Transmitter Tests
for
3 (Three) Wireless Bodypack Microphones

For : Shure Inc.
Niles, IL

P.O. No. : 4500092965
Dates Tested : November 21 through December 31, 2005.
Test Personnel : Richard E. King, EMC Engineer
Specification : FCC "Code of Federal Regulations" Title 47 Part 74 and Industry Canada RSS-123

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Richard E. King
EMC Engineer

Witnessed By : Juan Casttrejon
Shure Inc.

Approved By : Raymond J. Klouda
Raymond J. Klouda
Registered Professional Engineer of Illinois - 44894

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Revision History

Revision	Date	Description
—	02/16/2006	Initial release

Transmitter Tests for Three Wireless Bodypack Microphones

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: This report presents the results of a series of transmitter tests were performed on three Shure Inc. wireless bodypack microphones, (hereinafter referred to as the test items). No serial numbers were assigned to the test items. The tests were performed for Shure Incorporated of Niles, IL.

The test items are wireless microphones that operate in low power auxiliary station bands 518 to 806MHz.

Type of Equipment	Bodypack wireless microphones	
Equipment Designation	PG1-H7	
	PG1-M7	
	PG1-R12	
Test Specification Range	Low power auxiliary band 518-865MHz	
Test Item Frequency Range	PG1-H7	536.05 MHz lowest channel available.
	PG1-M7	671.175 MHz
	PG1-R12	805.85 MHz
Number of Channels	21	
Type of Modulation	FM	
Type of Antenna	Integral antenna	
Rated Output Power	10dBm ± 3dB	
Occupied Bandwidth	Max. 200 kHz	
Operating Voltage	9.0 VDC	
Rated Deviation	33kHz	
Declared Audio Input Limiting Threshold	10mV	

1.2 PURPOSE: The test series was performed to determine if the test item meets the technical requirements of FCC Part 74 for low power auxiliary station bands 518MHz to 806MHz and Industry Canada RSS-123 Low Power Licensed Radiocommunication Devices.

1.3 DEVIATIONS, ADDITIONS AND EXCLUSIONS: There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 APPLICABLE DOCUMENTS: The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 74, dated 1 October 2004

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, dated 1 October 2004

- RSS-123, "Radio Standards Specification Low Power Licensed Radiocommunication Devices" Issue 1, Rev. 2 November 6, 1999

- ANSI C63.4-2003, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"

1.5 SUBCONTRACTOR IDENTIFICATION: This series of tests was performed by Elite Electronic Engineering Incorporated, of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.6 LABORATORY CONDITIONS: The temperature at the time of the test was 22°C and the relative humidity was 11%.

2.0 TEST ITEM SETUP AND OPERATION:

2.1 POWER INPUT: The test item obtained 9.0VDC from a 9VDC battery.

2.2 GROUNDING: The test item was ungrounded during the tests.

2.3 PERIPHERAL EQUIPMENT: No peripheral equipment was submitted with the test item.

3.0 TEST EQUIPMENT:

3.1 TEST EQUIPMENT LIST: A list of the test equipment used can be found on Table I. All equipment was calibrated.

3.2 CALIBRATION TRACEABILITY: Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 RF POWER OUTPUT MEASUREMENTS:

4.1.1 REQUIREMENTS: In accordance with Paragraph 74.861(e)(1)(ii), for low power auxiliary stations operating in the bands allocated for TV broadcasting, the power of the measured unmodulated carrier power at the output of the transmitter power amplifier (antenna input power) may not exceed 250 milliwatts in the 470-608 and 614-806MHz bands. In accordance with Paragraph 6.2 of RSS-123, the requirement is the RF power output must not exceed 1 watt average power as listed in Table 1.

4.1.2 PROCEDURES: Since the test item has an integral antenna, the equivalent power into a dipole antenna was determined from the field intensity levels measured at 3 meters using

the substitution method. To determine the emission power another tuned dipole antenna was set in place of the test item and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was corrected to compensate for cable loss.

The measurements were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2003 for site attenuation.

The radiated emission test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization.
c) The maximum meter reading was recorded.
d) A dipole antenna tuned to the transmit frequency was placed on an adjustable height antenna mast 3 meters from the test item.
e) The signal level was adjusted to match the meter reading..
f) Measurements were performed with the input signal unmodulated.

4.1.3 RESULTS: The output power measurements are presented on page 16. As can be seen from the data, the power output of each transmitter is within the 250 milliwatt requirement of Part 74.861(e)(1)(ii) and the 1 watt requirement of RSS-123.

4.2 MODULATION CHARACTERISTICS:

4.2.1 REQUIREMENTS: In accordance with paragraph 74.861(e)(3) and paragraph 5.5 of RSS-123, for low power auxiliary stations operating in the bands allocated for TV broadcasting, any form of modulation may be used. A maximum deviation of ±75kHz is permitted when frequency modulation is employed.

4.2.2 PROCEDURES: For the purposes of this test, the test item was equipped with a temporary antenna port. The test item was connected to a modulation analyzer through the temporary antenna port. An audio generator was connected to an audio input of the test item.

(a) The test item was modulated with a 1000 Hz modulating signal at 60% of the test items rated frequency deviation.
(b) The level of the audio generator was increased by 20 dB in one step.
(c) The instantaneous and steady state positive peak deviations were recorded.
(d) Using the audio generator level obtained in step (b) the frequency range from 20Hz to 20000 Hz was slowly swept and the maximum frequency deviation recorded at several frequencies.
(e) Steps (a) through (d) were repeated for the negative peak deviations.

4.2.3 RESULTS: The plots of the modulation characteristics are presented on pages 17 through 19.

4.3 FREQUENCY STABILITY:

4.3.1 REQUIREMENTS: In accordance with paragraph 74.861(e)(4) and paragraph 7 of RSS-123 Table 1, for low power auxiliary stations operating in the bands allocated for TV broadcasting, the frequency tolerance of the transmitter shall be 0.005 percent.

4.3.2 PROCEDURES: For the purposes of this test the test item was equipped with a temporary antenna port. The test item was connected to a frequency counter through the temporary antenna port. The test item was then placed in a humidity temperature chamber.

(a) The nominal frequency of each transmitter was measured and recorded at nominal room temperature (23ºC).
(b) The temperature chamber was then set to -30ºC.
(c) Once the temperature had reached -30ºC the test item was allowed to soak for 30 minutes.
(d) After soaking at -30ºC for thirty minutes the test item was turned on and the transmit frequency was measured and recorded.
(e) Steps (b) through (d) were repeated for each temperature in 10ºC steps from -30ºC to +50ºC.
(f) Steps (b) and (e) were repeated for each transmitter.
(g) The test item was then removed from the temperature chamber and allowed to adjust to nominal room temperature (23ºC).
(h) The input voltage was checked and adjusted to the nominal level. The frequency was measured and recorded.
(i) The input voltage was then varied to 85% of its nominal level. The frequency was measured and recorded.
(j) The input voltage was then varied to 115% of its nominal level. The frequency was measured and recorded.
(k) Steps (h) through (j) were repeated for each transmitter.

