

## MEASUREMENT/TECHNICAL REPORT



**Intermec Technologies Corporation**  
**700 With Novatel CDPD**  
**Cellular Radio Module**

**REPORT NO: 20020117-1**

**DATE: January 17, 2002**

### APPENDIX C

#### RADIATED SPURIOUS EMISSIONS DATA

824 MHz EUT Vertical  
837 MHz EUT Vertical  
849 MHz EUT Vertical

824 MHz EUT Horizontal  
837 MHz EUT Horizontal  
849 MHz EUT Horizontal

## TRANSMITTER RADIATED SPURIOUS EMISSIONS

### 824.04 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Vertically

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

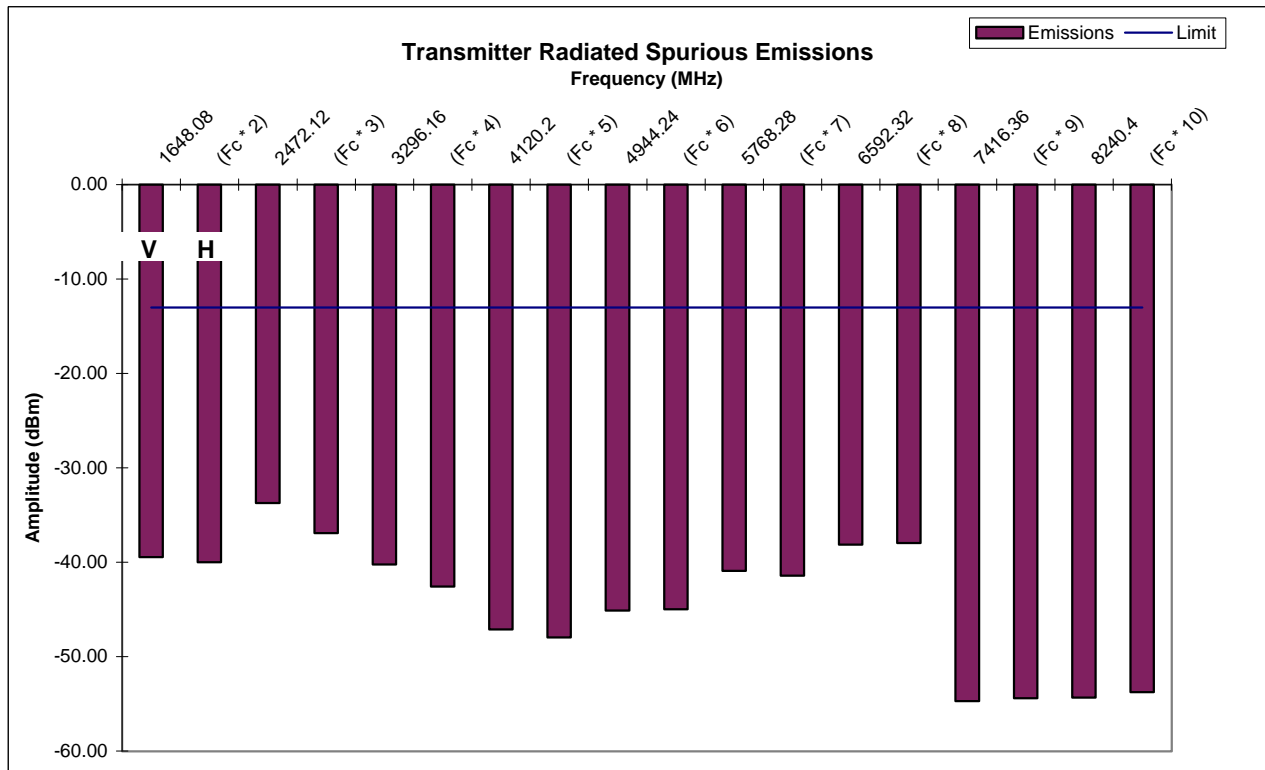
Tested Per Standard:

