



EMC Emission - TEST REPORT

Test Report File No. : **WC708036** Date of issue: 16 November 2007

Model / Serial No. : PCEx25100 / 40DA94

Product Type : Express Card 2.5, BRS/EBS Express Card Slot Modem

Applicant : Motorola Incorporated Nextnet Wireless Product Group

Manufacturer : Motorola Incorporated Nextnet Wireless Product Group

License Holder : Motorola Incorporated Nextnet Wireless Product Group

Address : 299 Johnson Avenue
Suite 120
Waseca MN 56093

Test Result : **Positive** **Negative**

Test Project Number : **WC708036**
Reference(s)

Total pages including
Appendices **45**

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<input type="checkbox"/> - not applicable	
<input checked="" type="checkbox"/> - applicable	

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- | | | |
|---|---|---|
| <input type="checkbox"/> - EN 50081-1 / 1991 | <input type="checkbox"/> - Group 1 | <input type="checkbox"/> - Group 2 |
| <input type="checkbox"/> - EN 55011 / 1991 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55013 / 1990 | | |
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| <input type="checkbox"/> - EN 55014 / 1987 | <input type="checkbox"/> - Household appliances and similar | |
| | <input type="checkbox"/> - Portable tools | |
| | <input type="checkbox"/> - Semiconductor devices | |
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| <input type="checkbox"/> - EN 55014 / A2:1990 | <input type="checkbox"/> - Household appliances and similar | |
| <input type="checkbox"/> - EN 55014 / 1993 | <input type="checkbox"/> - Portable tools | |
| | <input type="checkbox"/> - Semiconductor devices | |
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| <input type="checkbox"/> - EN 55015 / 1987 | | |
| <input type="checkbox"/> - EN 55015 / A1:1990 | | |
| <input type="checkbox"/> - EN 55015 / 1993 | | |
| <input type="checkbox"/> - EN 55022 / 1987 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55022 / 1991 | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
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 | | |
| <input type="checkbox"/> - BS | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - VCCI | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
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 | | |
| <input checked="" type="checkbox"/> - FCC Part 15 Subpart B | <input type="checkbox"/> - Class A | <input checked="" type="checkbox"/> - Class B |
| <input type="checkbox"/> - FCC Part 15 Subpart C | | |
| <input checked="" type="checkbox"/> - FCC Part 27 Subpart C | | |
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 | | |
| <input type="checkbox"/> - CISPR 11 (1990) | <input type="checkbox"/> - Group 1 | <input type="checkbox"/> - Group 2 |
| | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
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| <input type="checkbox"/> - CISPR 22 (1993) | <input type="checkbox"/> - Class A | <input type="checkbox"/> - Class B |
|
 | | |
| <input checked="" type="checkbox"/> - IC RSS-Gen Issue 1 | | |
| <input checked="" type="checkbox"/> - IC RSS-193 Issue 1 | | |

ENVIRONMENTAL CONDITIONS IN THE LAB

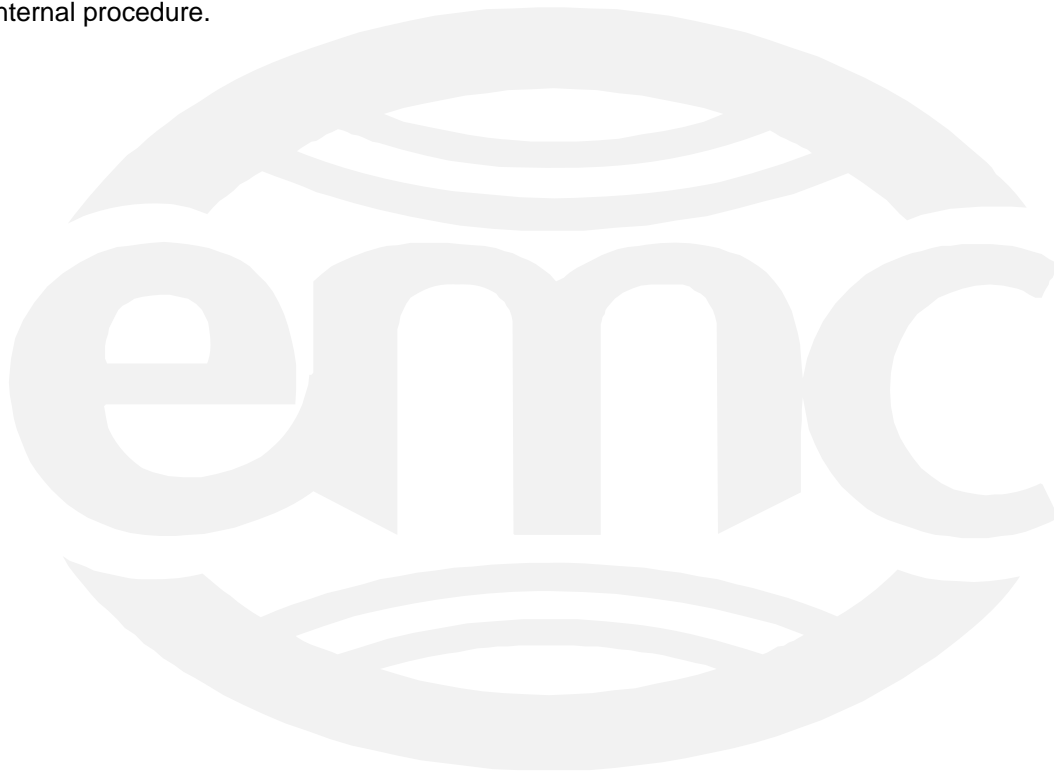
	<u>Actual</u>
Temperature:	: 21°C
Relative Humidity	: 32 - 42
Atmospheric pressure	: 98 - 100 kPa

POWER SUPPLY UTILIZED

Power supply system : 110V/60Hz - 1 ϕ

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.



Radiated emission limits - Transmitter, FCC 27.53, IC RSS-193 6.3

Test summary

The requirements are: - MET - NOT MET

Emissions within 20 dB of the limit verified using substitution method

Maximum emission after performing substitution is 7.77 GHz at -33.3 dBm EIRP, run 4

Minimum margin of compliance is 8.3 dB

AGC adjustment from 8 to 11 necessary for 7.5 GHz emission to comply

Test location

- Wild River Lab Large Test Site (Open Area Test Site)

- Wild River Lab Small Test Site (Open Area Test Site)

Test Distance

- 3 meters

- 10 meters

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
2075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	12-Jan-08
10527	SL18B4020	Phase One Microwave	Preamplifier 1 – 18 GHz	0001	Code B
N/A	L2G010G2	Microwave Circuits	Low Pass Filter	85441	Code B
N/A	H04G1862	Acronetics	High Pass Filter	89099	Code B
3294	8566B	Hewlett-Packard	Spectrum Analyzer	2349A03098	16-May-08
3295	85662A	Hewlett-Packard	Analyzer Display	2349A06144	16-May-08
2681	85650A	Hewlett-Packard	Quasi-Peak Adapter	2430A00562	23-Mar-08
3202	EM-6917B	Electro-Metrics	Biconicalog Periodic	101	10-May-08
3847	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	0607	Code B
3808	NLP-1750	Mini-Circuits	10 – 1750 MHz LPF	2	Code B
6717	3116	EMCO	Ridge Guide Ant 18-40 GHz	2005	10-Oct-08
2003	F550B1	Acronetics	4 – 8 GHz Bandpass Filter	010	Code B
3933	F551B-1	Acronetics	8 – 12 GHz Bandpass Filter	010	Code B
3934	F549B-1	Acronetics	2 – 4 GHz Bandpass Filter	010	Code B
3935	F548B-1	Acronetics	1 – 2 GHz Bandpass Filter	010	Code B
3010	6769B	Wiltron	Signal Generator	159003	30 Aug 08
2074	3115	Electro-Mechanics (EMCO)	Ridge Guide Antenna	2504	02-Jan-08
10468	83640B	Agilent	Signal Generator-rental	3420A01080	03-Jan-08

Test limit

-25.0 dBm

Test Data

See following pages

RADIATED EMISSIONS



Test Report #: WC708036 Run 1 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/22/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 99.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter on