4.3.3 RESULTS: The frequency stability measurements are presented on pages 20 through 22. As can be seen from the data the test frequency deviation was within the 0.005 percent limit.

4.4 OCCUPIED BANDWIDTH MEASUREMENTS:

4.4.1 REQUIREMENTS: In accordance with paragraph 74.861(d)(3), for low power auxiliary stations operating in the bands allocated for TV broadcasting, the occupied bandwidth shall not be greater than that necessary for satisfactory transmission and, in any event, an emissions appearing on any discrete frequency outside the authorized band shall be attenuated, at least, 43 + 10 log(P) dB below the mean output power of the transmitting unit. In addition to

paragraph 74.861(d)(3) the test item must also meet the requirements of paragraph 74.861(e)(5), the operating bandwidth shall not exceed 200kHz.

In accordance with the RSS-123 paragraph 6.3.1, the power of unwanted emissions shall be attenuated below the mean transmitter power as specified in the following schedule:

(1) On any frequency removed from the carrier frequency by more than 50% up to and including 100% of the authorized bandwidth: at least 25 dB.
(2) On any frequency removed from the carrier frequency by more than 100% up to and including 250% of the authorized bandwidth: at least 35 dB.
(3) On any frequency removed from the carrier frequency by more than 250% of the authorized bandwidth: at least 55 + 10 Log (P) dB.

4.4.2 PROCEDURES:

(a) For the purpose of this test the test items were equipped with a temporary antenna port. The test item was connected to a spectrum analyzer through 40 dB of attenuation. The unmodulated carrier signal level was measured and recorded.

(b) The test item was modulated with a 15 kHz sine wave at an input level necessary to produce 85% of the rated system deviation. A plot of the test items response was recorded.

(c) The test item was modulated with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of the rated system deviation. A plot of the test items response was recorded.

(d) Steps (a) through (c) were repeated separately for each of the remaining transmitters. The bandwidth of the spectrum analyzer was set to 3kHz (1% of Authorized BW).

4.4.3 RESULTS: The plots of the occupied bandwidth measured are presented on pages 23 through 31. The limits, shown on the plots, are referenced to the power measured from the unmodulated carrier, the power when modulated with the 15 kHz sine wave at 85% of the maximum deviation and when modulated with a 2500 Hz sine wave at an input 16dB greater than that necessary to produce 50% of the rated deviation. The operating bandwidth was determined using Carson's rule:

Bn = 2M + 2DK where Bn = bandwidth, M= Maximum modulating frequency and D = Peak Deviation. With K = 1, M = 10kHz and D = 49kHz resulting in an operating bandwidth of 118kHz.

As can be seen from the data, the test items met all occupied bandwidth requirements.

4.5 SPURIOUS EMISSIONS AT ANTENNA TERMINAL:

4.5.1 REQUIREMENTS: Since the test item was supplied with an integral antenna, radiated spurious emissions measurements were performed in lieu of antenna terminal measurements.

4.6 FIELD STRENGTH OF SPURIOUS EMISSIONS:

4.6.1 PRELIMINARY RADIATED MEASUREMENTS:

4.6.1.1 REQUIREMENTS: Radiated emission measurements first measured using peak detection. This data will show where significant emissions are present.

4.6.1.2 PROCEDURES: The preliminary test was performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2003 for site attenuation.

The preliminary measurements were performed with each test item operating with the input signal unmodulated. The broadband measuring antennas were positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 10th harmonic was investigated. The measurements were taken with a peak detector function.employed.

4.6.1.3 RESULTS: The preliminary plots are presented on pages 32 through 43. Factors for the antennas and cables were added to the data before it was plotted.

This data is only presented for a reference, and is not used to demonstrate compliance. All significant radiated emissions were subsequently re-measured using manual techniques.

4.6.2 FINAL RADIATED EMISSIONS:

4.6.2.1 REQUIREMENTS: The field strength of any emission on any frequency remove from the operating frequency by more than 250 percent of the authorized bandwidth: shall be attenuated by at least 43 + 10 log (P) dB for the FCC and at least 55 + 10 log (P) dB for RS-123.

4.6.2.2 PROCEDURES: Final radiated emission measurements were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2003 for site attenuation.

The final radiated emission test procedure is as follows:

a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
b) The test item was tested with an integral antenna.
c) The measurement antenna was placed on an adjustable height antenna mast 3 meters from the test item.
d) A double-ridged waveguide antenna was used above 1 GHz.
e) The emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization.

f) Measurements were performed with the input signal unmodulated.
g) The maximum meter reading was recorded.
h) The substitution method was used to measure the equivalent power into a dipole antenna. To determine the power level, another tuned dipole antenna or double ridged waveguide antenna was set in place of the test item and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was corrected to compensate for cable loss, as required, and when the ridged waveguide antenna was used increased by the difference in gain between the dipole and the waveguide antenna.

4.6.2.3 RESULTS OF OPEN FIELD RADIATED TEST: The final radiated emission levels are presented on pages 44 through 49. The radiated emissions were measured through the 10th harmonic. All emissions measured from the test item were within the specification limits.

5.0 CONCLUSION:

It was found that the Shure Incorporated, wireless bodypack microphones, did comply with the RF power output, the modulation characteristics, the frequency stability, the occupied bandwidth, and the field strength of spurious emissions requirements of FCC Part 74 for low power auxiliary station bands 518MHz to 806MHz and Industry Canada RSS-123 Low Power Licensed Radiocommunication Devices.

6.0 CERTIFICATION:

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specification.

The data presented in this test report pertains only to the test item at the test date as operated by Shure Incorporated personnel. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

7.0 ENDORSEMENT DISCLAIMER:

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.