ANSI/TIA/EIA-603-1992

Test Date (mm/dd/yy): 01/15/02

Measurement System Calibration Date: 01/11/02

Frequency	Meas. Antenna Polarity	EUT Spurious Measured	Measured Gen. Sub. 0 dBm reference	EUT Delta To 0 dBm reference	Substitution Antenna Gain	Cable Loss	Generator Substitution For EUT	Spec Limit	Margin
MHz		dBm	dBm	dBm	dBi	dB	dBm	dBm	dB
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
1648.08	Vert	-72.33	-35.51	-36.82	5.37	2.75	-39.44	-13.0	-26.4
(Fc * 2)	Horz	-71.78	-34.45	-37.33	5.37	2.75	-39.95	-13.0	-27.0
2472.12	Vert	-69.22	-37.95	-31.27	6.01	3.57	-33.71	-13.0	-20.7
(Fc * 3)	Horz	-71.32	-36.88	-34.44	6.01	3.57	-36.88	-13.0	-23.9
3296.16	Vert	-81.57	-43.35	-38.22	6.22	4.25	-40.19	-13.0	-27.2
(Fc * 4)	Horz	-82.29	-41.73	-40.56	6.22	4.25	-42.53	-13.0	-29.5
4120.2	Vert	-90.19	-44.01	-46.18	5.60	4.71	-47.07	-13.0	-34.1
(Fc * 5)	Horz	-90.91	-43.87	-47.04	5.60	4.71	-47.93	-13.0	-34.9
4944.24	Vert	-90.77	-46.01	-44.76	5.64	5.31	-45.09	-13.0	-32.1
(Fc * 6)	Horz	-90.60	-45.98	-44.62	5.64	5.31	-44.95	-13.0	-32.0
5768.28	Vert	-89.59	-48.26	-41.33	5.12	5.56	-40.89	-13.0	-27.9
(Fc * 7)	Horz	-89.83	-48.00	-41.83	5.12	5.56	-41.39	-13.0	-28.4
6592.32	Vert	-88.12	-49.53	-38.59	5.36	5.85	-38.10	-13.0	-25.1
(Fc * 8)	Horz	-88.19	-49.76	-38.43	5.36	5.85	-37.94	-13.0	-24.9
7416.36	Vert	-74.39	-18.71	-55.68	5.40	6.40	-54.68	-13.0	-41.7
(Fc * 9)	Horz	-74.61	-19.23	-55.38	5.40	6.40	-54.38	-13.0	-41.4
8240.4	Vert	-74.10	-19.88	-54.22	6.84	6.74	-54.32	-13.0	-41.3
(Fc * 10)	Horz	-74.10	-20.46	-53.64	6.84	6.74	-53.74	-13.0	-40.7



## TRANSMITTER RADIATED SPURIOUS EMISSIONS 837 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Vertically

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

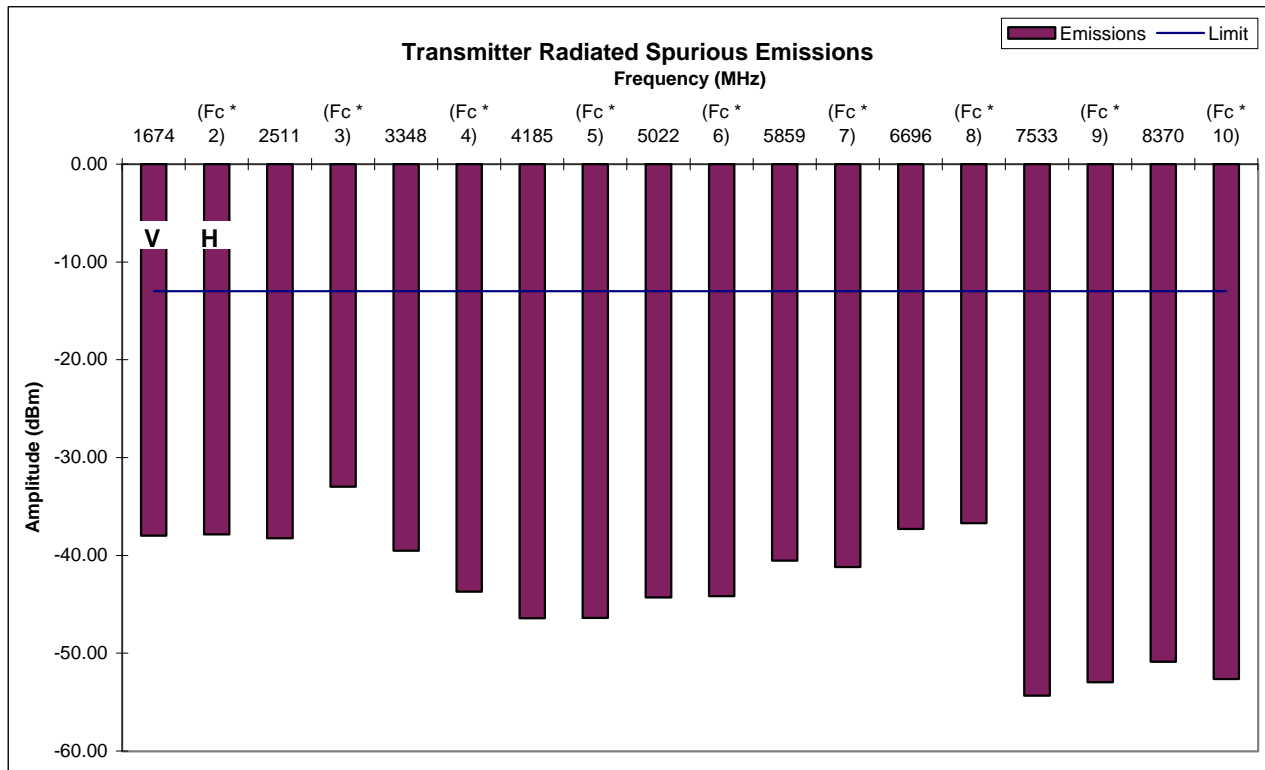
Tested Per Standard:

ANSI/TIA/EIA-603-1992

Test Date (mm/dd/yy): 01/15/02

Measurement System Calibration Date: 01/11/02

Frequency	Meas. Antenna Polarity	EUT Spurious Measured	Measured Gen. Sub. 0 dBm reference	EUT Delta To 0 dBm reference	Substitution Antenna Gain	Cable Loss	Generator Substitution For EUT	Spec Limit	Margin
MHz		(dBm)	(dBm)	(dBm)	(dBi)	(dB)	(dBm)	(dBm)	(dB)
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
1674	Vert	-71.13	-35.75	-35.38	5.33	2.77	-37.94	-13.0	-24.9
(Fc * 2)	Horz	-69.86	-34.60	-35.26	5.33	2.77	-37.82	-13.0	-24.8
2511	Vert	-73.38	-37.66	-35.72	6.11	3.61	-38.22	-13.0	-25.2
(Fc * 3)	Horz	-67.33	-36.87	-30.46	6.11	3.61	-32.96	-13.0	-20.0
3348	Vert	-80.28	-42.60	-37.68	6.14	4.33	-39.49	-13.0	-26.5
(Fc * 4)	Horz	-83.71	-41.84	-41.87	6.14	4.33	-43.68	-13.0	-30.7
4185	Vert	-88.70	-43.21	-45.49	5.65	4.75	-46.39	-13.0	-33.4
(Fc * 5)	Horz	-88.99	-43.53	-45.46	5.65	4.75	-46.36	-13.0	-33.4
5022	Vert	-90.45	-46.40	-44.05	5.57	5.34	-44.28	-13.0	-31.3
(Fc * 6)	Horz	-90.22	-46.31	-43.91	5.57	5.34	-44.14	-13.0	-31.1
5859	Vert	-89.39	-48.51	-40.88	5.19	5.56	-40.51	-13.0	-27.5
(Fc * 7)	Horz	-89.49	-47.97	-41.52	5.19	5.56	-41.15	-13.0	-28.2
6696	Vert	-88.34	-50.03	-38.31	4.94	6.00	-37.25	-13.0	-24.3
(Fc * 8)	Horz	-88.14	-50.42	-37.72	4.94	6.00	-36.66	-13.0	-23.7
7533	Vert	-73.98	-19.04	-54.94	5.76	6.40	-54.30	-13.0	-41.3
(Fc * 9)	Horz	-73.23	-19.67	-53.56	5.76	6.40	-52.92	-13.0	-39.9
8370	Vert	-71.12	-20.33	-50.79	6.92	6.87	-50.84	-13.0	-37.8
(Fc * 10)	Horz	-73.29	-20.73	-52.56	6.92	6.87	-52.61	-13.0	-39.6



