MOTOROLA

FCC ID: IHDP56LL1

DECLARATION OF COMPLIANCE HAC ASSESSMENT - TELECOIL

iDEN Mobile Devices **Audio Test Laboratory** **8000 West Sunrise Blvd** **Fort Lauderdale, FL. 33322**	**Date of Report:** 22 June 2010 **Report Revision:** Rev. 0 **Report ID:** FCC_HAC_Telecoil_Rpt_i886_Rev-O_100622

Responsible Engineer:	Cindy Martinez
Date/s Tested:	06/22//2010
Manufacturer/Location:	Motorola – Plantation, Florida
Sector/Group/Div.:	iDEN Mobile Devices
Date submitted for test:	22 June 2010
DUT Description:	Side Slider Qwerty Style with Internal Antenna
Signaling type:	TDMA: iDEN
Test TX mode(s):	2:6 (a.k.a. 1:3), 1:6
Max. Power output:	0.640W; Pulse Average; Factory tuning
Nominal Power:	0.600W; Pulse Average; Factory tuning
TX Frequency Bands:	iDEN - 806-825 MHz, 896-902 MHz
Model(s) Tested:	i886 (H86XAH6JR7AN)
Model(s) Certified:	i886 (H86XAH6JR7AN)
Serial Number(s):	364VLGM8GZ
Rule Part(s):	20.19(b)(2)

Product images can be found in Exhibit 7

Approved Applicable Accessories:

Antenna(s):

85-009279001
TX 806 - 825 MHz, RX 851 - 870 MHz
TX 896 - 902 MHz, RX 935 - 941 MHz

Battery(ies):

SNN5851A	BN80 High Performance Li-Ion Battery	Battery Cover : NTN2597xxxA
SNN5837A	BN70 High Performance Li-Ion Battery	Battery Cover : NTN3000xxxA

Min. Axial field strength: 5.32 dB A/m
Min. Radial field strength: -6.58 dB A/m
Min. ABM Desired-to-Undesired signal ratio: 20.78 dB
HAC Category rating: T3

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the ANSI C63.19-2007 standard. This report shall not be reproduced without written approval from an officially designated representative of the Motorola EME Laboratory.

The results and statements contained in this report pertain only to the device(s) evaluated.

John Lewczak
Motorola iDEN Mobile Devices Business

/s/ John Lewczak **Approval Date:** 23-June-2010

Certification Date: 23-June-2010

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REVISION HISTORY

Date	Revision	Comments
06/22/2010	O	Initial release.

1.0 Introduction and Overview

This report details the utilization, test setup, test equipment, and test results of Hearing Aid Compatibility (HAC) telecoil measurements required per 47 CFR 20.19(b)(2). These measurements were performed during a controlled on-network telephone call at full rated RF power with the antenna extended to assess compliance with the ANSI C63.19-2007 standard. The data in this report are for assessing T-coil compliance only.

Per the Table 7-1 of the standard the iDEN air interface protocol articulation weighting factor (AWF) has been assigned a value of zero.

2.0 Telecoil Compliance Criteria (Per ANSI C63.19-2007; section 7.3)

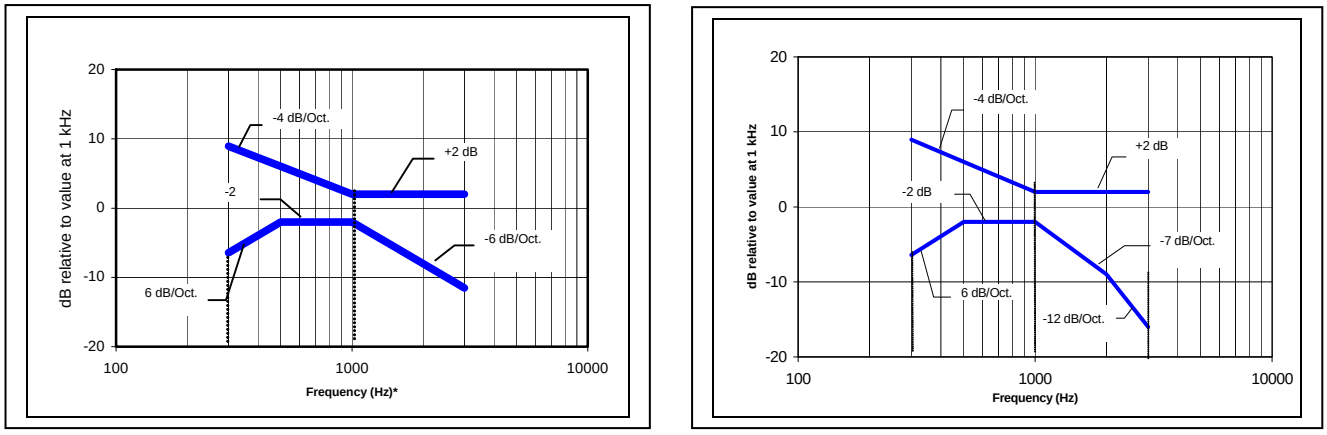
The signal quality rating shall be T3 or better per 47 CFR 20.19. Per ANSI C63.19-2007 this rating is dependent upon the articulation weighting factor (AWF) for specific air interface protocols as listed in the following table:

Table 2-1 – Signal Quality rating limits

Rating	AWF = 0
T4	> 30 dB
T3	20 to 30 dB

To merit this rating the axial component and the radial components of the audio band magnetic (ABM) field shall be ≥ -18 dB A/m at 1 kHz.

In addition the frequency response shall lie with the limit lines evident in the following graphs:



A – Mask for WDs with a field <= -15 dB(A/m) at 1 kHz B - Mask for WDs with a field that exceeds -15 dB (A/m) at 1kHz

Figure 1-1 –Frequency Response (Axial only)

The current ANSI C63.19-2007 methodology used to determine a wireless device (WD) T-category rating is illustrated in the attached flow chart in Figure 2-2. This process presumes that the interference heard by a hearing aid used is dominated by the RF interference component rather than the inductively coupled noise interference component due to pulsing currents flowing in a handset. As a result a WD T-category rating value is precluded from exceeding the RF interference rating by virtue of the highlighted steps within the diagram.

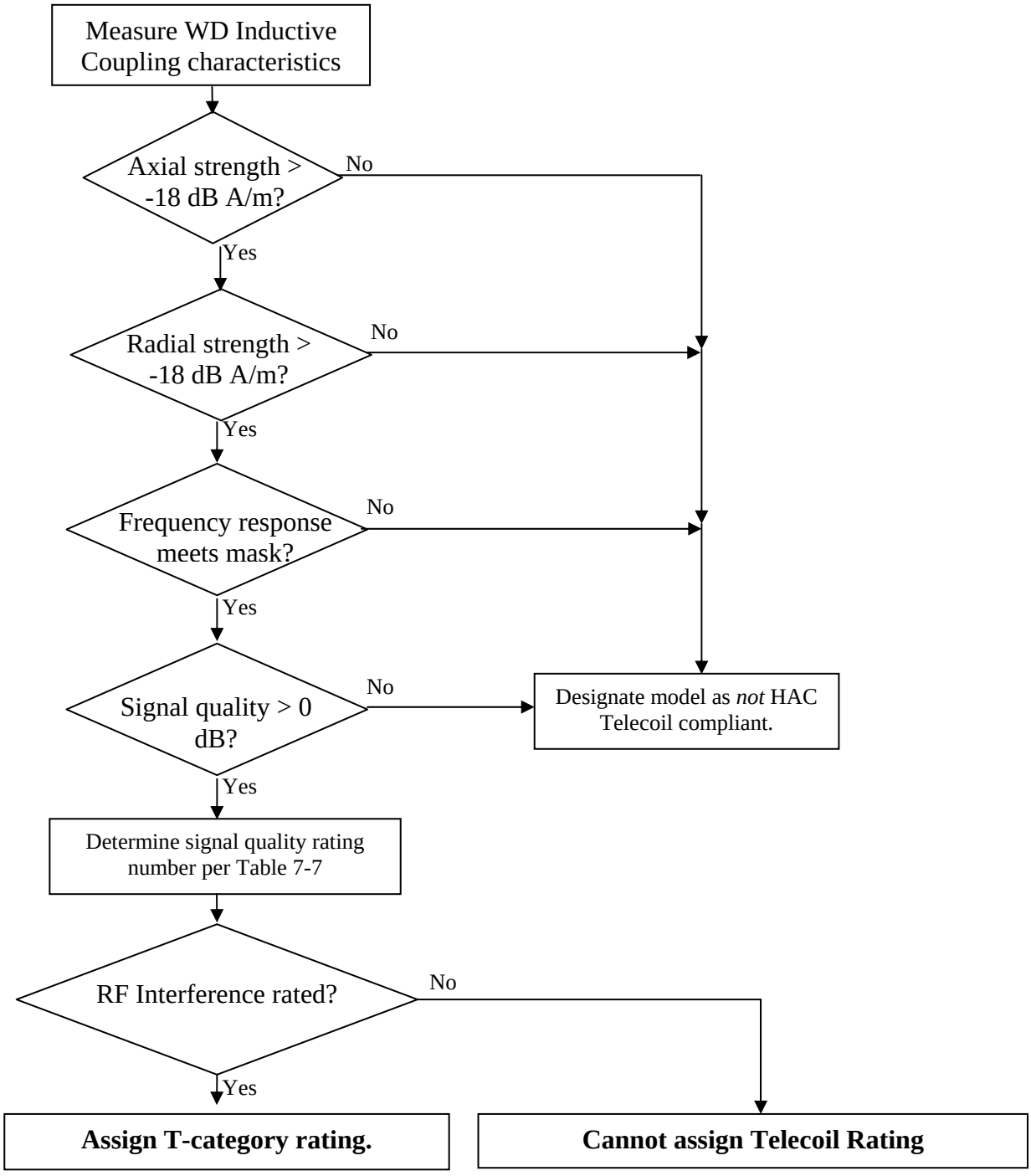


Figure 2-2 - WD Telecoil Category Rating Process
(Note: RFI rating assumed to be M3 or M4)

3.0 Description of Device Under Test (DUT)

FCC ID: IHDP56LL1 is used for telephone service subject to 47 CFR 20.19 for hearing aid compatibility. The maximum output power is 0.640 watts pulse average as determined by the upper limit of the production line final test station. The DUT was tuned to be within 5% of the maximum rated power. It is capable of transmitting on any network commanded frequency in the bands of 806 to 821 MHz (within the United States) and 896 to 902 MHz. It employs a time division multiplexing (TDM) transmission technology with a duty cycle of 16.67% (1:6 multiplexing) or 33.33% (2:6 multiplexing) using 16-QAM modulation on each of four OFDM-like sub-carriers. Since the TDM period is fixed at 90 ms. this duty cycle difference results in a difference in the RF carrier modulation envelope fundamental frequency being either 11 Hz or 22 Hz respectively. To evaluate the effect of the difference in envelope fundamental frequency measurements were made with both duty cycles in each band of operation (see section 9).

A different Vocoder is used for each multiplexing factor as commanded by the cellular network because a more efficient Vocoder is needed to achieve the greater spectral efficiency provided by the low-rate 1:6 multiplexing. Each Vocoder operates for the full duration of a transmission burst and both produce a random digital stream during the burst so between them there is essentially no difference in the modulation envelope during the burst. Accordingly measurements were made for the 2 duty cycles using the Vocoder normally used with the particular duty cycle.