TABLE I: TEST EQUIPMENT LIST

ELITE ELECTRONIC ENG. INC. Page: 1

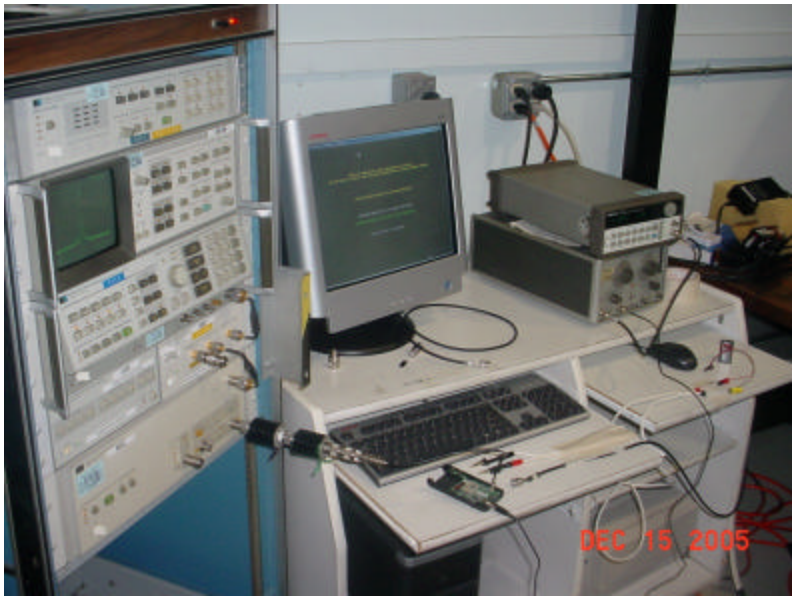
Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Cal Inv	Due Date
Equipment Type: ACCESSORIES, MISCELLANEOUS								
XCN0	1000 PF CAPACITOR (1000V)	MICROLAB	HR-10N	001	100M-4GHZ		12	
XCN1	1000 PF CAPACITOR (1000V)	MICROLAB	HR-10N	002	100M-4GHZ		12	
XDY0	HIGH POWER DIRECTIONAL COU	WERLATONE	C6934	14801	.1-1000MHZ	02/08/06	12	02/08/07
XTR2	ESD SIMULATOR (SIEMENS)	NOISE LABORATOR	ESS-100L	DX65088	0.2-25KV	07/19/05	12	07/19/06
XTRD	ESD GUN (SIEMENS)	NOISE LABORATOR	TC-815D	DX65113	0.2-30KV	07/19/05	12	07/19/06
XZG2	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	2223A01751	---		N/A	
Equipment Type: AMPLIFIERS								
ADF0	WIDE BAND RF AMP	IFI	CMX5001	F075-0401	.01-1000MHZ		N/A	
APK2	PREAMPLIFIER	AGILENT TECHNOL	8449B	3008A01595	1-26.5GHZ	02/11/05	12	02/11/06
ATU0	TWT AMPLIFIER	HUGHES AIRCRAFT	1177H09R000	004	1-2GHZ		NOTE 1	
Equipment Type: ANTENNAS								
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	03/02/05	12	03/02/06
NSA4	LOG-PERIODIC ANTENNA	AMPLIFIER RESEA	AT1080	13264	80-1000MHZ		NOTE 1	
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL611	2057	0.03-2GHZ	08/15/05	12	08/15/06
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	10/01/05	12	10/01/06
Equipment Type: ATTENUATORS								
T1N1	10DB 20W ATTENUATOR	NARDA	766-10		DC-4GHZ	09/07/05	12	09/07/06
T2D9	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BH5445	DC-18HGZ	12/05/05	12	12/05/06
T2DE	20DB 25W ATTENUATOR	WEINSCHEL	46-20-34	BN1032	DC-18GHZ	03/10/05	12	03/10/06
Equipment Type: CHAMBERS (ENV)								
ETC0	TEMPERATURE CHAMBER	TENNEY	BTR-100350	9145-17	-60C TO 100C		NOTE 1	
ETCC	SINGLE CHANNEL TEMPERATURE	WATLOW	F4SH-CCA0-01	008389-0339	PROGRAMMABLE		NOTE 1	
Equipment Type: CONTROLLERS								
CDV0	REPLACEMENT FOR CDD0	COMPAQ	PRESARIO	MXK3391BPJ	2.5GHZ		N/A	
Equipment Type: METERS								
MFC0	MICROWAVE FREQ. COUNTER	HEWLETT PACKARD	5343A	2133A00591	10HZ-26GHZ	05/31/05	12	05/31/06
MPC2	DUAL POWER METER	HEWLETT PACKARD	EPM-442A	US37480150	0.1MHZ-50GHZ	11/18/05	12	11/18/06
MPCC	POWER SENSOR	HEWLETT PACKARD	8482A	2652A13499	0.1-4200MHZ	03/17/05	12	03/17/06
MPCD	POWER SENSOR	HEWLETT PACKARD	8482A	3318A28808	0.1-4200MHZ	03/17/05	12	03/17/06
Equipment Type: POWER SUPPLIES								
SIB0	DC POWER SUPPLY	INSTEK	PC-3030	PC303RP1			NOTE 1	
Equipment Type: PRINTERS AND PLOTTERS								
HRE5	LASER JET 5P (DCC-DRFI)	HEWLETT PACKARD	LJ 6P	SUSBB43325	---		N/A	
Equipment Type: RECEIVERS								
RAC0	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	2449A01117	100HZ-22GHZ	02/07/05	12	02/07/06
RACE	RF PRESELECTOR W/ RECEIVER	HEWLETT PACKARD	85685A	3010A01194	20HZ-2GHZ	08/26/05	12	08/26/06
RAF1	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	2043A00271	0.01-1000MHZ	02/07/05	12	02/07/06
RYE0	MODULATION ANALYZER	HEWLETT PACKARD	8901B	3104A03410	0.15-1300MHZ	12/09/04	14	02/09/06
Equipment Type: SIGNAL GENERATORS								
GRD0	SIGNAL GENERATOR	HEWLETT PACKARD	E4432B	US38080222	250KHZ-3.0GHZ	09/28/05	12	09/28/06
GWH1	DDS FUNCTION GENERATOR	WAVETEK	29	071747	0.0001HZ-10MHZ	02/15/05	12	02/15/06

Cal. Interval: Listed in Months I/O: Initial Only N/A: Not Applicable
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

Photographs of the Specific Test Setups

Output Power and Spurious Emissions Test Setup

Frequency Stability vs. Temperature



Occupied Bandwidth Test Setup

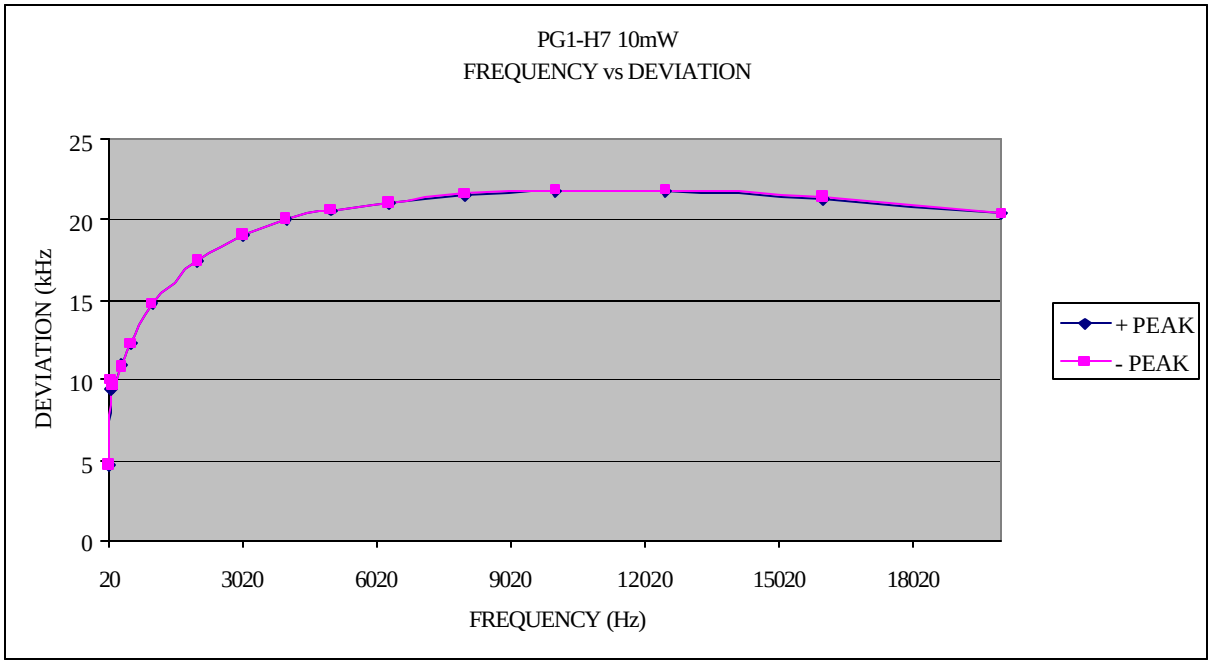
MANUFACTURER : Shure Inc.
MODEL NO. : Wireless Bodypack Microphones
SERIAL NO. : None Assigned
SPECIFICATION : FCC-74 and RSS-123
TEST PERFORMED : RF Output Power
DATE : November 22, 2005
NOTES : Test Distance is 3 Meters

