

## Stable Features Report | MAMMOGRAPHY

### morphology

	Feature Name	Unit	Feature details
1	area	mm^2	MORPH,--,MAM,--,LIN:--,S:--,RS:--
2	perimeter	mm	MORPH,--,MAM,--,LIN:--,S:--,RS:--
3	perimeter to area ratio	--	MORPH,--,MAM,--,LIN:--,S:--,RS:--
6	acircularity	--	MORPH,--,MAM,--,LIN:--,S:--,RS:--
7	center of mass shift	mm	MORPH,--,MAM,--,LIN:--,S:--,RS:--
8	maximum diameter	mm	MORPH,--,MAM,--,LIN:--,S:--,RS:--
9	area density aabb	--	MORPH,--,MAM,--,LIN:--,S:--,RS:--

### intensity-based statistics

	Feature Name	Unit	Feature details
11	mean	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
12	variance	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
15	median	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
16	minimum	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
17	10th percentile	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
18	90th percentile	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
19	maximum	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
20	Interquartile range	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
21	range	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
22	Mean absolut deviation	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
23	Robust mean absolute deviation	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
24	Median absolute deviation	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
25	Coefficient of variation	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
26	Quartile coefficient	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
27	Energy	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--
28	Root mean	--	STAT,--,MAM,--,LIN:2,S:1mm,RS:--

### intensity histogram

	Feature Name	Unit	Feature details
36	maximum	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
38	range	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
43	entropy	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
44	uniformity	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
45	energy	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
46	maximum histogram gradient	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--
48	minimum histogram gradient	--	IH,--,MAM,FBN:64,LIN:2,S:1mm,RS:--

### grey-level co-occurrence matrix

	Feature Name	Unit	Feature details
50	joint maximum	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
52	joint variance	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
53	joint entropy	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
54	difference average	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
56	difference entropy	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
59	sum entropy	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
60	angular second moment	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
61	contrast	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
62	dissimilarity	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
64	inverse difference normalised	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
66	inverse difference moment normalised	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
68	correlation	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
73	first measure of information correlation	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
74	second measure of information correlation	--	CM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
75	joint maximum	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--

77	joint variance	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
78	joint entropy	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
79	difference average	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
81	difference entropy	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
84	sum entropy	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
85	angular second moment	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
86	contrast	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
87	dissimilarity	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
89	inverse difference normalised	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
91	inverse difference moment normalised	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
93	correlation	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
98	first measure of information correlation	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
99	second measure of information correlation	--	CM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
102	joint variance	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
103	joint entropy	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
104	difference average	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
105	difference variance	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
109	sum entropy	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
110	angular second moment	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
111	contrast	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
112	dissimilarity	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
114	inverse difference normalised	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
116	inverse difference moment normalised	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
118	correlation	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
123	first measure of information correlation	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
124	second measure of information correlation	--	CM,2D:mrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
127	joint variance	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
128	joint entropy	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
129	difference average	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
130	difference variance	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
134	sum entropy	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
135	angular second moment	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
136	contrast	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
137	dissimilarity	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
139	inverse difference normalised	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
141	inverse difference moment normalised	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
143	correlation	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
148	first measure of information correlation	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
149	second measure of information correlation	--	CM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--

#### grey-level run length matrix

	Feature Name	Unit	Feature details
158	Grey level non uniformity	--	RLM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
159	Grey level non uniformity normalized	--	RLM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
160	Run length non uniformity	--	RLM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
165	Run entropy	--	RLM,2D:avg,MAM,FBN:64,LIN:2,S:1mm,RS:--
174	Grey level non uniformity	--	RLM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
175	Grey level non uniformity normalized	--	RLM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
176	Run length non uniformity	--	RLM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
181	Run entropy	--	RLM,2.5D:dmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
190	Grey level non uniformity	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
191	Grey level non uniformity normalized	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
192	Run length non uniformity	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
197	Run entropy	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
206	Grey level non uniformity	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
207	Grey level non uniformity normalized	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
208	Run length non uniformity	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
211	Grey level variance	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
212	Run length variance	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--
213	Run entropy	--	RLM,2.5D:vmrg,MAM,FBN:64,LIN:2,S:1mm,RS:--

#### grey-level size zone matrix

	Feature Name	Unit	Feature details
216	low grey level zone emphasis	--	SZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
222	grey level non uniformity glszm	--	SZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
223	grey level non uniformity normalized glszm	--	SZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
224	zone size non uniformity	--	SZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
229	zone size entropy	--	SZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--

232	low grey level zone emphasis	--	SZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
238	grey level non uniformity glszm	--	SZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
239	grey level non uniformity normalized glszm	--	SZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
240	zone size non uniformity	--	SZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
245	zone size entropy	--	SZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--

#### *neighbourhood grey tone difference matrix*

	Feature Name	Unit	Feature details
247	contrast	--	TDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
248	busyness	--	TDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
250	strength	--	TDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
252	contrast	--	TDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
253	busyness	--	TDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
255	strength	--	TDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--

#### *grey-level distance zone matrix*

	Feature Name	Unit	Feature details
256	small distance emphasis gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
257	large distance emphasis gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
258	low grey level zone emphasis gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
262	large distance high grey level emphasis gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
263	grey level non uniformity gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
264	grey level non uniformity normalized gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
265	zone distance non uniformity gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
266	zone distance non uniformity normalized gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
269	zone distance variance gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
270	zone distance entropy gldzm	--	DZM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
271	small distance emphasis gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
272	large distance emphasis gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
273	low grey level zone emphasis gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
277	large distance high grey level emphasis gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
278	grey level non uniformity gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
279	grey level non uniformity normalized gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
280	zone distance non uniformity gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
281	zone distance non uniformity normalized gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
284	zone distance variance gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
285	zone distance entropy gldzm	--	DZM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--

#### *neighbouring grey level dependence matrix*

	Feature Name	Unit	Feature details
294	grey level non uniformity	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
295	grey level non uniformity normalized	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
296	dependence count non uniformity	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
298	dependence count percentage	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
301	dependence count entropy	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
302	dependence count energy	--	LDM,2D,MAM,FBN:64,LIN:2,S:1mm,RS:--
311	grey level non uniformity	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
312	grey level non uniformity normalized	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
313	dependence count non uniformity	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
315	dependence count percentage	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
318	dependence count entropy	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--
319	dependence count energy	--	LDM,2.5D,MAM,FBN:64,LIN:2,S:1mm,RS:--