

EMC EMISSIONS - TEST REPORT (Full)



Test Report No.	BC204924	Issue Date:	Mon 30/Sep/2002
Model / Serial No.	TX:GTI200209-001T, Contol / SN: 001		
Product Type	900 MHz Single frequency RF System		
Client	Gamotech International		
Manufacturer	Gamotech International		
License holder	Gamotech International		
Address	900 Sandhill		
	Reno, Nv 89521		
Test Criteria Applied	FCC part 15.249		
Test Result	PASS		
Test Project Number	BC204924	Title 47 CFR 15: Radio Frequency Devices	
References			
Total Pages			
Including			
Appendices:	27		
			
Reviewed By : Todd Seeley	Approved By : Robert Cresswell		

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STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty for Conducted Emissions in the frequency range of 150kHz – 30MHz is calculated to be $\pm 2.30\text{dB}$ and for Radiated Emissions is calculated to be $\pm 3.60\text{dB}$ in the frequency range of 30MHz – 200MHz and $\pm 3.38\text{dB}$ in the frequency range of 200MHz – 1000MHz.

EUT Received Date: 20-Sep-2002

Testing Start Date: 20-Sep-2002

Testing End Date: 20-Sep-2002

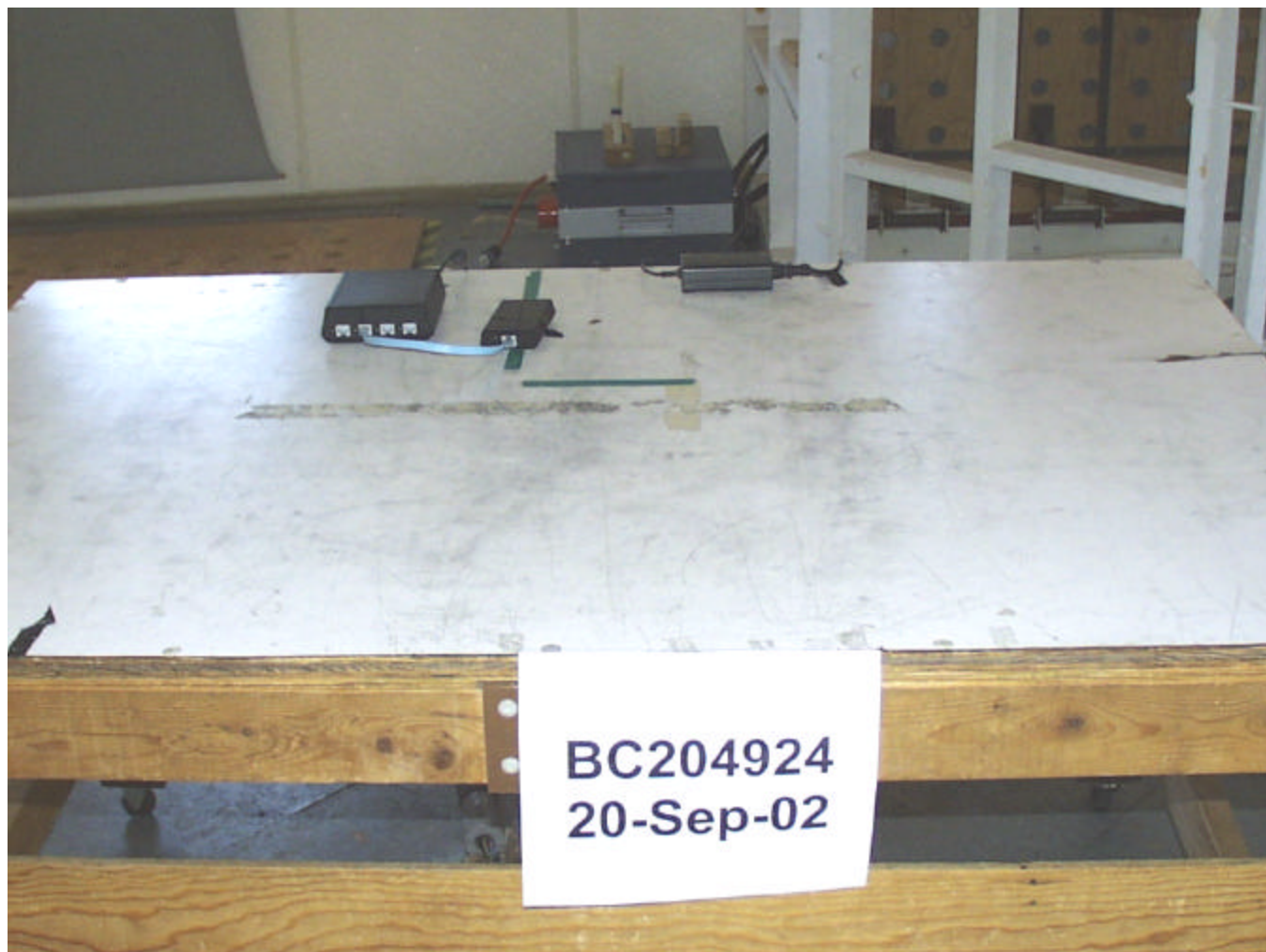
Test-setup photo(s):
Conducted Emissions