User controls include selecting the duration of the backlight duration and the audio frequency response characteristic. Once set, these characteristics are maintained until the user adjusts them. Instructions for setting the backlight duration and the frequency response are provided in the User Guide respectively in the sections entitled *Customizing Your Phone, User Settings,* and *Advanced Calling Features, Features for the Hearing Impaired.*

4.0 Test Equipment List

Table 4-1 – List of test equipment used

Equipment Type	Model Number	Serial Number	Calibration Due
Axial Probe	HAC – A100	0238	02-11-11
Radial Probe	HAC – R100	0238	02-11-11
Helmholtz Coil	AMCC SD HAC P02 AB	1030	02-12-11
Audio Analyzer software	SoundCheck 6.1	SC-422	07-02-11
Input amplifier	SoundConnect	PS-418	07-02-11
Telephone Magnetic Field Simulator	TMFS-1	300-01151	APREL TMFS v.1.6, Release 23 March 2005

5.0 Descriptions of Measurement System (a variation of ANSI C63.19-2007; Figure 6-1)

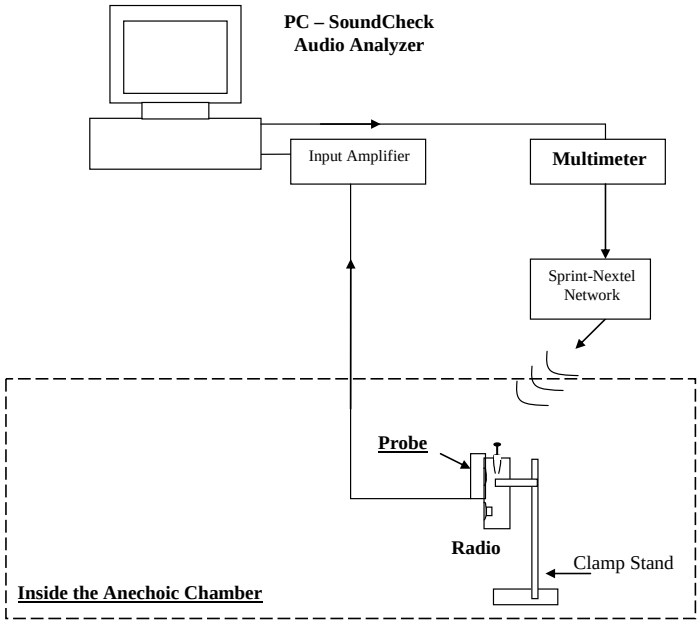


Figure 5-1 – Test setup

The laboratory utilizes the Listen *SoundCheck* system, which is a software package that both generates and measures audio signals via a D/A card installed in a personal computer. This software provides the filtering and integration functions necessary to complete the measurements in ANSI C63.19-2007, sections 6.3.4.2 and 6.3.4.3. The 11-second P50 male audio signal so generated is applied to the DUT which is engaged in an on-network telephone call as the antenna is not removable and the antenna port connector lies between the battery and the housing. Transmission power was monitored via embedded diagnostic software that displays output power to ensure no power cutback occurred. The measurement system consists of a CCL A-100 Axial telecoil probe and an R-100 Radial telecoil probe. Section 4.0 presents relevant test equipment information. All measurement equipment used to assess Telecoil HAC compliance was calibrated.

6.0 Measurement System Verification

The HAC measurements were conducted with Axial and Radial telecoil probes model/serial numbers A-100/0238 and R-100/0238. A Telephone Magnetic Field Simulator (TMFS) was used (rather than a Helmholtz coil) for system verification following the guidelines stated in the TMFS procedures document. For calibration, telecoil probe output signal levers were compared with target valued provided by the manufacturer, and the results provided in Table 6-1-1. The photos below depict the validation setup using the TMFS.

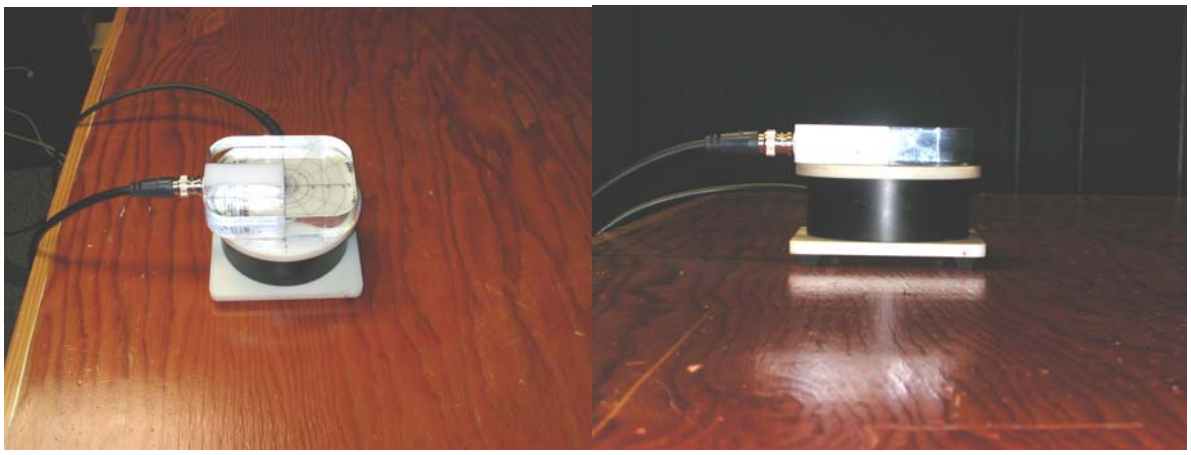


Figure 6-1 – Probe coil being calibrated with TMFS

6.1 System Verification Test Results

In accordance with ANSI C63.19-2007, clause 6.2.4 the probes were calibrated and sensitivity levels at 1 kHz verified and listed below on 11 February 2010. System verification measurement results for Axial and Radial probes are listed and compared with expected values from the TMFS in Table 6-1-1. The amplitude linearity data obtained using a Helmholtz coil are shown in Table 6-1-2. The data demonstrates compliance to the ± 0.5 dB tolerance, with the output varying in corresponding 10 dB steps.

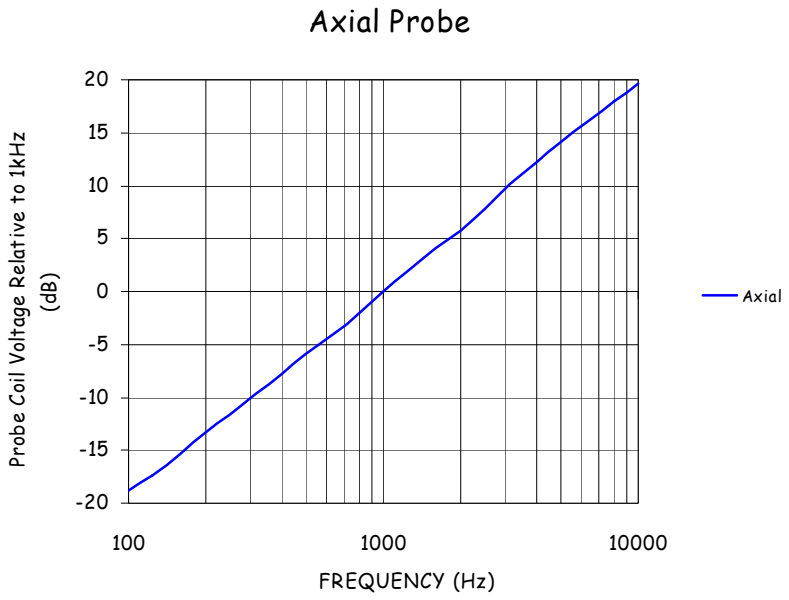


Figure 6-1-1 - Axial Probe sensitivity at 1000 Hz: -60 dB V/(A/m)

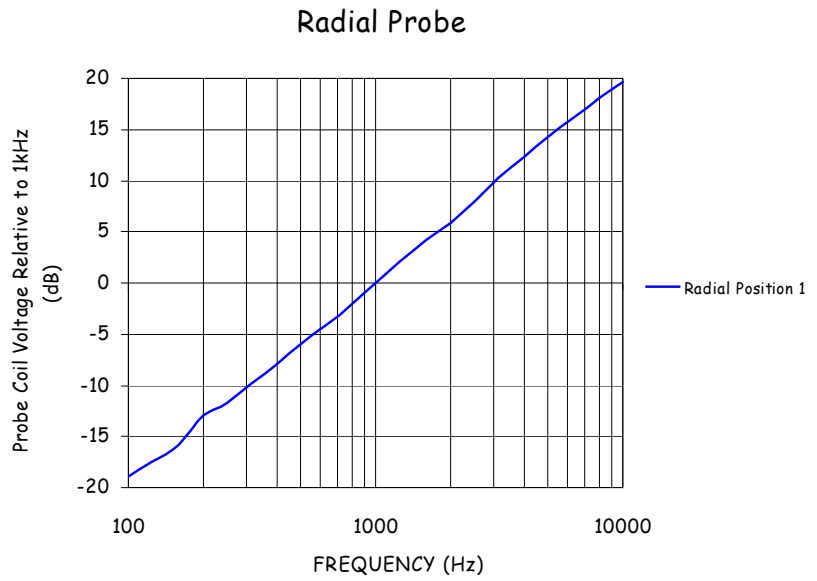


Figure 6-1-2 - Radial Probe sensitivity at 1000 Hz: -60 dB V/(A/m)

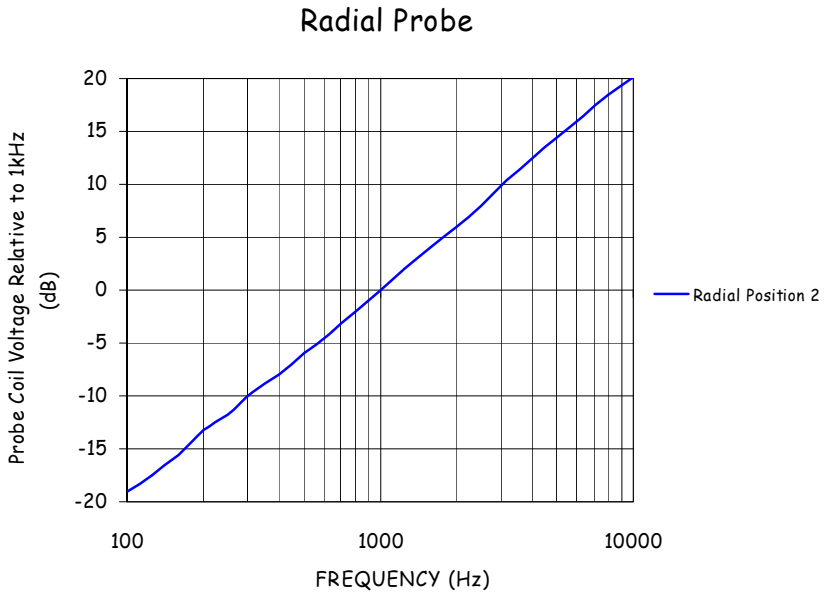


Figure 6-1-3 - Radial Probe sensitivity at 1000 Hz: -60 dB V/(A/m)

Table 6-1-1 - Probe Sensitivity

Orientation	Input Signal	Target Magnetic Field	Measured Magnetic field	Deviation
Axial	1 kHz, 0.5V	-20.0 dB A/m	-20.66 dB A/m	0.66 dB
Radial 1	1 kHz, 0.5V	-27.5 dB A/m	-28.08 dB A/m	0.58 dB
Radial 2	1 kHz, 0.5V	-27.5 dB A/m	-27.90 dB A/m	0.40 dB