## TRANSMITTER RADIATED SPURIOUS EMISSIONS

### 848.97 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Vertically

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

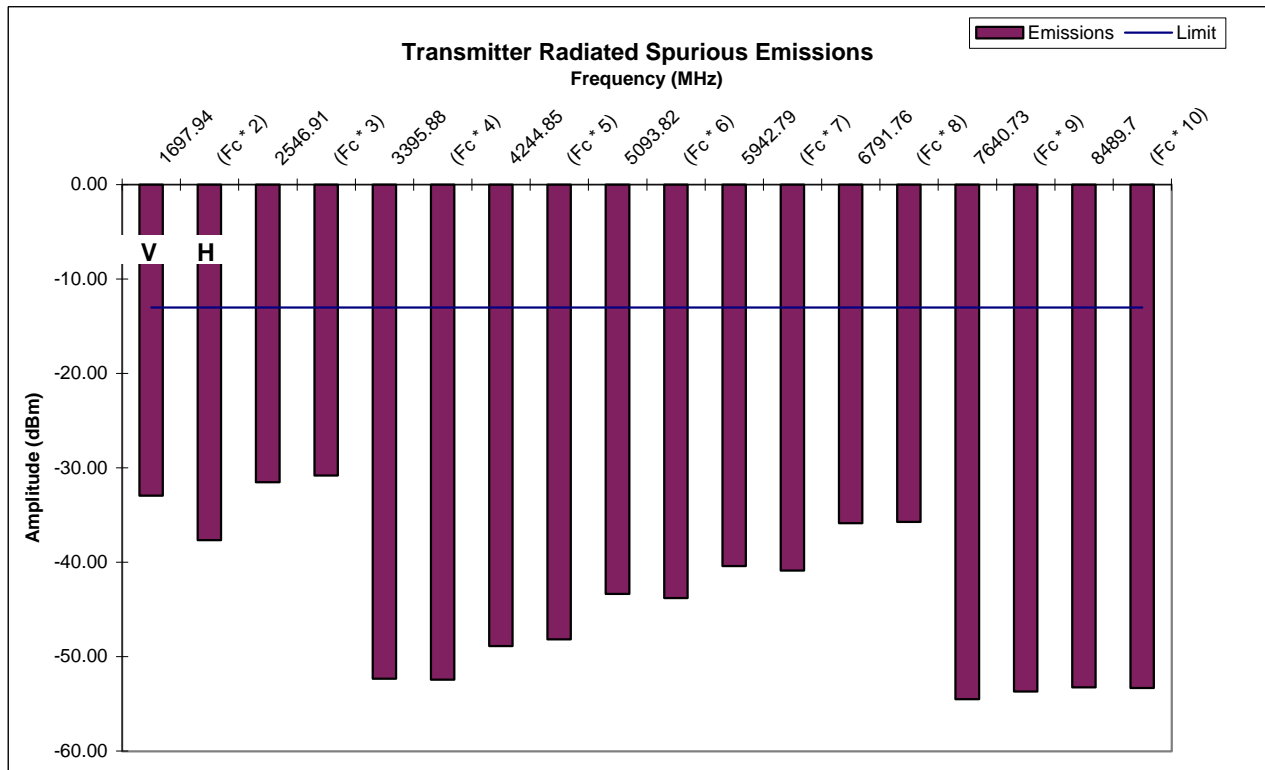
Tested Per Standard:

ANSI/TIA/EIA-603-1992

Test Date (mm/dd/yy): 01/16/02

Measurement System Calibration Date: 01/11/02

Frequency	Meas. Antenna Polarity	EUT Spurious Measured	Measured Gen. Sub. 0 dBm reference	EUT Delta To 0 dBm reference	Substitution Antenna Gain	Cable Loss	Generator Substitution For EUT	Spec Limit	Margin
MHz		dBm	dBm	dBm	dBi	dB	dBm	dBm	dB
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
1697.94	Vert	-66.56	-36.12	-30.44	5.26	2.80	-32.90	-13.0	-19.9
(Fc * 2)	Horz	-70.00	-34.84	-35.16	5.26	2.80	-37.62	-13.0	-24.6
2546.91	Vert	-66.69	-37.71	-28.98	6.16	3.65	-31.49	-13.0	-18.5
(Fc * 3)	Horz	-65.61	-37.34	-28.27	6.16	3.65	-30.78	-13.0	-17.8
3395.88	Vert	-92.61	-42.00	-50.61	6.08	4.39	-52.30	-13.0	-39.3
(Fc * 4)	Horz	-92.64	-41.92	-50.72	6.08	4.39	-52.41	-13.0	-39.4
4244.85	Vert	-91.07	-43.08	-47.99	5.69	4.82	-48.86	-13.0	-35.9
(Fc * 5)	Horz	-90.67	-43.40	-47.27	5.69	4.82	-48.14	-13.0	-35.1
5093.82	Vert	-90.06	-46.91	-43.15	5.47	5.31	-43.31	-13.0	-30.3
(Fc * 6)	Horz	-90.17	-46.58	-43.59	5.47	5.31	-43.75	-13.0	-30.8
5942.79	Vert	-89.26	-48.65	-40.61	5.25	5.50	-40.36	-13.0	-27.4
(Fc * 7)	Horz	-89.36	-48.26	-41.10	5.25	5.50	-40.85	-13.0	-27.9
6791.76	Vert	-88.46	-51.09	-37.37	4.60	6.14	-35.83	-13.0	-22.8
(Fc * 8)	Horz	-88.53	-51.28	-37.25	4.60	6.14	-35.71	-13.0	-22.7
7640.73	Vert	-74.05	-19.06	-54.99	5.98	6.49	-54.48	-13.0	-41.5
(Fc * 9)	Horz	-73.87	-19.71	-54.16	5.98	6.49	-53.65	-13.0	-40.7
8489.7	Vert	-73.88	-20.73	-53.15	6.99	6.92	-53.22	-13.0	-40.2
(Fc * 10)	Horz	-74.25	-21.04	-53.21	6.99	6.92	-53.28	-13.0	-40.3



## TRANSMITTER RADIATED SPURIOUS EMISSIONS 824.04 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Horizontally

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

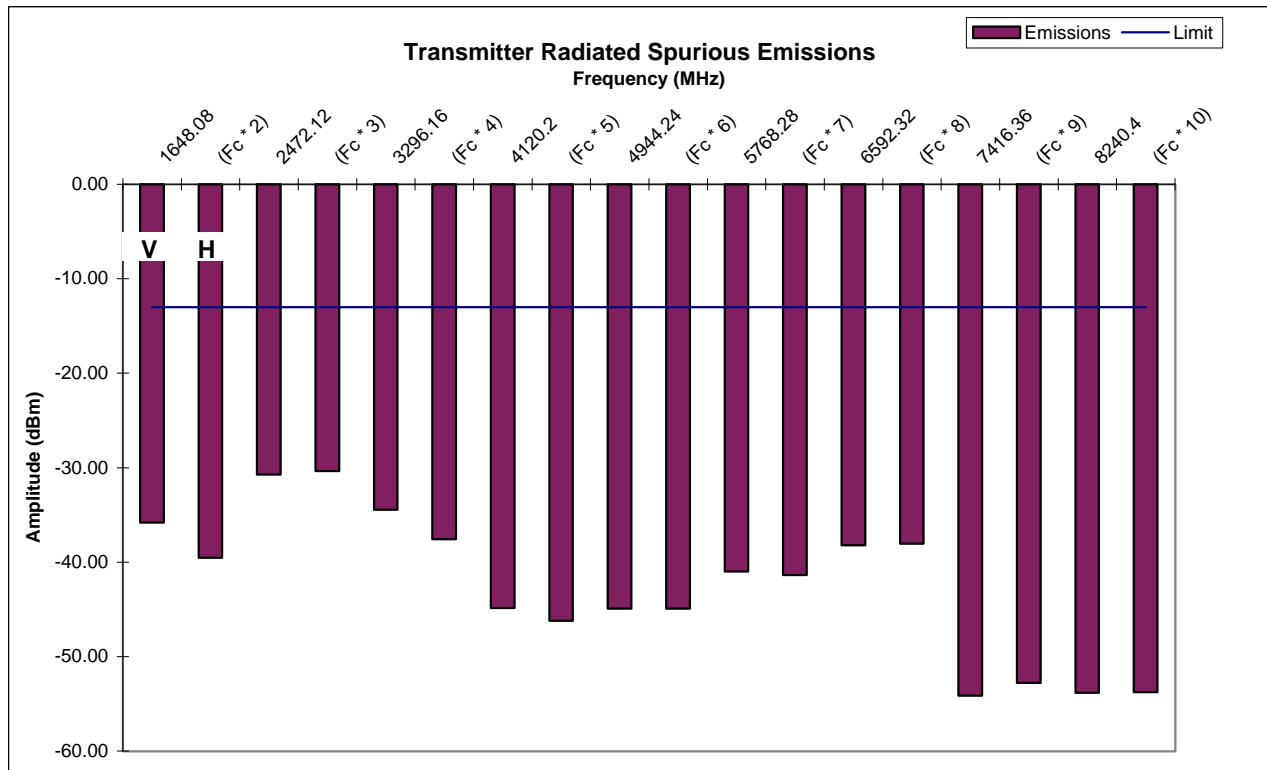
Tested Per Standard:

ANSI/TIA/EIA-603-1992

Test Date (mm/dd/yy): 01/15/02

Measurement System Calibration Date: 01/11/02

Frequency	Meas. Antenna Polarity	EUT Spurious Measured	Measured Gen. Sub. 0 dBm reference	EUT Delta To 0 dBm reference	Substitution Antenna Gain	Cable Loss	Generator Substitution For EUT	Spec Limit	Margin
MHz		dBm	dBm	dBm	dBi	dB	dBm	dBm	dB
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
1648.08	Vert	-68.68	-35.51	-33.17	5.37	2.75	-35.79	-13.0	-22.8
(Fc * 2)	Horz	-71.35	-34.45	-36.90	5.37	2.75	-39.52	-13.0	-26.5
2472.12	Vert	-66.20	-37.95	-28.25	6.01	3.57	-30.69	-13.0	-17.7
(Fc * 3)	Horz	-64.75	-36.88	-27.87	6.01	3.57	-30.31	-13.0	-17.3
3296.16	Vert	-75.79	-43.35	-32.44	6.22	4.25	-34.41	-13.0	-21.4
(Fc * 4)	Horz	-77.29	-41.73	-35.56	6.22	4.25	-37.53	-13.0	-24.5
4120.2	Vert	-87.94	-44.01	-43.93	5.60	4.71	-44.82	-13.0	-31.8
(Fc * 5)	Horz	-89.17	-43.87	-45.30	5.60	4.71	-46.19	-13.0	-33.2
4944.24	Vert	-90.57	-46.01	-44.56	5.64	5.31	-44.89	-13.0	-31.9
(Fc * 6)	Horz	-90.53	-45.98	-44.55	5.64	5.31	-44.88	-13.0	-31.9
5768.28	Vert	-89.66	-48.26	-41.40	5.12	5.56	-40.96	-13.0	-28.0
(Fc * 7)	Horz	-89.78	-48.00	-41.78	5.12	5.56	-41.34	-13.0	-28.3
6592.32	Vert	-88.19	-49.53	-38.66	5.36	5.85	-38.17	-13.0	-25.2
(Fc * 8)	Horz	-88.26	-49.76	-38.50	5.36	5.85	-38.01	-13.0	-25.0
7416.36	Vert	-73.83	-18.71	-55.12	5.40	6.40	-54.12	-13.0	-41.1
(Fc * 9)	Horz	-72.99	-19.23	-53.76	5.40	6.40	-52.76	-13.0	-39.8
8240.4	Vert	-73.59	-19.88	-53.71	6.84	6.74	-53.81	-13.0	-40.8
(Fc * 10)	Horz	-74.08	-20.46	-53.62	6.84	6.74	-53.72	-13.0	-40.7



