$(3), (5), (15)^2, (5, 15)$	50b3
()	$(5)^2, (25)^2, (5, 5)$	11a2
(2)	$(2, 2), (2, 4)$	200b1
(2)	$(4), (2, 2)$	46a1
(2)	$(4), (2, 6)$	36a3
(2)	$(4), (2, 2), (2, 4)$	128a1
(2)	$(4), (2, 6), (2, 12)$	1040g2
(2)	$(4), (10), (2, 10)$	450a3
(2)	$(4), (22), (2, 2)$	49a2
(2)	$(8), (2, 2), (2, 4)$	294f1
(2)	$(4), (2, 2), (2, 4), (2, 22)$	49a1
(2)	$(4)^2, (2, 2), (2, 4)$	120b1
(2)	$(4)^2, (2, 2), (4, 4)$	320a4
(2)	$(4)^2, (2, 6), (2, 12)$	450g1
(2)	$(4), (6), (2, 2), (2, 6)$	14a3
(2)	$(4), (6), (2, 6), (6, 6)$	98a3
(2)	$(4), (6)^2, (2, 2)$	726a2

G	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(2)	$(4), (8), (2,2), (2,8)$	45a1
(2)	$(4), (10), (2,2), (2,10)$	450a1
(2)	$(4), (10)^2, (2,2)$	768b1
(2)	$(4), (12), (2,2), (2,12)$	30a3
(2)	$(4), (16), (2,2), (2,16)$	3150bk1
(2)	$(6), (12), (2,2), (2,6)$	36a4
(2)	$(8)^2, (2,2), (4,8)$	2880r6
(2)	$(4)^2, (2,2), (2,4)^2$	33a4
(2)	$(4)^2, (2,6), (2,12)^2$	960o7
(2)	$(4)^2, (8), (2,2), (2,4)$	33a2
(2)	$(4)^2, (8), (2,2), (4,4)$	64a4
(2)	$(4), (6), (2,2), (2,4), (2,6)$	130a4
(2)	$(4), (8), (2,2), (2,4), (2,8)$	144b1
(2)	$(4), (8), (12), (2,2), (2,12)$	960e3
(2)	$(4), (8), (16), (2,2), (2,8)$	63a1
(2)	$(4), (10), (2,2), (2,10), (5,10)$	150b3
(2)	$(4), (10)^2, (2,2), (2,10)$	198e1
(2)	$(4), (12), (2,2), (2,4), (2,12)$	720j3
(2)	$(4), (12), (24), (2,2), (2,12)$	960o3
(2)	$(6)^2, (22), (2,2), (2,4)$	256a1
(2)	$(10)^2, (20), (2,2), (2,10)$	450a4
(2)	$(4)^2, (8), (2,2), (2,4)^2$	17a3
(2)	$(4)^2, (8)^2, (2,2), (2,4)$	45a3
(2)	$(4), (8)^2, (2,2), (2,4), (2,8)$	24a6
(2)	$(4), (8)^3, (2,2), (2,8)$	45a6
(2)	$(4), (8), (16)^2, (2,2), (2,8)$	75b1
(2)	$(4), (10)^2, (2,2), (2,10), (5,10)$	150b1
(2)	$(4), (10)^2, (20), (2,2), (2,10)$	450a2
(2)	$(4)^2, (8)^2, (2,2), (2,4)^2$	63a6
(2)	$(4), (6)^2, (2,2), (2,6)^2, (3,6)$	112c3
(2)	$(4), (8)^3, (16), (2,2), (2,8)$	75b6
(2)	$(4), (8)^2, (16), (2,2), (2,4), (2,8)$	510e7
(2)	$(4), (8), (16)^2, (2,2), (2,4), (2,8)$	1470k3
(2)	$(4), (10)^2, (20), (2,2), (2,10), (5,10)$	66c3
(2)	$(6)^2, (12), (2,2), (2,6)^2, (3,6)$	98a4
(2)	$(4)^2, (6), (12)^2, (2,2), (2,4), (2,6)$	30a7
(2)	$(4)^2, (8)^3, (2,2), (2,4)^2$	15a5