Table 6-1-2 - Probe Linearity

Level	Delta of Axial Probe (at 1 kHz)	Delta of Radial Probe (at 1 kHz)	Acceptance Criteria	Result
0 - 10	0.0	0.0	± 0.5 dB	Pass
10 - 20	0.0	0.0	± 0.5 dB	Pass
20 - 30	-0.2	-0.2	± 0.5 dB	Pass
30 – 40	-0.1	-0.2	± 0.5 dB	Pass

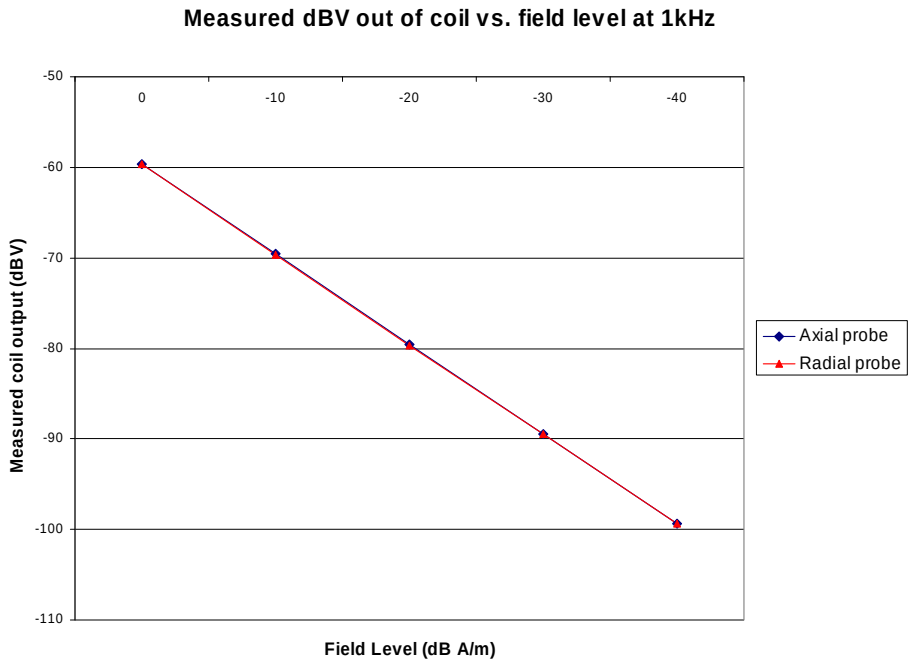


Figure 6-1-4 – Axial/Radial Probe Linearity

6.2 RF Immunity Verification

To alleviate any concern that RF radiation from the handset would influence ABM readings by the measurement system the ambient noise floor was measured when a Reference Coil was positioned where the handset antenna was located during ABM measurements. The Plots below show the Axial probe ambient noise floor measured with and without RF. The RF signal was produced with a signal generator at 900 and 1900 MHz transmitting at a power level of 1 Watt. The data shows only a small affect to the frequency response below 300 Hz, the amount of which would be negligible in the determination of the signal quality.

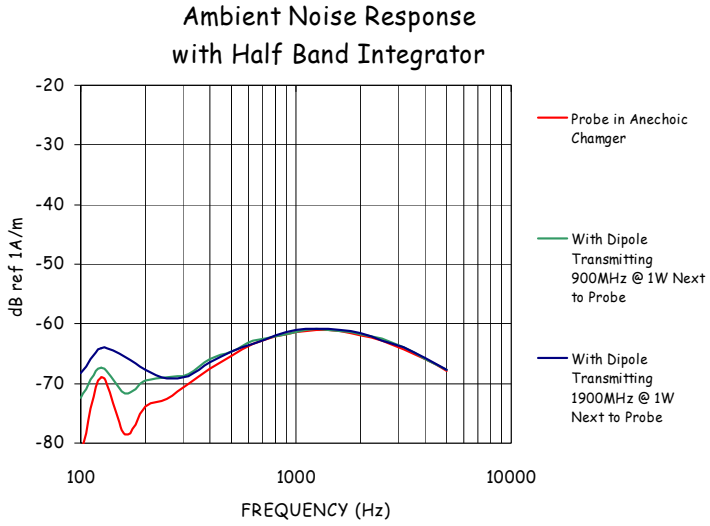


Figure 6-2 – Noise with RF Measured Response

6.3 RF Frequency Independence

It was noted in section 5 that a live on-the-air network call test was used to obtain audio band magnetic (ABM) data using the system illustrated in Figure 5-1 rather than a base station emulator. This was done because no base station emulator is available commercially or internally that supports both of the Vocoders described in section 3. A limitation of the network test is that the network assigned RF test frequency could not be controlled and was limited to a narrow frequency range near those listed with the ABM data in section 9. To compensate for this testing limitation an additional set of ABM data was taken to verify that the ABM data was not dependent on the RF test frequency.

The commercially available R2660B Service Monitor instrument does support testing at selectable frequencies, but only using the 33.3% duty cycle 2:6 Vocoder. One was used to obtain additional ABM1 and ABM 2 axial orientation data at several band-edge and mid-band frequencies to verify that the ABM data is independent of the test frequency. The data is listed in the following table together with some statistical results that show ABM data is essentially independent of the RF test frequency.

Table 6.3 –Axial Probe Measurements

Axial		
Test Frequency (MHz)	**AMB1 (dB A/m)**	**AMB2 (dB A/m)**
806.1000 MHz	18.07	-49.21
813.5125 MHz	18.01	-48.28
820.9875 MHz	17.95	-49.28
896.1062 MHz	18.69	-49.10
900.9812 MHz	18.92	-48.83
Standard Deviation	**0.45**	**0.41**

7.0 DUT Setup and Test Procedure

The test setup was done as specified in ANSI C63.19-2007, section 6.3.2 and Figure 6-1. Axial and radial measurements were performed at locations in accordance with ANSI C63.19-2007; Annex A.3, and are illustrated in the test setup photograph. The coordinates for these locations, relative to the acoustic output center, are given in Table 7. The test flow and procedure was per ANSI C63.19-2007, Figure 6-3, and section 6.3.1 was followed in order to demonstrate compliance. The test procedure consisted of placing the DUT in an interconnect phone call from the Sprint-Nextel system to a phone on the Motorola test site. Transmission power was monitored via embedded diagnostic software that displays output power to ensure no power cutback occurred. Then from the Motorola Audio Lab connection to the Mobile Switch Center (MSC) on the Motorola test site an 11 second P50 male signal was sent to the DUT. The P50 artificial speech levels were determined by the reference input levels as stated in ANSI C63.19-2007, Table 6-1.

iDEN TDMA (22 and 11 Hz): -18 dBm0

Below is the corresponding voltage level used to send the audio signal to the iDEN network

Input Level to the iDEN Network: -20.7 dB V = 92.26mV

The signal was then measured with the telecoil and analyzed for frequency response and level. The test results were obtained with:

- The DUT user interface configured for telecoil operation,
- The display and keypad lighting off as would normally be the case when used for a call.

- The probe manually positioned for maximum coupling, then secured (See coordinates in Table 7):
  - Axial - center of acoustic output.
  - Radial 1 - probe at 0 degrees just left of the acoustic output center.
  - Radial 2 - probe at 90 degrees just above the acoustic output center.

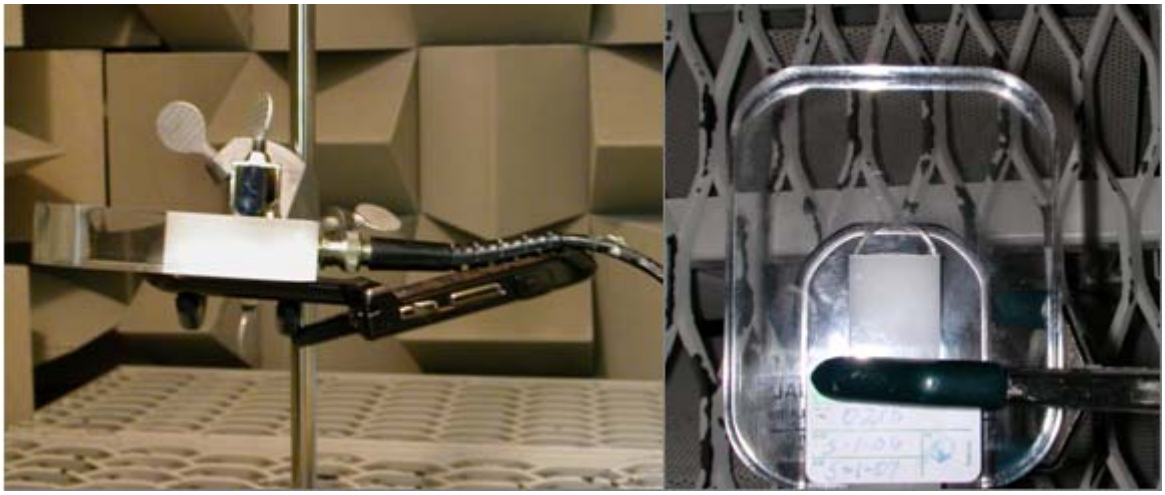


Figure 7-1 – Test holder

Figure 7-2 – Measurement location coordinates

Table 7 – Measurement location coordinates

Location	X coordinate (mm)	Y coordinate (mm)	Sub-grid Number (See Appendix A)
Axial -	0	0	5
Radial 1 -	-4	0	5
Radial 2 -	0	-2	5

Note: X is offset to the right from the center of the acoustic output and Y is the vertical offset (see Figure A-5 in ANSI C63.19-2007).

8.0 Environmental Test Conditions

The table below presents the range and average environmental conditions during the HAC tests reported herein:

Table 8 – Environmental Conditions

	Target	Measured
Ambient Temperature	23 ˚C +/- 5 ˚C	Within Guidelines
Relative Humidity	0 - 80 %	Within Guidelines

The audio lab ambient and test system noise level was determined and found satisfactory as specified in ANSI C63.19-2007, section 6.2.1. The following graph shows the results obtained using a 1/3rd octave resolution bandwidth filter.

