Electromagnetic Compatibility Test Report

Tests Performed on a GameTraks

Electronic Game Call, Model 100-100

Radiometrics Document RP-6222

ACCREDITED
Certification # 1495.01

Product Detail:
FCC ID:V3BGTS100-101
IC ID: 7608A-30MGTS100
Equipment type: 908 to 921 MHz Frequency Hopping Transmitter

Test Standards:
US CFR Title 47, Chapter I, FCC Part 15 Subpart C
FCC Part 15 CFR Title 47: 2007
Industry Canada RSS-210, Issue 6 as required for Category I Equipment

This report concerns: Original Grant for Certification

Tests Performed For:	*Test Facility:*
GameTraks, Inc. 609 Deerpath Sturtevant, WI 53177	**Radiometrics Midwest Corporation** 12 East Devonwood Romeoville, IL 60446

Document RP-6222 Revisions:

Rev.	Issue Date	Affected Pages	Revised By
0	March 20, 2008		
1	April 8, 2008	17, 18	Joseph Strzelecki

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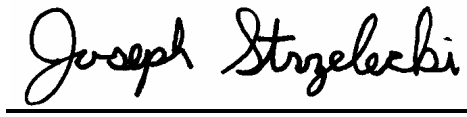
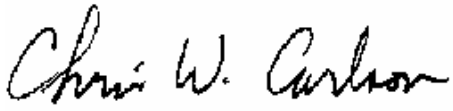
1 ADMINISTRATIVE DATA

Equipment Under Test: A GameTraks, Game Call Model: 100-100 Serial Number: This will be referred to as the EUT in this Report	
Date EUT Received at Radiometrics: (Month-Day-Year) January 3, 2008	*Test Date(s): (Month-Day-Year)* January 3 thru March 4, 2008
Test Report Written By: Joseph Strzelecki Senior EMC Engineer	*Test were not Witnessed by Personnel from:* GameTraks, Inc.
Radiometrics' Personnel Responsible for Test:  Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	*Test Report Approved By*  Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is an electronic game call, Model 100-100, manufactured by GameTraks. The product consists of a handheld remote and a speaker. Both use the same RF circuitry. The detailed test results are presented in a separate section.

The following tests results apply to both transceivers: the Handheld remote and speaker.

Emissions Tests Results

Environmental Phenomena	Frequency Range	Basic Standard	Test Result
RF Radiated Emissions	30-9300 MHz	RSS-210 & FCC Part 15	Pass
Occupied Bandwidth Test	Fundamental Freq.	RSS-210 & FCC Part 15	Pass

AC conducted emissions are not presented herein since the EUT is designed not to transmit while charging.

Spread Spectrum Transmitter Requirements

Environmental Phenomena	Frequency Range	FCC Section	RSS-210 Section	Test Result
Carrier Frequency Separation	902-928 MHz	15.247 a	6.2.2 (o) (a)	Pass
Number of Hopping Frequencies	902-928 MHz	15.247 a	6.2.2 (o) (a)	Pass
Time of Occupancy (Dwell Time)	902-928 MHz	15.247 a	6.2.2 (o) (a)	Pass
20 dB Bandwidth Test;	902-928 MHz	15.247 a	6.2.2 (o) (a)	Pass
Peak Output Power	902-928 MHz	15.247 b	6.2.2 (o) (a)	Pass
Spurious Radiated Emissions	30-9300 MHz	15.247 c	6.2.2 (o) (a)	Pass

Since there is no antenna connector on either EUT, radiated tests were performed to show compliance with the conducted requirements in the above table.

3 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is an electronic game call, Model 100-100, manufactured by GameTraks. The EUT was in good working condition during the tests, with no known defects.

3.2 Related Submittals

GameTraks, Inc. is not submitting any other products simultaneously for equipment authorization related to the EUT.

4 TESTED SYSTEM DETAILS

4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

The EUT was tested as a stand-alone device.

Power was supplied at 115 VAC, 60 Hz single-phase to its external power supply.

The identification for all equipment, plus descriptions of all cables used in the tested system, are:

Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	Electronic Game Call System	E	GameTraks	100-100	None
2	Hand held	E	GameTraks	100-100H	None
3	Speaker	E	GameTraks	100-201	None

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

No cables were connected to the EUT during testing, since the system does not transmit while charging.

4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC CFR Title 47	2007	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2003	2003	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
IC RSS-Gen Issue 2	2007	General Requirements and Information for the Certification of Radiocommunication Equipment (RSS-Gen)
IC RSS-210 Issue 7	2007	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands)

The test procedures used are in accordance with the Industry Canada RSS-212 and ANSI document C63.4-2003, "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois:

Chamber A: Is an anechoic chamber that measures 24' L X 12' W X 12' H. The walls and ceiling are fully lined with ferrite absorber tiles. The floor has a 10' x 10' section of ferrite absorber tiles located in the center. Panashield of Rowayton, Connecticut manufactured the chamber. The enclosure is NAMAS certified.

Chamber B: Is a shielded enclosure that measures 24' L X 12' W X 8' H. Erik A. Lindgren & Associates of Chicago, Illinois manufactured the enclosure.

Chamber C: Is a shielded enclosure that measures 20' L X 10' W X 8' H. Lindgren RF Enclosures Inc. of Addison, Illinois manufactured the enclosure.

Chamber D: Is a fully anechoic chamber that measures 22' L X 10' W X 10' H. The walls, ceiling and floor are fully lined with ferrite absorber tiles. Braden Shielding Systems of Tulsa, Oklahoma manufactured the chamber.

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

Open Area Test Site (OATS): Is located on 8625 Helmar Road in Newark, Illinois, USA and measures 56' L X 24' W X 17' H. The entire open field test site has a metal ground screen. The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as file number IC3124.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

Because the EUT is battery powered and cannot be operated while charging, Conducted Emissions tests were not performed

8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

9 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	RMC/Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	01/30/08
AMP-22	Anritsu	Pre-amplifier	MH648A	M23969	0.1-1200MHz	12 Mo.	02/04/08
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	10/24/06
ANT-44	Impossible Machine	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	12/26/07
HPF-01	Solar	High Pass Filter	7930-100	HPF-1	0.15-30MHz	24 Mo.	10/04/07
HPF-04	Mini-Circuits	High Pass Filter	VHP-36	HPF-04	2-10 GHz	12 Mo.	02/08/07
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	05/03/07
LSN-03	Farnell	50 uH LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	05/03/07
REC-01	Hewlett Packard	Spectrum Analyzer	8566A	2106A02115, 2209A01349	30Hz-22GHz	12 Mo.	10/18/07
REC-07	Anritsu	Spectrum Analyzer	MS2601A	MT53067	0.01-2200MHz	12 Mo.	01/11/08
REC-08	Hewlett Packard	Spectrum Analyzer	8566B	2648A13481 2209A01436	30Hz-22GHz	12 Mo.	07/31/07
THM-01	Extech Inst.	Temp/Humid Meter	4465CF	001106557	N/A	24 Mo.	03/31/06

Note: All calibrated equipment is subject to periodic checks.