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List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 -25dBm GUIDELINE < 1GHz
Config. 1; 5 MHz ch BW, RF freq 2500 MHz						
70.092 MHz	42.02 Qp	0.8 / 9.73 / 29.3 / 0.05	23.3	V / 1.00 / 0	-16.7	-46.93
119.976 MHz	47.33 Qp	1.0 / 9.25 / 29.5 / 0.09	28.16	V / 1.00 / 0	-15.34	-42.07
134.256 MHz	42.43 Qp	1.05 / 8.25 / 29.5 / 0.1	22.32	V / 1.00 / 0	-21.18	-47.91
143.958 MHz	46.6 Qp	1.08 / 9.1 / 29.44 / 0.1	27.44	V / 1.00 / 0	-16.06	-42.79
167.934 MHz	42.26 Qp	1.23 / 9.34 / 29.4 / 0.1	23.54	V / 1.00 / 0	-19.96	-46.69
212.808 MHz	45.05 Qp	1.4 / 11.0 / 29.7 / 0.11	27.87	V / 1.00 / 0	-15.63	-42.36
357.955 MHz	41.69 Qp	1.93 / 15.0 / 29.75 / 0.14	29.0	V / 1.00 / 0	-17.0	-41.23
386.587 MHz	36.65 Qp	1.99 / 15.47 / 29.97 / 0.14	24.27	V / 1.00 / 0	-21.73	-45.96
486.823 MHz	34.56 Qp	2.11 / 17.39 / 30.06 / 0.16	24.16	V / 1.00 / 0	-21.84	-46.07
134.256 MHz	42.7 Qp	1.05 / 8.25 / 29.5 / 0.1	22.59	V / 1.00 / 90	-20.91	-47.64
167.946 MHz	43.5 Qp	1.23 / 9.34 / 29.4 / 0.1	24.78	V / 1.00 / 90	-18.72	-45.45
486.823 MHz	34.6 Qp	2.11 / 17.39 / 30.06 / 0.16	24.2	V / 1.00 / 90	-21.8	-46.03
143.958 MHz	46.6 Qp	1.08 / 9.1 / 29.44 / 0.1	27.44	V / 1.00 / 180	-16.06	-42.79
357.955 MHz	46.71 Qp	1.93 / 15.0 / 29.75 / 0.14	34.02	H / 1.00 / 270	-11.98	-36.21
386.587 MHz	41.05 Qp	1.99 / 15.47 / 29.97 / 0.14	28.67	H / 1.00 / 270	-17.33	-41.56
83.97 MHz	40.49 Qp	0.89 / 7.56 / 29.38 / 0.06	19.61	H / 1.00 / 270	-20.39	-50.62
386.587 MHz	42.2 Qp	1.99 / 15.47 / 29.97 / 0.14	29.82	H / 1.00 / 270	-16.18	-40.41
83.97 MHz	41.7 Qp	0.89 / 7.56 / 29.38 / 0.06	20.82	H / 1.00 / 90	-19.18	-49.41
83.97 MHz	46.05 Qp	0.89 / 7.56 / 29.38 / 0.06	25.17	H / 3.00 / 180	-14.83	-45.06

Tested by: Greg Jakubowski

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Reviewed by: J. T. Schneider

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RADIATED EMISSIONS



America

Test Report #: WC708036 Run 1 Test Area: LTS

EUT Model #: PCEX25100 Date: 10/22/2007

EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter on

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List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2 -25dBm GUIDELINE < 1GHz
119.976 MHz	49.7 Qp	1.0 / 9.25 / 29.5 / 0.09	30.53	H / 3.00 / 270	-12.97	-39.7
Maximized						
357.955 MHz	45.59 Qp	1.93 / 15.0 / 29.75 / 0.14	32.9	H / 1.00 / 281	-13.1	-37.33
Config. 2; 5.5 MHz ch BW, RF freq 2590 MHz						
232.908 MHz	41.1 Qp	1.44 / 11.72 / 29.59 / 0.12	24.8	V / 1.00 / 0	-21.2	-45.43
212.808 MHz	47.75 Qp	1.4 / 11.0 / 29.7 / 0.11	30.57	V / 1.00 / 0	-12.93	-39.66
232.908 MHz	49.55 Qp	1.44 / 11.72 / 29.59 / 0.12	33.25	V / 1.00 / 0	-12.75	-36.98
134.256 MHz	43.0 Qp	1.05 / 8.25 / 29.5 / 0.1	22.89	V / 1.00 / 90	-20.61	-47.34
83.97 MHz	50.9 Qp	0.89 / 7.56 / 29.38 / 0.06	30.02	H / 3.00 / 90	-9.98	-40.21
Config. 3; 6.0 MHz ch BW, RF freq 2687 MHz						
Max'd						
143.979 MHz	47.21 Qp	1.08 / 9.1 / 29.44 / 0.1	28.05	V / 1.00 / 139	-15.45	-42.18
EUT off, host laptop still on						
All previous emissions are still present so they're not related to the EUT						
End Tx scan 30 - 1000 MHz						

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RADIATED EMISSIONS



America

Test Report #: WC708036 Run 1 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/22/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 99.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter on

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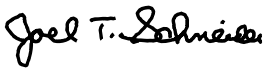
Measurement summary for limit1: FCC-B <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m
83.97 MHz	50.9 Qp	0.89 / 7.56 / 29.38 / 0.06	30.02	H / 3.00 / 90	-9.98
357.955 MHz	46.71 Qp	1.93 / 15.0 / 29.75 / 0.14	34.02	H / 1.00 / 270	-11.98
232.908 MHz	49.55 Qp	1.44 / 11.72 / 29.59 / 0.12	33.25	V / 1.00 / 0	-12.75
212.808 MHz	47.75 Qp	1.4 / 11.0 / 29.7 / 0.11	30.57	V / 1.00 / 0	-12.93
119.976 MHz	49.7 Qp	1.0 / 9.25 / 29.5 / 0.09	30.53	H / 3.00 / 270	-12.97
143.979 MHz	47.21 Qp	1.08 / 9.1 / 29.44 / 0.1	28.05	V / 1.00 / 139	-15.45
386.587 MHz	42.2 Qp	1.99 / 15.47 / 29.97 / 0.14	29.82	H / 1.00 / 270	-16.18
70.092 MHz	42.02 Qp	0.8 / 9.73 / 29.3 / 0.05	23.3	V / 1.00 / 0	-16.7
167.946 MHz	43.5 Qp	1.23 / 9.34 / 29.4 / 0.1	24.78	V / 1.00 / 90	-18.72
134.256 MHz	43.0 Qp	1.05 / 8.25 / 29.5 / 0.1	22.89	V / 1.00 / 90	-20.61
486.823 MHz	34.6 Qp	2.11 / 17.39 / 30.06 / 0.16	24.2	V / 1.00 / 90	-21.8

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Test Report #: WC708036 Run 1 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/22/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 99.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter on

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Measurement summary for limit2: -25dBm GUIDELINE < 1GHz (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 -25dBm GUIDELINE < 1GHz
357.955 MHz	46.71 Qp	1.93 / 15.0 / 29.75 / 0.14	34.02	H / 1.00 / 270	-36.21
232.908 MHz	49.55 Qp	1.44 / 11.72 / 29.59 / 0.12	33.25	V / 1.00 / 0	-36.98
212.808 MHz	47.75 Qp	1.4 / 11.0 / 29.7 / 0.11	30.57	V / 1.00 / 0	-39.66
119.976 MHz	49.7 Qp	1.0 / 9.25 / 29.5 / 0.09	30.53	H / 3.00 / 270	-39.7
83.97 MHz	50.9 Qp	0.89 / 7.56 / 29.38 / 0.06	30.02	H / 3.00 / 90	-40.21
386.587 MHz	42.2 Qp	1.99 / 15.47 / 29.97 / 0.14	29.82	H / 1.00 / 270	-40.41
143.979 MHz	47.21 Qp	1.08 / 9.1 / 29.44 / 0.1	28.05	V / 1.00 / 139	-42.18
167.946 MHz	43.5 Qp	1.23 / 9.34 / 29.4 / 0.1	24.78	V / 1.00 / 90	-45.45
486.823 MHz	34.6 Qp	2.11 / 17.39 / 30.06 / 0.16	24.2	V / 1.00 / 90	-46.03
70.092 MHz	42.02 Qp	0.8 / 9.73 / 29.3 / 0.05	23.3	V / 1.00 / 0	-46.93
134.256 MHz	43.0 Qp	1.05 / 8.25 / 29.5 / 0.1	22.89	V / 1.00 / 90	-47.34