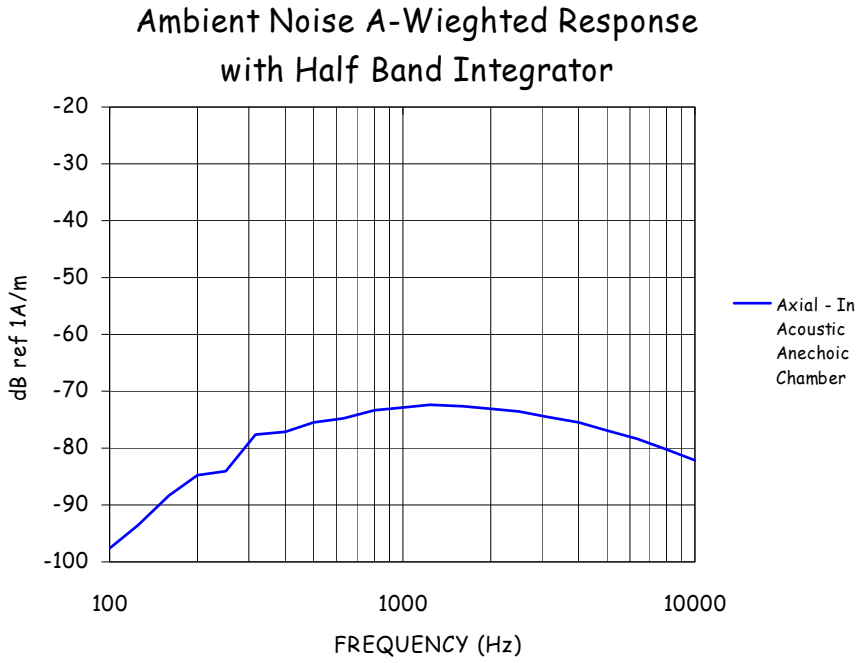


Figure 8-1– Axial Ambient Magnetic frequency distribution

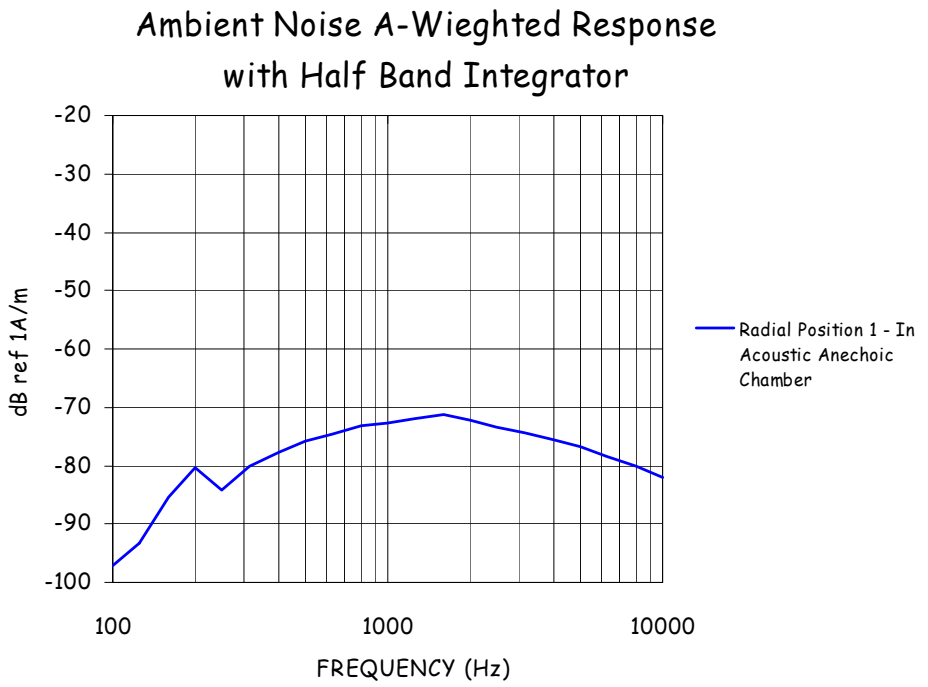


Figure 8-2 – Radial Position 1 Ambient Magnetic frequency distribution

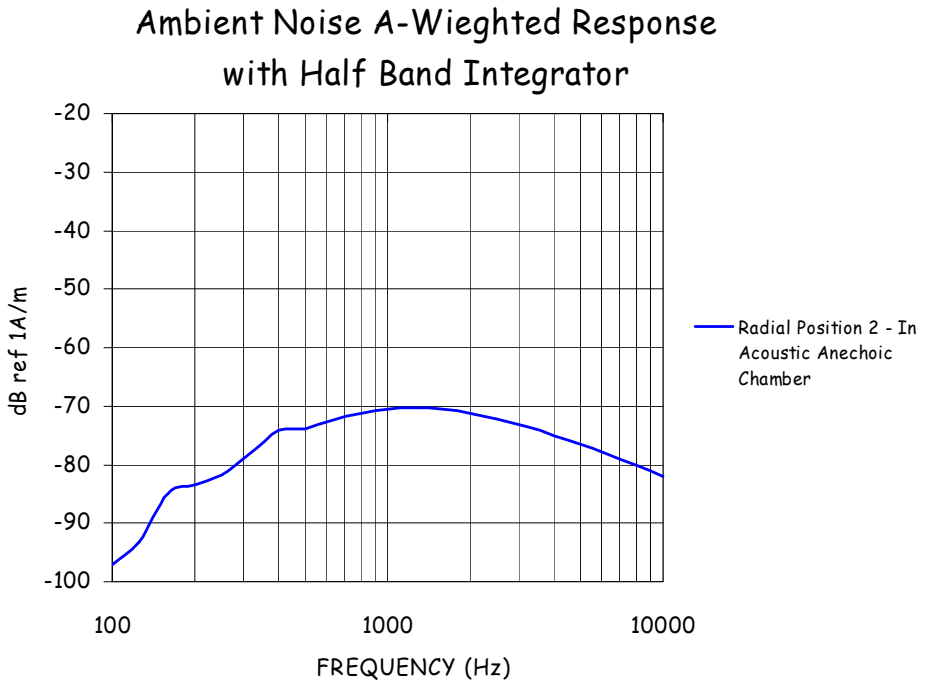


Figure 8-3 – Radial Position 2 Ambient Magnetic frequency distribution

9.0 Test Results Summary

The telecoil desired signal strength (ABM1) results per ANSI C63.19-2007, section 6.3.4.2 are shown in Section 9.2 for the 800 MHz band and 9.4 for the 900 MHz band. The desired signal results are reported herein at the center of the 800 and 900 MHz bands only, as measured in a 1/3 octave bandwidth filter. The ABM1 frequency response plots for both 800 & 900MHz are shown in Section 9.1, and illustrate compliance with the ANSI C63.19-2007 limits given in Section 2. Signal quality results depend on the undesired signal strengths (ABM2) measured per ANSI C63.19-2007, Section 6.3.4.3 and are half band integrated with an A-weighted filter applied. The undesired signal results are plotted in Figures 9-2-1 through 9-2-4 for 800 MHz and Figures 9-4-1 through 9-4-4 for the 900 MHz band. The Desired-to-Undesired ABM signal strength ratio is taken to be the difference between the lowest signal strength measured and the greatest band-dependent interference level measured. This numbers are in bold and highlighted in **Blue**. Signal to Noise ratios are reported in Section 9.3 for the 800 MHz band and 9.5 for the 900 MHz band. All measurements were made with backlighting off.

9.1 Axial frequency response plot data comparison:

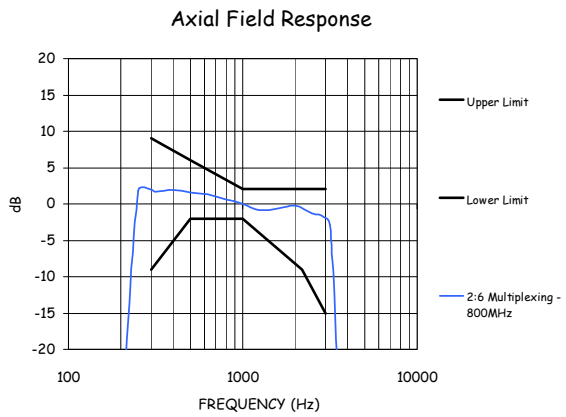


Figure 9-1-1: 800 MHz Measured Frequency Response (2:6) – BN 70 Battery

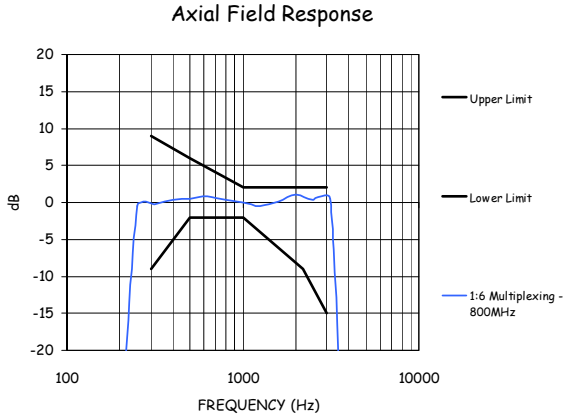


Figure 9-1-2: 800 MHz Measured Frequency Response (1:6) – BN 70 Battery

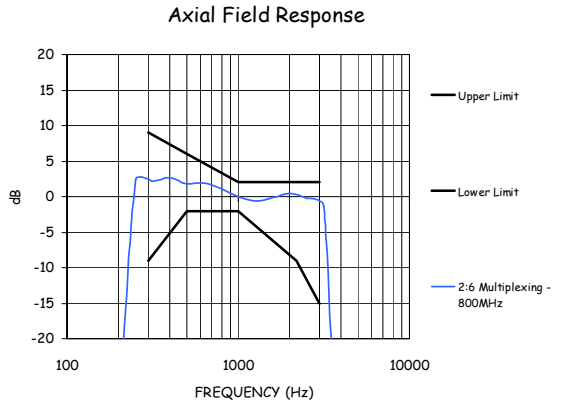


Figure 9-1-3: 800 MHz Measured Frequency Response (2:6) – BN80 Battery

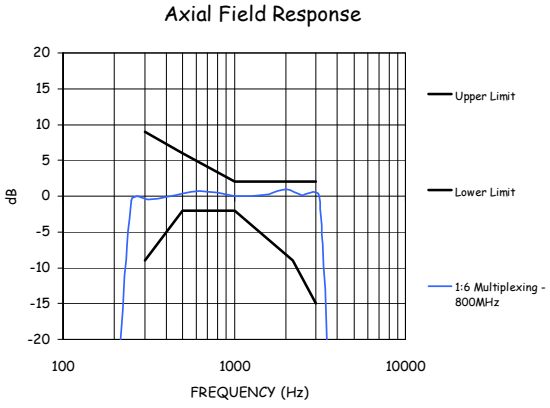


Figure 9-1-4: 800 MHz Measured Frequency Response (1:6) – BN80 Battery

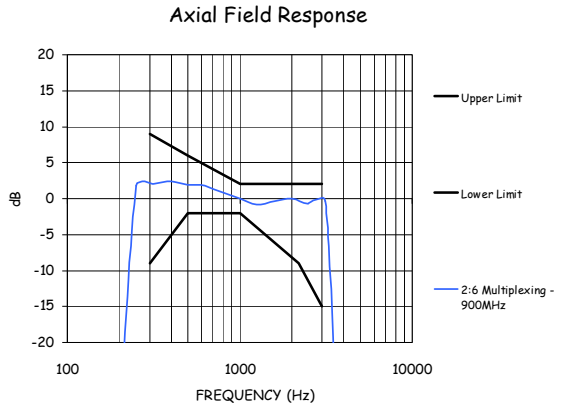


Figure 9-1-5: 900 MHz Measured Frequency Response (2:6) – BN70 Battery

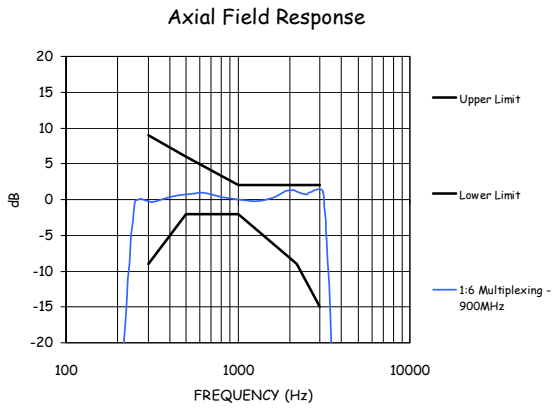


Figure 9-1-6: 900 MHz Measured Frequency Response (1:6). – BN70 Battery

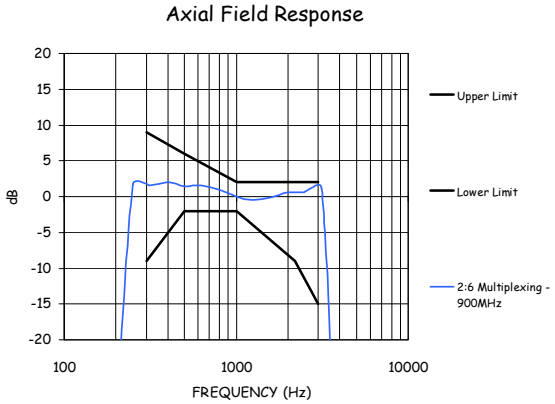


Figure 9-1-7: 900 MHz Measured Frequency Response (2:6) – BN80 Battery

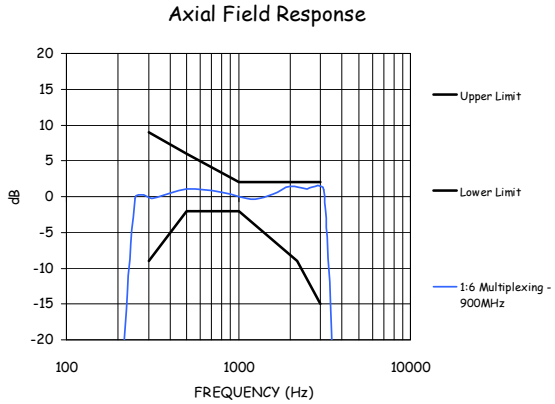


Figure 9-1-8: 900 MHz Measured Frequency Response (1:6) – BN80 Battery

The frequency responses above were measured with the DUT configured to optimize hearing aid inductive coupling frequency response, a setting selected by the user via the keypad.