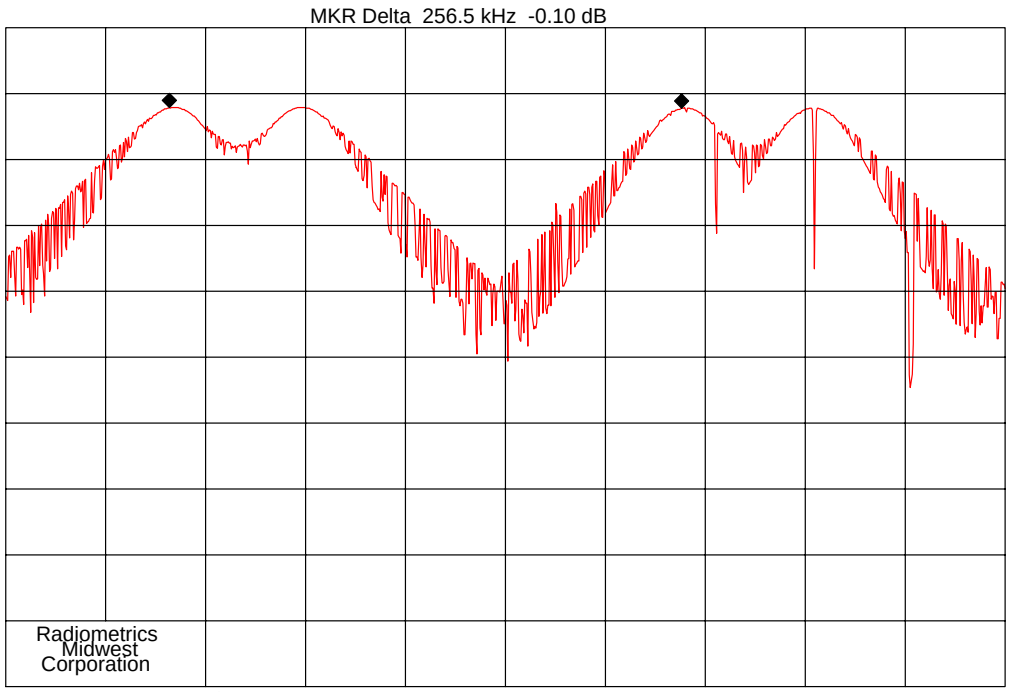
10 TEST SECTIONS

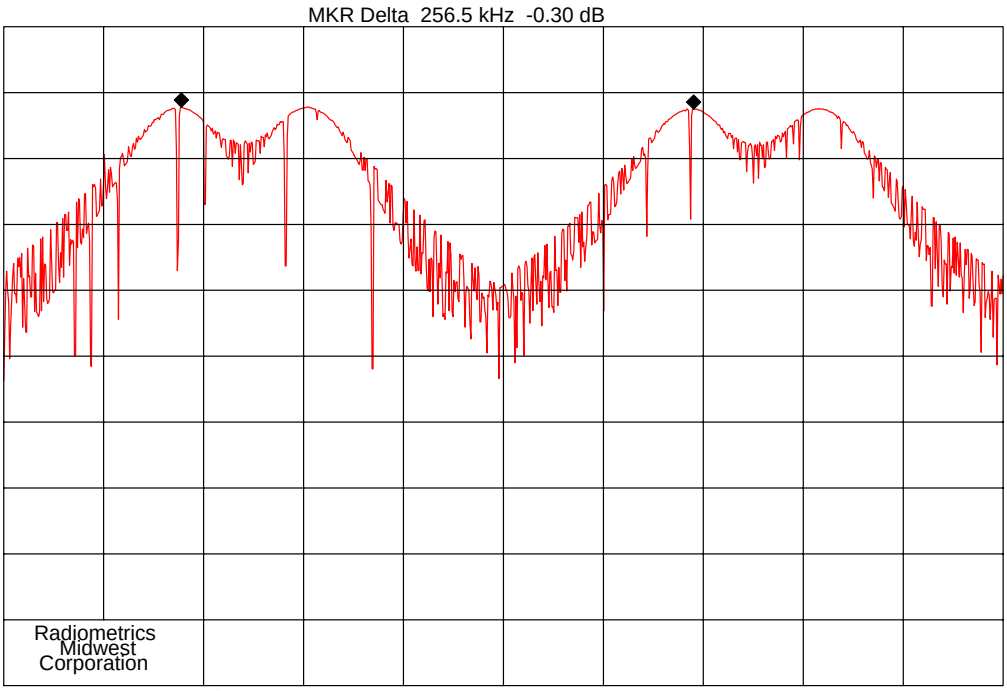
10.1 AC Conducted Emissions; Section RSS 210

Because the EUT is battery powered and cannot be operated while charging, Conducted Emissions tests were not performed

10.2 Carrier Frequency Separation

The EUT has its hopping function enabled. The spectrum analyzer was set to the MAX HOLD mode to read peak emissions. The sweep was set to AUTO. The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

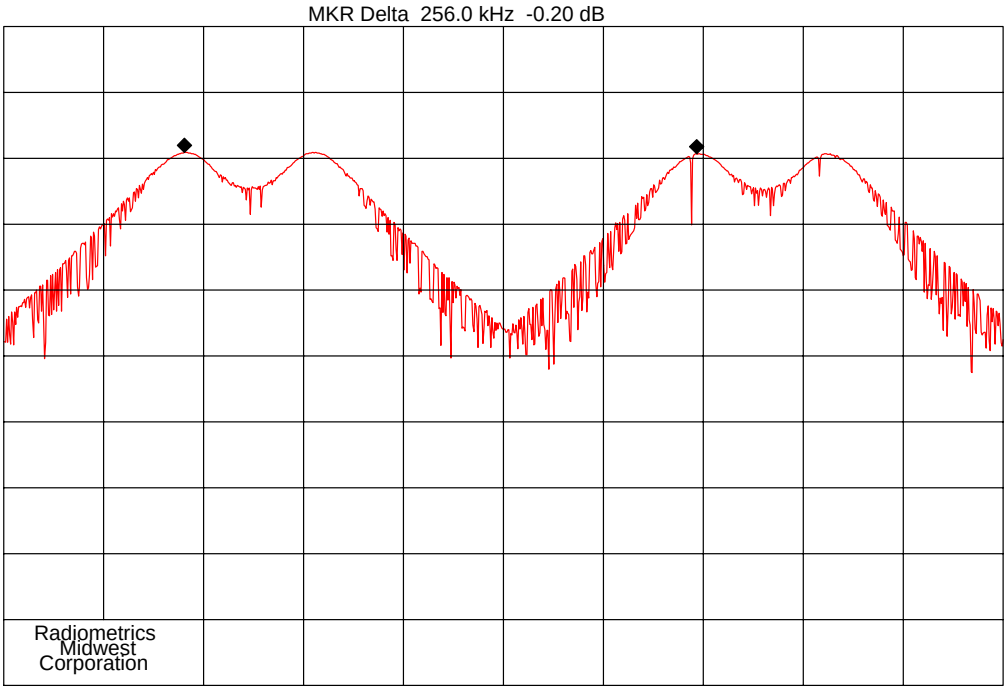




COMPANY : GameTraks
CENTER 915.010 MHz
RES BW 30 kHz
10 dB/
NOTES : Carrier Freq. Separation, Mid Band

ITEM : Remote
REF 0.0 dBm
VBW 100 kHz
TIME : 16:58

DATE : 03-04-2008
SPAN 500 kHz
ATTEN 10 dB
SWP 20.0 msec



COMPANY : GameTraks
CENTER 920.651 MHz
RES BW 30 kHz
10 dB/
NOTES : Carrier Freq. Separation, Upper band

ITEM : Remote
REF 0.0 dBm
VBW 100 kHz
TIME : 17:02

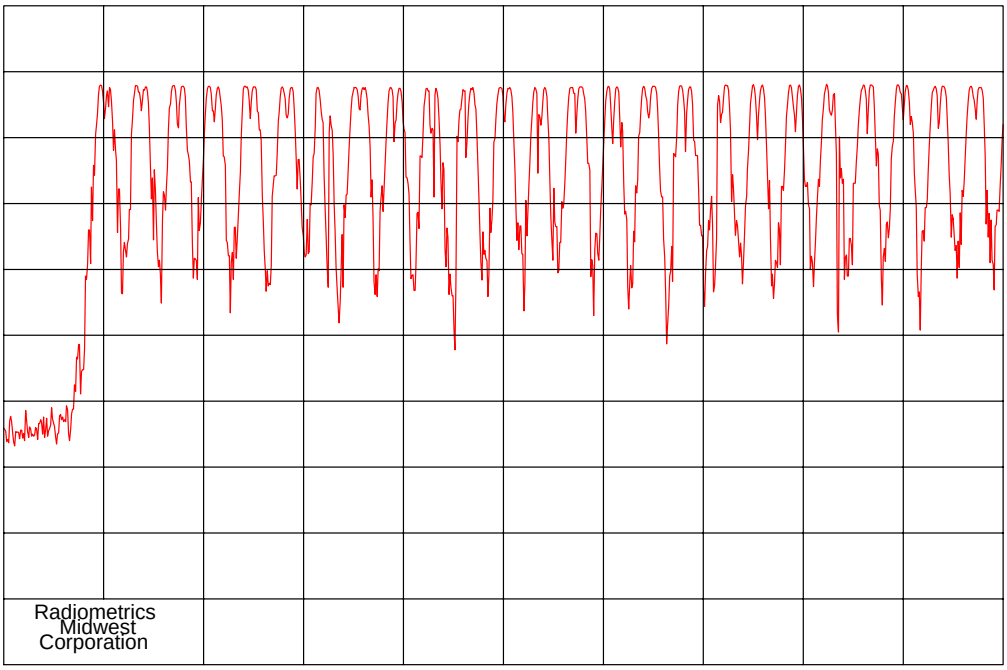
DATE : 03-04-2008
SPAN 499 kHz
ATTEN 10 dB
SWP 20.0 msec

The separation must be at least 25kHz or 20 dB BW, whichever is greater. Therefore it must be at least 127.5 kHz. Since the separation is 256.5 kHz, it complies with the speficiation.

Judgement: Pass

10.3 Number of Hopping Frequencies

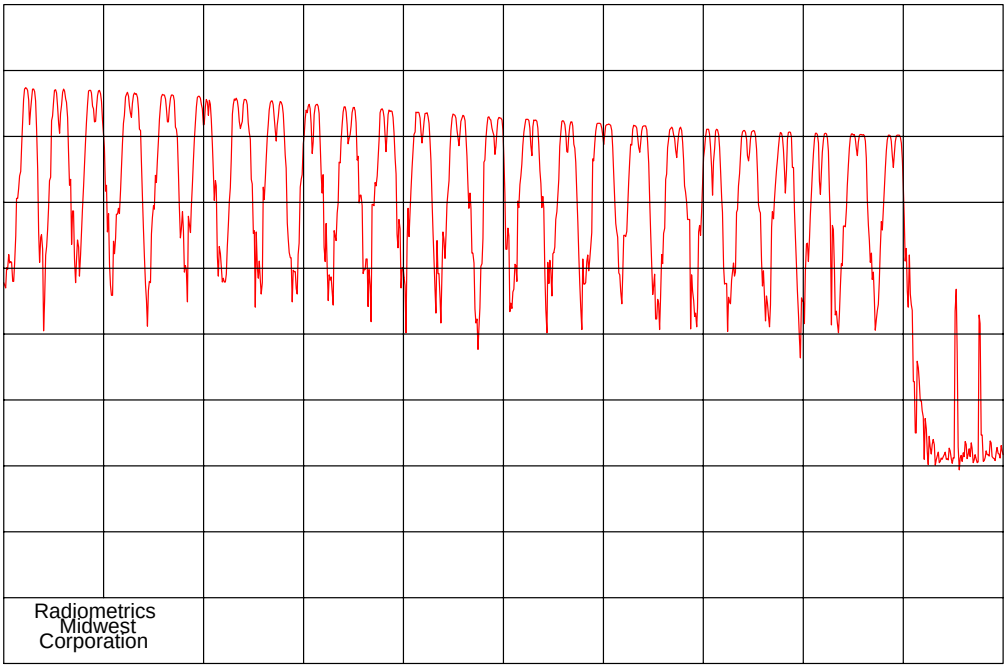
The EUT has its hopping function enabled. The spectrum analyzer was set to the MAX HOLD mode to read peak emissions. The sweep was set to AUTO. The trace was allowed to stabilize.