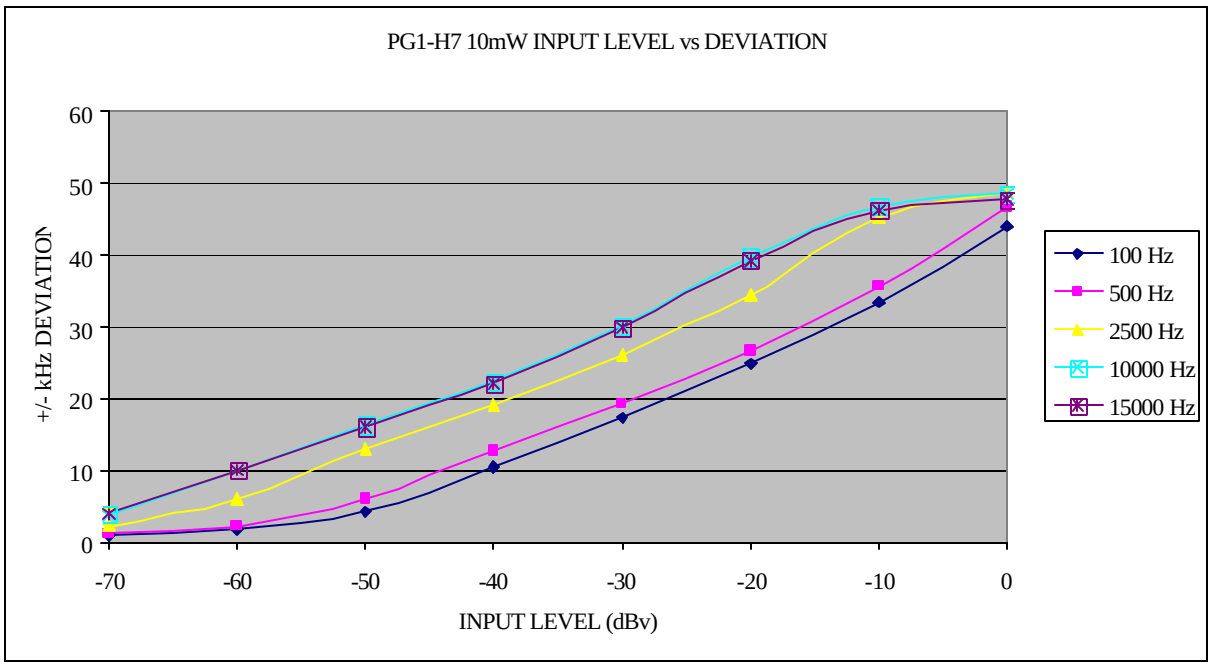
UNIT	Rated Power* (Watts)	Frequency (MHz)	Matched Sig. Gen Reading (dBm)	ERP (dipole) (dBm)	Limit (dBm)	ERP (Watts)	Limit* (Watts)
PG1-H7	.010	536.05	10.4	8.9	24.0	0.0077	0.250
PG1-M7	.010	671.18	8.9	7.1	24.0	0.0051	0.250
PG1-R12	.010	805.85	9.3	7.4	24.0	0.0054	0.250

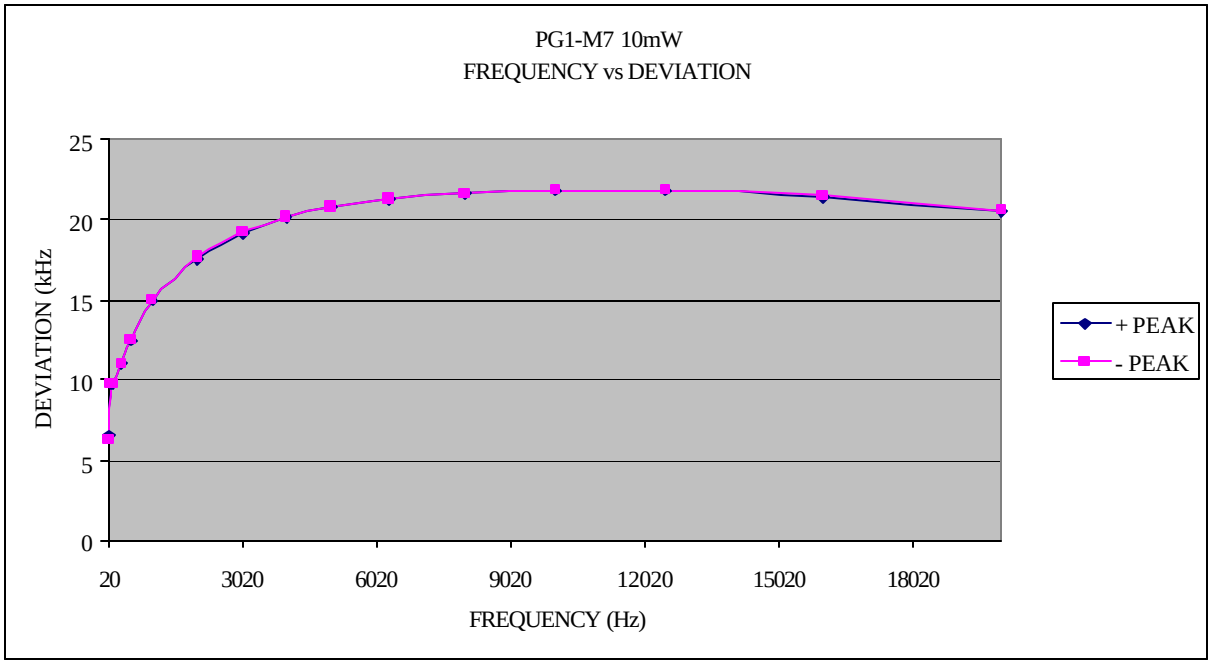
* Limit and rated power listed are for conducted power at the antenna port. Since the measurements are effective radiated power (ERP) measurements, they include the integral antenna gain (loss).

