

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.225)

COMPANY	ZEBRA TECHNOLOGIES	DATE	6/9/03
EUT	CARD PRINTER	DUTY CYCLE	N/A %
MODEL	DG420i	PEAK TO AVG	N/A dB
S/N	2154609	TEST DIST.	3 Meters
TEST ENGINEER	Michael Christensen	LAB	A

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
13.5600	27.0	A	H	1.0	0			10.3	0.5	0.0	0.0	0.0	37.8	-42.2	80.0	DATA TAKEN AT 3 M
																NO NEED TO EXTRAPOLATE
																LIMIT FROM 30 METERS
13.5600	29.5	A	V	1.0	0			10.3	0.5	0.0	0.0	0.0	40.3	-39.7	80.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

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27.1200	23.4	A	H	1.0	0			9.3	0.7	0.0	20.0	0.0	13.4	-16.1	29.5	
27.1200	23.3	A	V	1.0	0			9.3	0.7	0.0	20.0	0.0	13.3	-16.2	29.5	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
 ** DELTA = SPEC LIMIT - CORRECTED READING

Test Location	: Compatible Electronics	Page	: 1/4
Customer	: DIGIMARC	Date	: 6/09/2003
Manufacturer	: ZEBRA TECHNOLOGIES	Time	: 13:09:15
Eut name	: CARD PRINTER	Lab	: A
Model	: DG420i	Test Distance	: 3.0
Serial #	:		
Specification	: FCC Class B		
Distance correction factor (20 * log(test/spec)		:	0.00
Test Mode	: TESTED BY MICHAEL CHRISTENSEN		

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
1V	32.111	55.20	0.95	11.26	33.60	33.81	40.00	-6.19
2H	64.068	49.60	1.34	8.55	33.56	25.93	40.00	-14.07
3V	64.081	58.20	1.34	8.55	33.56	34.53	40.00	-5.47
4H	67.849	50.50	1.38	7.80	33.52	26.16	40.00	-13.84
5V	67.862	50.70	1.38	7.80	33.52	26.36	40.00	-13.64
6V	67.862Qp	49.96	1.38	7.80	33.52	25.62	40.00	-14.38
7H	67.872	48.80	1.38	7.80	33.52	24.46	40.00	-15.54
8V	73.782	54.60	1.44	6.89	33.50	29.43	40.00	-10.57
9V	80.061	55.30	1.50	6.11	33.50	29.41	40.00	-10.59
10H	80.104	48.30	1.50	6.11	33.50	22.42	40.00	-17.58
11V	88.571	57.90	1.59	7.22	33.50	33.21	43.50	-10.29
12V	100.062	59.10	1.60	10.21	33.60	37.31	43.50	-6.19
13V	127.058	56.10	1.83	12.27	33.58	36.62	43.50	-6.88
14H	128.505	55.40	1.85	12.25	33.57	35.93	43.50	-7.57
15H	128.574	54.70	1.85	12.25	33.57	35.23	43.50	-8.27
16H	134.964	52.60	1.93	12.16	33.52	33.17	43.50	-10.33
17V	135.664Qp	44.40	1.93	12.16	33.51	24.98	43.50	-18.52
18V	135.664	46.10	1.93	12.16	33.51	26.68	43.50	-16.82
19V	143.463	55.00	2.03	11.78	33.45	35.36	43.50	-8.14
20H	144.099	52.40	2.03	11.72	33.44	32.71	43.50	-10.79
21H	147.518	50.70	2.07	11.42	33.42	30.77	43.50	-12.73
22V	147.559	50.40	2.07	11.41	33.42	30.47	43.50	-13.03
23V	147.874	60.10	2.08	11.39	33.42	40.15	43.50	-3.35
24V	147.880Qp	50.52	2.08	11.39	33.42	30.57	43.50	-12.93
25H	151.606	52.20	2.11	11.35	33.41	32.25	43.50	-11.25
26H	159.190	44.70	2.14	12.03	33.44	25.43	43.50	-18.07
27H	160.079	52.20	2.14	12.12	33.44	33.02	43.50	-10.48
28V	160.107	54.60	2.14	12.12	33.44	35.42	43.50	-8.08
29V	160.108	54.10	2.14	12.12	33.44	34.92	43.50	-8.58
30H	162.157	50.00	2.15	12.56	33.45	31.26	43.50	-12.24
31H	168.868	51.50	2.18	13.97	33.48	34.17	43.50	-9.33
32H	170.826	49.90	2.18	14.36	33.48	32.96	43.50	-10.54
33V	180.081	51.40	2.26	15.90	33.48	36.09	43.50	-7.41
34H	194.746	55.10	2.44	16.72	33.42	40.84	43.50	-2.66
35H	194.766Qp	52.31	2.44	16.72	33.42	38.05	43.50	-5.45