COMPANY : GameTraks
START 908.00 MHz
RES BW 30 kHz
10 dB/
NOTES : Number of Hopping Frequencies, 1st half of band

ITEM : Remote
REF 0.0 dBm
VBW 100 kHz
TIME : 16:34

DATE : 03-04-2008
STOP 915.00 MHz
ATTEN 10 dB
SWP 21.0 msec



COMPANY : GameTraks
START 915.00 MHz
RES BW 30 kHz
10 dB/
NOTES : Number of Hopping Frequencies, 2nd half of band

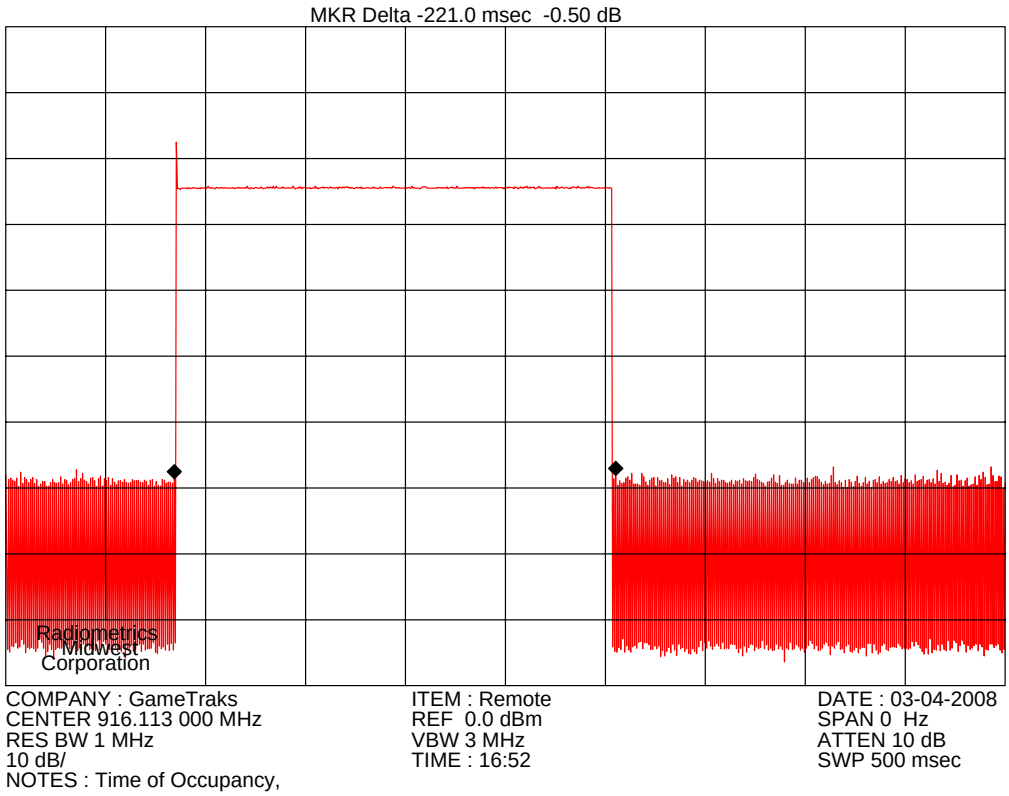
ITEM : Remote
REF 0.0 dBm
VBW 100 kHz
TIME : 16:37

DATE : 03-04-2008
STOP 922.00 MHz
ATTEN 10 dB
SWP 21.0 msec

Total of 50 Channels. Judgment: Pass

10.4 Time of Occupancy (Dwell Time)

The EUT has its hopping function enabled. The spectrum analyzer was set to the MAX HOLD mode to read peak emissions. The span was set to zero. The marker-delta function to determine the dwell time.



Judgment: Pass
The Time of Occupancy was measured to be 221 mSec maximum. The limit is 400 mSec.

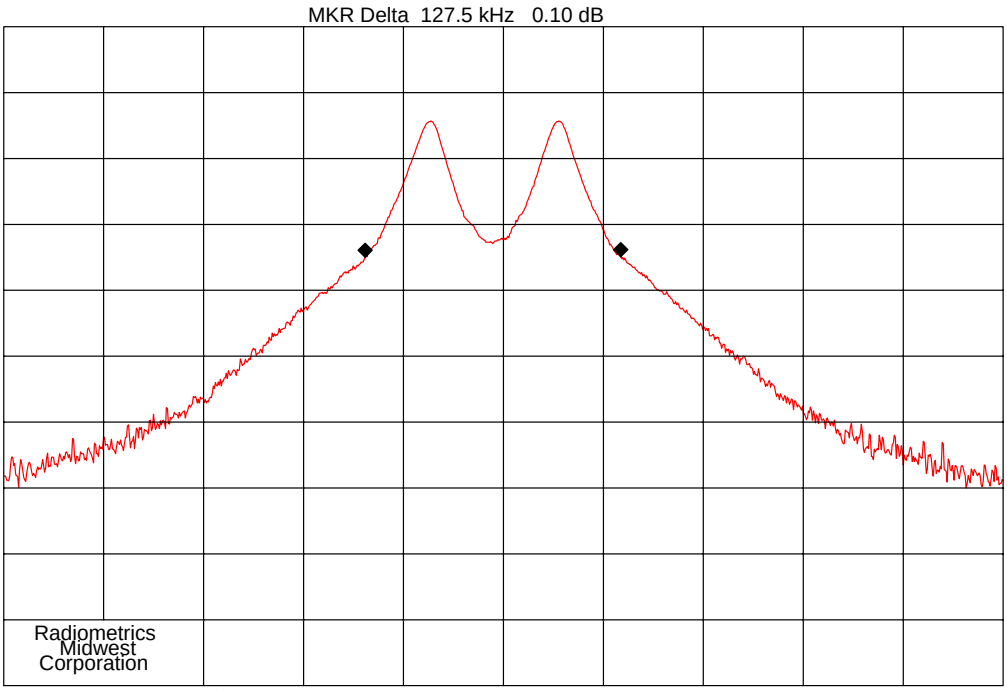
10.5 Occupied Bandwidth (20 dB)

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

Channel Freq. MHz	Remote 20 dB BW kHz	Speaker 20 dB BW kHz
909	127.5	120.5
915	116.5	122.0
921	118.0	123.0

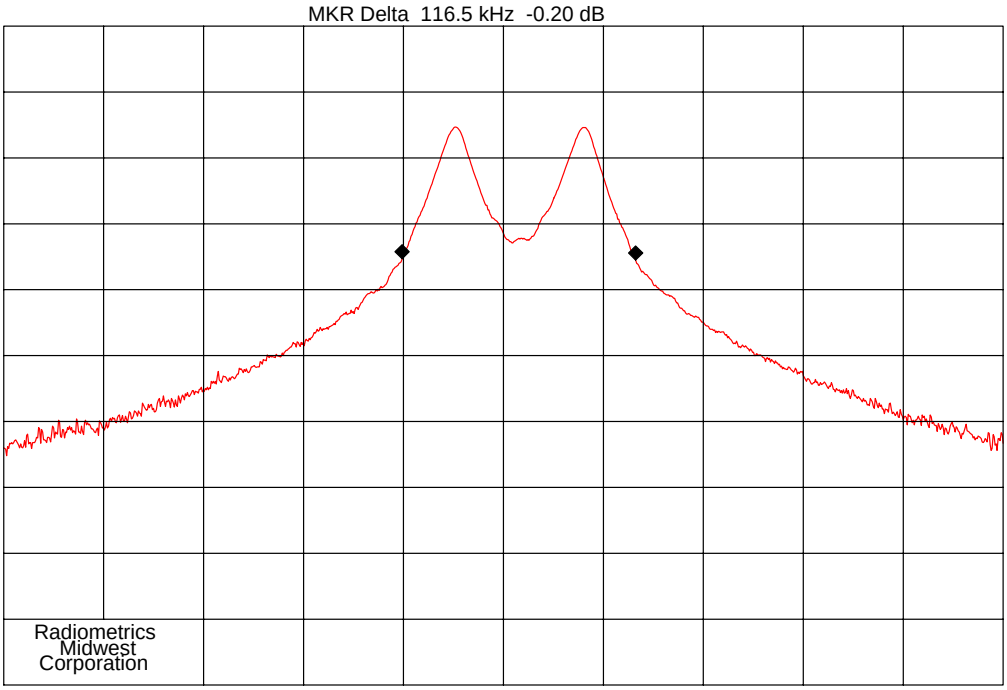
Judgement Pass: All bandwidths are less than 250 kHz.