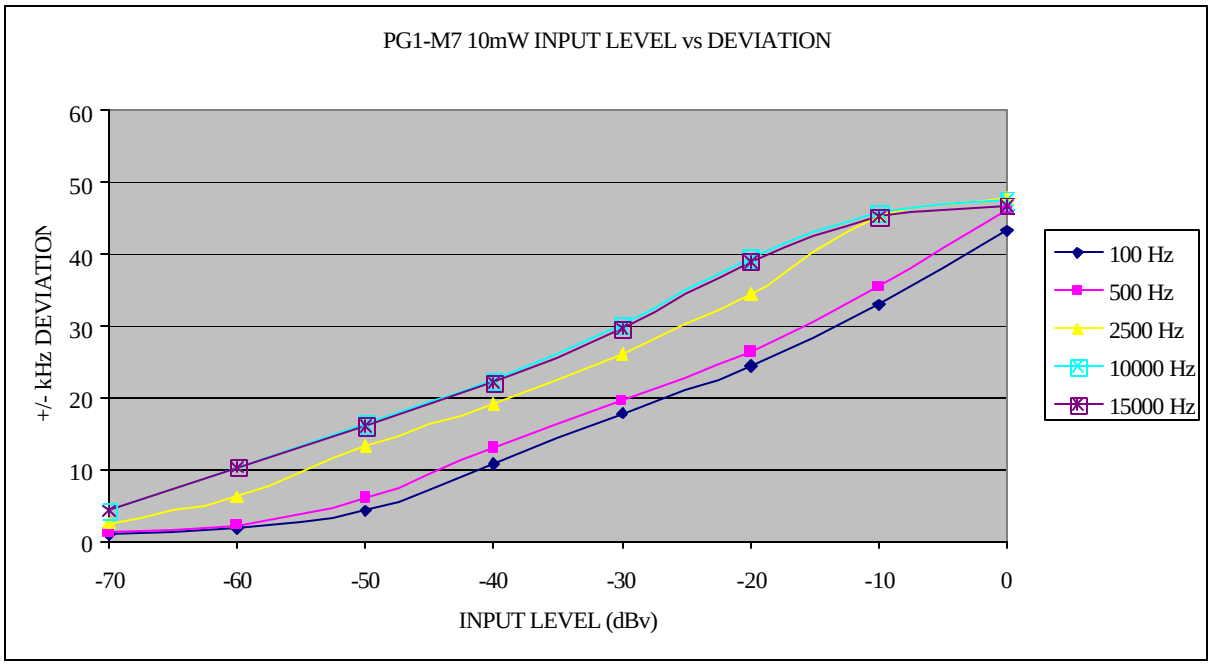
Checked BY : Richard E. King

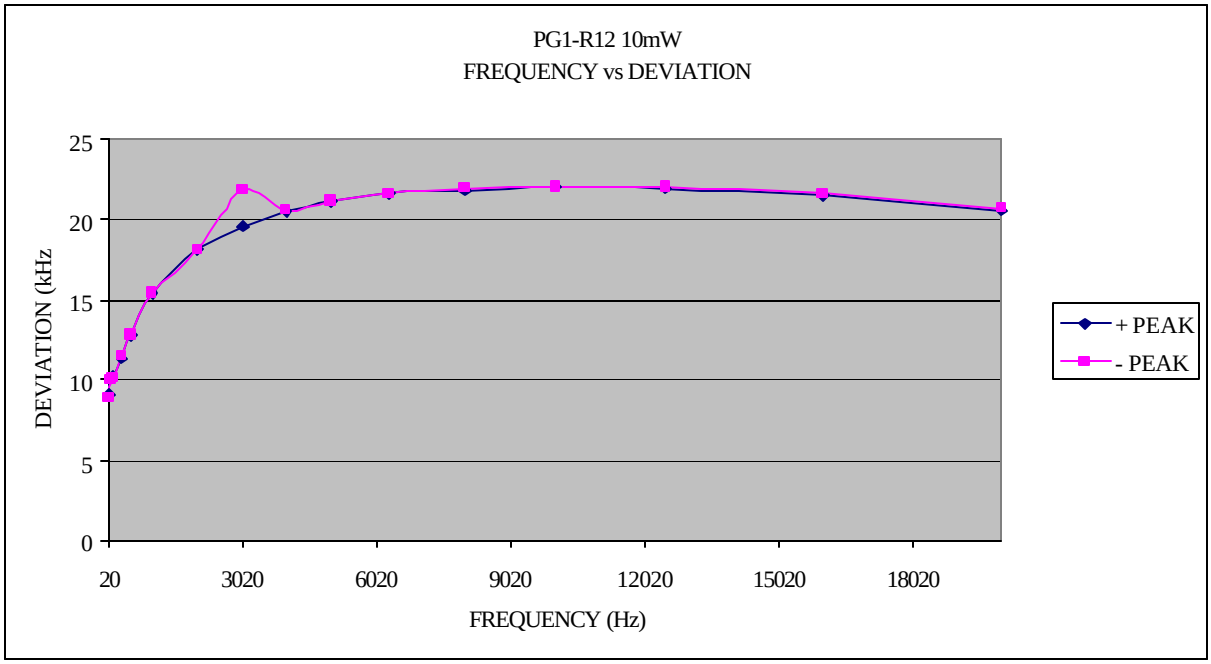
Richard E. King

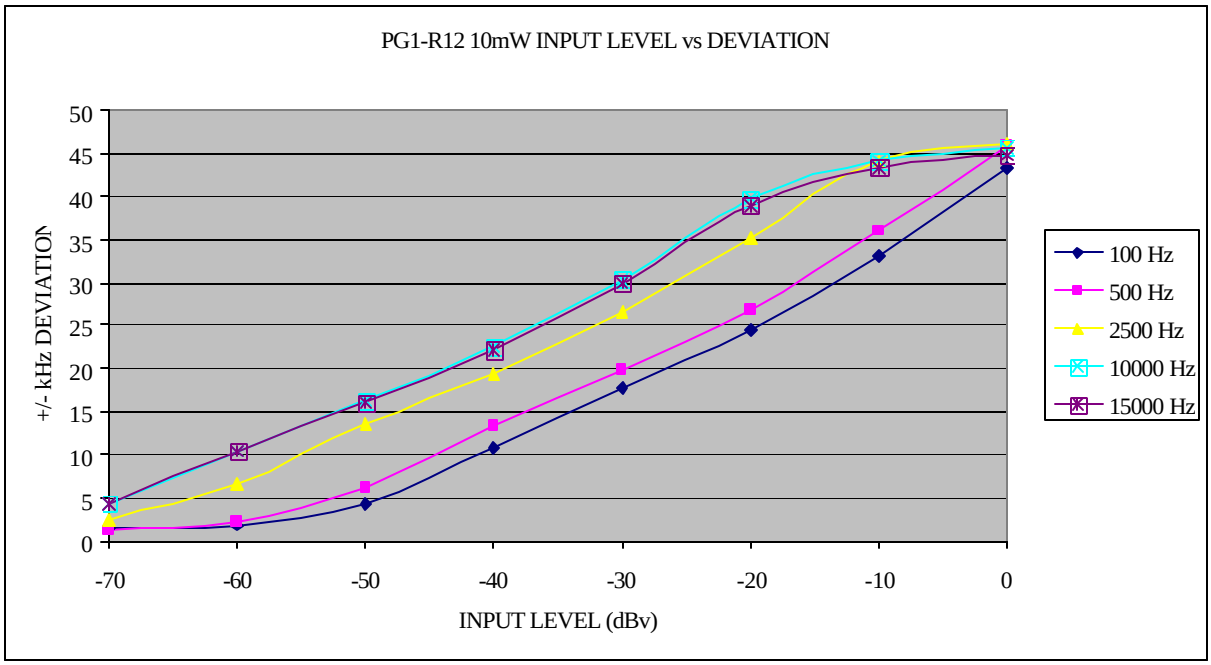

PG1-H7 10mW
FREQUENCY vs DEVIATION
DEVIATION (kHz
25
20
15
10
5
0
20
3020
6020
9020
12020
15020
18020
FREQUENCY (Hz)
+ PEAK
- PEAK


PG1-H7 10mW INPUT LEVEL vs DEVIATION
+/- kHz DEVIATION
60
50
40
30
20
10
0
-70
-60
-50
-40
-30
-20
-10
0
INPUT LEVEL (dBv)
100 Hz
500 Hz
2500 Hz
10000 Hz
15000 Hz


PG1-M7 10mW
FREQUENCY vs DEVIATION
DEVIATION (kHz
25
20
15
10
5
0
20
3020
6020
9020
12020
15020
18020
FREQUENCY (Hz)
+ PEAK
- PEAK


PG1-M7 10mW INPUT LEVEL vs DEVIATION
+/- kHz DEVIATION
60
50
40
30
20
10
0
-70
-60
-50
-40
-30
-20
-10
0
INPUT LEVEL (dBv)
100 Hz
500 Hz
2500 Hz
10000 Hz
15000 Hz


PG1-R12 10mW
FREQUENCY vs DEVIATION
DEVIATION (kHz
25
20
15
10
5
0
20
3020
6020
9020
12020
15020
18020
FREQUENCY (Hz)
+ PEAK
- PEAK


PG1-R12 10mW INPUT LEVEL vs DEVIATION
+/- kHz DEVIATION
50
45
40
35
30
25
20
15
10
5
0
-70
-60
-50
-40
-30
-20
-10
0
INPUT LEVEL (dBv)
100 Hz
500 Hz
2500 Hz
10000 Hz
15000 Hz

MANUFACTURER : **Shure Inc.**
MODEL NO. : **PG1-H7 and PG1-M7**
SERIAL NO. : **None assigned**
SPECIFICATION : **FCC-74 and RSS-123**
TEST PERFORMED : **Frequency Stability vs. Temperature**
DATE : **December 12, 2005**
NOTES :

PG1-H7 10mW

Temperature	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50ºC	53604902	53605080	0.00033	0.005	-178	2680
+40ºC	53604900	53605080	0.00034	0.005	-180	2680
+30ºC	53605001	53605080	0.00015	0.005	-79	2680
+20ºC	53605116	53605080	-0.00007	0.005	36	2680