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America

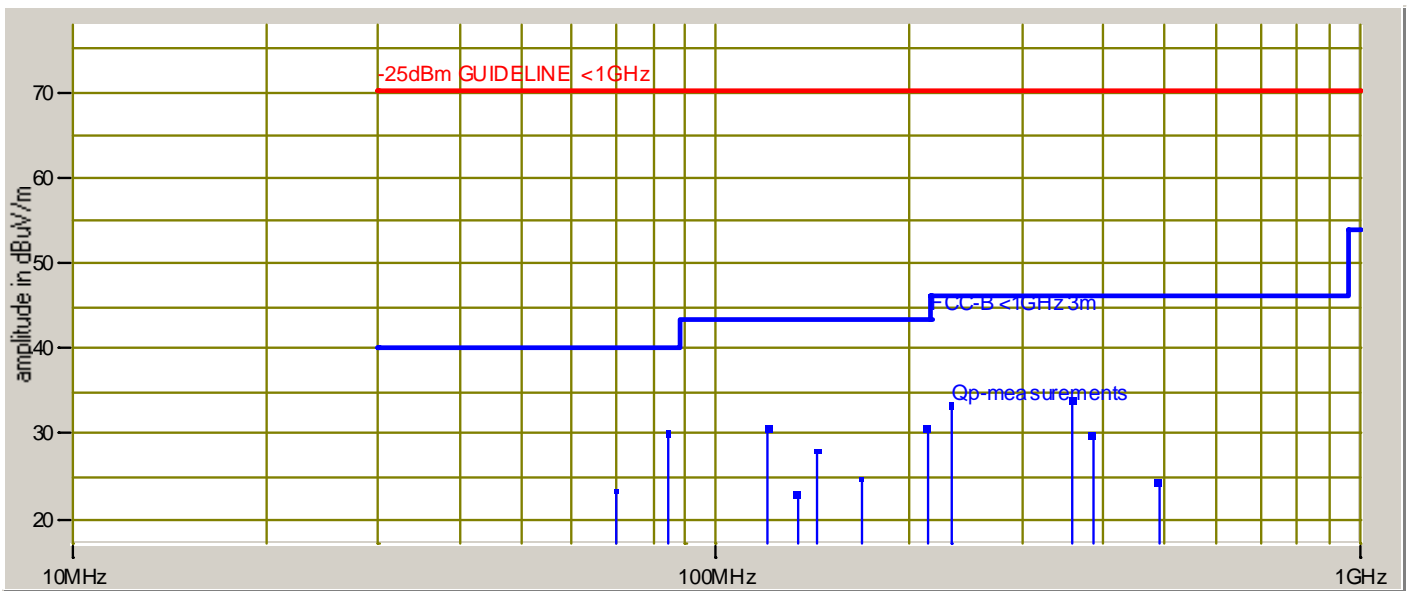
Test Report #: WC708036 Run 1 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/22/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 99.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter on

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Graph:



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Joel T. Schneider
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RADIATED EMISSIONS



Test Report #: WC708036 Run 4 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/23/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC Part 27 Air Pressure: 98.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Tx on

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List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC Pt 27 -25dBm	DELTA2
Theoretical limit used initially, final levels calculated using substitution method						
AGC settings; Config 1 = 8, config 2 = 9, config 3 = 8						
Begin scan 1-2 GHz w/ preamp & 1-2GHz BPF						
Config. 1; 5 MHz ch BW, RF freq 2500 MHz						
No significant emissions detected						
Config. 2; 5.5 MHz ch BW, RF freq 2590 MHz						
No significant emissions detected						
Config. 3; 6.0 MHz ch BW, RF freq 2687 MHz						
No significant emissions detected						
Begin spurious scan 2-4 GHz, no preamp or filters, noise floor > 10dB below the limit						
Config. 3; 6.0 MHz ch BW, RF freq 2687 MHz						
No significant emissions detected						
Config. 2; 5.5 MHz ch BW, RF freq 2590 MHz						
No significant emissions detected						
Config. 1; 5 MHz ch BW, RF freq 2500 MHz						
No significant emissions detected						
Begin scan 4-18 GHz w/ preamp & 4GHz HPF						
Config. 1; 5 MHz ch BW, RF freq 2500 MHz						
5.0 GHz	37.26 Av	7.67 / 33.2 / 43.69 / 0.83	35.27	V / 1.00 / 0	n/a	n/a
5.0 GHz	58.3 Pk	7.67 / 33.2 / 43.69 / 0.83	56.31	V / 1.00 / 0	-13.92	n/a

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RADIATED EMISSIONS



Test Report #: WC708036 Run 4 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/23/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC Part 27 Air Pressure: 98.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Tx on

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List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC Pt 27 -25dBm	DELTA2
7.5 GHz	35.99 Av	9.95 / 36.4 / 43.06 / 0.05	39.33	V / 1.00 / 0	n/a	n/a
7.5 GHz	59.95 Pk	9.95 / 36.4 / 43.06 / 0.05	63.29	V / 1.00 / 0	-6.94	n/a
Maximized						
5.0 GHz	38.46 Av	7.67 / 33.2 / 43.69 / 0.83	36.47	V / 1.33 / 4	n/a	n/a
5.0 GHz	60.15 Pk	7.67 / 33.2 / 43.69 / 0.83	58.16	V / 1.33 / 4	-12.07	n/a
7.5 GHz	37.28 Av	9.95 / 36.4 / 43.06 / 0.05	40.62	V / 1.00 / 345	n/a	n/a
7.5 GHz	65.9 Pk	9.95 / 36.4 / 43.06 / 0.05	69.24	V / 1.00 / 345	-0.99	n/a
Config. 2; 5.5 MHz ch BW, RF freq 2590 MHz						
Maximized						
5.18 GHz	38.7 Av	7.77 / 33.43 / 43.79 / 0.74	36.84	V / 1.04 / 309	n/a	n/a
5.18 GHz	63.15 Pk	7.77 / 33.43 / 43.79 / 0.74	61.29	V / 1.04 / 309	-8.94	n/a
7.77 GHz	38.81 Av	10.21 / 36.57 / 42.8 / 0.06	42.85	V / 1.52 / 92	n/a	n/a
7.77 GHz	58.45 Pk	10.21 / 36.57 / 42.8 / 0.06	62.49	V / 1.52 / 92	-7.74	n/a
Config. 3; 6.0 MHz ch BW, RF freq 2687 MHz						
Maximized						
5.374 GHz	38.53 Av	7.98 / 33.68 / 43.75 / 0.64	37.07	V / 1.05 / 2	n/a	n/a
5.374 GHz	61.6 Pk	7.98 / 33.68 / 43.75 / 0.64	60.14	V / 1.05 / 2	-10.09	n/a
8.061 GHz	38.65 Av	10.52 / 36.75 / 42.57 / 0.08	43.43	V / 1.01 / 197	n/a	n/a
8.061 GHz	58.15 Pk	10.52 / 36.75 / 42.57 / 0.08	62.93	V / 1.01 / 197	-7.3	n/a
Begin scan 18-27 GHz, Agilent SA, dual ridgeguide horn, 100mm from EUT						
Configurations 1 & 3 (low & high)						

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RADIATED EMISSIONS



Test Report #: WC708036 Run 4 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/23/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC Part 27 Air Pressure: 98.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Tx on

Data File Name: 8036.dat

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List of measurements for run #: 4

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC Pt 27 -25dBm	DELTA2
No significant emissions detected						
Config. 1; 5 MHz ch BW, RF freq 2500 MHz						
AGC setting; Config 1 = 11						
Maximized						
5.0 GHz	55.05 Pk	7.67 / 33.2 / 43.69 / 0.83	53.06	V / 1.00 / 0	-17.17	n/a
7.5 GHz	54.8 Pk	9.95 / 36.4 / 43.06 / 0.05	58.14	V / 1.01 / 347	-12.09	n/a
Substitution performed, EIRP limit = -25.0 dBm						
Signal generator output level adjusted to match the highest previous EUT measurement levels						
5.0 GHz, Sig gen = -49.5 dBm, coax loss = 1.8 dB, Tx antenna gain = 10.7 dBi						
-49.5 - 1.8 + 10.7 = -40.6 dBm EIRP						
7.5 GHz, Sig gen = -33.3 dBm, coax loss = 1.9 dB, Tx antenna gain = 11.3 dBi						
-33.3 - 1.9 + 11.3 = -23.9 dBm EIRP						
7.5 GHz re-measured after adjusting AGC from 8 to 11, reducing emission by 11.1 dB to -35 dBm						
5.18 GHz, Sig gen = -45.6 dBm, coax loss = 1.8 dB, Tx antenna gain = 10.7 dBi						
-45.6 - 1.8 + 10.7 = -36.7 dBm EIRP						
7.77 GHz, Sig gen = -42.7 dBm, coax loss = 1.9 dB, Tx antenna gain = 11.3 dBi						
-42.7 - 1.9 + 11.3 = -33.3 dBm EIRP						
5.374 GHz, Sig gen = -46.7 dBm, coax loss = 1.8 dB, Tx antenna gain = 10.7 dBi						
-46.7 - 1.8 + 10.7 = -37.8 dBm EIRP						
8.061 GHz, Sig gen = -44.3 dBm, coax loss = 1.9 dB, Tx antenna gain = 11.3 dBi						
-44.3 - 1.9 + 11.3 = -34.9 dBm EIRP						
End scan 1 - 27 GHz						