These plots demonstrate that this model complies with the ANSI C63.19-2007 limits given in Section 7.3.2 and thus met the requirements of 47 CFR 20.19.

9.2 800 MHz Band Audio band magnetic (ABM) signal strength measured at 851.687500 MHz (BN70 and BN80 Batteries)

BN70 Battery		
Measurement Orientation with 2:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**6.60**	**-27.43**
Radial 1	**-6.58**	**-37.35**
Radial 2	**-5.21**	**-34.54**

BN70 Battery		
Measurement Orientation with 1:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**7.90**	**-16.83**
Radial 1	**-4.07**	**-38.36**
Radial 2	**-4.18**	**-30.98**

BN80 Battery		
Measurement Orientation with 2:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**5.32**	**-17.34**
Radial 1	**-6.43**	**-40.20**
Radial 2	**-5.80**	**-32.96**

BN80 Battery		
Measurement Orientation with 1:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**8.46**	**-18.98**
Radial 1	**-4.19**	**-39.71**
Radial 2	**-4.21**	**-28.84**

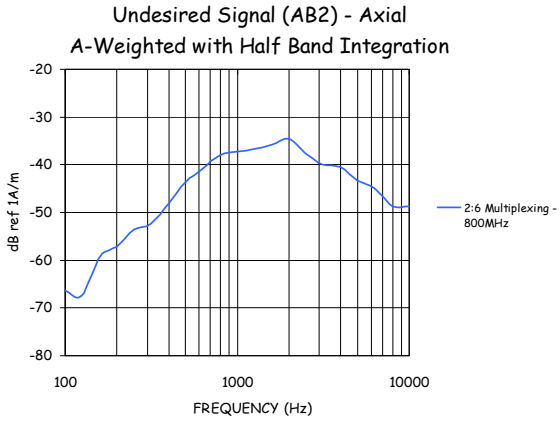


Figure 9-2-1: 800 MHz Undesired Signal (2:6) – BN70 Battery

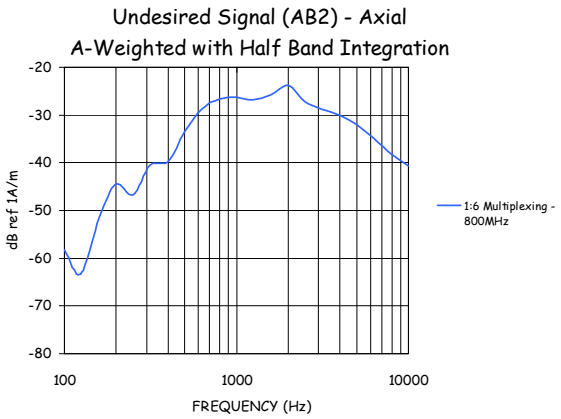


Figure 9-2-2: 800 MHz Undesired Signal (1:6) – BN70 Battery

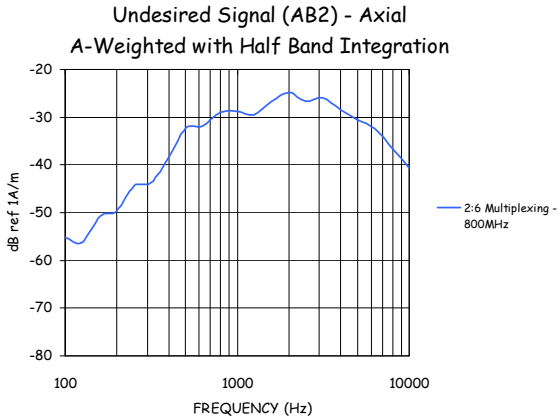


Figure 9-2-3: 800 MHz Undesired Signal (2:6) – BN80 Battery

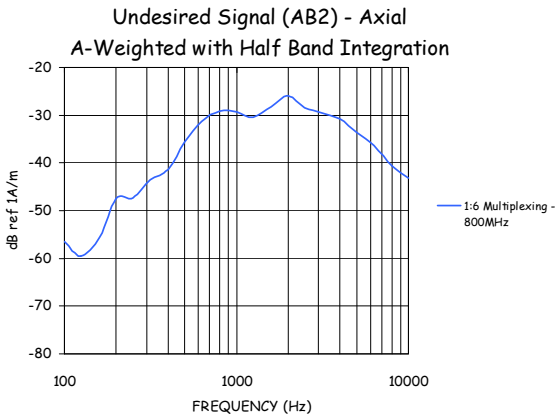


Figure 9-2-4: 800 MHz Undesired Signal (1:6) – BN80 Battery

Considering that the user has no choice of multiplexing ratio the highlighted ABM1 axial and radial values are the minimum values that all users might experience. The ABM2 values reported are the greatest values measured for the battery type listed.

800 MHz Band Desired to Undesired ABM Signal Ratio measured at 851.687500 MHz (BN70 and BN80 Batteries)

BN70 Battery		
Measurement Orientation	**ABM Ratio (dB) 2:6 Multiplexing**	**ABM Ratio (dB) 1:6 Multiplexing**
Axial	**34.02**	**24.73**
Radial 1	**30.77**	**34.29**
Radial 2	**29.33**	**26.80**

BN80 Battery		
Measurement Orientation	**ABM Ratio (dB) 2:6 Multiplexing**	**ABM Ratio (dB) 1:6 Multiplexing**
Axial	**22.66**	**27.44**
Radial 1	**33.77**	**35.52**
Radial 2	**27.16**	**24.63**

9.3 900 MHz Band Audio band magnetic (ABM) signal strength measured at 937.081250MHz (BN70 and BN80 Batteries)

BN70 Battery		
Measurement Orientation with 2:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**6.09**	**-20.83**
Radial 1	**-6.04**	**-33.32**
Radial 2	**-6.28**	**-27.81**

BN70 Battery		
Measurement Orientation with 1:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**6.08**	**-19.38**
Radial 1	**-4.56**	**-34.25**
Radial 2	**-5.69**	**-28.33**

BN80 Battery		
Measurement Orientation with 2:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**6.35**	**-16.33**
Radial 1	**-5.42**	**-29.43**
Radial 2	**-4.89**	**-25.66**

BN80 Battery		
Measurement Orientation with 1:6 multiplexing	**Desired signal ABM1 (dB A/m)**	**Undesired Signal ABM2 (dB A/m)**
Axial	**8.07**	**-20.32**
Radial 1	**-3.57**	**-28.00**
Radial 2	**-5.28**	**-26.93**

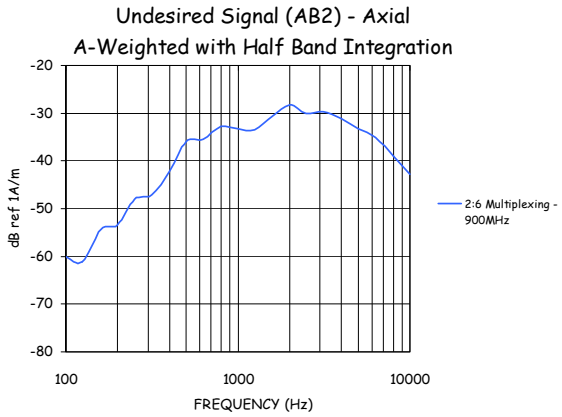


Figure 9-4-1: 900 MHz Undesired Signal (2:6) – BN70 Battery.

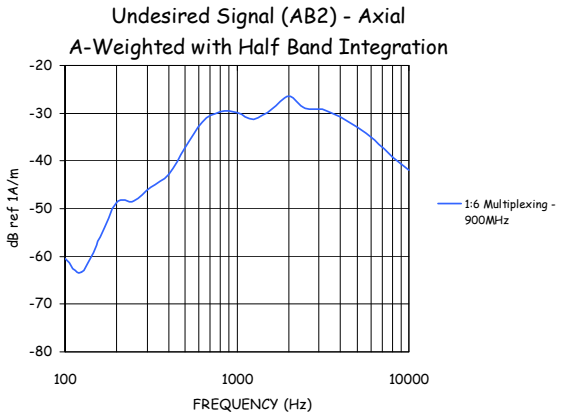


Figure 9-4-2: 900 MHz Undesired Signal (1:6) – BN70 Battery.

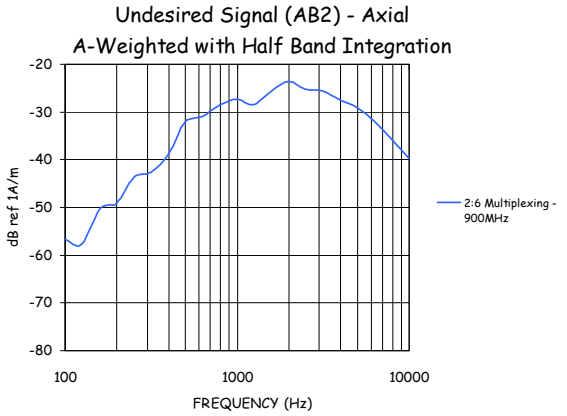


Figure 9-4-3: 900 MHz Undesired Signal (2:6) – BN80 Battery.

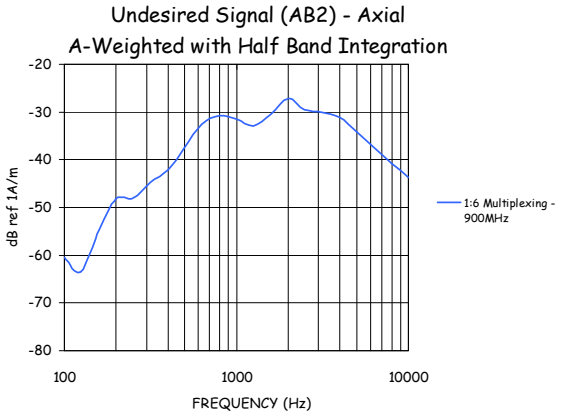


Figure 9-4-4: 900 MHz Undesired Signal (1:6) – BN80 Battery.