+10ºC	53605208	53605080	-0.00024	0.005	128	2680
+0ºC	53605254	53605080	-0.00032	0.005	174	2680
-10ºC	53605228	53605080	-0.00028	0.005	148	2680
-20ºC	53605079	53605080	0.00000	0.005	-1	2680
-30ºC	53604849	53605080	0.00043	0.005	-231	2680

PG1-M7 10mW

Temperature	Measured Frequency (Hz)	Nominal Frequency (Hz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50ºC	67117249	67117562	0.00047	0.005	-313	3355
+40ºC	67117328	67117562	0.00035	0.005	-234	3355
+30ºC	67117464	67117562	0.00015	0.005	-98	3355
+20ºC	67117613	67117562	-0.00008	0.005	51	3355
+10ºC	67117703	67117562	-0.00021	0.005	141	3355
+0ºC	67117774	67117562	-0.00032	0.005	212	3355
-10ºC	67117730	67117562	-0.00025	0.005	168	3355
-20ºC	67117632	67117562	-0.00010	0.005	70	3355
-30ºC	67117607	67117562	-0.00007	0.005	45	3355

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : **Shure Inc.**
MODEL NO. : **PG1-R12**
SERIAL NO. : **None assigned**
SPECIFICATION : **FCC-74 and RSS-123**
TEST PERFORMED : **Frequency Stability vs. Temperature**
DATE : **December 12, 2005**
NOTES :

PG1-R12 10mW

Temperature	Measured Frequency (Hz)	Nominal Frequency (Hz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50ºC	80585110	80584653	0.00057	0.005	-457	4029
+40ºC	80585110	80584791	0.00040	0.005	-319	4029
+30ºC	80585110	80584961	0.00018	0.005	-149	4029
+20ºC	80585110	80585143	-0.00004	0.005	33	4029
+10ºC	80585110	80585279	-0.00021	0.005	169	4029
+0ºC	80585110	80585283	-0.00021	0.005	173	4029
-10ºC	80585110	80585333	-0.00028	0.005	223	4029
-20ºC	80585110	80585104	0.00001	0.005	-6	4029
-30ºC	80585110	80585024	0.00011	0.005	-86	4029