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RADIATED EMISSIONS



America

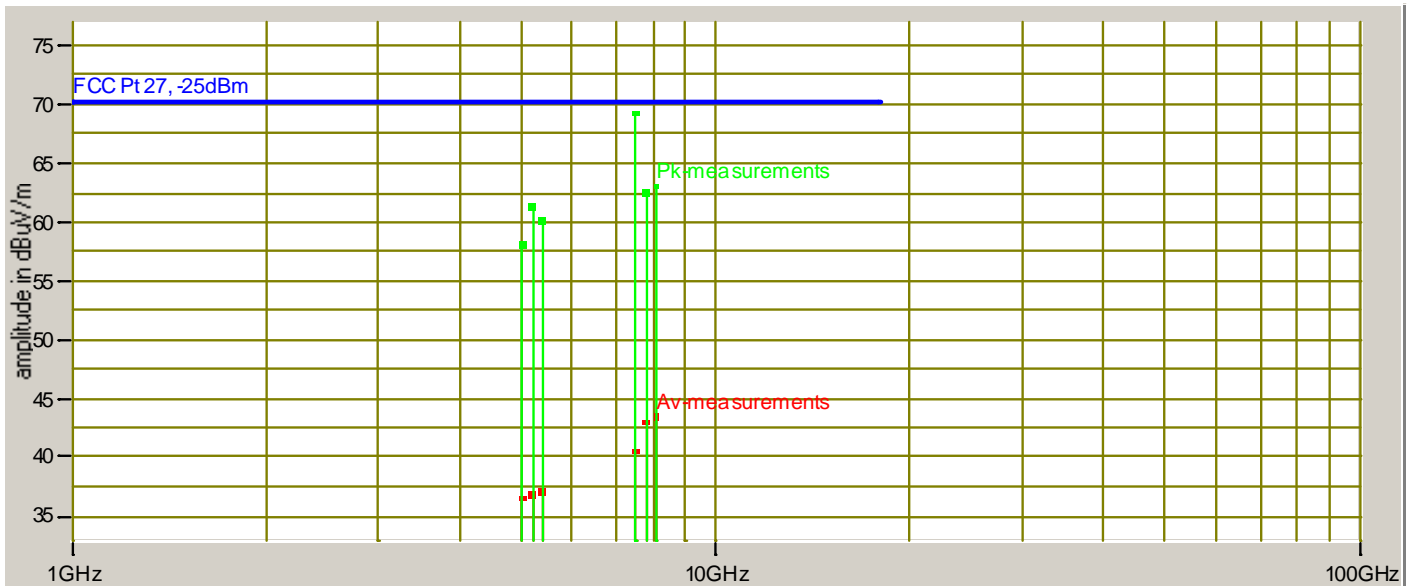
Test Report #: WC708036 Run 4 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/23/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC Part 27 Air Pressure: 98.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Tx on

Data File Name: 8036.dat Page: 4 of 4

Graph:



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Radiated emission limits - Receiver, FCC 15.205, FCC 15.209, IC RSS-Gen 6(a)

Test summary

The requirements are: - MET - NOT MET

Minimum margin of compliance is 21 dB at 1.659 GHz, run 3

Test location

- Wild River Lab Large Test Site (Open Area Test Site)

- Wild River Lab Small Test Site (Open Area Test Site)

Test Distance

- 3 meters

- 10 meters

Test equipment

TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	02-May-07
2690	8566B	Hewlett-Packard	Spectrum Analyzer	2430A00930	12 May 07
2673	85662A	Hewlett-Packard	Analyzer Display	2152A03687	12 May 07
2684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	15 Mar 07
2075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	12 Jan 08
3847	ZHL-1042J	Mini-Circuits	Preamplifier 10 - 3000 MHz	0607	Code B
3958	SL18B4020	Phase One Microwave	Preamplifier 1 - 18 GHz	0002	Code B

Cal Code B = Calibration verification performed internally.

Test limit

Spurious Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

Test Data

See following pages

RADIATED EMISSIONS



America

Test Report #: WC708036 Run 2 Test Area: LTS

EUT Model #: PCEX25100 Date: 10/22/2007

EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C

Test Method: FCC B Air Pressure: 99.0 kPa

Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Transmitter off, Rx mode

Data File Name: 8036.dat Page: 1 of 2

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2
Config. 4; 5 MHz ch BW, RF freq 2500 MHz						
Rotated EUT 0 - 360 degrees, antenna 1 - 4 meters high, both vertical & horizontal						
No significant emissions detected						
Config. 5; 5.5 MHz ch BW, RF freq 2590 MHz.						
No significant emissions detected						
Config. 6; 6 MHz ch BW, RF freq 2687 MHz.						
No significant emissions detected						
End Rx scan 30 - 1000 MHz						

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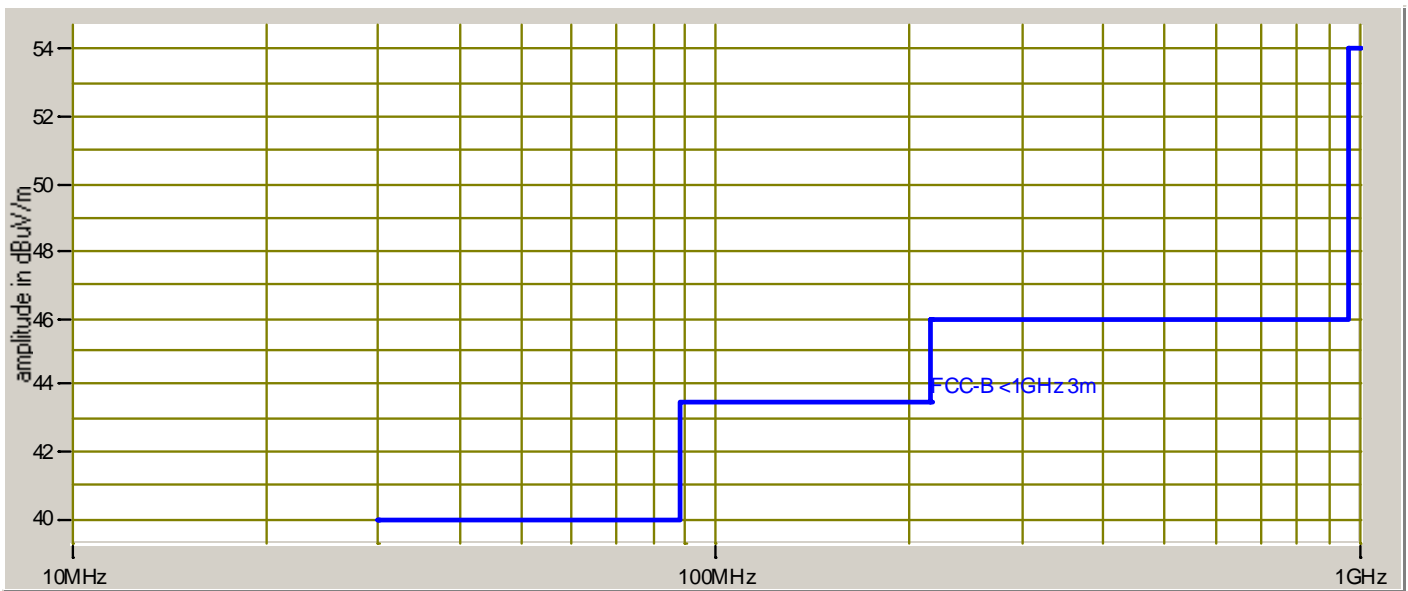
RADIATED EMISSIONS



America

Test Report #: WC708036 Run 2 Test Area: LTS
EUT Model #: PCEX25100 Date: 10/22/2007
EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
Test Method: FCC B Air Pressure: 99.0 kPa
Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 42.0 %
EUT Description: BRS/EBS Express Card Slot Modem
Notes: Transmitter off, Rx mode
Data File Name: 8036.dat Page: 2 of 2

Graph:



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Test Report #: WC708036 Run 3 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/23/2007
 EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 98.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Receive mode, transmitter off

Notes: _____

Data File Name: 8036.dat

Page: 1 of 4

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC B Avg, 3m	DELTA2 FCC B Pk, 3m
Config 4; 5 MHz ch BW, RF freq 2500 MHz						
1.659 GHz	44.75 Av	4.11 / 25.99 / 42.99 / 0.0	31.85	V / 1.00 / 0	-22.15	n/a
1.5 GHz	42.85 Av	3.93 / 25.0 / 42.75 / 0.0	29.03	V / 1.00 / 0	-24.97	n/a
1.996 GHz	40.95 Av	4.48 / 28.07 / 43.09 / 0.0	30.41	V / 1.00 / 0	-23.59	n/a
Maximized						
1.5 GHz	42.02 Av	3.93 / 25.0 / 42.75 / 0.0	28.2	V / 1.00 / 0	-25.8	n/a
1.659 GHz	44.96 Av	4.11 / 25.99 / 42.99 / 0.0	32.06	V / 1.00 / 0	-21.94	n/a
1.996 GHz	42.28 Av	4.48 / 28.07 / 43.09 / 0.0	31.74	V / 1.13 / 0	-22.26	n/a
1.5 GHz	44.35 Pk	3.93 / 25.0 / 42.75 / 0.0	30.53	V / 1.00 / 0	n/a	-43.47
1.659 GHz	45.25 Pk	4.11 / 25.99 / 42.99 / 0.0	32.35	V / 1.00 / 0	n/a	-41.65
1.996 GHz	48.85 Pk	4.48 / 28.07 / 43.09 / 0.0	38.31	V / 1.13 / 0	n/a	-35.69
Config 5; 5.5 MHz ch BW, RF freq 2590 MHz						
No new or higher emissions detected						
Config 6; 6 MHz ch BW, RF freq 2687 MHz						
No new or higher emissions detected						
End receiver scan 1 - 18 GHz						