COMPANY : GameTraks
CENTER 909.000 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Low Channel

ITEM : Remote
REF 0.0 dBm
VBW 30 kHz
TIME : 17:13

DATE : 03-04-2008
SPAN 498 kHz
ATTEN 10 dB
SWP 30.0 msec

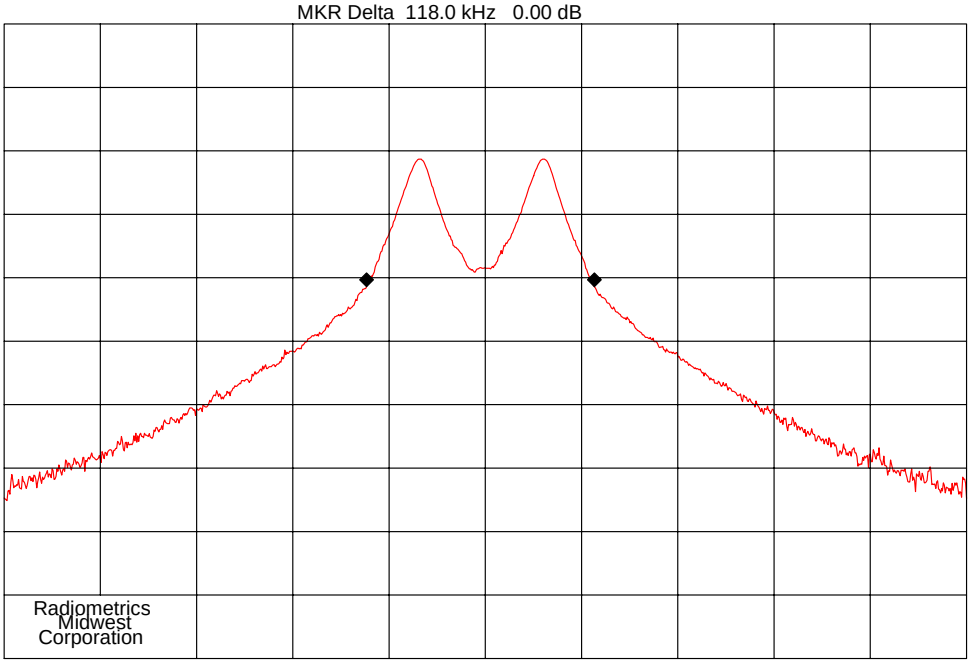


COMPANY : GameTraks
CENTER 915.000 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Middle Channel

ITEM : Remote
REF 0.0 dBm
VBW 30 kHz
TIME : 17:11

DATE : 03-04-2008
SPAN 498 kHz
ATTEN 10 dB
SWP 30.0 msec

MKR Delta 118.0 kHz 0.00 dB

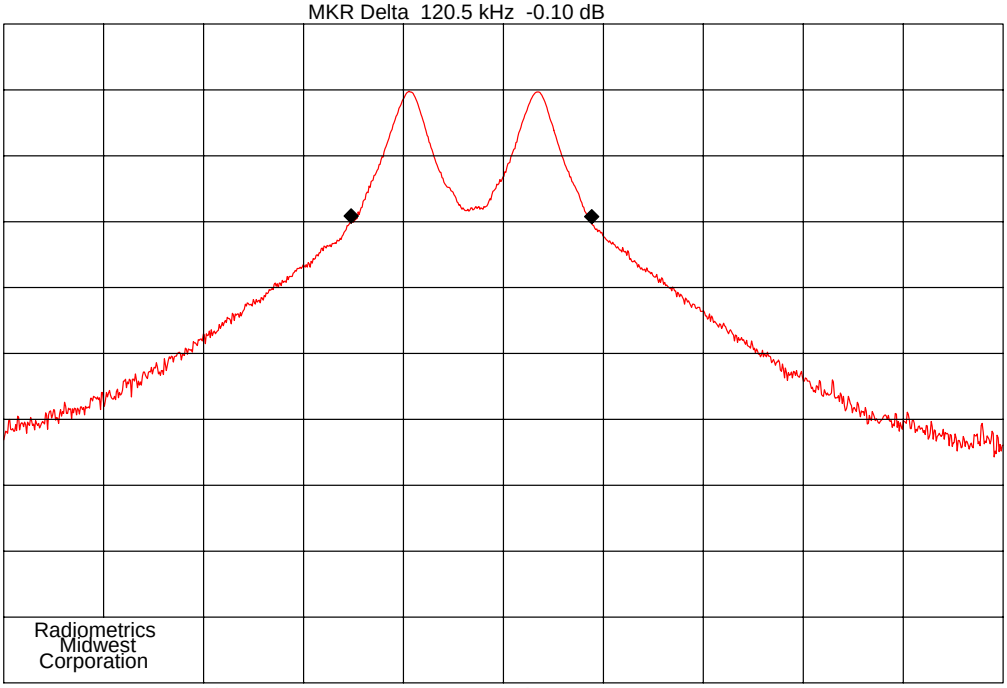


COMPANY : GameTraks
CENTER 921.023 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Upper Channel

ITEM : Remote
REF 0.0 dBm
VBW 30 kHz
TIME : 17:14

DATE : 03-04-2008
SPAN 498 kHz
ATTEN 10 dB
SWP 30.0 msec

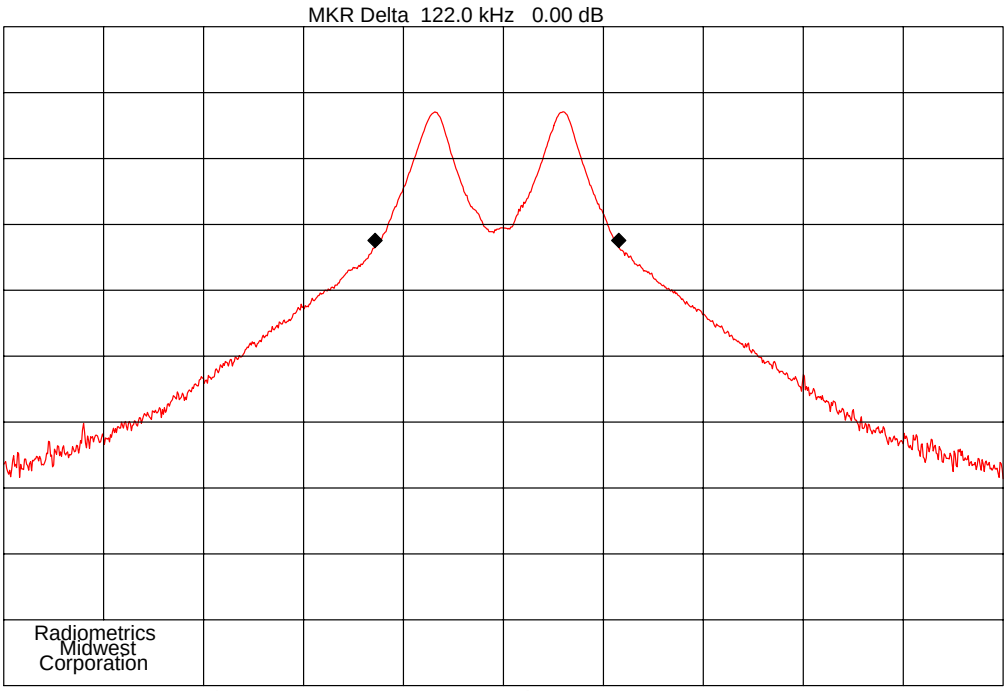
MKR Delta 120.5 kHz -0.10 dB



COMPANY : GameTraks
CENTER 909.000 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Low Channel

ITEM : Speaker
REF 0.0 dBm
VBW 30 kHz
TIME : 16:11

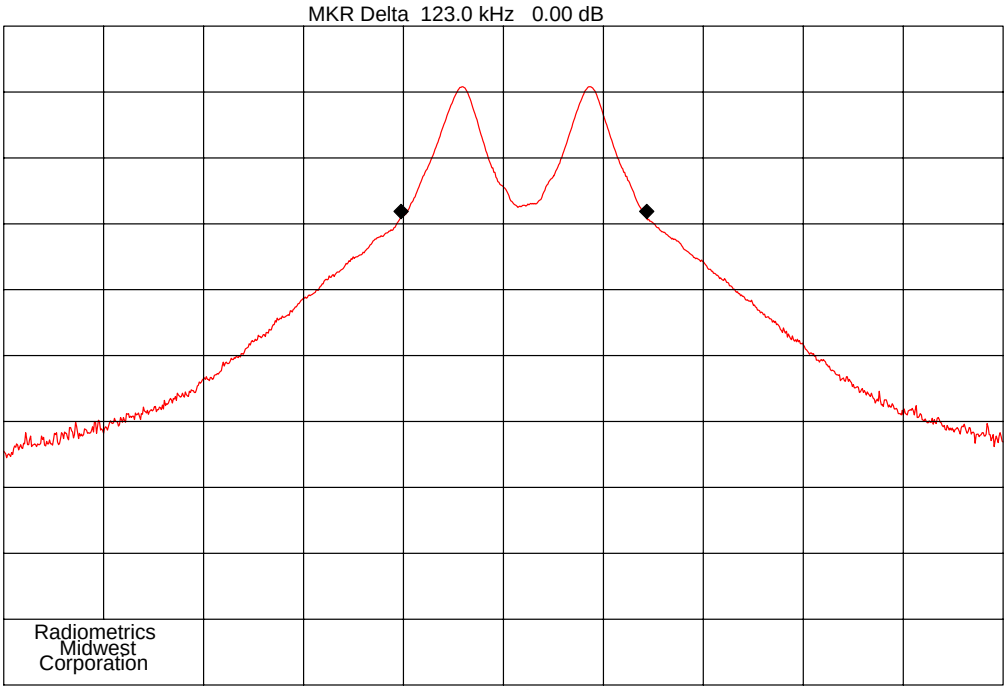
DATE : 03-04-2008
SPAN 500 kHz
ATTEN 10 dB
SWP 30.0 msec