## TRANSMITTER RADIATED SPURIOUS EMISSIONS 837 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Horizontally

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

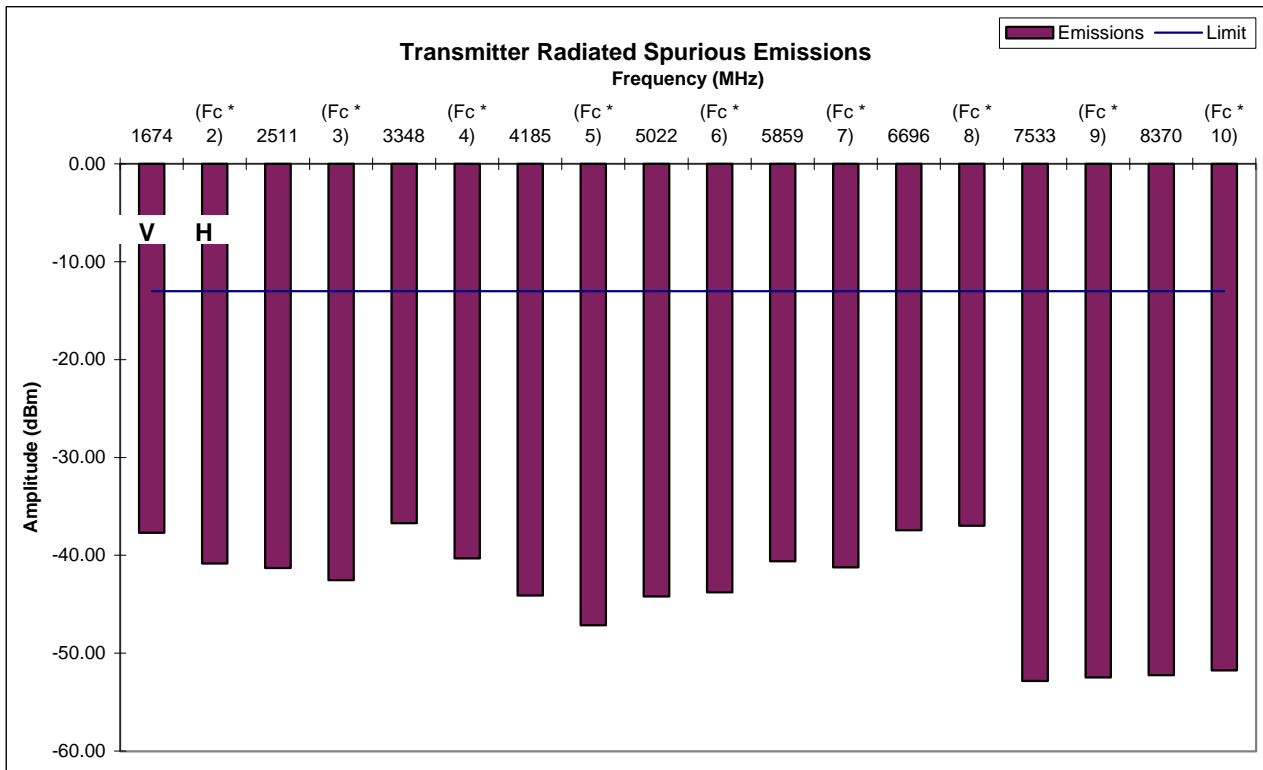
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Frequency	Meas. Antenna Polarity	EUT Spurious Measured	Measured Gen. Sub. 0 dBm reference	EUT Delta To 0 dBm reference	Substitution Antenna Gain	Cable Loss	Generator Substitution For EUT	Spec Limit	Margin
MHz		dBm	dBm	dBm	dBi	dB	dBm	dBm	dB
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
1674	Vert	-70.86	-35.75	-35.11	5.33	2.77	-37.67	-13.0	-24.7
(Fc * 2)	Horz	-72.84	-34.60	-38.24	5.33	2.77	-40.80	-13.0	-27.8
2511	Vert	-76.41	-37.66	-38.75	6.11	3.61	-41.25	-13.0	-28.3
(Fc * 3)	Horz	-76.88	-36.87	-40.01	6.11	3.61	-42.51	-13.0	-29.5
3348	Vert	-77.47	-42.60	-34.87	6.14	4.33	-36.68	-13.0	-23.7
(Fc * 4)	Horz	-80.31	-41.84	-38.47	6.14	4.33	-40.28	-13.0	-27.3
4185	Vert	-86.37	-43.21	-43.16	5.65	4.75	-44.06	-13.0	-31.1
(Fc * 5)	Horz	-89.76	-43.53	-46.23	5.65	4.75	-47.13	-13.0	-34.1
5022	Vert	-90.33	-46.40	-43.93	5.57	5.34	-44.16	-13.0	-31.2
(Fc * 6)	Horz	-89.82	-46.31	-43.51	5.57	5.34	-43.74	-13.0	-30.7
5859	Vert	-89.45	-48.51	-40.94	5.19	5.56	-40.57	-13.0	-27.6
(Fc * 7)	Horz	-89.54	-47.97	-41.57	5.19	5.56	-41.20	-13.0	-28.2
6696	Vert	-88.51	-50.03	-38.48	4.94	6.00	-37.42	-13.0	-24.4
(Fc * 8)	Horz	-88.42	-50.42	-38.00	4.94	6.00	-36.94	-13.0	-23.9
7533	Vert	-72.48	-19.04	-53.44	5.76	6.40	-52.80	-13.0	-39.8
(Fc * 9)	Horz	-72.77	-19.67	-53.10	5.76	6.40	-52.46	-13.0	-39.5
8370	Vert	-72.50	-20.33	-52.17	6.92	6.87	-52.22	-13.0	-39.2
(Fc * 10)	Horz	-72.41	-20.73	-51.68	6.92	6.87	-51.73	-13.0	-38.7