Test-setup photo(s):
Conducted Emissions



Test-setup photo(s):
Radiated Emissions



Test-setup photo(s):
Radiated Emissions



Appendix A

Test Data Sheets
and
Test Equipment Used

Conducted Electromagnetic Emissions



Test Report #: **BC204924 Run 01**
 Test Method: FCC
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 Cond
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: 18 °C
 Relative Humidity: 35 %
 Air Pressure: 80 kPa
 Page: 1 of 1

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		FCC B	N/A
0.494	18.5 Pk	0.1 / 0.0 / -10.0	28.6	Neutral	-19.4	N/A
0.990	27.4 Qp	0.2 / 0.0 / -10.0	37.6	Neutral	-10.4	N/A
1.58	26.7 Pk	0.3 / 0.0 / -10.0	37.0	Neutral	-11.0	N/A
1.68	26.8 Pk	0.3 / 0.0 / -10.0	37.1	Neutral	-10.9	N/A
15.65	22.4 Pk	0.8 / 0.0 / -10.0	33.2	Neutral	-14.8	N/A
14.36	27.3 Pk	0.7 / 0.0 / -10.0	38.0	Neutral	-10.0	N/A
0.494	17.7 Qp	0.1 / 0.0 / -10.0	27.8	Line 1	-20.2	N/A
0.990	27.2 Qp	0.2 / 0.0 / -10.0	37.4	Line 1	-10.6	N/A
1.59	25.9 Qp	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
1.58	25.9 Pk	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
1.58	25.9 Pk	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
1.68	26.0 Qp	0.3 / 0.0 / -10.0	36.3	Line 1	-11.7	N/A
14.37	28.0 Pk	0.7 / 0.0 / -10.0	38.7	Line 1	-9.3	N/A
15.65	23.4 Qp	0.8 / 0.0 / -10.0	34.2	Line 1	-13.8	N/A

Tested by: Dan Dillon
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Daniel M. Dillon
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Reviewed by: Todd Seeley
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Todd Seeley
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Conducted Electromagnetic Emissions



Test Report #: **BC204924 Run 01**
 Test Method: **FCC**
 EUT Model #: **TX:GTI200209-001T,
Contoler:GTI200209-001C**
 EUT Serial #: **001**
 Manufacturer: **GameTech**
 EUT Description: **900 MHz Single frequency RF System**
 Notes:

Test Area: **Pinewood Site 1 Cond**
 Test Date: **20-Sep-2002**
 EUT Power: **120 VAC 60 Hz**

Temperature: **18** °C
 Relative Humidity: **35** %
 Air Pressure: **80** kPa
 Page: **2** of **2**