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RADIATED EMISSIONS



America

Test Report #: WC708036 Run 3 Test Area: LTS

EUT Model #: PCEX25100 Date: 10/23/2007

EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C

Test Method: FCC B Air Pressure: 98.0 kPa

Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Receive mode, transmitter off

Notes: _____

Data File Name: 8036.dat Page: 2 of 4

Measurement summary for limit1: FCC B >1GHz 3m (Av)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC B Avg, 3m
1.659 GHz	44.96 Av	4.11 / 25.99 / 42.99 / 0.0	32.06	V / 1.00 / 0	-21.94
1.996 GHz	42.28 Av	4.48 / 28.07 / 43.09 / 0.0	31.74	V / 1.13 / 0	-22.26
1.5 GHz	42.85 Av	3.93 / 25.0 / 42.75 / 0.0	29.03	V / 1.00 / 0	-24.97
1.5 GHz	44.35 Pk	3.93 / 25.0 / 42.75 / 0.0	30.53	V / 1.00 / 0	-23.47*
1.659 GHz	45.25 Pk	4.11 / 25.99 / 42.99 / 0.0	32.35	V / 1.00 / 0	-21.65*
1.996 GHz	48.85 Pk	4.48 / 28.07 / 43.09 / 0.0	38.31	V / 1.13 / 0	-15.69*

* Peak measurement against an average limit

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Reviewed by: S. L. Rupp *Susan L Rupp*

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Test Report #: WC708036 Run 3 Test Area: LTS

EUT Model #: PCEX25100 Date: 10/23/2007

EUT Serial #: 40DA94 EUT Power: 3.3 Vdc Temperature: 21.0 °C

Test Method: FCC B Air Pressure: 98.0 kPa

Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: Receive mode, transmitter off

Data File Name: 8036.dat Page: 3 of 4

Measurement summary for limit2: FCC B >1G 3 M (Pk)					
FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA2 FCC B Pk, 3m
1.996 GHz	48.85 Pk	4.48 / 28.07 / 43.09 / 0.0	38.31	V / 1.13 / 0	-35.69
1.659 GHz	45.25 Pk	4.11 / 25.99 / 42.99 / 0.0	32.35	V / 1.00 / 0	-41.65
1.5 GHz	44.35 Pk	3.93 / 25.0 / 42.75 / 0.0	30.53	V / 1.00 / 0	-43.47

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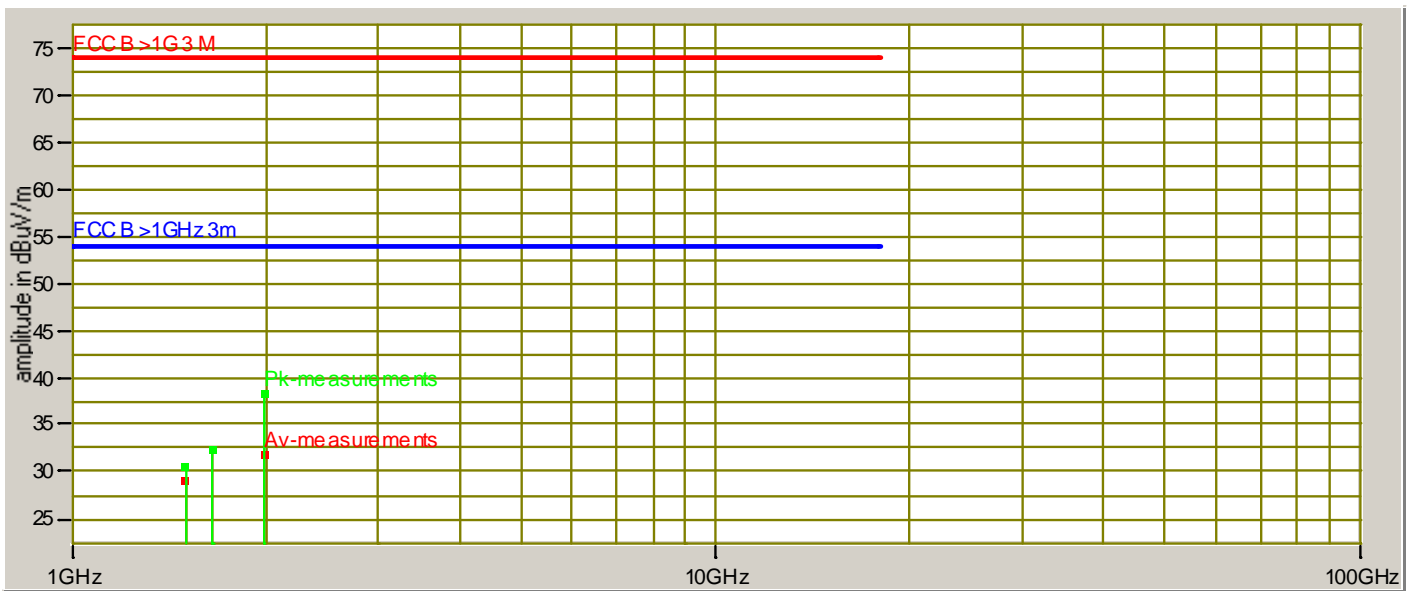
America

Test Report #: <u>WC708036 Run 3</u>	Test Area: <u>LTS</u>
EUT Model #: <u>PCEX25100</u>	Date: <u>10/23/2007</u>
EUT Serial #: <u>40DA94</u>	EUT Power: <u>3.3 Vdc</u>
Temperature: <u>21.0</u> °C	Air Pressure: <u>98.0</u> kPa
Test Method: <u>FCC B</u>	Rel. Humidity: <u>32.0</u> %
Customer: <u>Motorola Inc., NextNet Wireless Product Group</u>	

EUT Description: BRS/EBS Express Card Slot Modem
 Receive mode, transmitter off
 Notes: _____

Data File Name: <u>8036.dat</u>	Page:	4 of 4
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Graph:



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Conducted emissions - AC power lines - Class B limits, FCC 15.207, IC RSS-Gen 7.2.2

Test summary

The requirements are: - MET - NOT MET
 Minimum margin of compliance is 9 dB at 300.99 kHz, run 7

Test location

- Wild River Lab Large Test Site (Open Area Test Site)
- Wild River Lab Small Test Site (Open Area Test Site)

Test equipment

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
2417	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1439	Code B
2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	22-Mar-08

Cal Code B = Calibration verification performed internally.

Test limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

Test Data

See following pages

CONDUCTED EMISSIONS



America

Test Report #: WC708036 Run 7 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/24/2007
 EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 100.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat

Page: 1 of 6

List of measurements for run #: 7

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
Tx mode						
150.0 kHz	46.41 Qp	0.12 / 0.1 / 0.0 / 0.0	46.63	N	-19.37	n/a
165.0 kHz	45.61 Qp	0.12 / 0.1 / 0.0 / 0.0	45.83	N	-19.38	n/a
185.0 kHz	48.13 Qp	0.12 / 0.1 / 0.0 / 0.0	48.35	N	-15.91	n/a
200.0 kHz	46.87 Qp	0.13 / 0.1 / 0.0 / 0.0	47.1	N	-16.52	n/a
300.99 kHz	42.07 Qp	0.14 / 0.0 / 0.0 / 0.0	42.22	N	-18.0	n/a
497.84 kHz	40.59 Qp	0.18 / 0.14 / 0.0 / 0.0	40.91	N	-15.13	n/a
150.0 kHz	34.96 Av	0.12 / 0.1 / 0.0 / 0.0	35.18	N	n/a	-20.82
165.0 kHz	35.95 Av	0.12 / 0.1 / 0.0 / 0.0	36.17	N	n/a	-19.04
185.0 kHz	37.7 Av	0.12 / 0.1 / 0.0 / 0.0	37.92	N	n/a	-16.34
200.0 kHz	36.43 Av	0.13 / 0.1 / 0.0 / 0.0	36.66	N	n/a	-16.96
300.99 kHz	38.15 Av	0.14 / 0.0 / 0.0 / 0.0	38.3	N	n/a	-11.92
497.84 kHz	26.86 Av	0.18 / 0.14 / 0.0 / 0.0	27.18	N	n/a	-18.86
150.0 kHz	52.85 Qp	0.12 / 0.1 / 0.0 / 0.0	53.07	L1	-12.93	n/a
165.0 kHz	51.47 Qp	0.12 / 0.1 / 0.0 / 0.0	51.69	L1	-13.52	n/a
185.0 kHz	50.03 Qp	0.12 / 0.1 / 0.0 / 0.0	50.25	L1	-14.01	n/a
200.0 kHz	47.31 Qp	0.13 / 0.1 / 0.0 / 0.0	47.54	L1	-16.08	n/a
300.99 kHz	41.31 Qp	0.14 / 0.0 / 0.0 / 0.0	41.46	L1	-18.76	n/a
497.84 kHz	39.17 Qp	0.18 / 0.14 / 0.0 / 0.0	39.49	L1	-16.55	n/a
150.0 kHz	37.91 Av	0.12 / 0.1 / 0.0 / 0.0	38.13	L1	n/a	-17.87
165.0 kHz	37.08 Av	0.12 / 0.1 / 0.0 / 0.0	37.3	L1	n/a	-17.91
185.0 kHz	39.5 Av	0.12 / 0.1 / 0.0 / 0.0	39.72	L1	n/a	-14.54
200.0 kHz	37.08 Av	0.13 / 0.1 / 0.0 / 0.0	37.31	L1	n/a	-16.31
300.99 kHz	36.59 Av	0.14 / 0.0 / 0.0 / 0.0	36.74	L1	n/a	-13.48

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CONDUCTED EMISSIONS



Test Report #: WC708036 Run 7 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/24/2007
 EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 100.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat

Page: 2 of 6

List of measurements for run #: 7

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
497.84 kHz	26.23 Av	0.18 / 0.14 / 0.0 / 0.0	26.55	L1	n/a	-19.49
Rx mode						
150.0 kHz	46.15 Qp	0.12 / 0.1 / 0.0 / 0.0	46.37	N	-19.63	n/a
165.0 kHz	46.07 Qp	0.12 / 0.1 / 0.0 / 0.0	46.29	N	-18.92	n/a
185.0 kHz	48.09 Qp	0.12 / 0.1 / 0.0 / 0.0	48.31	N	-15.95	n/a
200.0 kHz	48.73 Qp	0.13 / 0.1 / 0.0 / 0.0	48.96	N	-14.66	n/a
300.99 kHz	42.13 Qp	0.14 / 0.0 / 0.0 / 0.0	42.28	N	-17.94	n/a
497.84 kHz	31.57 Qp	0.18 / 0.14 / 0.0 / 0.0	31.89	N	-24.15	n/a
150.0 kHz	34.38 Av	0.12 / 0.1 / 0.0 / 0.0	34.6	N	n/a	-21.4
165.0 kHz	35.5 Av	0.12 / 0.1 / 0.0 / 0.0	35.72	N	n/a	-19.49
185.0 kHz	36.43 Av	0.12 / 0.1 / 0.0 / 0.0	36.65	N	n/a	-17.61
200.0 kHz	35.58 Av	0.13 / 0.1 / 0.0 / 0.0	35.81	N	n/a	-17.81
300.99 kHz	40.18 Av	0.14 / 0.0 / 0.0 / 0.0	40.33	N	n/a	-9.89
497.84 kHz	21.29 Av	0.18 / 0.14 / 0.0 / 0.0	21.61	N	n/a	-24.43
150.0 kHz	52.59 Qp	0.12 / 0.1 / 0.0 / 0.0	52.81	L1	-13.19	n/a
165.0 kHz	51.17 Qp	0.12 / 0.1 / 0.0 / 0.0	51.39	L1	-13.82	n/a
185.0 kHz	49.71 Qp	0.12 / 0.1 / 0.0 / 0.0	49.93	L1	-14.33	n/a
200.0 kHz	48.95 Qp	0.13 / 0.1 / 0.0 / 0.0	49.18	L1	-14.44	n/a
300.99 kHz	41.23 Qp	0.14 / 0.0 / 0.0 / 0.0	41.38	L1	-18.84	n/a
497.84 kHz	30.89 Qp	0.18 / 0.14 / 0.0 / 0.0	31.21	L1	-24.83	n/a
150.0 kHz	36.83 Av	0.12 / 0.1 / 0.0 / 0.0	37.05	L1	n/a	-18.95
165.0 kHz	37.93 Av	0.12 / 0.1 / 0.0 / 0.0	38.15	L1	n/a	-17.06
185.0 kHz	39.3 Av	0.12 / 0.1 / 0.0 / 0.0	39.52	L1	n/a	-14.74

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CONDUCTED EMISSIONS



America

Test Report #: WC708036 Run 7 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/24/2007
 EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 100.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat Page: 3 of 6

List of measurements for run #: 7

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
200.0 kHz	35.5 Av	0.13 / 0.1 / 0.0 / 0.0	35.73	L1	n/a	-17.89
300.99 kHz	39.54 Av	0.14 / 0.0 / 0.0 / 0.0	39.69	L1	n/a	-10.53
497.84 kHz	21.34 Av	0.18 / 0.14 / 0.0 / 0.0	21.66	L1	n/a	-24.38

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CONDUCTED EMISSIONS



America

Test Report #: WC708036 Run 7 Test Area: LTS
EUT Model #: PCEX25100 Date: 10/24/2007
EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
Test Method: FCC B Air Pressure: 100.0 kPa
Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat

Page: 4 of 6

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
150.0 kHz	52.85 Qp	0.12 / 0.1 / 0.0 / 0.0	53.07	L1	-12.93
165.0 kHz	51.47 Qp	0.12 / 0.1 / 0.0 / 0.0	51.69	L1	-13.52
185.0 kHz	50.03 Qp	0.12 / 0.1 / 0.0 / 0.0	50.25	L1	-14.01
200.0 kHz	48.95 Qp	0.13 / 0.1 / 0.0 / 0.0	49.18	L1	-14.44
497.84 kHz	40.59 Qp	0.18 / 0.14 / 0.0 / 0.0	40.91	N	-15.13
300.99 kHz	42.13 Qp	0.14 / 0.0 / 0.0 / 0.0	42.28	N	-17.94

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Test Report #: WC708036 Run 7 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/24/2007
 EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 100.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat Page: 5 of 6

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
300.99 kHz	40.18 Av	0.14 / 0.0 / 0.0 / 0.0	40.33	N	-9.89
185.0 kHz	39.5 Av	0.12 / 0.1 / 0.0 / 0.0	39.72	L1	-14.54
200.0 kHz	37.08 Av	0.13 / 0.1 / 0.0 / 0.0	37.31	L1	-16.31
165.0 kHz	37.93 Av	0.12 / 0.1 / 0.0 / 0.0	38.15	L1	-17.06
150.0 kHz	37.91 Av	0.12 / 0.1 / 0.0 / 0.0	38.13	L1	-17.87
497.84 kHz	26.86 Av	0.18 / 0.14 / 0.0 / 0.0	27.18	N	-18.86