COMPANY : GameTraks
CENTER 915.000 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Middle Channel

ITEM : Speaker
REF 0.0 dBm
VBW 30 kHz
TIME : 16:10

DATE : 03-04-2008
SPAN 500 kHz
ATTEN 10 dB
SWP 30.0 msec



COMPANY : GameTraks
CENTER 921.000 MHz
RES BW 10 kHz
10 dB/
NOTES : Occupied Bandwidth, Upper Channel

ITEM : Speaker
REF 0.0 dBm
VBW 30 kHz
TIME : 16:07

DATE : 03-04-2008
SPAN 500 kHz
ATTEN 10 dB
SWP 30.0 msec

10.6 Peak Output Power

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement. The FCC procedures from power output option 1 was used.

The transmitter's peak power was calculated using the following equation:

P = (E x d)^2 / (30 x G)

Where: E = the measured maximum peak field strength in V/m.
G = The numeric gain of the transmitting antenna over an isotropic radiator.
d = Distance in meters from which the field strength was measured. (3 meters)
P = The EUT power in watts

The field Strength was measured using the procedures described in section 10.9, with the exception of the resolution and video bandwidths. The spectrum analyzer was set to the following settings:

Span = 3 MHz ; RBW = 3 MHz (> the 20 dB bandwidth of the emission being measured)
VBW = 3 MHz; Sweep = auto; Detector function = peak; Trace = max hold

Since the gain of the antenna is always less than 6dB, the limit is not reduced.

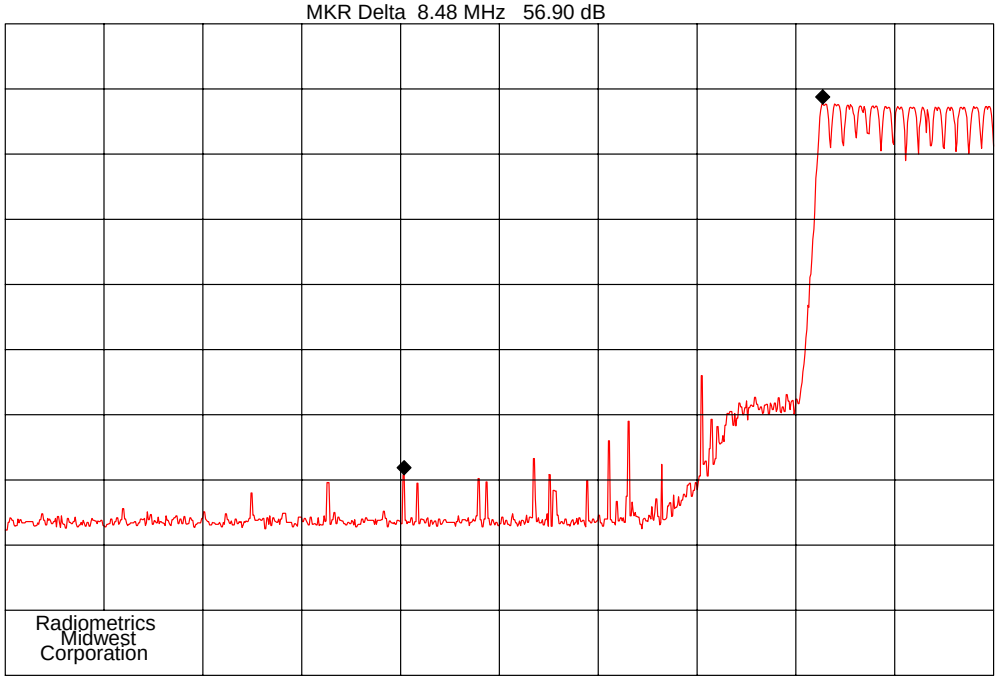
	Freq	Peak Field Strength		Ant gain	Test Distance	Output power from EUT		Limit
EUT	MHz	dBuV/m	V/m	Numeric	Meters	Watts	dBm	dBm
HandHeld	909	98.9	0.0881	1	3	2.33E-03	3.67	30
HandHeld	915	100.9	0.11092	1	3	3.69E-03	5.67	30
HandHeld	921	93.7	0.04842	1	3	7.03E-04	-1.53	30
Speaker	909	97.9	0.07852	1	3	1.85E-03	2.67	30
Speaker	915	98.2	0.08128	1	3	1.98E-03	2.97	30
Speaker	921	95.2	0.05754	1	3	9.93E-04	-0.03	30

Judgment: Pass by 24.33 dB

10.7 Band-edge Compliance of RF Conducted Emissions

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest frequency. The trace was allowed to stabilize.

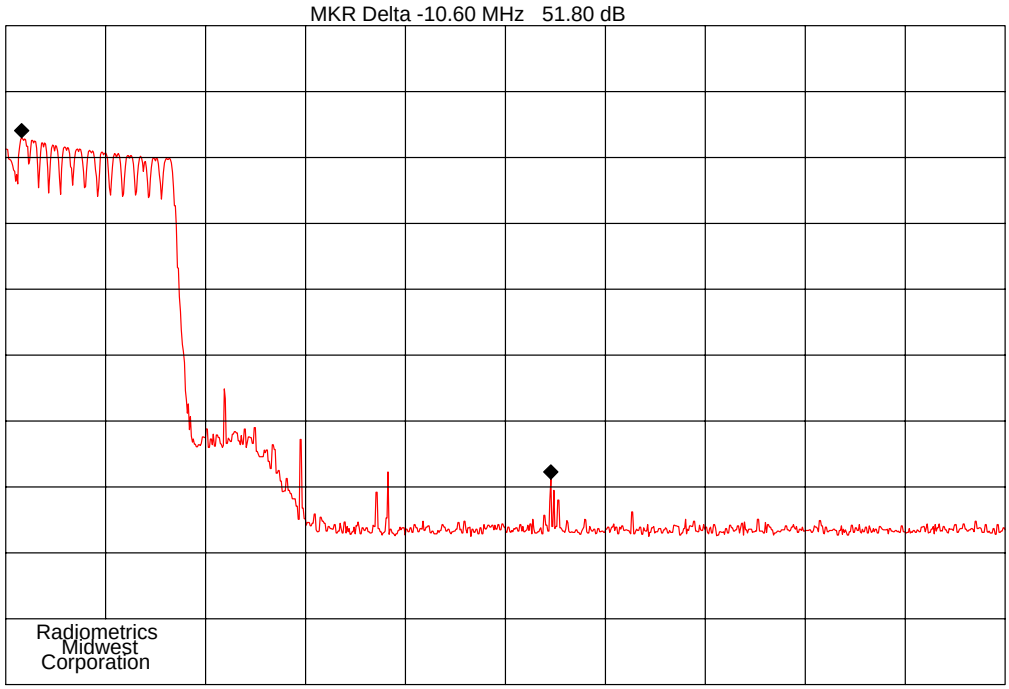
Test Results for Remote



COMPANY : GameTraks
CENTER 902.0 MHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge Test, Lower Band Edge

ITEM : Remote
REF 0.0 dBm
VBW 300 kHz
TIME : 16:25

DATE : 03-04-2008
SPAN 20.0 MHz
ATTEN 10 dB
SWP 20.0 msec

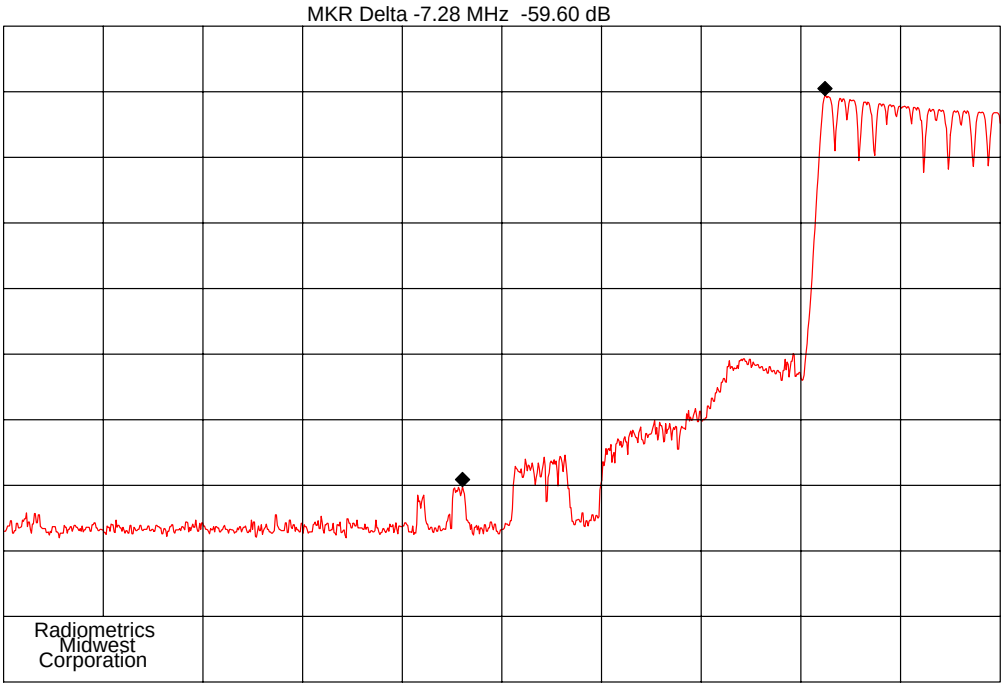


COMPANY : GameTraks
CENTER 928.0 MHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge Test, Upper Band Edge