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / LISN / ATTEN	FINAL	TEST POINT	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB)	(dBuV)		FCC B	N/A
***** Measurement Summary *****						
14.37	28.0 Pk	0.7 / 0.0 / -10.0	38.7	Line 1	-9.3	N/A
14.36	27.3 Pk	0.7 / 0.0 / -10.0	38.0	Neutral	-10.0	N/A
0.990	27.4 Qp	0.2 / 0.0 / -10.0	37.6	Neutral	-10.4	N/A
1.68	26.8 Pk	0.3 / 0.0 / -10.0	37.1	Neutral	-10.9	N/A
1.58	26.7 Pk	0.3 / 0.0 / -10.0	37.0	Neutral	-11.0	N/A
1.58	25.9 Pk	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
1.58	25.9 Pk	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
1.59	25.9 Qp	0.3 / 0.0 / -10.0	36.2	Line 1	-11.8	N/A
15.65	23.4 Qp	0.8 / 0.0 / -10.0	34.2	Line 1	-13.8	N/A
0.494	18.5 Pk	0.1 / 0.0 / -10.0	28.6	Neutral	-19.4	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 1** Test Area: Pinewood Site 1 (3m)

Test Method: FCC.15.249 Test Date: 20-Sep-2002

EUT Model #: TX:GTI200209-001T, Contoler:GTI200209-001C EUT Power: 120 VAC 60 Hz

EUT Serial #: 001

Manufacturer: GameTech

EUT Description: 900 MHz Single frequency RF System

Notes:

Temperature: °C

Relative Humidity: %

Air Pressure: kPa

Page: 1 of 1

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB/m) (dB)	(dBuV)	(m) (DEG)	N/A	N/A
All radings are maximized						
914.55	68.0 Pk	1.8 / 22.9 / 0.0	92.7	V / 1.0 / 27.0	N/A	N/A
914.55	67.5 Pk	1.8 / 22.9 / 0.0	92.2	H / 1.0 / 100.0	N/A	N/A
1829.14	19.9 Pk	2.6 / 28.4 / 0.0	50.9	V / 1.0 / 100.0	N/A	N/A
1829.14	14.9 Av	2.6 / 28.4 / 0.0	45.9	V / 1.0 / 100.0	N/A	N/A
Noise floor						
2729.14	16.4 Pk	3.3 / 31.0 / 0.0	50.7	V / 1.0 / 100.0	N/A	N/A
2729.14	14.5 Av	3.3 / 31.0 / 0.0	48.8	V / 1.0 / 100.0	N/A	N/A
Noise floor						
3629.14	18.7 Pk	4.0 / 33.2 / 0.0	55.9	V / 1.0 / 100.0	N/A	N/A
3629.14	14.0 Av	4.0 / 33.2 / 0.0	51.2	V / 1.0 / 100.0	N/A	N/A
Noise floor						
4543.69	33.0 Pk	4.4 / 33.6 / 40.7	30.3	V / 1.0 / 100.0	N/A	N/A
4543.69	31.8 Av	4.4 / 33.6 / 40.7	29.1	V / 1.0 / 100.0	N/A	N/A
Noise floor						
5458.24	31.1 Pk	4.9 / 35.8 / 40.1	31.7	V / 1.0 / 100.0	N/A	N/A
5458.24	30.7 Av	4.9 / 35.8 / 40.1	31.3	V / 1.0 / 100.0	N/A	N/A
Noise floor						
6372.79	32.9 Pk	4.8 / 36.5 / 40.6	33.6	V / 1.0 / 100.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 1**
 Test Method: FCC.15.249
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: °C
 Relative Humidity: %
 Air Pressure: kPa