Test Location	: Compatible Electronics	Page	: 2/4
Customer	: DIGIMARC	Date	: 6/09/2003
Manufacturer	: ZEBRA TECHNOLOGIES	Time	: 13:09:15
Eut name	: CARD PRINTER	Lab	: A
Model	: DG420i	Test Distance	: 3.0
Serial #	:		
Specification	: FCC Class B		
Distance correction factor (20 * log(test/spec)			: 0.00
Test Mode	: TESTED BY MICHAEL CHRISTENSEN		

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
36H	199.008	57.50	2.49	16.95	33.40	43.53	43.50	0.03
37H	199.011Qp	54.52	2.49	16.95	33.40	40.55	43.50	-2.95*
38H	200.108	52.20	2.50	17.00	33.40	38.30	43.50	-5.20
39H	202.256	56.20	2.51	16.94	33.39	42.26	43.50	-1.24
40H	202.259Qp	52.93	2.51	16.94	33.39	38.99	43.50	-4.51
41H	207.046	58.80	2.53	16.83	33.37	44.79	43.50	1.29
42H	207.047Qp	54.18	2.53	16.83	33.37	40.17	43.50	-3.33
43V	217.000	48.40	2.57	16.60	33.33	34.24	46.00	-11.76
44H	217.000	50.40	2.57	16.60	33.33	36.24	46.00	-9.76
45V	217.001Qp	47.44	2.57	16.60	33.33	33.28	46.00	-12.72
46H	217.003Qp	48.11	2.57	16.60	33.33	33.95	46.00	-12.05
47H	217.018	50.60	2.57	16.60	33.33	36.44	46.00	-9.56
48H	224.071	54.70	2.60	16.44	33.30	40.43	46.00	-5.57*
49V	224.102	51.50	2.60	16.44	33.30	37.23	46.00	-8.77
50H	227.001	53.00	2.61	16.38	33.29	38.69	46.00	-7.31
51V	228.896	49.10	2.62	16.33	33.28	34.77	46.00	-11.23
52V	230.565	47.00	2.62	16.30	33.28	32.65	46.00	-13.35
53V	230.565Qp	46.03	2.62	16.30	33.28	31.68	46.00	-14.32
54H	230.601	52.30	2.62	16.30	33.28	37.94	46.00	-8.06
55H	230.602	46.30	2.62	16.30	33.28	31.94	46.00	-14.06
56H	230.603Qp	51.35	2.62	16.30	33.28	36.99	46.00	-9.01
57H	232.198	54.70	2.63	16.26	33.27	40.32	46.00	-5.68*
58H	235.880	52.40	2.64	16.19	33.26	37.98	46.00	-8.02
59H	240.026	44.30	2.66	16.10	33.24	29.82	46.00	-16.18
60H	243.444	47.80	2.67	16.03	33.23	33.28	46.00	-12.72
61V	250.074	48.70	2.70	15.91	33.20	34.11	46.00	-11.89
62V	256.060	43.70	2.73	16.40	33.23	29.60	46.00	-16.40
63H	257.511	49.20	2.73	16.52	33.23	35.22	46.00	-10.78
64H	288.061	40.40	2.85	18.85	33.30	28.81	46.00	-17.19
65V	311.909	49.60	2.98	13.07	33.30	32.34	46.00	-13.66
66V	320.062	50.00	3.03	13.31	33.30	33.03	46.00	-12.97
67H	320.070	48.70	3.03	13.31	33.30	31.73	46.00	-14.27
68H	320.103	49.60	3.03	13.31	33.30	32.63	46.00	-13.37
69H	324.221	52.90	3.05	13.43	33.30	36.08	46.00	-9.92
70V	325.518	52.00	3.06	13.47	33.30	35.23	46.00	-10.77