Tested by: Greg Jakubowski

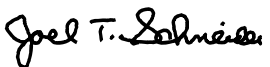
 Printed



 Signature

Reviewed by: J. T. Schneider

 Printed



 Signature

CONDUCTED EMISSIONS



America

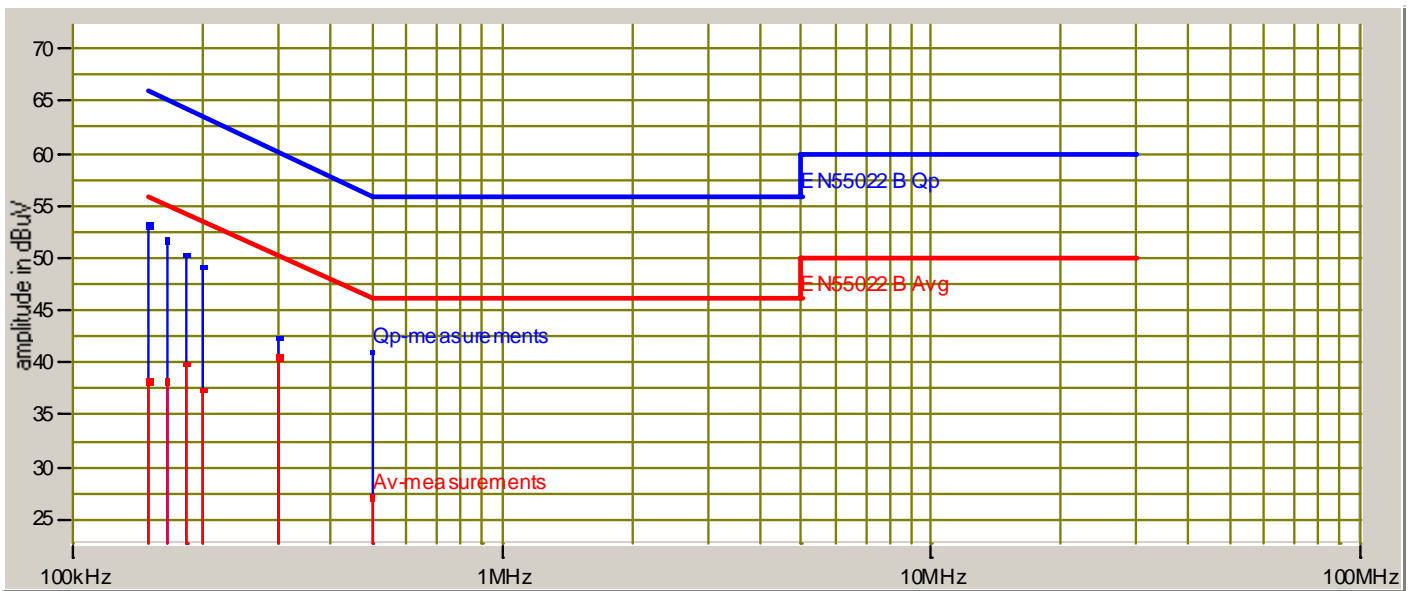
Test Report #: WC708036 Run 7 Test Area: LTS
 EUT Model #: PCEX25100 Date: 10/24/2007
 EUT Serial #: 40DA94 EUT Power: 110V/60Hz Temperature: 21.0 °C
 Test Method: FCC B Air Pressure: 100.0 kPa
 Customer: Motorola Inc., NextNet Wireless Product Group Rel. Humidity: 32.0 %

EUT Description: BRS/EBS Express Card Slot Modem

Notes: _____

Data File Name: 8036.dat Page: 6 of 6

Graph:



Tested by: Greg Jakubowski

 Printed

Greg Jakubowski

 Signature

Reviewed by: J. T. Schneider

 Printed

Joel T. Schneider

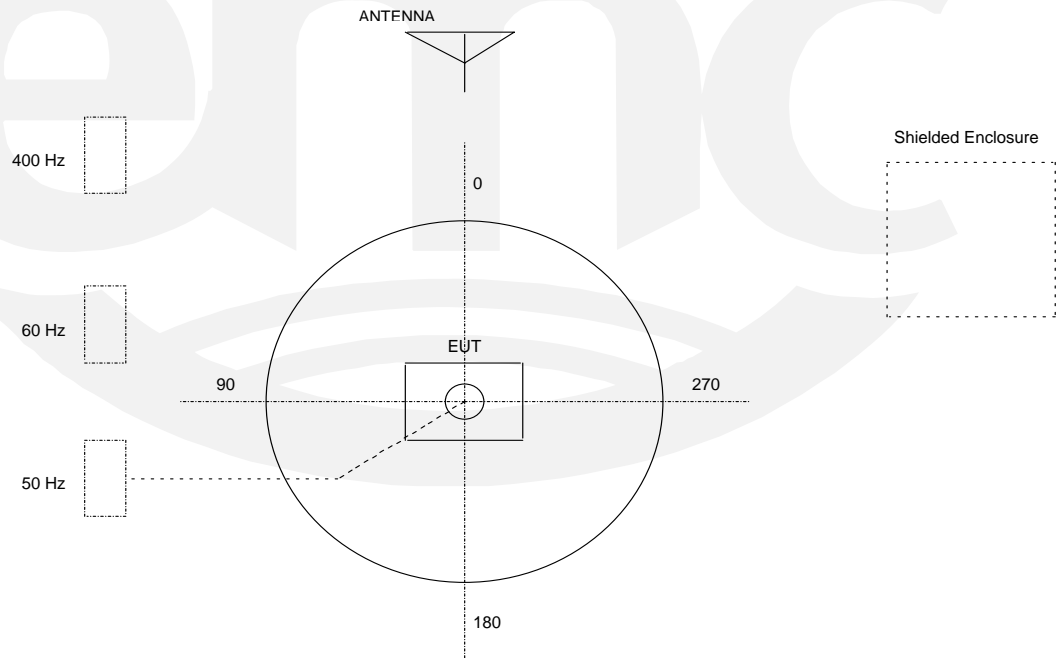
 Signature

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB Large Test Site

Notes:

1. Items shown in dotted lines are located on the floor below the test area. It is 5 meters vertically from the ground floor to the test area.
2. 50 Hz, 60 Hz, and 400 Hz are power panels for alternating current.
3. The antenna may be positioned horizontally 3, 10 or 30 meters from the center of the turntable.
4. The circle is a 6.7 meter diameter turntable.
5. A ground plane is in the plane of this sheet.
6. The test sample is shown in the azimuthal position representing zero degrees.



Test setup photo, radiated emissions



Test setup photo, radiated emissions



Test setup photo, conducted emissions on AC mains



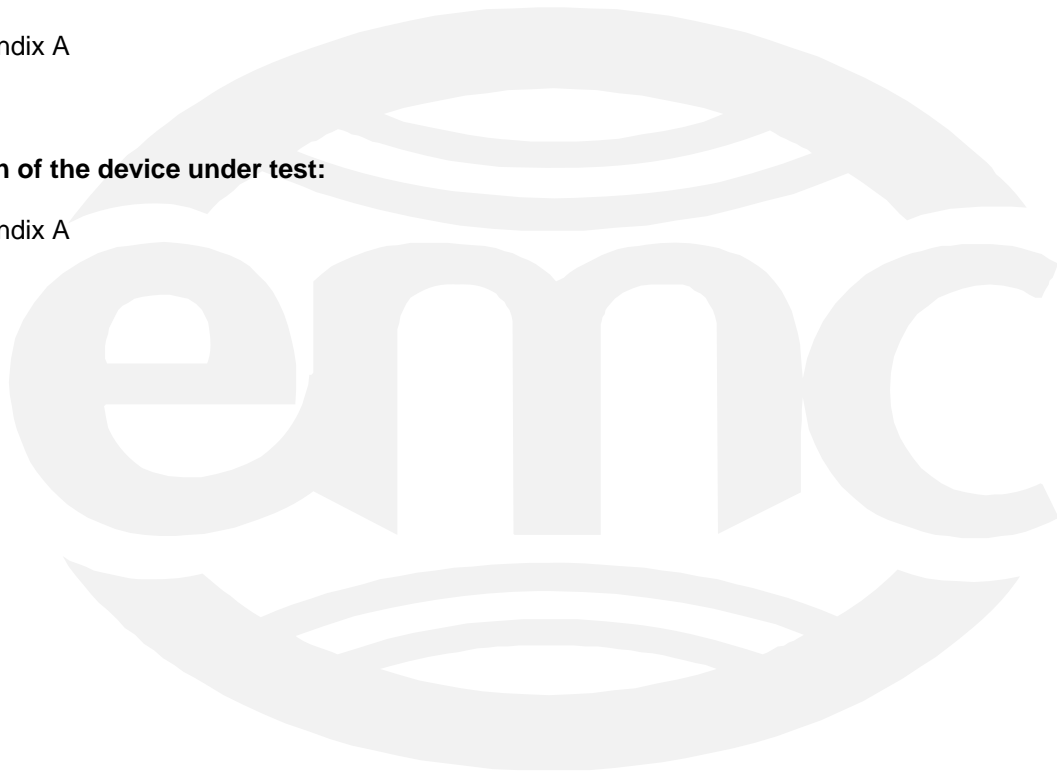
Test Operation Mode:

The device under test was operated under the following conditions during emissions testing:

- Standby
- Test program (H - Pattern)
- Test program (color bar)
- Test program (customer specific)
- Practice operation
- See Appendix A

Configuration of the device under test:

- See Appendix A



DEVIATIONS FROM STANDARD:

None.

GENERAL REMARKS:

AGC adjustment from 8 to 11 necessary for 7.5 GHz emission to comply

Modifications required to pass:

- None
- As indicated in the Test Plan

Test Specification Deviations: Additions to or Exclusions from:

- None
- As indicated in the Test Plan

SUMMARY:

The requirements according to the technical regulations are

- met
- **not** met.

The device under test does

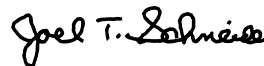
- fulfill the general approval requirements mentioned on page 3.
- **not** fulfill the general approval requirements mentioned on page 3.