Page: 2 of 2

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB/m) (dB)	(dBuV)	(m) (DEG)	N/A	N/A
6372.79	31.1 Av	4.8 / 36.5 / 40.6	31.8	V / 1.0 / 100.0	N/A	N/A
Noise floor						
7287.34	31.1 Pk	5.4 / 37.5 / 40.7	33.4	V / 1.0 / 100.0	N/A	N/A
7287.34	31.1 Av	5.4 / 37.5 / 40.7	33.4	V / 1.0 / 100.0	N/A	N/A
Noise floor						
8201.89	40.6 Pk	5.9 / 37.8 / 48.4	35.8	V / 1.0 / 100.0	N/A	N/A
8201.89	39.6 Av	5.9 / 37.8 / 48.4	34.9	V / 1.0 / 100.0	N/A	N/A
Noise floor						
9116.44	41.1 Pk	6.2 / 39.6 / 50.1	37.0	V / 1.0 / 100.0	N/A	N/A
9116.44	40.9 Av	6.2 / 39.6 / 50.1	36.7	V / 1.0 / 100.0	N/A	N/A
Noise floor						
9116.44	41.1 Pk	6.2 / 39.6 / 50.1	36.9	H / 1.0 / 100.0	N/A	N/A
9116.44	40.7 Av	6.2 / 39.6 / 50.1	36.5	H / 1.0 / 100.0	N/A	N/A
Noise floor						
8201.89	39.6 Pk	5.9 / 37.8 / 48.4	34.9	H / 1.0 / 100.0	N/A	N/A
8201.89	39.6 Av	5.9 / 37.8 / 48.4	34.8	H / 1.0 / 100.0	N/A	N/A
Noise floor						
7287.34	30.2 Pk	5.4 / 37.5 / 40.7	32.4	H / 1.0 / 100.0	N/A	N/A
7287.34	31.2 Av	5.4 / 37.5 / 40.7	33.5	H / 1.0 / 100.0	N/A	N/A
Noise floor						
6372.79	33.2 Pk	4.8 / 36.5 / 40.6	33.9	H / 1.0 / 100.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 1**
 Test Method: FCC.15.249
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: °C
 Relative Humidity: %
 Air Pressure: kPa

Page: 3 of 3

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	N/A	N/A
6372.79	31.9 Av	4.8 / 36.5 / 40.6	32.6	H / 1.0 / 100.0	N/A	N/A
Noise floor						
5458.24	30.6 Pk	4.9 / 35.8 / 40.1	31.2	H / 1.0 / 100.0	N/A	N/A
5458.24	30.4 Av	4.9 / 35.8 / 40.1	31.1	H / 1.0 / 100.0	N/A	N/A
Noise floor						
4543.69	33.5 Pk	4.4 / 33.6 / 40.7	30.8	H / 1.0 / 100.0	N/A	N/A
4543.69	32.4 Av	4.4 / 33.6 / 40.7	29.7	H / 1.0 / 100.0	N/A	N/A
Noise floor						
3629.14	18.7 Pk	4.0 / 33.2 / 0.0	55.9	H / 1.0 / 100.0	N/A	N/A
3629.14	14.1 Av	4.0 / 33.2 / 0.0	51.3	H / 1.0 / 100.0	N/A	N/A
Noise floor						
2729.14	17.9 Pk	3.3 / 31.0 / 0.0	52.2	H / 1.0 / 100.0	N/A	N/A
2729.14	14.5 Av	3.3 / 31.0 / 0.0	48.8	H / 1.0 / 100.0	N/A	N/A
Noise floor						
1829.14	18.6 Pk	2.6 / 28.4 / 0.0	49.5	H / 1.0 / 100.0	N/A	N/A
1829.14	15.2 Av	2.6 / 28.4 / 0.0	46.2	H / 1.3 / 74.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 1**
 Test Method: FCC.15.249
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: °C
 Relative Humidity: %
 Air Pressure: kPa