9.4 900 MHz Band Desired to Undesired ABM Signal Ratio (BN70 and BN80 Batteries)

BN70 Battery		
Measurement Orientation	**ABM Ratio (dB) 2:6 Multiplexing**	**ABM Ratio (dB) 1:6 Multiplexing**
Axial	**26.92**	**25.47**
Radial 1	**27.28**	**29.70**
Radial 2	**21.53**	**22.64**

BN80 Battery		
Measurement Orientation	**ABM Ratio (dB) 2:6 Multiplexing**	**ABM Ratio (dB) 1:6 Multiplexing**
Axial	**22.69**	**28.39**
Radial 1	**24.02**	**24.42**
Radial 2	**20.78**	**21.65**

9.5 Minimum ABM1 Signal Strength Summary

Given that users cannot select either the frequency band or the multiplexing ratio then the minimum signal strength all users will experience is evident by comparing the highlighted values in sections 9.2 and 9.4. Those values are:

Minimum axial: 5.32 dB A/m
Minimum radial: -6.58 dB A/m (at location radial 1)

Comparing the summaries in sections 9.6 and 9.7 with the ANSI C63.19-2007 limits in Section 2 then per the flow chart in Figure 2 it is evident that this model complies with the signal strength requirements mandated by FCC 47 CFR section 20.19.

9.6 Minimum Desired to Undesired Signal Ratio Summary

Given that users cannot select either the frequency band or the multiplexing ratio then the minimum signal strength all users will experience is evident by comparing the highlighted values in sections 9.3 and 9.5. The result is:

Minimum Desired to Undesired Signal: 20.78 dB (in the 900 MHz band)

Comparing the measured desired to undesired signal ratio values listed in the tables of sections 9.3 and 9.5 with Table 1 in section 2 a rating of T3 may be justified based solely on audio band magnetic (ABM) measurements. Considering the RF interference potential this rating can be justified as long as the RF field strength warrants a rating of T3 at the specific locations where the telecoil measurements were made.

10.0 Uncertainty budget

Table 7 - List of Uncertainties

Contributor	Data (dB)	Data type	Probability distribution	Divisor	Std. uncertainty (dB)
RF reflections	+/- 0.8	Specification	rectangular	1.73	+/- 1.39
Acoustic noise	+/- 0.8	Specification	rectangular	1.73	+/- 1.39
Probe coil sensitivity	+/- 0.5	Specification	rectangular	1.73	+/- 0.87
Reference signal level	+/- 0.25	Specification	rectangular	1.73	+/- 0.43
Positioning accuracy	+/- 0.5	Standard deviation	Normal	1.00	+/- 0.50
Cable loss	+/- 1	Uncertainty	Normal	2.00	+/- 2.00
Frequency analyzer	+/- 0.3	Specification	rectangular	1.73	+/- 0.52
System repeatability	+/- 0.4	Standard deviation	Normal	1.00	+/- 0.40
Repeatability of the WD	+/- 0.3	Standard deviation	Normal	1.00	+/- 0.30
Combined standard uncertainty			Normal	1	0.83
Expanded uncertainty (coverage factor = 2) U			Normal (K=2)	2	1.65

11.0 Declaration of Conformity

Motorola, Inc. hereby declares that based on the data herein this model complies with the requirements of 47 CFR 20.19(b)(2) with a rating of T4 based on ANSI C63.19-2007.

ANNEX A (HAC Distribution Plots: E and H-Field RF Data)

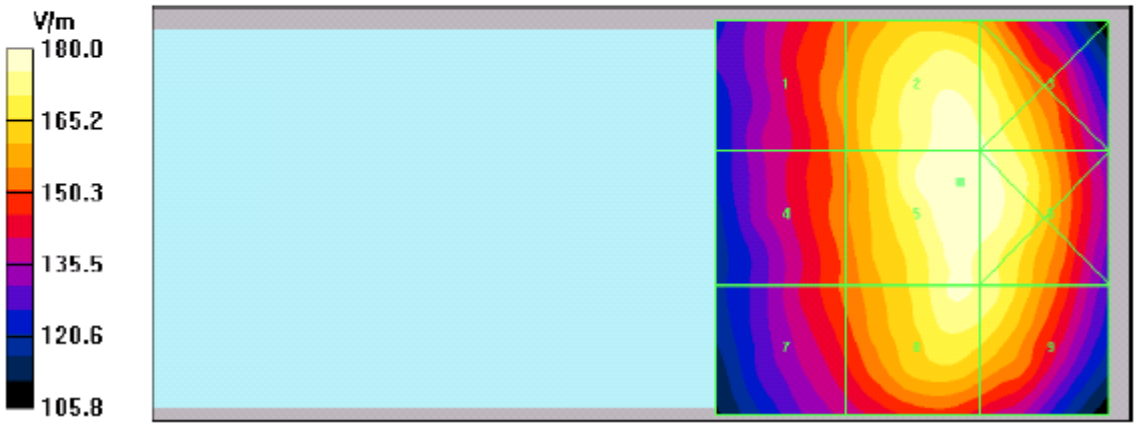
Serial: 364VLGM8F0; Procedure Notes: Battery SNN5851A; Communication System: iDEN 900, Vocoder 2:6; Frequency: 900.98 MHz; Communication System Channel Number: 7; Duty Cycle: 1:3; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3 ; DASY4 Configuration:

- Probe: ER3DV6R - SN2248; ConvF(1, 1, 1); Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn434; Calibrated: 1/15/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH CHANNEL, E Scan - ER sensor center 15mm above WD Ref 3, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 180.0 V/m
Probe Modulation Factor = 3.38
Reference Value = 63.6 V/m; Power Drift = 0.096 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **157.5 M4**	Grid 2 **178.2 M4**	Grid 3 **176.6 M4**
Grid 4 **155.2 M4**	Grid 5 **180.0 M4**	Grid 6 **178.9 M4**
Grid 7 **152.0 M4**	Grid 8 **176.0 M4**	Grid 9 **174.4 M4**



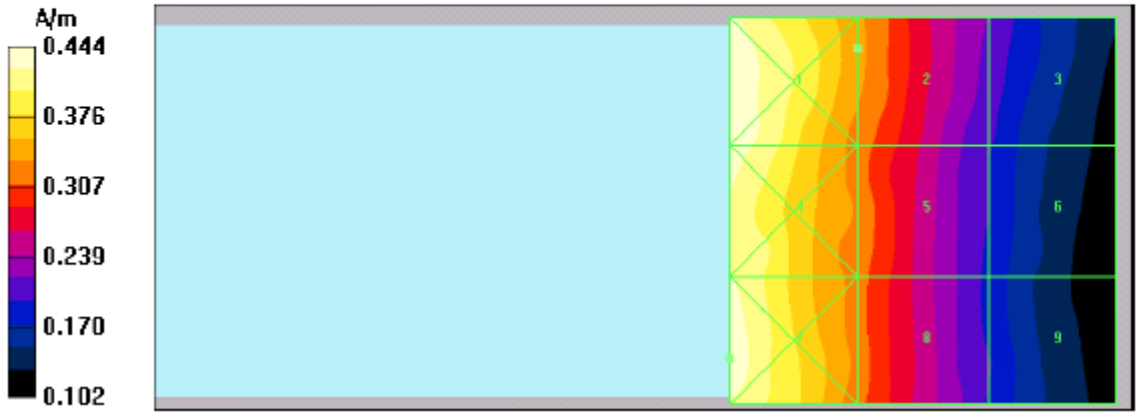
Serial: 364VLGM8F0; Procedure Notes: Battery: SNN5851A; Communication System: iDEN 900, Vocoder 1:6; Frequency: 896.02 MHz; Communication System Channel Number: 5; Duty Cycle: 1:6; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3 ; DASY4 Configuration:

- Probe: H3DV6 - SN6074; ; Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn378; Calibrated: 2/12/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW CHANNEL, H Scan - H3DV6 sensor center 15mm above WD Ref, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.338 A/m
Probe Modulation Factor = 4.20
Reference Value = 0.062 A/m; Power Drift = -0.032 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 0.441 **M4**	Grid 2 **0.338 M4**	Grid 3 **0.216 M4**
Grid 4 0.432 **M4**	Grid 5 **0.325 M4**	Grid 6 **0.197 M4**
Grid 7 0.444 **M4**	Grid 8 **0.322 M4**	Grid 9 **0.197 M4**



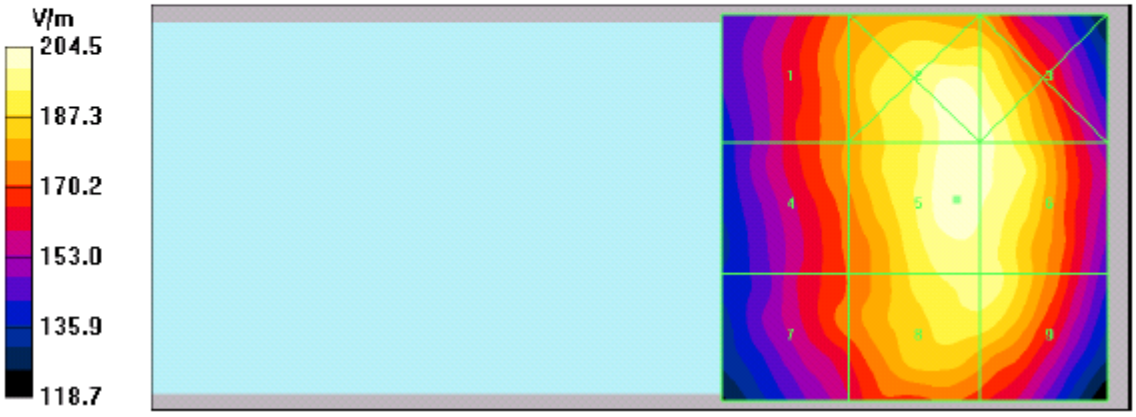
Serial: 364VLGM8F0; Procedure Notes: Battery" SNN5851A; Communication System: iDEN 900, Vocoder 1:6; Frequency: 896.02 MHz; Communication System Channel Number: 5; Duty Cycle: 1:6; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3 ; DASY4 Configuration:

- Probe: ER3DV6R - SN2248; ConvF(1, 1, 1); Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn434; Calibrated: 1/15/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW CHANNEL, E Scan - ER sensor center 15mm above WD Ref, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 204.5 V/m
Probe Modulation Factor = 4.82
Reference Value = 50.9 V/m; Power Drift = 0.085 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **179.9 M4**	Grid 2 **203.9 M3**	Grid 3 **201.6 M3**
Grid 4 **178.2 M4**	Grid 5 **204.5 M3**	Grid 6 **201.7 M3**
Grid 7 **173.6 M4**	Grid 8 **197.7 M4**	Grid 9 **197.8 M4**



Serial: 364VLGM8F0; Procedure Notes: Battery: SNN5837A; Communication System: iDEN 800, 2:6 vocoder; Frequency: 824.98 MHz; Communication System Channel Number: 4; Duty Cycle: 1:3; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

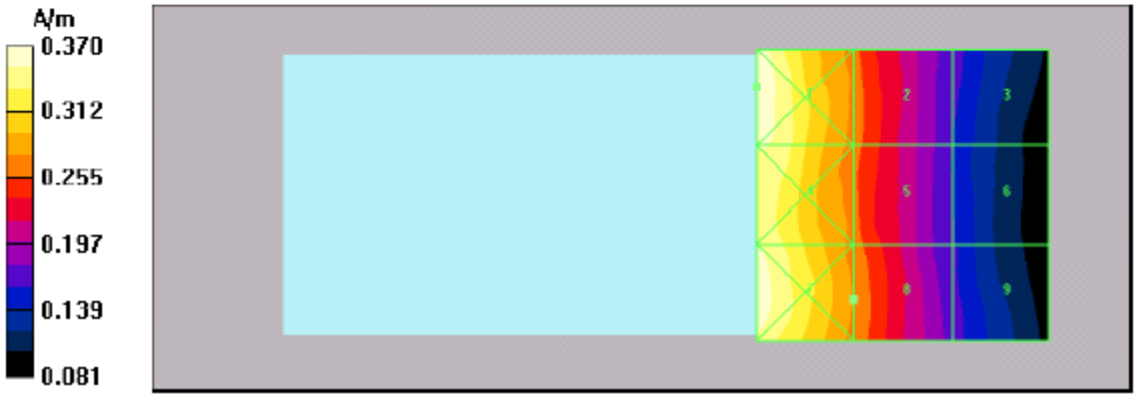
DASY4 Configuration:

- Probe: H3DV6 - SN6074; ; Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn378; Calibrated: 2/12/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH CHANNEL, H Scan - H3DV6 sensor center 15mm above WD Ref 3, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.273 A/m
Probe Modulation Factor = 3.00
Reference Value = 0.076 A/m; Power Drift = -0.325 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 **0.370 M4**	Grid 2 **0.269 M4**	Grid 3 **0.169 M4**
Grid 4 **0.355 M4**	Grid 5 **0.266 M4**	Grid 6 **0.162 M4**
Grid 7 **0.363 M4**	Grid 8 **0.273 M4**	Grid 9 **0.170 M4**



Serial: 364VLGM8F0; Procedure Notes: Battery SNN5851A; Communication System: iDEN 800, 2:6 vocoder; Frequency: 824.98 MHz; Communication System Channel Number: 4; Duty Cycle: 1:3; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

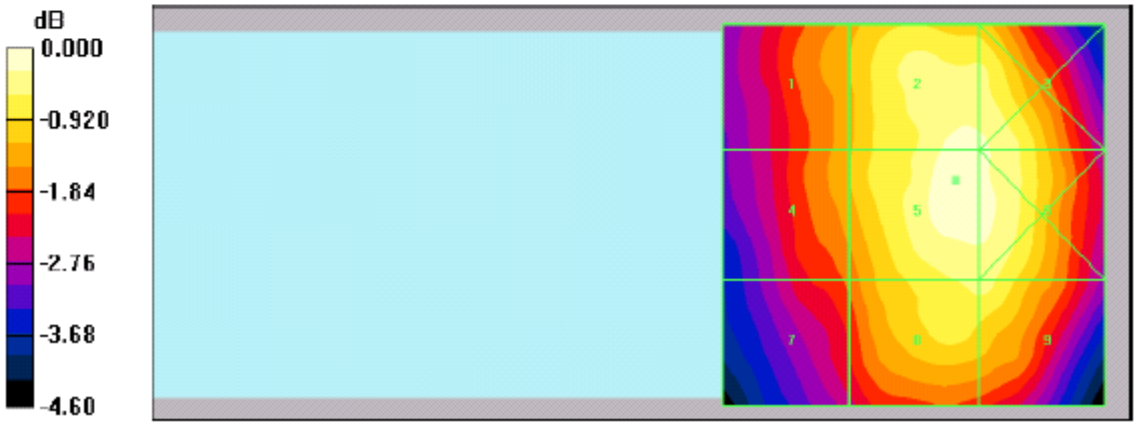
DASY4 Configuration:

- Probe: ER3DV6R - SN2248; ConvF(1, 1, 1); Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn434; Calibrated: 1/15/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH CHANNEL, E Scan - ER sensor center 15mm above WD Ref 3, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 188.2 V/m
Probe Modulation Factor = 3.51
Reference Value = 63.4 V/m; Power Drift = -0.142 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **163.5 M4**	Grid 2 **183.8 M4**	Grid 3 **183.2 M4**
Grid 4 **163.4 M4**	Grid 5 **188.2 M4**	Grid 6 **185.2 M4**
Grid 7 **154.0 M4**	Grid 8 **177.5 M4**	Grid 9 **177.5 M4**



0 dB = 188.2V/m

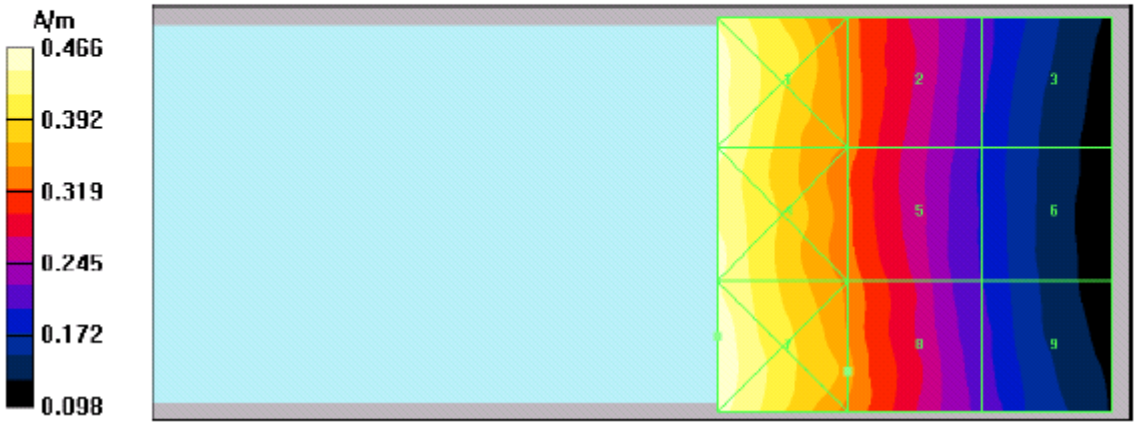
Serial: 364VLGM8F0; Procedure Notes: Battery SNN5837A; Communication System: iDEN 800, Vocoder 1:6; Frequency: 824.98 MHz; Communication System Channel Number: 4; Duty Cycle: 1:6; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3 ; DASY4 Configuration:

- Probe: H3DV6 - SN6074; ; Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn378; Calibrated: 2/12/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH CHANNEL, H Scan - H3DV6 sensor center 15mm above WD Ref 3, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.355 A/m
Probe Modulation Factor = 4.26
Reference Value = 0.064 A/m; Power Drift = -0.170 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 0.456 **M4**	Grid 2 **0.339 M4**	Grid 3 **0.208 M4**
Grid 4 0.452 **M4**	Grid 5 **0.335 M4**	Grid 6 **0.197 M4**
Grid 7 0.466 **M4**	Grid 8 **0.355 M4**	Grid 9 **0.215 M4**



Serial: 364VLGM8F0; Procedure Notes: Battery: SNN5837A; Communication System: iDEN 800, Vocoder 1:6; Frequency: 824.98 MHz; Communication System Channel Number: 4; Duty Cycle: 1:6; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3

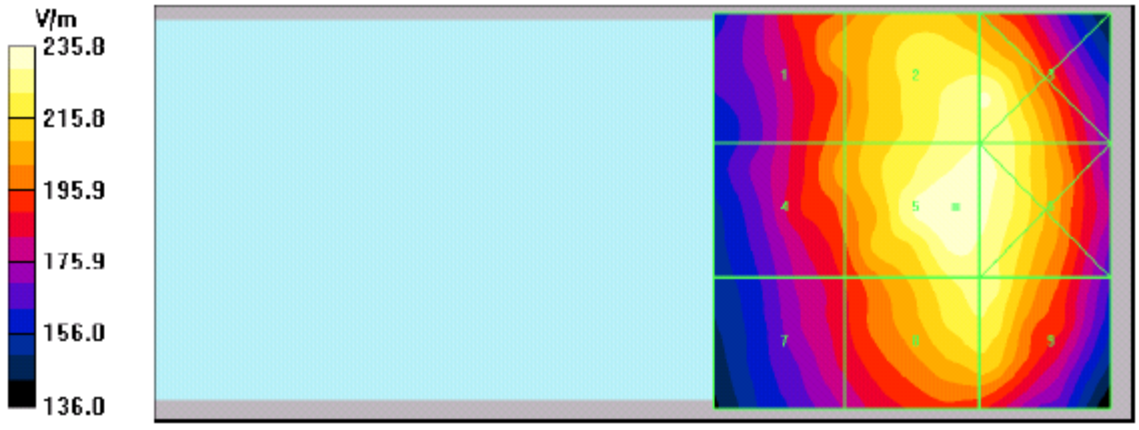
DASY4 Configuration:

- Probe: ER3DV6R - SN2248; ConvF(1, 1, 1); Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn434; Calibrated: 1/15/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH CHANNEL, E Scan - ER sensor center 15mm above WD Ref 3, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 235.8 V/m
Probe Modulation Factor = 5.00
Reference Value = 55.1 V/m; Power Drift = -0.094 dB
Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1 **206.7 M3**	Grid 2 **229.6 M3**	Grid 3 **230.0 M3**
Grid 4 **206.2 M3**	Grid 5 **235.8 M3**	Grid 6 **232.0 M3**
Grid 7 **190.3 M4**	Grid 8 **226.9 M3**	Grid 9 **227.0 M3**



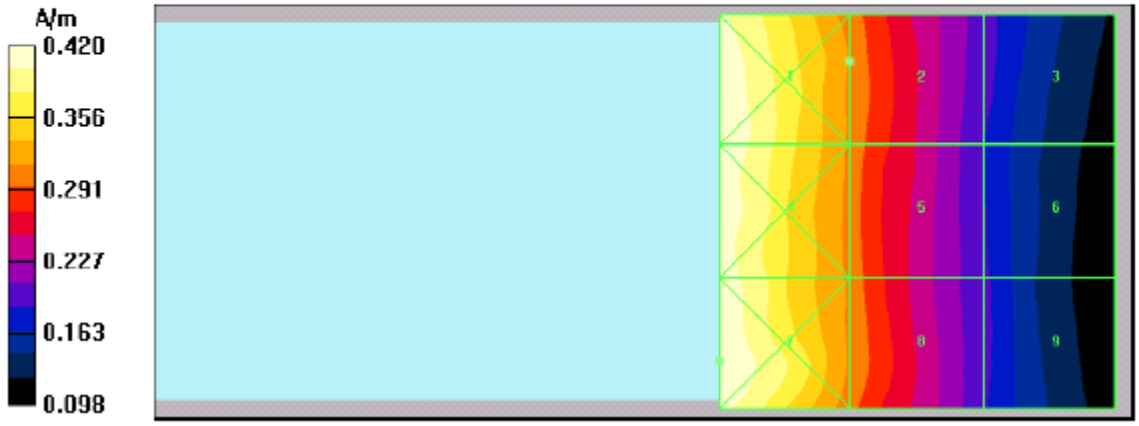
Serial: 364VLGM8F0; Procedure Notes: Battery: SNN5837A; Communication System: iDEN 900, Vocoder 2:6; Frequency: 896.02 MHz; Communication System Channel Number: 5; Duty Cycle: 1:3; Medium: Air; Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3 ; DASY4 Configuration:

- Probe: H3DV6 - SN6074; ; Calibrated: 7/16/2009
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn378; Calibrated: 2/12/2010
- Phantom: R-3, HAC Test Arch (rev.2); Type: SD HAC P01 BA; Serial: 1071;
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW CHANNEL, H Scan - H3DV6 sensor center 15mm above WD Ref, Hearing Aid Compatibility Test (101x101x1): Measurement grid: dx=5mm, dy=5mm
Maximum value of peak Total field = 0.311 A/m
Probe Modulation Factor = 2.96
Reference Value = 0.088 A/m; Power Drift = -0.253 dB
Hearing Aid Near-Field Category: M4 (AWF 0 dB)

Peak H-field in A/m

Grid 1 0.419 **M4**	Grid 2 **0.311 M4**	Grid 3 **0.194 M4**
Grid 4 0.416 **M4**	Grid 5 **0.308 M4**	Grid 6 **0.189 M4**
Grid 7 0.420 **M4**	Grid 8 **0.310 M4**	Grid 9 **0.191 M4**



ANNEX B (Manufacturer's Probe Calibration Certificates)

Communication Certification Laboratory

CALIBRATION
ID NO. 0238
DATE 2-11-2010 BY RRF
DUE 2-11-2011

HAC Probe Certificate of Calibration

Client: Motorola
Test No: 2586
Model No: A-100
Serial No: 0238
Description: HAC Probe (Axial)

Job Number/Certificate No. 1547
Test Program Revision: None
Laboratory Site No: 1

At the time of calibration, this certifies that the above product was calibrated in accordance with applicable Communication Certification Laboratory (CCL) procedures. This report is not to be reproduced, except in full, without written approval of CCL.