ITEM : Remote
REF 0.0 dBm
VBW 300 kHz
TIME : 16:30

DATE : 03-04-2008
SPAN 20.0 MHz
ATTEN 10 dB
SWP 20.0 msec

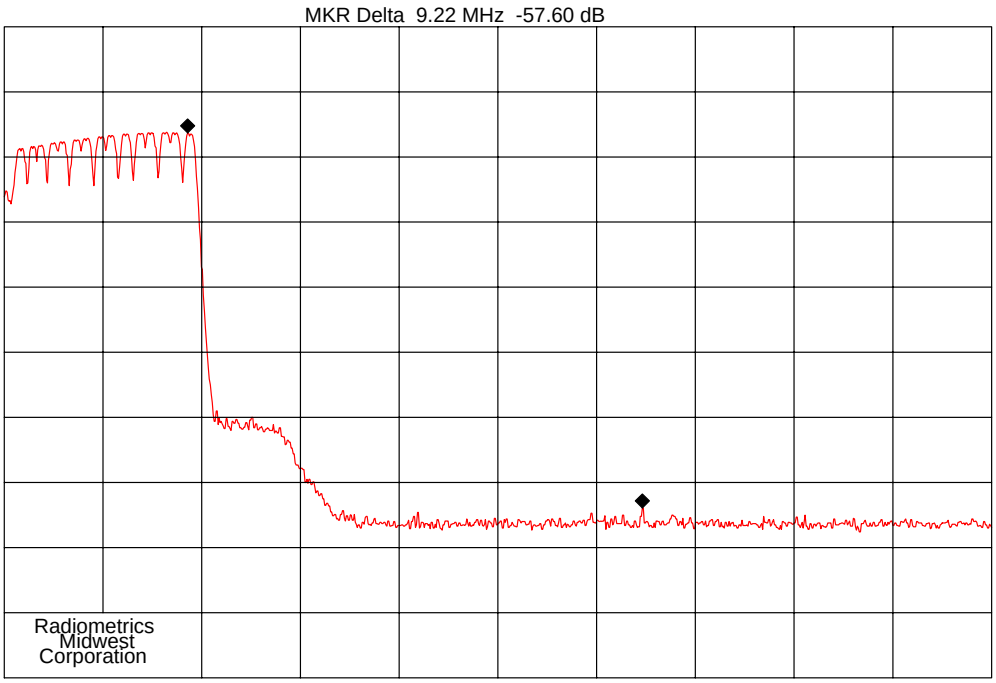
Test Results for Speaker



COMPANY : GameTraks
CENTER 902.0 MHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge Test, Lower band edge

ITEM : Speaker
REF 0.0 dBm
VBW 300 kHz
TIME : 16:57

DATE : 04-08-2008
SPAN 20.0 MHz
ATTEN 10 dB
SWP 20.0 msec



COMPANY : GameTraks
START 918.0 MHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge Test, Upper Band Edge

ITEM : Speaker
REF 0.0 dBm
VBW 300 kHz
TIME : 17:14

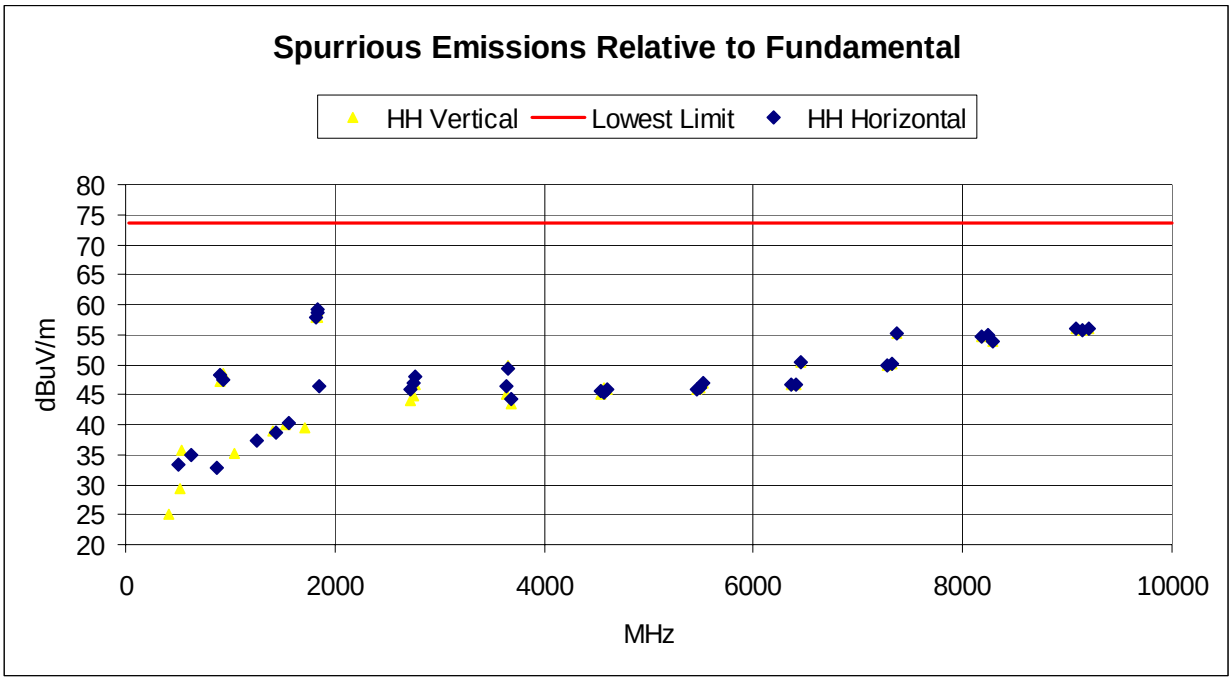
DATE : 04-08-2008
STOP 938.0 MHz
ATTEN 10 dB
SWP 20.0 msec

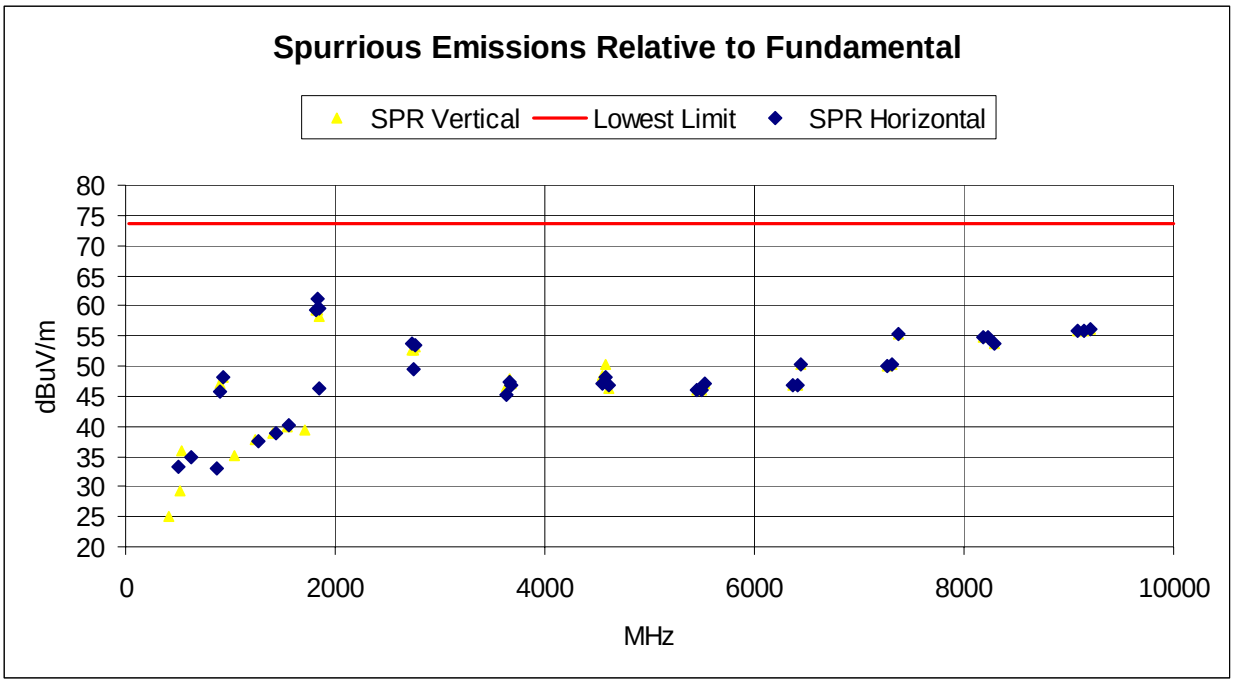
Judgment: Pass by 31.8 dB overall

10.8 Spurious RF Conducted Emissions

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement.