Page: 4 of 4

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	N/A	N/A
***** Measurement Summary *****						
914.55	68.0 Pk	1.8 / 22.9 / 0.0	92.7	V / 1.0 / 27.0	N/A	N/A
1829.14	19.9 Pk	2.6 / 28.4 / 0.0	50.9	V / 1.0 / 100.0	N/A	N/A
2729.14	17.9 Pk	3.3 / 31.0 / 0.0	52.2	H / 1.0 / 100.0	N/A	N/A
3629.14	18.7 Pk	4.0 / 33.2 / 0.0	55.9	H / 1.0 / 100.0	N/A	N/A
4543.69	33.5 Pk	4.4 / 33.6 / 40.7	30.8	H / 1.0 / 100.0	N/A	N/A
5458.24	31.1 Pk	4.9 / 35.8 / 40.1	31.7	V / 1.0 / 100.0	N/A	N/A
6372.79	33.2 Pk	4.8 / 36.5 / 40.6	33.9	H / 1.0 / 100.0	N/A	N/A
7287.34	31.2 Av	5.4 / 37.5 / 40.7	33.5	H / 1.0 / 100.0	N/A	N/A
8201.89	40.6 Pk	5.9 / 37.8 / 48.4	35.8	V / 1.0 / 100.0	N/A	N/A
9116.44	41.1 Pk	6.2 / 39.6 / 50.1	37.0	V / 1.0 / 100.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 02**
 Test Method: FCC Part 15
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: 19 °C
 Relative Humidity: 34 %
 Air Pressure: 80 kPa
 Page: 1 of 1

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) FCC B (> 1GHz)
No emissions found: 0 Deg, horizontal						
No emissions found: 90 Deg, horizontal						
No emissions found: 180 Deg, horizontal						
No emissions found: 270 Deg, horizontal						
No emissions found: 0 Deg, vertical						
No emissions found: 90 Deg, vertical						
No emissions found: 180 Deg, vertical						
No emissions found: 270 Deg, vertical						
No emissions found 1- 4 GHz, vertical or horizontal						
4572.51	37.0 Av	4.4 / 33.7 / 40.7	34.4	V / 1.0 / 0.0	N/A	-19.6
4572.81	37.7 Av	4.4 / 33.7 / 40.7	35.2	V / 1.0 / 0.0	N/A	-18.8
No higher emissions found: 90 Deg, vertical						
No higher emissions found: 180 Deg, vertical						
No higher emissions found: 270 Deg, vertical						

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Radiated Electromagnetic Emissions



Test Report #:	BC204924 Run 02	Test Area:	Pinewood Site 1 (3m)	Temperature:	19	°C								
Test Method:	FCC Part 15	Test Date:	20-Sep-2002	Relative Humidity:	34	%								
EUT Model #:	TX:GTI200209-001T, Contoler:GTI200209-001C	EUT Power:	120 VAC 60 Hz	Air Pressure:	80	kPa								
EUT Serial #:	001	Page: 2 of 2												
Manufacturer:	GameTech	<table border="1"> <thead> <tr> <th colspan="2">Level Key</th> </tr> </thead> <tbody> <tr> <td>Pk – Peak</td> <td>Nb – Narrow Band</td> </tr> <tr> <td>Qp – QuasiPeak</td> <td>Bb – Broad Band</td> </tr> <tr> <td>Av - Average</td> <td></td> </tr> </tbody> </table>					Level Key		Pk – Peak	Nb – Narrow Band	Qp – QuasiPeak	Bb – Broad Band	Av - Average	
Level Key														
Pk – Peak	Nb – Narrow Band													
Qp – QuasiPeak	Bb – Broad Band													
Av - Average														
EUT Description:	900 MHz Single frequency RF System													
Notes:														

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC B (< 1GHz)	FCC B (> 1GHz)
The following was maximized between 4 - 8 GHz, vertical						
4572.81	41.3 Av	4.4 / 33.7 / 40.7	38.8	V / 1.0 / 350.0	N/A	-15.2
No higher emissions found: 0 Deg, horizontal						
No higher emissions found: 90 Deg, horizontal						
No higher emissions found: 180 Deg, horizontal						
No higher emissions found: 270 Deg, horizontal						
No emissions found: 8 - 10 GHz, horizontal						
Rotated table 360 Deg.						
No emissions found: 8 - 10 GHz, vertical						
Rotated table 360 Deg.						
914.54	60.1 Qp	1.8 / 22.9 / 0.0	84.8	H / 1.5 / 0.0	38.8 *	N/A
914.54 MHz is the transmit frequency and was deleted from the summary.						
No other emissions found: 0 Deg, horizontal						
No emissions found: 90 Deg, horizontal						
No emissions found: 180 Deg, horizontal						

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Radiated Electromagnetic Emissions