G	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(2)	$(4)^2, (8)^4, (2,2), (2,4)$	630c6
(2)	$(4)^2, (8)^4, (2,2), (4,4)$	4410r6
(2)	$(4), (8)^2, (16)^2, (2,2), (2,4), (2,8)$	1680p1
(2)	$(4)^2, (6), (8), (12)^2, (2,2), (2,4), (2,6)$	90c5
(2)	$(4)^2, (6), (12)^2, (2,2), (2,4)^2, (2,6)$	90c4
(3)	$(3,3)$	19a1
(3)	$(15), (5,15)$	50a3
(3)	$(15)^2$	450b2
(3)	$(15)^2, (5,15)$	50a1
(4)	$(2,4), (2,8)$	64a3
(4)	$(8), (2,4)$	33a3
(4)	$(8), (2,8)$	192c6
(4)	$(8), (2,12)$	150c3
(4)	$(8), (4,4)$	40a4
(4)	$(8), (2,4), (2,8)$	17a4
(4)	$(8), (2,4), (4,4)$	17a1
(4)	$(8), (2,8), (2,16)$	1470k1
(4)	$(8)^2, (2,4), (2,8)$	24a3
(4)	$(8)^2, (2,8), (4,8)$	240d6
(4)	$(8), (12), (2,4), (2,12)$	90c1
(4)	$(12), (24), (2,4), (2,12)$	960o8
(4)	$(8)^2, (16), (2,4), (2,8)$	21a4
(4)	$(8)^2, (2,4), (2,8)^2, (4,4)$	195a6
(4)	$(8)^2, (16)^2, (2,4), (2,8)$	15a7
(4)	$(8)^2, (16)^3, (2,4), (2,8)$	1230f4
(4)	$(8)^2, (16)^2, (2,4), (2,8)^2, (4,4)$	210e6
(5)	$(5,5)$	11a1
(5)	$(15), (5,5)$	50b2
(5)	$(15), (5,15)$	50b1
(5)	$(25)^2, (5,5)$	11a3
(6)	$(12), (2,6)$	14a4
(6)	$(12), (2,6), (2,12)$	130a2
(6)	$(12), (2,6), (3,6), (6,6)$	14a1
(6)	$(12)^2, (2,6), (2,12)$	30a1
(6)	$(12)^2, (2,6), (2,12)^2$	90c7
(6)	$(12)^2, (24), (2,6), (2,12)$	90c8
(8)	$(16), (2,8)$	21a3

G	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
(8)	$(16), (2,8), (2,16)$	1230f1
(8)	$(16), (2,8), (4,8)$	15a4
(8)	$(16)^2, (2,8), (2,16)$	210e1
(10)	$(20), (2,10), (5,10)$	66c1
(12)	$(24), (2,12)$	90c3
$(2,2)$	$(2,4), (4,4)$	64a1
$(2,2)$	$(2,4)^3$	33a1
$(2,2)$	$(2,4)^2, (2,8)$	63a2
$(2,2)$	$(2,4)^2, (2,12)$	960o6
$(2,2)$	$(2,4)^2, (4,4)$	17a2
$(2,2)$	$(2,4)^2, (4,8)$	1200j4
$(2,2)$	$(2,4), (2,8), (4,8)$	75b3
$(2,2)$	$(2,4)^3, (2,6)$	210a6
$(2,2)$	$(2,4)^3, (2,8)$	45a5
$(2,2)$	$(2,4)^3, (4,4)$	231a3
$(2,2)$	$(2,4)^2, (2,6), (2,12)$	30a6
$(2,2)$	$(2,4)^2, (2,8), (2,16)$	75b2
$(2,2)$	$(2,4)^2, (2,8), (4,4)$	40a1
$(2,2)$	$(2,4)^2, (2,8), (4,8)$	510e5
$(2,2)$	$(2,4), (2,6), (2,12)^2$	14400bo6
$(2,2)$	$(2,4)^3, (2,6), (2,12)$	90c2
$(2,2)$	$(2,4)^3, (2,8)^2$	45a2
$(2,2)$	$(2,4)^3, (2,8), (4,4)$	21a2
$(2,2)$	$(2,4)^2, (2,6), (2,12)^2$	720j6
$(2,2)$	$(2,4)^2, (2,8)^2, (4,4)$	75b5
$(2,2)$	$(2,4), (2,6), (2,12)^3$	150c6
$(2,2)$	$(2,4)^3, (2,8)^2, (4,4)$	42a3
$(2,2)$	$(2,4)^2, (2,8)^3, (4,4)$	294c2
$(2,2)$	$(2,4)^3, (2,8)^3, (4,4)$	15a2
$(2,2)$	$(2,4)^2, (2,8)^4, (4,4)$	6720cd4
$(2,2)$	$(2,4)^3, (2,8)^4, (4,4)$	210e5
$(2,4)$	$(2,8)^2, (4,4)$	21a1
$(2,4)$	$(2,8)^2, (4,8)$	1230f2
$(2,4)$	$(2,8), (4,4), (4,8)$	15a1
$(2,4)$	$(2,8)^2, (2,16), (4,4)$	15a3
$(2,4)$	$(2,8)^2, (4,4), (4,8)$	210e3
$(2,6)$	$(2,12)^3$	30a2

G	$\mathcal{H}_{\mathbb{Q}}(20, E)$	Label
$(2,8)$	$(2,16)^2, (4,8)$	`210e2`