Test Location	: Compatible Electronics	Page	: 3/4
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Model	: DG420i	Test Distance	: 3.0
Serial #	:		
Specification	: FCC Class B		
Distance correction factor (20 * log(test/spec)		:	0.00
Test Mode	: TESTED BY MICHAEL CHRISTENSEN		

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
71V	339.028	53.30	3.14	13.85	33.30	36.99	46.00	-9.01
72V	339.031	54.90	3.14	13.85	33.30	38.59	46.00	-7.41
73H	339.043	51.00	3.14	13.85	33.30	34.69	46.00	-11.31
74V	340.732	53.90	3.15	13.89	33.30	37.64	46.00	-8.36
75V	343.324	52.50	3.16	13.97	33.30	36.33	46.00	-9.67
76H	346.533	48.40	3.18	14.05	33.30	32.33	46.00	-13.67
77H	352.058Qp	58.40	3.21	14.20	33.29	42.52	46.00	-3.48*
78H	352.058	59.10	3.21	14.20	33.29	43.22	46.00	-2.78
79V	352.082	60.70	3.21	14.20	33.29	44.82	46.00	-1.18
80V	352.088Qp	59.46	3.21	14.20	33.29	43.58	46.00	-2.42*
81V	352.608	54.80	3.22	14.22	33.29	38.94	46.00	-7.06
82V	352.613Qp	52.42	3.22	14.22	33.29	36.56	46.00	-9.44
83H	352.626Qp	49.52	3.22	14.22	33.29	33.66	46.00	-12.34
84H	352.636	50.60	3.22	14.22	33.29	34.75	46.00	-11.25
85V	360.134	52.20	3.26	14.41	33.26	36.62	46.00	-9.38
86V	366.186	56.90	3.30	14.57	33.23	41.54	46.00	-4.46
87V	366.190Qp	55.03	3.30	14.57	33.23	39.67	46.00	-6.33
88H	371.965	44.10	3.34	14.72	33.21	28.95	46.00	-17.05
89V	379.695	52.30	3.38	14.91	33.18	37.42	46.00	-8.58
90V	379.697Qp	49.31	3.38	14.91	33.18	34.43	46.00	-11.57
91V	379.712	52.40	3.38	14.91	33.18	37.52	46.00	-8.48
92V	384.066	51.60	3.41	15.02	33.16	36.87	46.00	-9.13
93H	384.091	43.00	3.41	15.02	33.16	28.27	46.00	-17.73
94V	393.285	49.10	3.46	15.24	33.13	34.68	46.00	-11.32
95H	400.070	43.90	3.50	15.40	33.10	29.70	46.00	-16.30
96V	406.840	46.30	3.53	15.48	33.09	32.23	46.00	-13.77
97H	416.044	41.90	3.57	15.59	33.07	27.99	46.00	-18.01
98V	416.070	47.00	3.57	15.59	33.07	33.09	46.00	-12.91
99V	420.376	46.30	3.58	15.64	33.06	32.47	46.00	-13.53
100V	433.318	46.00	3.64	15.79	33.03	32.40	46.00	-13.60
101V	448.081	40.90	3.69	15.96	33.00	27.55	46.00	-18.45
102H	448.091	44.70	3.69	15.96	33.00	31.35	46.00	-14.65
103H	479.970	42.70	3.82	16.30	32.94	29.88	46.00	-16.12
104V	480.082	42.50	3.82	16.30	32.94	29.68	46.00	-16.32
105H	500.103	50.00	3.90	16.50	32.90	37.50	46.00	-8.50