Test Report #:	BC204924 Run 02	Test Area:	Pinewood Site 1 (3m)	Temperature:	19	°C
Test Method:	FCC Part 15	Test Date:	20-Sep-2002	Relative Humidity:	34	%
EUT Model #:	TX:GTI200209-001T, Contoler:GTI200209-001C	EUT Power:	120 VAC 60 Hz	Air Pressure:	80	kPa
EUT Serial #:	001	Page: 3 of 3				
Manufacturer:	GameTech					
EUT Description:	900 MHz Single frequency RF System					
Notes:						

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC B (< 1GHz)	FCC B (> 1GHz)
No emissions found: 270 Deg, horizontal						
444.67	14.6 Qp	1.2 / 16.2 / 0.0	32.0	V / 1.0 / 0.0	-14.0	N/A
914.55	65.8 Qp	1.8 / 22.9 / 0.0	90.5	V / 1.0 / 0.0	44.5 *	N/A
914.55 MHz is the transmit frequency and was deleted from the summary.						
No higher emissions found: 90 Deg, vertical						
No higher emissions found: 180 Deg, vertical						
No higher emissions found: 270 Deg, vertical						
The following was maximized between 200 and 1000 mhz, VERTICAL						
444.67	16.4 Qp	1.2 / 16.2 / 0.0	33.8	V / 1.0 / 0.0	-12.2	N/A
The following are noise floor readings between 200 and 1000 MHz.						
200.00	9.6 Qp	0.8 / 11.4 / 0.0	21.7	V / 1.0 / 0.0	-21.8	N/A
240.00	10.4 Qp	0.8 / 11.3 / 0.0	22.5	V / 1.0 / 0.0	-23.5	N/A
378.75	9.2 Qp	1.1 / 15.0 / 0.0	25.3	V / 1.0 / 0.0	-20.7	N/A
558.25	9.6 Qp	1.4 / 18.2 / 0.0	29.2	V / 1.0 / 0.0	-16.8	N/A
663.75	10.0 Qp	1.5 / 20.9 / 0.0	32.3	V / 1.0 / 0.0	-13.7	N/A
956.25	10.3 Qp	1.8 / 23.8 / 0.0	36.0	V / 1.0 / 0.0	-10.0	N/A
30.02	29.6 Qp	0.2 / 13.7 / 22.4	21.1	V / 1.0 / 0.0	-18.9	N/A
41.23	34.4 Qp	0.3 / 12.3 / 22.4	24.6	V / 1.0 / 0.0	-15.4	N/A

Tested by: Dan Dillon

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 02**
 Test Method: FCC Part 15
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: 19 °C
 Relative Humidity: 34 %
 Air Pressure: 80 kPa
 Page: 4 of 4