Checked BY : Richard E. King

Richard E. King

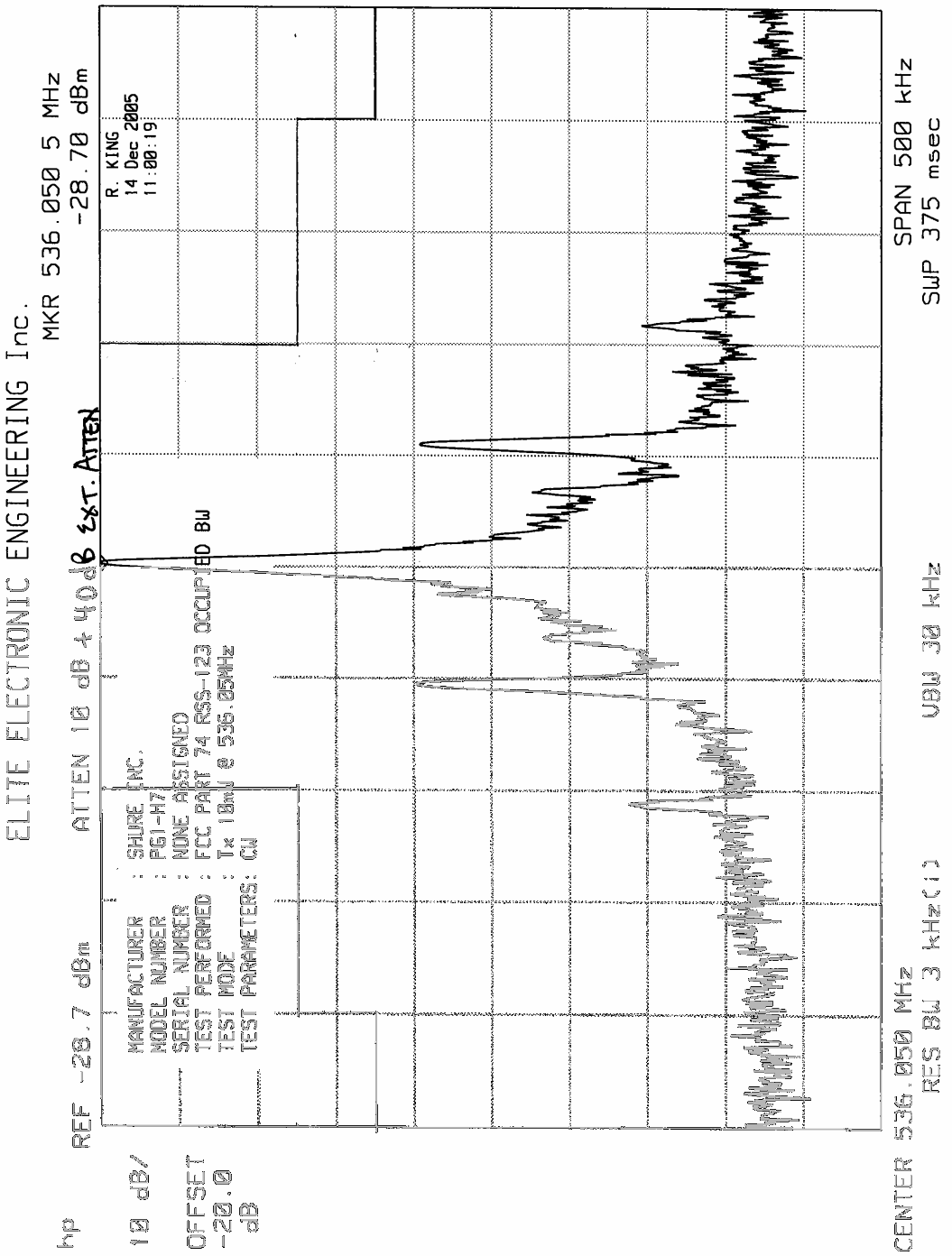
MANUFACTURER : Shure Inc.
SERIAL NOs. : None assigned
SPECIFICATION : FCC-74 and RSS-123
TEST PERFORMED : Frequency Stability vs. Voltage
DATE : December 12, 2005
NOTES :

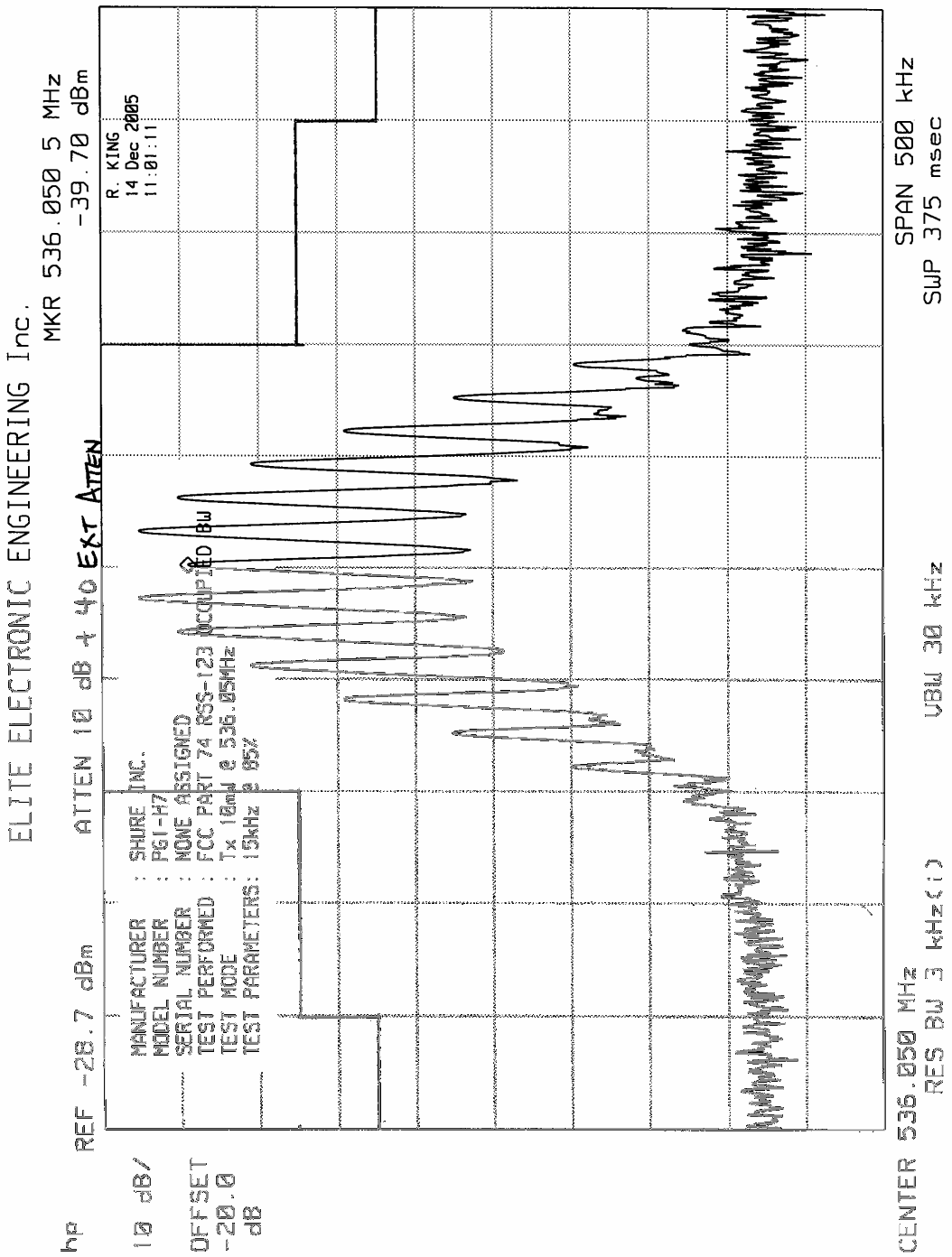
Test Item	Nominal Frequency (Hz)	7.7VDC Measured Frequency (Hz)	10.3VDC Measured Frequency (Hz)	7.7VDC Deviation (%)	10.3VDC Deviation (%)	Limit (%)
PG1-H7	53605080	53605076	53605070	0.00001	0.00002	0.005
PG1-M7	67117562	67117546	67117552	0.00002	0.00001	0.005
PG1-R12	80585110	80585075	80585093	0.00004	0.00002	0.005