Test Location : Compatible Electronics
Customer : DIGIMARC
Manufacturer : ZEBRA TECHNOLOGIES
Eut name : CARD PRINTER
Model : DG420i
Serial # :
Specification : FCC Class B
Distance correction factor ($20 * \log(\text{test}/\text{spec})$) : 0.00
Test Mode : TESTED BY MICHAEL CHRISTENSEN

Page : 4/4

Date : 6/09/2003

Time : 13:09:15

Lab : A

Test Distance : 3.0

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
106H	510.527	50.30	3.94	16.58	32.92	37.90	46.00	-8.10
107V	512.028	46.50	3.95	16.59	32.92	34.12	46.00	-11.88
108H	512.043	41.60	3.95	16.59	32.92	29.22	46.00	-16.78
109V	528.088	43.10	4.01	16.71	32.96	30.87	46.00	-15.13
110H	544.079	40.30	4.08	16.82	32.99	28.21	46.00	-17.79
111V	544.083	43.70	4.08	16.82	32.99	31.61	46.00	-14.39
112V	576.101	51.50	4.15	17.04	32.89	39.80	46.00	-6.20
113H	589.819	36.30	4.18	17.13	32.84	24.78	46.00	-21.22
114V	608.029	45.20	4.27	17.49	32.77	34.19	46.00	-11.81
115H	608.066	42.10	4.27	17.49	32.77	31.09	46.00	-14.91
116H	640.031	44.40	4.52	18.62	32.64	34.91	46.00	-11.09
117V	640.041Qp	50.10	4.52	18.62	32.64	40.61	46.00	-5.39*
118V	664.468	47.70	4.60	19.45	32.63	39.12	46.00	-6.88
119V	664.471Qp	46.41	4.60	19.45	32.63	37.83	46.00	-8.17
120V	664.485Qp	45.00	4.60	19.45	32.63	36.42	46.00	-9.58
121V	664.492	46.20	4.60	19.45	32.63	37.62	46.00	-8.38
122V	672.035	46.40	4.60	19.70	32.64	38.06	46.00	-7.94
123H	672.055	38.70	4.60	19.70	32.65	30.36	46.00	-15.64
124V	678.041	45.20	4.60	19.90	32.66	37.04	46.00	-8.96
125V	678.046Qp	43.34	4.60	19.90	32.66	35.18	46.00	-10.82
126V	691.585Qp	43.74	4.60	20.33	32.68	35.99	46.00	-10.01
127V	691.597	45.00	4.60	20.33	32.68	37.25	46.00	-8.75
128V	704.049	51.90	4.62	20.65	32.67	44.49	46.00	-1.51
129V	704.049Qp	50.44	4.62	20.65	32.67	43.03	46.00	-2.97*
130V	736.027	42.50	4.75	21.05	32.48	35.81	46.00	-10.19
131V	768.035	50.20	4.80	21.43	32.40	44.03	46.00	-1.97
132V	768.036Qp	49.14	4.80	21.43	32.40	42.97	46.00	-3.03*
133V	800.033	43.50	4.80	21.80	32.40	37.70	46.00	-8.30
134V	832.035	47.20	4.93	21.53	32.59	41.07	46.00	-4.93*
135H	832.062	42.60	4.93	21.53	32.59	36.47	46.00	-9.53
136H	868.732	45.00	5.04	21.24	32.39	38.88	46.00	-7.12
137V	896.029	43.20	5.09	21.03	31.96	37.36	46.00	-8.64
138V	928.047	37.90	5.21	21.15	31.84	32.42	46.00	-13.58