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV/m)	(m) (DEG)	FCC B (< 1GHz)	FCC B (> 1GHz)
55.45	39.2 Qp	0.3 / 9.9 / 22.1	27.4	V / 1.0 / 0.0	-12.6	N/A
59.86	42.6 Qp	0.4 / 9.1 / 21.9	30.2	V / 1.0 / 0.0	-9.8	N/A
149.69	29.6 Qp	0.7 / 12.5 / 25.3	17.5	V / 1.0 / 0.0	-26.0	N/A
41.23	35.5 Qp	0.3 / 12.3 / 22.4	25.7	V / 1.0 / 90.0	-14.3	N/A
55.45	43.8 Qp	0.3 / 9.9 / 22.1	32.0	V / 1.0 / 90.0	-8.0	N/A
59.86	47.4 Qp	0.4 / 9.1 / 21.9	35.0	V / 1.0 / 90.0	-5.0	N/A
149.69	32.6 Qp	0.7 / 12.5 / 25.3	20.5	V / 1.0 / 90.0	-23.0	N/A
41.23	36.6 Qp	0.3 / 12.3 / 22.4	26.8	V / 1.0 / 180.0	-13.2	N/A
149.69	34.1 Qp	0.7 / 12.5 / 25.3	22.0	V / 1.0 / 180.0	-21.5	N/A
58.62	35.1 Qp	0.4 / 9.3 / 22.0	22.8	V / 1.0 / 180.0	-17.2	N/A
119.95	33.8 Qp	0.6 / 11.7 / 23.6	22.5	V / 1.0 / 180.0	-21.0	N/A
58.62	36.0 Qp	0.4 / 9.3 / 22.0	23.7	V / 1.0 / 270.0	-16.3	N/A
The following were maximized between 30 and 200 MHz, vertical						
55.45	45.0 Qp	0.3 / 9.9 / 22.1	33.2	V / 1.0 / 20.0	-6.8	N/A
59.87	46.7 Qp	0.4 / 9.1 / 21.9	34.3	V / 1.0 / 76.0	-5.7	N/A
149.69	28.4 Qp	0.7 / 12.5 / 25.3	16.2	H / 1.5 / 0.0	-27.3	N/A
199.96	26.7 Qp	0.7 / 13.7 / 28.1	13.0	H / 1.5 / 0.0	-30.5	N/A
55.45	28.0 Qp	0.3 / 9.9 / 22.1	16.2	H / 1.5 / 90.0	-23.8	N/A
59.86	31.0 Qp	0.4 / 9.1 / 21.9	18.5	H / 1.5 / 90.0	-21.5	N/A
119.95	28.7 Qp	0.6 / 11.7 / 23.6	17.4	H / 1.5 / 90.0	-26.1	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC204924 Run 02**
 Test Method: FCC Part 15
 EUT Model #: TX:GTI200209-001T,
 Contoler:GTI200209-001C
 EUT Serial #: 001
 Manufacturer: GameTech
 EUT Description: 900 MHz Single frequency RF System
 Notes:

Test Area: Pinewood Site 1 (3m)
 Test Date: 20-Sep-2002
 EUT Power: 120 VAC 60 Hz

Temperature: 19 °C
 Relative Humidity: 34 %
 Air Pressure: 80 kPa
 Page: 5 of 5

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC B (< 1GHz)	FCC B (> 1GHz)
149.69	29.9 Qp	0.7 / 12.5 / 25.3	17.8	H / 1.5 / 90.0	-25.7	N/A
aNo higher emissions found: 180 Deg, horizontal						
119.95	32.5 Qp	0.6 / 11.7 / 23.6	21.2	H / 1.5 / 270.0	-22.3	N/A
149.69	28.6 Qp	0.7 / 12.5 / 25.3	16.5	H / 1.5 / 270.0	-27.0	N/A
No emissions found within 15 dB of the limit, nothing maximized						
30 - 200 MHz, horizontal						

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Radiated Electromagnetic Emissions



Test Report #:	BC204924 Run 02	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15	Test Date:	20-Sep-2002
EUT Model #:	TX:GTI200209-001T, Contoler:GTI200209-001C	EUT Power:	120 VAC 60 Hz
EUT Serial #:	001		
Manufacturer:	GameTech		
EUT Description:	900 MHz Single frequency RF System		
Notes:			