The handheld and the Speaker were both tested in continous mode and peak readings were made from the lowest frequency generated in the EUT up through the 10th harmonic. The limit is 20 dB lower than the peak of the fundamental. For each polarization and fundamental frequency, there is a separate limit. The data is shown graphically and in tabular form.





Judgement: Pass by 11 dB

10.9 Spurious Radiated Emissions (Restricted Band)

Radiated emission measurements in the Restricted bands were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. Below 1 GHz, when a radiated emission is detected approaching the specification limit, the measurement of the emission is repeated using a tuned dipole antenna with a Roberts Balun. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded.

From 30 to 1000 MHz, an Anritsu Spectrum analyzer and a preamplifier with a 10 dB attenuator connected to the input were used. The out of band emissions and the ambient emissions were below the level of input overload (80 dBuV).

For tests from 1 to 10 GHz, an HP8566 spectrum analyzer was used with a preamplifier. The out of band emissions and the ambient emissions were below the level of input overload (72 dBuV). In addition, a high pass filter was used to reduce the fundamental emission.

Final radiated emissions measurements were performed in the open area test site at a test distance of 3 meters. The entire frequency range from 30 to 9300 MHz was slowly scanned and the emissions in the restricted frequency bands were recorded. Measurements were performed using the peak detector function. The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground. The open area test site used to collect the radiated data is located on 8625 Helmar Road in Newark, Illinois. The open field test site has a metal ground screen. All other tests are performed at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

10.9.1 Radiated Emissions Field Strength Sample Calculation

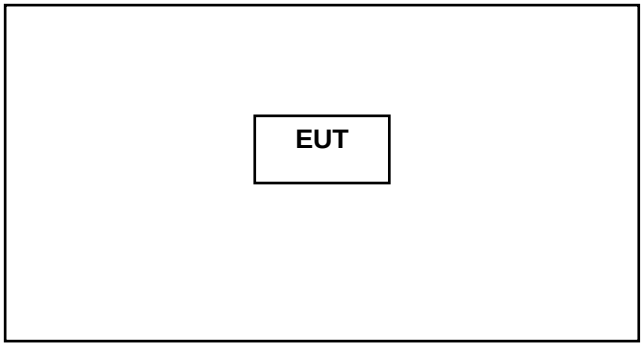
The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG

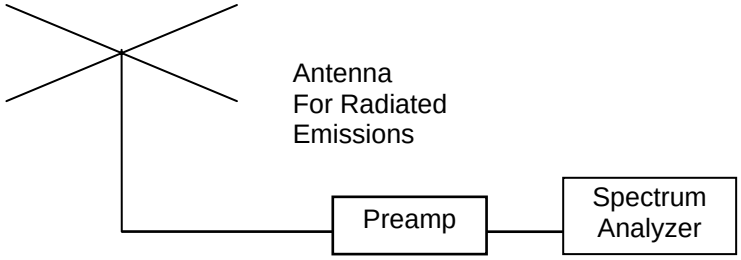
Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
HPF = High pass Filter Loss
PKA = Peak to Average Factor (This is zero for non-average measurements)

The Peak to average factor is used when average measurements are required. It is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is 20 * Log(Duty cycle/100).

Figure 1. Drawing of Radiated Emissions Setup



Notes:
- AC outlet with low-pass filter at the base of the turntable
- Antenna height varied from 1 to 4 meters
- Distance from antenna to tested system is 3 meters
- Not to Scale



Frequency Range	Receive Antenna	Amplifier	Spectrum Analyzer	High Pass Filter
30 to 1000 MHz	ANT-44	None	REC-03	None*
1 to 10 GHz	ANT-13	AMP-05	REC-01	HPF-03

10.9.2 Transmitter Spurious Radiated Emissions Test Results

The EUT was tested in the transmit mode from 30 to 9300 MHz

The following spectrum analyzer settings were used.
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
A Video Bandwidth of 30 Hz was used for Average measurements above 1 GHz.

Manufacturer	GameTraks	Specification	FCC Part 15 Subpart C & RSS-210
Model	100-100	Test Date	3/4/08
Serial Number	None	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; BC = Biconical (ANT-3); LP = Log-Periodic (ANT-6); HN = Horn (ANT-13) P = peak; Q = QP		
Notes	Corr. Factors = Cable Loss – Preamp Gain – Duty Cycle Factor + HP Filter Loss		

Note that each row shows the peak and average data from both the HH (Handheld) and the SPR (Speaker).

				HH		SPR			EUT	Peak	Avg	HH Peak	HH Ave	SPR Peak	SPR Ave
hrm	Tx	ANT		Peak	Avg	Peak	Avg	Corr.	Emission	FCC	FCC	Margin	Margin	Margin	Margin
#	Freq	Pol.	Amb	Analyzer RDG dBuV				Fact.	Freq MHz	Limit	Limit	Und Lim	Und Lim	Und Lim	Und Lim
1	909	V	N	85.1	83.3	78.6	76.2	13.8	909	125.2	N/A	26.3	N/A	32.8	N/A
1	909	H	N	84.3	82.2	84.1	82.1	13.8	909	125.2	N/A	27.1	N/A	27.3	N/A
be	902	V	Y	33.6	31.4	33.5	31.3	13.7	902	74	54	26.7	8.9	26.8	9.0
be	902	H	Y	34.5	32.4	32.1	29.8	13.7	902	74	54	25.8	7.9	28.2	10.5
2	909	V	N	34.2	32.3	35.8	33.7	23.6	1818	74	54	16.2	N/A	14.6	N/A
2	909	H	N	33.8	31.8	35.1	32.9	24.1	1818	74	54	16.1	N/A	14.8	N/A
3	909	V	N	37.9	35.9	46.7	44.5	6	2727	74	54	30.1	12.1	21.3	3.5
3	909	H	N	40	38.2	47.6	45.3	6	2727	74	54	28.0	9.8	20.4	2.7
4	909	V	N	36.3	34.3	37.6	35.5	8.9	3636	74	54	28.8	10.8	27.5	9.6
4	909	H	N	37.4	35.2	36.3	34.3	8.9	3636	74	54	27.7	9.9	28.8	10.8
5	909	V	N	34.1	26.0	37.5	34.2	10.9	4545	74	54	29.0	17.1	25.6	8.9
5	909	H	N	34.8	26.0	36.1	33.4	10.9	4545	74	54	28.3	17.1	27.0	9.7
6	909	V	Y	34	26.0	34	26.0	12	5454	74	54	28.0	16.0	28.0	16.0
6	909	H	Y	34	26.0	34	26.0	12	5454	74	54	28.0	16.0	28.0	16.0
7	909	V	Y	34	26.0	34	26.0	12.7	6363	74	54	27.3	N/A	27.3	N/A
7	909	H	Y	34	26.0	34	26.0	12.7	6363	74	54	27.3	N/A	27.3	N/A
8	909	V	Y	34	26.0	34	26.0	15.9	7272	74	54	24.1	12.1	24.1	12.1
8	909	H	Y	34	26.0	34	26.0	15.9	7272	74	54	24.1	12.1	24.1	12.1
9	909	V	Y	34	26.0	34	26.0	20.8	8181	74	54	19.2	7.2	19.2	7.2
9	909	H	Y	34	26.0	34	26.0	20.8	8181	74	54	19.2	7.2	19.2	7.2
10	909	V	Y	34	26.0	34	26.0	21.9	9090	74	54	18.1	6.1	18.1	6.1
10	909	H	Y	34	26.0	34	26.0	21.9	9090	74	54	18.1	6.1	18.1	6.1