## TRANSMITTER RADIATED SPURIOUS EMISSIONS

### 848.97 MHz Transmitter Frequency

FCC ID: EHANOVCDPD

Product: Intermec 700 with Novatel Expedite CDPD radio

Set Up: Terminal placed Horizontally

Intermec Technologies Corporation

EMC Test Laboratory

Cedar Rapids, IA

Tested Per Standard:

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MHz		dBm	dBm	dBm	dBi	dB	dBm	dBm	dB
a	b	c	d	e	f	g	h	i	j
(formula)				(=c-d)			(=e-f+g)		(=h-i)
<b>1697.94</b>	Vert	-67.59	-36.12	-31.47	5.26	2.80	-33.93	-13.0	-20.9
(Fc * 2)	Horz	-68.60	-34.84	-33.76	5.26	2.80	-36.22	-13.0	-23.2
<b>2546.91</b>	Vert	-71.71	-37.71	-34.00	6.16	3.65	-36.51	-13.0	-23.5
(Fc * 3)	Horz	-68.19	-37.34	-30.85	6.16	3.65	-33.36	-13.0	-20.4
<b>3395.88</b>	Vert	-92.60	-42.00	-50.60	6.08	4.39	-52.29	-13.0	-39.3
(Fc * 4)	Horz	-92.63	-41.92	-50.71	6.08	4.39	-52.40	-13.0	-39.4
<b>4244.85</b>	Vert	-89.26	-43.08	-46.18	5.69	4.82	-47.05	-13.0	-34.1
(Fc * 5)	Horz	-90.72	-43.40	-47.32	5.69	4.82	-48.19	-13.0	-35.2
<b>5093.82</b>	Vert	-89.95	-46.91	-43.04	5.47	5.31	-43.20	-13.0	-30.2
(Fc * 6)	Horz	-89.97	-46.58	-43.39	5.47	5.31	-43.55	-13.0	-30.6
<b>5942.79</b>	Vert	-89.19	-48.65	-40.54	5.25	5.50	-40.29	-13.0	-27.3
(Fc * 7)	Horz	-89.38	-48.26	-41.12	5.25	5.50	-40.87	-13.0	-27.9
<b>6791.76</b>	Vert	-88.43	-51.09	-37.34	4.60	6.14	-35.80	-13.0	-22.8
(Fc * 8)	Horz	-88.47	-51.28	-37.19	4.60	6.14	-35.65	-13.0	-22.7
<b>7640.73</b>	Vert	-73.93	-19.06	-54.87	5.98	6.49	-54.36	-13.0	-41.4
(Fc * 9)	Horz	-74.20	-19.71	-54.49	5.98	6.49	-53.98	-13.0	-41.0
<b>8489.7</b>	Vert	-74.16	-20.73	-53.43	6.99	6.92	-53.50	-13.0	-40.5
(Fc * 10)	Horz	-73.77	-21.04	-52.73	6.99	6.92	-52.80	-13.0	-39.8