Temperature: 19 °C
 Relative Humidity: 34 %
 Air Pressure: 80 kPa
 Page: 6 of 6

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	FCC B (< 1GHz)	FCC B (> 1GHz)
***** Measurement Summary *****						
59.86	47.4 Qp	0.4 / 9.1 / 21.9	35.0	V / 1.0 / 90.0	-5.0	N/A
55.45	45.0 Qp	0.3 / 9.9 / 22.1	33.2	V / 1.0 / 20.0	-6.8	N/A
956.25	10.3 Qp	1.8 / 23.8 / 0.0	36.0	V / 1.0 / 0.0	-10.0	N/A
444.67	16.4 Qp	1.2 / 16.2 / 0.0	33.8	V / 1.0 / 0.0	-12.2	N/A
41.23	36.6 Qp	0.3 / 12.3 / 22.4	26.8	V / 1.0 / 180.0	-13.2	N/A
663.75	10.0 Qp	1.5 / 20.9 / 0.0	32.3	V / 1.0 / 0.0	-13.7	N/A
4572.81	41.3 Av	4.4 / 33.7 / 40.7	38.8	V / 1.0 / 350.0	N/A	-15.2
58.62	36.0 Qp	0.4 / 9.3 / 22.0	23.7	V / 1.0 / 270.0	-16.3	N/A
558.25	9.6 Qp	1.4 / 18.2 / 0.0	29.2	V / 1.0 / 0.0	-16.8	N/A
30.02	29.6 Qp	0.2 / 13.7 / 22.4	21.1	V / 1.0 / 0.0	-18.9	N/A
378.75	9.2 Qp	1.1 / 15.0 / 0.0	25.3	V / 1.0 / 0.0	-20.7	N/A
119.95	33.8 Qp	0.6 / 11.7 / 23.6	22.5	V / 1.0 / 180.0	-21.0	N/A
149.69	34.1 Qp	0.7 / 12.5 / 25.3	22.0	V / 1.0 / 180.0	-21.5	N/A
200.00	9.6 Qp	0.8 / 11.4 / 0.0	21.7	V / 1.0 / 0.0	-21.8	N/A
240.00	10.4 Qp	0.8 / 11.3 / 0.0	22.5	V / 1.0 / 0.0	-23.5	N/A

Tested by: Dan Dillon

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Equipment Report

20-Sep-2002

Project Number: BC204924

Project Date: 20-Sep-2002

Company Name: Gametech

Equip ID	Manufacturer	Model Number	Serial Number	Description	Date	Calibration Interval	Due	Cal Code
<u>Test Performed C</u>		<u>Conducted Emissions</u>						
7508	SOLAR	8028-50-TS-24-BNC	8305121	LISN	08-May-2002	12	08-May-2003	B
7509	SOLAR	8028-50-TS-24-BNC	8305122	LISN (10 kHz - 30 MHz)	08-May-2002	12	08-May-2003	B
8184	RHODE & SCHWARZ	ESH2-Z5	830364/002	LISN 50 ohm/50uH 3 line (1kHz - 30 MHz)	23-Apr-2002	12	23-Apr-2003	B
8191	RHODE & SCHWARTZ	ESHS 30	842806/001	EMI Test Receiver	21-Mar-2002	12	21-Mar-2003	G
<u>Test Performed R</u>		<u>Radiated Emissions</u>						
7637	MITEQ	AM-2A-000110-N	848495	Amplifier		0		Y
8040	HEWLETT PACKARD	8594E	3223A00145	Spectrum Analyzer	31-Jan-2002	12	31-Jan-2003	G
8207	AVANTEK	AWT-18037	1002	RF Pre-Amplifier (8-18 GHz)	16-Apr-2002	12	16-Apr-2003	B
8208	AVANTEK	AFT97-8434-10F	1007	RF Pre-Amplifier (4-8 GHz)	16-Apr-2002	12	16-Apr-2003	B
8264	EMCO	3115	9205-3886	Horn Antenna	01-Aug-2002	12	01-Aug-2003	G

Cal Code Legend: G=Out Source, Y=No Cal required, R=Out of Service, B=In-House Verification Required 1 of 1

Appendix B

Test Plan
and
Constructional Data Form
To be supplied by customer

Appendix C

Measurement Protocol

And

Test Procedures

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4 & CNS13438.

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 it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the applicable limit.

To convert between dBμV and μV, the following conversions apply:

- $\text{dB}\mu\text{V} = 20(\log \mu\text{V})$
- $\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$

RADIATED EMISSIONS

The final level, expressed in dBμV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBμV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the applicable limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B. The amplifier gain is automatically accounted for by using an analyzer offset.

Example: At a Test Frequency of 30 MHz, with a peak reading on the spectrum analyzer or measuring receiver of 14 dBmV:

Measured Level	+	Transducer & Cable Loss factor	=	Corrected Reading	Specification Limit	-	Corrected Reading	=	Delta Specification
(dBμV)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
14.0		14.9		28.9	40.0		28.9		-11.1

DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-1992 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω /50 μ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 22GHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. 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, 10 or 30 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.