				HH		SPR			EUT	Peak	Avg	HH Peak	HH Ave	SPR Peak	SPR Ave
hrm	Tx	ANT		Peak	Avg	Peak	Avg	Corr.	Emission	FCC	FCC	Margin	Margin	Margin	Margin
#	Freq	Pol.	Amb	Analyzer RDG dBuV				Fact.	Freq MHz	Limit	Limit	Und Lim	Und Lim	Und Lim	Und Lim
1	915	V	N	86.9	84.8	79.5	77.5	14	915	125.2	N/A	24.3	N/A	31.7	N/A
1	915	H	N	85.1	83.3	84.3	82.0	13.9	915	125.2	N/A	26.2	N/A	27.0	N/A
2	915	V	N	33.9	32.0	35.2	32.9	24	1830	74	54	16.1	N/A	14.8	N/A
2	915	H	N	34.7	32.7	36.7	34.4	24.5	1830	74	54	14.8	N/A	12.8	N/A
3	915	V	N	38.8	37.0	46.6	44.4	6	2745	74	54	29.2	11.0	21.4	3.6
3	915	H	N	40.9	39.0	43.6	41.5	6	2745	74	54	27.1	9.0	24.4	6.5
4	915	V	N	41.1	39.1	39.1	36.9	8.9	3660	74	54	24.0	6.0	26.0	8.2
4	915	H	N	40.4	38.5	38.4	36.2	8.9	3660	74	54	24.7	6.6	26.7	8.9
5	915	V	N	35.1	33.5	39.1	35.4	11.1	4575	74	54	27.8	9.4	23.8	7.5
5	915	H	N	34.2	31.2	37.1	34.2	11.1	4575	74	54	28.7	11.7	25.8	8.7
6	915	V	Y	34	26.0	34	26.0	12.1	5490	74	54	27.9	N/A	27.9	N/A
6	915	H	Y	34	26.0	34	26.0	12.1	5490	74	54	27.9	N/A	27.9	N/A
7	915	V	Y	34	26.0	34	26.0	12.8	6405	74	54	27.2	N/A	27.2	N/A
7	915	H	Y	34	26.0	34	26.0	12.8	6405	74	54	27.2	N/A	27.2	N/A
8	915	V	Y	34	26.0	34	26.0	16.2	7320	74	54	23.8	11.8	23.8	11.8
8	915	H	Y	34	26.0	34	26.0	16.2	7320	74	54	23.8	11.8	23.8	11.8
9	915	V	Y	34	26.0	34	26.0	20.9	8235	74	54	19.1	7.1	19.1	7.1
9	915	H	Y	34	26.0	34	26.0	20.9	8235	74	54	19.1	7.1	19.1	7.1
10	915	V	Y	34	26.0	34	26.0	21.8	9150	74	54	18.2	6.2	18.2	6.2
10	915	H	Y	34	26.0	34	26.0	21.8	9150	74	54	18.2	6.2	18.2	6.2
1	921	V	N	79.6	77.7	76.3	74.2	14.1	921	125.2	N/A	31.5	N/A	34.8	N/A
1	921	H	N	78.6	76.8	81.2	79.0	14	921	125.2	N/A	32.6	N/A	30.0	N/A
be	921	V	N	34.2	32.1	34	32.0	14.2	928	74	54	25.6	7.7	25.8	7.8
Be	921	H	N	33.1	31.2	33.8	31.7	14.3	928	74	54	26.6	8.5	25.9	8.0
2	921	V	N	34.6	32.5	33.9	31.7	24.4	1842	74	54	15.0	N/A	15.7	N/A
2	921	H	N	33.9	31.7	34.6	32.5	24.9	1842	74	54	15.2	N/A	14.5	N/A
3	921	V	N	40.8	38.8	47.4	45.0	5.9	2763	74	54	27.3	9.3	20.7	3.1
3	921	H	N	42.2	40.1	47.6	45.3	5.9	2763	74	54	25.9	8.0	20.5	2.8
4	921	V	N	35.2	33.2	38.7	36.5	8.3	3684	74	54	30.5	12.5	27.0	9.2
4	921	H	N	35.9	33.8	38.5	36.2	8.3	3684	74	54	29.8	11.9	27.2	9.5
5	921	V	N	34.6	26.0	35.2	33.6	11.2	4605	74	54	28.2	16.8	27.6	9.2
5	921	H	N	34.7	26.0	35.6	33.1	11.2	4605	74	54	28.1	16.8	27.2	9.7
6	921	V	Y	34	26.0	34	26.0	13	5526	74	54	27.0	N/A	27.0	N/A
6	921	H	Y	34	26.0	34	26.0	13	5526	74	54	27.0	N/A	27.0	N/A
7	921	V	Y	34	26.0	34	26.0	16.3	6447	74	54	23.7	N/A	23.7	N/A
7	921	H	Y	34	26.0	34	26.0	16.3	6447	74	54	23.7	N/A	23.7	N/A
8	921	V	Y	34	26.0	34	26.0	21.2	7368	74	54	18.8	6.8	18.8	6.8
8	921	H	Y	34	26.0	34	26.0	21.2	7368	74	54	18.8	6.8	18.8	6.8
9	921	V	Y	34	26.0	34	26.0	19.8	8289	74	54	20.2	8.2	20.2	8.2
9	921	H	Y	34	26.0	34	26.0	19.8	8289	74	54	20.2	8.2	20.2	8.2
10	921	V	Y	34	26.0	34	26.0	22.1	9210	74	54	17.9	N/A	17.9	N/A
10	921	H	Y	34	26.0	34	26.0	22.1	9210	74	54	17.9	N/A	17.9	N/A

Judgement; Pass by 2.8 dB
N/A indicates limits in

10.9.3 Reciever Emissions

The EUT was tested in the Receive mode from 30 to 5000 MHz.

The following spectrum analyzer settings were used.
Span = wide enough to fully capture the emission being measured
Peak data: RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz;
QP data: RBW = 120kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
A Video Bandwidth of 30 Hz was used for Average measurements above 1 GHz.

Notes	Hand Held Remote Model 100-100H
Test Date	01/03/2008

Freq. MHz	Meter Reading dBuV	Antenna Factor dB	Antenna Pol/ Type	Corr. Factors dB	Field Strength dBuV/m EUT	Field Strength dBuV/m Limit	Margin Under Limit dB
406.8	25.5 P	16.1	H/44	-16.5	25.1	46.0	20.9
407.2	25.5 P	16.1	H/44	-16.8	24.8	46.0	21.2
516.4	27.7 P	17.8	H/44	-16.2	29.4	46.0	16.6
516.4	27.7 P	17.8	H/44	-16.2	29.4	46.0	16.6
528.4	33.5 P	18.3	H/44	-16.0	35.8	46.0	10.2
618.4	24.1 P	19.1	H/44	-15.5	27.7	46.0	18.3
1039.0	25.4 P	23.1	H/44	-13.3	35.2	54.0	18.8
1236.0	25.8 P	24.4	H/44	-12.4	37.8	54.0	16.2
1412.0	25.4 P	25.5	H/44	-12.0	38.9	54.0	15.1
1535.0	25.5 P	26.2	H/44	-11.7	40.0	54.0	14.0
1714.0	23.8 P	27.3	H/44	-11.8	39.4	54.0	14.6
439.6	27.3 P	16.0	V/44	-16.5	26.7	46.0	19.3
497.2	32.5 P	16.8	V/44	-16.1	33.2	46.0	12.8
625.6	31.9 P	18.6	V/44	-15.6	34.9	46.0	11.1
874.0	25.7 P	21.3	V/44	-14.1	32.9	46.0	13.1
1063.0	24.1 P	22.4	V/44	-13.2	33.4	54.0	20.6
1261.0	25.7 P	24.0	V/44	-12.3	37.4	54.0	16.6
1438.0	26.0 P	24.8	V/44	-12.0	38.8	54.0	15.2
1554.0	26.3 P	25.6	V/44	-11.6	40.3	54.0	13.7
1844.0	31.6 P	27.5	V/44	-12.8	46.3	54.0	7.7

Notes	Speaker 100-201
Test Date	01/22/2008

Freq. MHz	Meter Reading dBuV	Antenna Factor dB	Antenna Pol/ Type	Corr. Factors dB	Field Strength dBuV/m EUT	Field Strength dBuV/m Limit	Margin Under Limit dB
414.4	24.4 P	16.4	H/44	-16.7	24.1	46.0	21.9
496.0	27.4 P	17.2	H/44	-16.1	28.5	46.0	17.5
517.6	28.3 P	17.8	H/44	-16.2	29.9	46.0	16.1
521.2	24.9 P	17.9	H/44	-16.0	26.8	46.0	19.2
670.0	23.5 P	20.1	H/44	-15.3	28.3	46.0	17.7
836.8	23.2 P	21.9	H/44	-14.3	30.8	46.0	15.2
919.8	35.6 Q	22.6	H/44	-13.8	44.5	46.0	1.5
1099.0	25.0 P	23.8	H/44	-12.9	35.8	54.0	18.2
1214.0	24.5 P	24.4	H/44	-12.5	36.4	54.0	17.6
1266.0	24.9 P	24.6	H/44	-12.3	37.2	54.0	16.8
1404.0	24.4 P	25.2	H/44	-12.0	37.6	54.0	16.4
1572.0	25.0 P	26.3	H/44	-11.6	39.8	54.0	14.2
425.2	32.8 P	16.2	V/44	-16.6	32.4	46.0	13.6
472.0	28.1 P	16.7	V/44	-16.3	28.5	46.0	17.5
492.4	23.8 P	16.9	V/44	-16.1	24.6	46.0	21.4
518.8	27.6 P	17.4	V/44	-16.1	28.8	46.0	17.2
647.2	25.0 P	19.2	V/44	-15.4	28.8	46.0	17.2
708.4	28.5 P	19.8	V/44	-15.0	33.3	46.0	12.7
910.9	25.1 P	21.7	V/44	-13.9	32.9	46.0	13.1
913.7	28.5 P	21.8	V/44	-13.8	36.5	46.0	9.5
918.4	33.7 P	21.7	V/44	-13.8	41.6	46.0	4.4
919.8	32.8 Q	21.7	V/44	-13.8	40.8	46.0	5.2
1151.0	24.7 P	23.3	V/44	-12.8	35.2	54.0	18.8
1367.0	25.1 P	24.3	V/44	-12.2	37.2	54.0	16.8
1577.0	23.8 P	25.6	V/44	-11.5	37.9	54.0	16.1
1759.0	24.1 P	26.8	V/44	-12.1	38.8	54.0	15.2
1930.0	22.9 P	28.3	V/44	-11.1	40.1	54.0	13.9

Judgment: Passed by 1.5 dB