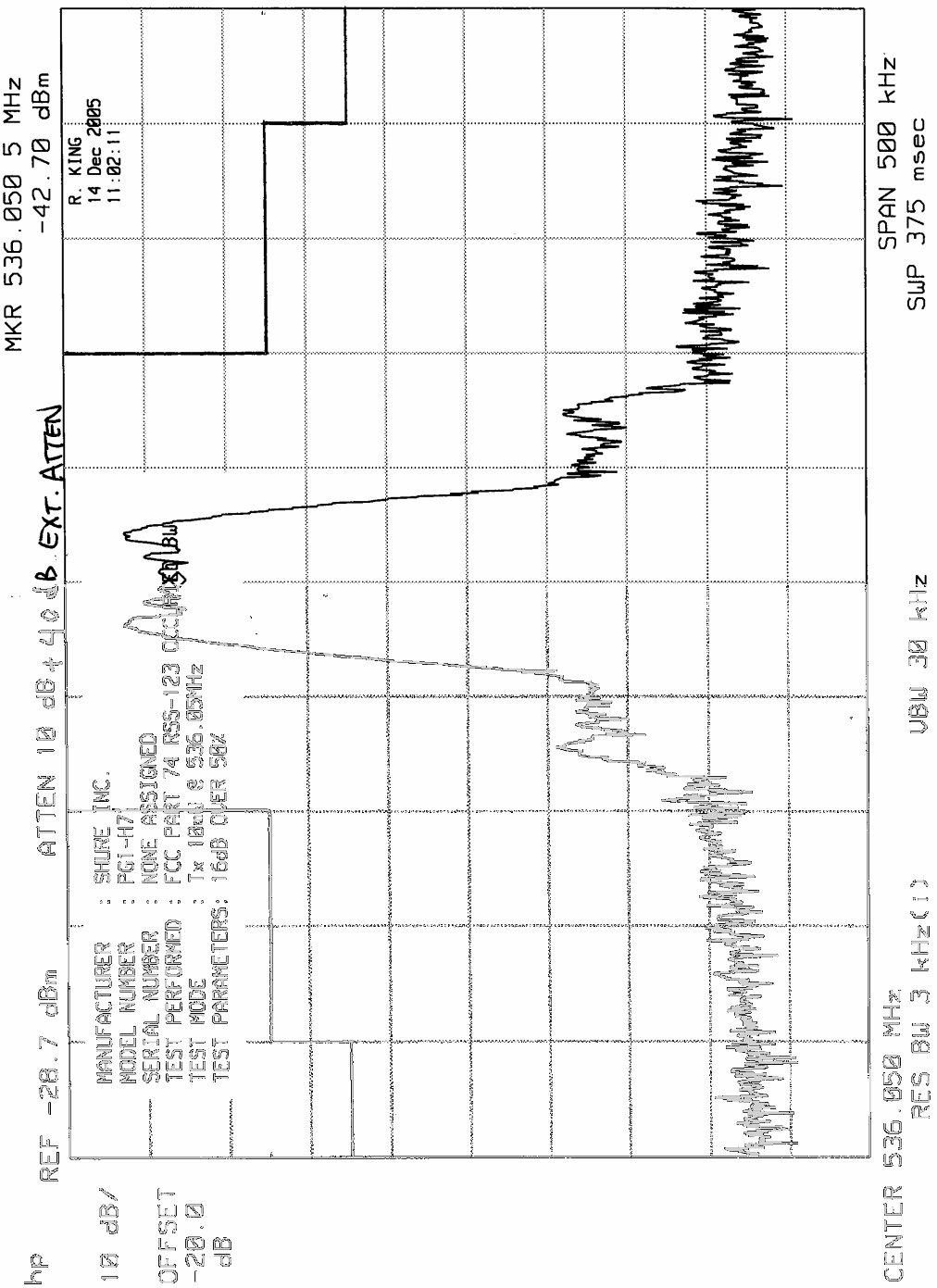
Test Item	Nominal Frequency (Hz)	7.7VDC Measured Frequency (Hz)	10.3VDC Measured Frequency (Hz)	7.7VDC Deviation (Hz)	10.3VDC Deviation (Hz)	Limit (Hz)
PG1-H7	53605080	53605076	53605070	-4	-10	2680
PG1-M7	67117562	67117546	67117552	-16	-10	3355
PG1-R12	80585110	80585075	80585093	-35	-17	4029

Checked BY : Richard E. King

Richard E. King


ELITE ELECTRONIC ENGINEERING Inc.
MKR 536.050 5 MHz
-28.70 dBm
R. KING
14 Dec 2005
11:00:19
hp
REF -28.7 dBm
ATTEN 10 dB + 40dB Ext. Atten
10 dB/
OFFSET
-20.0
dB
MANUFACTURER : SHURE INC.
MODEL NUMBER : PG1-HT
SERIAL NUMBER : NONE ASSIGNED
TEST PERFORMED : FCC PART 74 RSS-123 OCCUPIED BW
TEST MODE : Tx 10mW @ 536.05MHz
TEST PARAMETERS: CW
CENTER 536.050 MHz
RES BW 3 kHz(i)
VBW 30 kHz
SPAN 500 kHz
SWP 375 msec


ELITE ELECTRONIC ENGINEERING Inc.
MKR 536.050 5 MHz
-39.70 dBm
R. KING
14 Dec 2005
11:01:11
REF -28.7 dBm
ATTEN 10 dB + 40 EXT ATTEN
hp
10 dB/
OFFSET
-20.0
dB
MANUFACTURER : SHURE INC.
MODEL NUMBER : P61-H7
SERIAL NUMBER : NONE ASSIGNED
TEST PERFORMED : FCC PART 74 RSS-123
TEST MODE : Tx 10mW @ 536.05MHz
TEST PARAMETERS: 15kHz @ 85%
OCCUPIED BW
CENTER 536.050 MHz
RES BW 3 kHz(i)
VBW 30 kHz
SPAN 500 kHz
SWP 375 msec


ELITE ELECTRONIC ENGINEERING Inc.
MKR 536.050 5 MHz
-42.70 dBm
R. KING
14 Dec 2005
11:02:11
REF -28.7 dBm
ATTEN 10 dB 40 dB EXT. ATTEN
10 dB/
OFFSET
-20.0
dB
MANUFACTURER : SHURE INC.
MODEL NUMBER : PGI-H7
SERIAL NUMBER : NONE ASSIGNED
TEST PERFORMED : FCC PART 74 RSS-123
TEST MODE : Tx 10dB @ 536.05MHz
TEST PARAMETERS: 16dB OVER 50Z
CENTER 536.050 MHz
RES BW 3 kHz
VBW 30 kHz
SPAN 500 kHz
SWP 375 msec