EUT Received Date:	<u>22 October 2007</u>
Condition of EUT:	<u>Normal</u>
Testing Start Date:	<u>22 October 2007</u>
Testing End Date:	<u>24 October 2007</u>

- TÜV AMERICA INC -



Greg S Jakubowski
Senior EMC Technician



Joel T Schneider
Senior EMC Engineer

Appendix A

Constructional Data Form

and

Block Diagram





EMC Test Plan and Constructional Data Form

America

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company: Motorola Inc., NextNet Wireless Product Group
 Address: 299 Johnson Ave.
Suite 120
Waseca, MN 56093
 Contact: Tim Blom Position: Engineering Section Manager
 Phone: 507-837-3672 Fax: 507-837-1059
 E-mail Address: Tim.Blom@motorola.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description BRS/EBS Express Card Slot Modem
 EUT Name Express Card 2.5
 Model No.: PCEX25100 Serial No.: S/N: 40DA94
 Product Options: none
 Configurations to be tested: standard

Equipment Modification (If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)

Modifications since last test: N/A
 Modifications made during test: _____

Test Objective(s): Please indicate the tests to be performed, entering the applicable standard(s) where noted.

- | | |
|---|--|
| <input type="checkbox"/> EMC Directive 89/336/EEC (EMC)
Std: _____ | <input checked="" type="checkbox"/> FCC: Class <input type="checkbox"/> A <input checked="" type="checkbox"/> B Part <u>27</u> |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC)
Std: _____ | <input type="checkbox"/> VCCI: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> Medical Device Directive 93/42/EEC (EMC)
Std: _____ | <input type="checkbox"/> BSMI: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> Vehicle Directive 72/245/EEC (EMC)
Std: _____ | <input checked="" type="checkbox"/> Canada: Class <input type="checkbox"/> A <input checked="" type="checkbox"/> B |
| <input type="checkbox"/> FDA Reviewers Guidance for Premarket
Notification Submissions (EMC) | <input type="checkbox"/> Australia: Class <input type="checkbox"/> A <input type="checkbox"/> B |
| | <input checked="" type="checkbox"/> Other: <u>FCC 2, 15, 27, IC RSS-193</u> |

Third Party Certification, if applicable (*Signature on Page 6 Required)

- | | |
|---|---|
| <input type="checkbox"/> Attestation of Conformity (AoC)* | <input type="checkbox"/> EMC Certification (used with Octagon Mark)* |
| <input type="checkbox"/> Certificate of Conformity (CoC)* | <input type="checkbox"/> Compliance Document* |
| Protection Class (N/A for vehicles) | <input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III |
| (Press F1 when field is selected to show additional information on Protection Class.) | |
| <input type="checkbox"/> FCC / TCB Certification | <input type="checkbox"/> Industry Canada / FCB Certification |
| <input type="checkbox"/> E-Mark Certification | <input type="checkbox"/> Taiwan Certification |



EMC Test Plan and Constructional Data Form

America

Attendance

Test will be: Attended by the customer Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.

If a failure occurs, TÜV America should:

- Call contact listed above, if not available then stop testing. (After hrs phone): _____
- Continue testing to complete test series.
- Continue testing to define corrective action.
- Stop testing.

EUT Specifications and Requirements

Length: 4.55" Width: 2.2" Height: .75" Weight: .1 Lb

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 3.3 Vdc (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: 1

Current (Amps/phase(max)): 1.5 Current (Amps/phase(nominal)): .3

Other: ---

Other Special Requirements

Transmitter radiated emissions to be measured per EIA/TIA 603-C procedure for licensed transmitters. Receiver radiated emissions testing to be performed on ANSI C63.4-2003 clause 5.4 compliant site. Receiver radiated emissions measured with a quasi peak detector compliant to CISPR Publication 16.

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
Laptop express card slot

EUT Power Cable

- Permanent OR Removable Length (in meters): N/A
 Shielded OR Unshielded
 Not Applicable



EMC Test Plan and Constructional Data Form

America

EUT Interface Ports and Cables																
Type	Analog		Digital		During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Active	Passive		Yes	No							Type
EXAMPLE: RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Express card Slot - USB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	metal wrap	internal	card bus	internal	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
accessory antenna	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	none	coaxial	DV	50 ohm	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: NextNet Tool/Diagnostics s/w: 9.03a

Description: Test software for PCE product that enables test modes for compliance testing.

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Radiated emissions - transmitter - 3 RF channels, 3 channel bandwidths

Requirements per TIA/EIA 603-C-2004 and Industry Canada RSS-193 procedures [absolute power level of -13 dBm and verified using antenna-generator substitution method]

Expedience mode, 9.09% transmitter duty cycle, 4 QAM

Configuration 1 :: 5.0 MHz channel bandwidth: RF Freq = 2500 MHz

Configuration 2 :: 5.5 MHz channel bandwidth: RF freq = 2590 MHz

Configuration 3 :: 6.0 MHz channel bandwidth: RF freq = 2687 MHz

Radiated emissions to be measured from 30 MHz to 27 GHz for each configuration.

2. Radiated emissions - receiver - 3 RF channels, 3 channel bandwidths

Requirements per FCC part 15B and Industry Canada RSS-Gen

Configuration 4 :: 5.0 MHz channel bandwidth: RF freq = 2500 MHz

Configuration 5 :: 5.5 MHz channel bandwidth: RF freq = 2590 MHz

Configuration 6 :: 6.0 MHz channel bandwidth: RF freq = 2687 MHz

Radiated emissions to be measured from 30 MHz to 14 GHz for each configuration.

3. Transmitter and Receiver AC Power Lines Conducted Emissions Limits.

Requirements per FCC part 15B and Industry Canada RSS-Gen

Configuration 7 :: 5.5 MHz channel bandwidth: RF freq = 2500 MHz, transmit 9.09% duty cycle

Configuration 8 :: 6.0 MHz channel bandwidth: RF freq = 2590 MHz, receive mode



America

EMC Test Plan and Constructional Data Form

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
Express Card	PCEx25100	403D3A	FCC: PHX-PCE25100 IC: 109AM-PCE25100
Accessory Antenna	SPA2600/70/7/0/V_ C	N/A	N/A



EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)
This information is required for FCC & Taiwan testing.

Description	Model #	Serial #	FCC ID #
Dell laptop computer	Precision M65	4RFK3B1	N/A
Belkin Mouse	F8E814-OPT	057002030	N/A

Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use
3.25 MHz	N	U1	6V switcher
1.45 MHz	N	U5	4.2V switcher
25 MHz	N	Y201	XTAL - Ethernet
40 MHz	N	Y901	TCXO for main stability
100 MHz	Y	U601	Core clock
200 MHz	Y	U601	Data clock
3748.5-4030.5 MHz	N	U901	VCO freq range

Power Supply

Manufacturer	Model #	Serial #	Type
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____

Power Line Filters

Manufacturer	Model #	Location in EUT
N/A		



EMC Test Plan and Constructional Data Form

America

Critical EMI Components (Capacitors, ferrites, etc.)				
<i>Description</i>	<i>Manufacturer</i>	<i>Part # or Value</i>	<i>Qty</i>	<i>Component # / Location</i>
N/A				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

N/A

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures (Signature Required for Certifications checked on pg 1)

/s/ Tim Blom

10/19/2007

Customer authorization to perform tests according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date



EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.

** Part 15 test setup for radiated emissions compliance (DoC). **
Test setup per ANSI C63.4-2003

** Parts 2 and 27 test setup for BRS and EBS service rules **
Test setup per TIA-603-C (2004)

Authorization Signatures

/s/ Tim Blom

10/19/2007

Customer authorization to perform tests
according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date

Appendix B

Measurement Protocol



MEASUREMENT PROTOCOL

Test Methodology

Emissions testing is performed according to the procedures in ANSI C63.4-2003.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ± 1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ± 4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

Radiated Emissions

The final level, in $\text{dB}\mu\text{V}/\text{m}$, equals the reading from the spectrum analyzer (Level $\text{dB}\mu\text{V}$), adding the antenna correction factor and cable loss factor (Factor dB) to it, and subtracting the preamp gain (and duty cycle correction factor, if applicable). This result then has the limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ (MHz)	LEVEL ($\text{dB}\mu\text{V}$)	CABLE/ANT/PREAMP (dB) (dB/m) (dB)	FINAL ($\text{dB}\mu\text{V}/\text{m}$)	POL/HGT/AZ (m) (deg)	DELTA1
60.80	42.5Qp +	1.2 + 10.9 - 25.5 =	29.1	V 1.0 0.0	-10.9

Substitution Method

Per TIA/EIA 603-C-2004, a radiated emission scan was also made, at TUV America's Wild River Lab Large Test Site, with the EUT's antenna replaced with a termination to demonstrate case radiation compliance to the -13 dBm requirement. Radiated emissions from the EUT are measured in the frequency range of 30 to 27000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The field strength levels were measured per ANSI C63.4. The EUT is then replaced with a tuned dipole antenna (below 1 GHz) or horn antenna (above 1 GHz). The substitute antenna was placed in the same polarization as the test antenna. A signal generator was used to generate a signal level that matched the highest level measured from the EUT. The signal generator level minus the cable loss from the signal generator to the substitute antenna plus the substitute antenna gain equals the spurious power level.