At planned intervals, CCL measurement standards are calibrated by comparison to or measurement against national standards, natural physical constants, or consensus standards.

National Standards are administered by NIST (National Institute of Standards and Technology) or other recognized national standards laboratories.

Initial testing found this instrument WITHIN SPECIFICATION. The measurement uncertainty is ±0.13 dB.

Support documentation relative to traceability is on file and is available for examination upon request.

CCL recommends calibration of this equipment in the interval of 1 year and the calibration due date based on this interval is one year from the calibration date.

Standards Used

ID No.	Model No.	Manufacturer	Serial No.	Calibrated
552	HP3585A	Hewlett Packard	---	2009-07-24
533	Signal Power Bench	CCL		2009-10-29
1030	CCL Helmholtz Coil per IEEE Standard 1027 Appendix C			

Temperature: 65° F Relative Humidity: 20%

Received in tolerance Yes Returned in tolerance Yes

Calibration Date: February 11, 2010

Russell Ferguson
Calibration Technician

Corporate Office and Laboratory
1940 West Alexander Street Salt Lake City, Utah 84119-2039
Tel (801) 972-6146 Fax (801) 972-8432

www.cclab.com

EMC Open Area Test Site
29145/29151 Old Lincoln Hwy Wanship, Utah 84017-9760
Tel (435) 336-5868

Communication Certification Laboratory

Hearing Aid Probe Calibration

Model: A-100

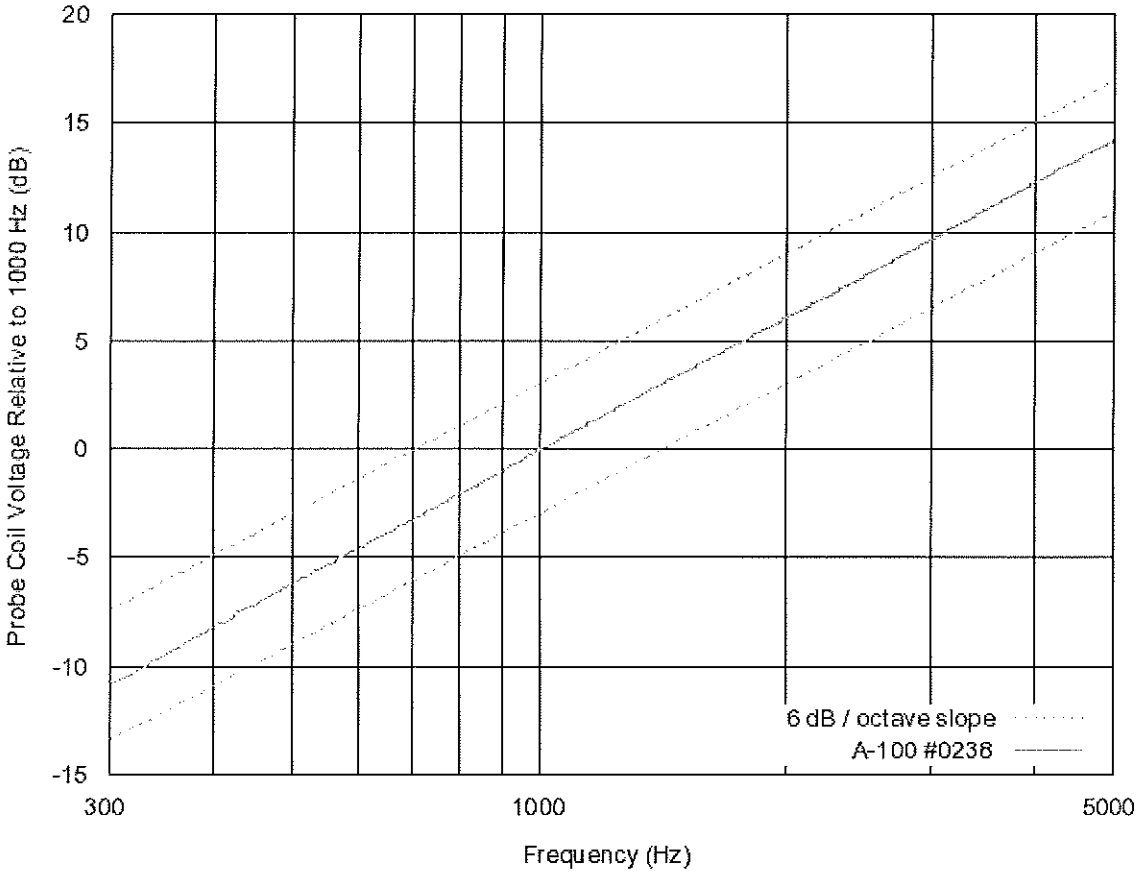
Data Form: P1

Serial Number: 0238

Specification Reference: IEEE Standard 1027, Sections 5.1 and 5.2

Sensitivity at 1000 Hz: -60 dBV/(A/m)

Frequency Response:



* The measurement uncertainty of the probe is ± 0.13

Humidity:	20%	Temperature:	65 °F
Test Equipment:	Signal Power B - Bar Code 533	Date:	11-Feb-10
Test Operator:	RRF		

Communication Certification Laboratory

Hearing Aid Probe Calibration

Model: A-100

Data Form: P1

Serial Number: 0238

Specification Reference: IEEE Standard 1027, Sections 5.1 and 5.2

Summary Data

Freq (Hz)	Sens (dBV)	1kHz Ref	Freq (Hz)	Sens (dBV)	1kHz Ref	Freq (Hz)	Sens (dBV)	1kHz Ref
300	-70.8	-10.8	1945	-54.2	5.8	3637	-48.6	11.4
347	-69.6	-9.6	1992	-54.0	6.0	3684	-48.5	11.5
394	-68.4	-8.4	2039	-53.8	6.2	3731	-48.4	11.6
441	-67.3	-7.3	2086	-53.6	6.4	3778	-48.3	11.7
488	-66.4	-6.4	2133	-53.4	6.6	3825	-48.1	11.9
535	-65.6	-5.6	2180	-53.2	6.8	3872	-48.0	12.0
582	-64.9	-4.9	2227	-53.0	7.0	3919	-47.9	12.1
629	-64.2	-4.2	2274	-52.8	7.2	3966	-47.8	12.2
676	-63.6	-3.6	2321	-52.6	7.4	4013	-47.7	12.3
723	-63.0	-3.0	2368	-52.5	7.5	4060	-47.6	12.4
770	-62.4	-2.4	2415	-52.3	7.7	4107	-47.5	12.5
817	-61.9	-1.9	2462	-52.1	7.9	4154	-47.4	12.6
864	-61.4	-1.4	2509	-52.0	8.0	4201	-47.3	12.7
911	-60.9	-0.9	2556	-51.8	8.2	4248	-47.2	12.8
958	-60.5	-0.5	2603	-51.6	8.4	4295	-47.1	12.9
1000	-60.0	0.0	2650	-51.5	8.5	4342	-47.0	13.0
1005	-60.0	0.0	2697	-51.3	8.7	4389	-46.9	13.1
1052	-59.6	0.4	2744	-51.1	8.9	4436	-46.8	13.2
1099	-59.2	0.8	2791	-51.0	9.0	4483	-46.7	13.3
1146	-58.8	1.2	2838	-50.8	9.2	4530	-46.7	13.3
1193	-58.5	1.5	2885	-50.7	9.3	4577	-46.6	13.4
1240	-58.1	1.9	2932	-50.5	9.5	4624	-46.5	13.5
1287	-57.8	2.2	2979	-50.4	9.6	4671	-46.4	13.6
1334	-57.5	2.5	3026	-50.3	9.7	4718	-46.3	13.7
1381	-57.2	2.8	3073	-50.1	9.9	4765	-46.2	13.8
1428	-56.9	3.1	3120	-50.0	10.0	4812	-46.1	13.9
1475	-56.6	3.4	3167	-49.8	10.2	4859	-46.0	14.0
1522	-56.3	3.7	3214	-49.7	10.3	4906	-45.9	14.1
1569	-56.1	3.9	3261	-49.6	10.4	4953	-45.9	14.1
1616	-55.8	4.2	3308	-49.5	10.5	5000	-45.8	14.2
1663	-55.5	4.5	3355	-49.3	10.7			
1710	-55.3	4.7	3402	-49.2	10.8			
1757	-55.1	4.9	3449	-49.1	10.9			
1804	-54.8	5.2	3496	-49.0	11.0			
1851	-54.6	5.4	3543	-48.8	11.2			
1898	-54.4	5.6	3590	-48.7	11.3			

Humidity: 20%

Temperature: 65 °F

Test Equipment: Signal Power B - Bar Code 533

Date: 11-Feb-10

Test Operator: RRF

Communication Certification Laboratory

CALIBRATION
I.D. NO. 0238
DATE 2-11-2010 BY RRF
DUE 2-11-2011

HAC Probe Certificate of Calibration

Client: Motorola
Test No: 2586
Model No: R-100
Serial No: 0238
Description: HAC Probe (Radial)

Job Number/Certificate No. 1548
Test Program Revision: None
Laboratory Site No: 1

At the time of calibration, this certifies that the above product was calibrated in accordance with applicable Communication Certification Laboratory (CCL) procedures. This report is not to be reproduced, except in full, without written approval of CCL.

At planned intervals, CCL measurement standards are calibrated by comparison to or measurement against national standards, natural physical constants, or consensus standards.

National Standards are administered by NIST (National Institute of Standards and Technology) or other recognized national standards laboratories.

Initial testing found this instrument WITHIN SPECIFICATION. The measurement uncertainty is ±0.13 dB.

Support documentation relative to traceability is on file and is available for examination upon request.

CCL recommends calibration of this equipment in the interval of 1 year and the calibration due date based on this interval is one year from the calibration date.

Standards Used

ID No.	Model No.	Manufacturer	Serial No.	Calibrated
552	HP3585A	Hewlett Packard	---	2009-07-24
533	Signal Power Bench	CCL		2009-10-29
1030	CCL Helmholtz Coil per IEEE Standard 1027 Appendix C			

Temperature: 65° F Relative Humidity: 20%

Received in tolerance Yes Returned in tolerance Yes

Calibration Date: February 11, 2010

Russell Ferguson
Calibration Technician

Corporate Office and Laboratory
1940 West Alexander Street Salt Lake City, Utah 84119-2039
Tel (801) 972-6146 Fax (801) 972-8432

www.cclab.com

EMC Open Area Test Site
29145/29151 Old Lincoln Hwy Wanship, Utah 84017-9760
Tel (435) 336-5868

Communication Certification Laboratory

Hearing Aid Probe Calibration

Model: R-100

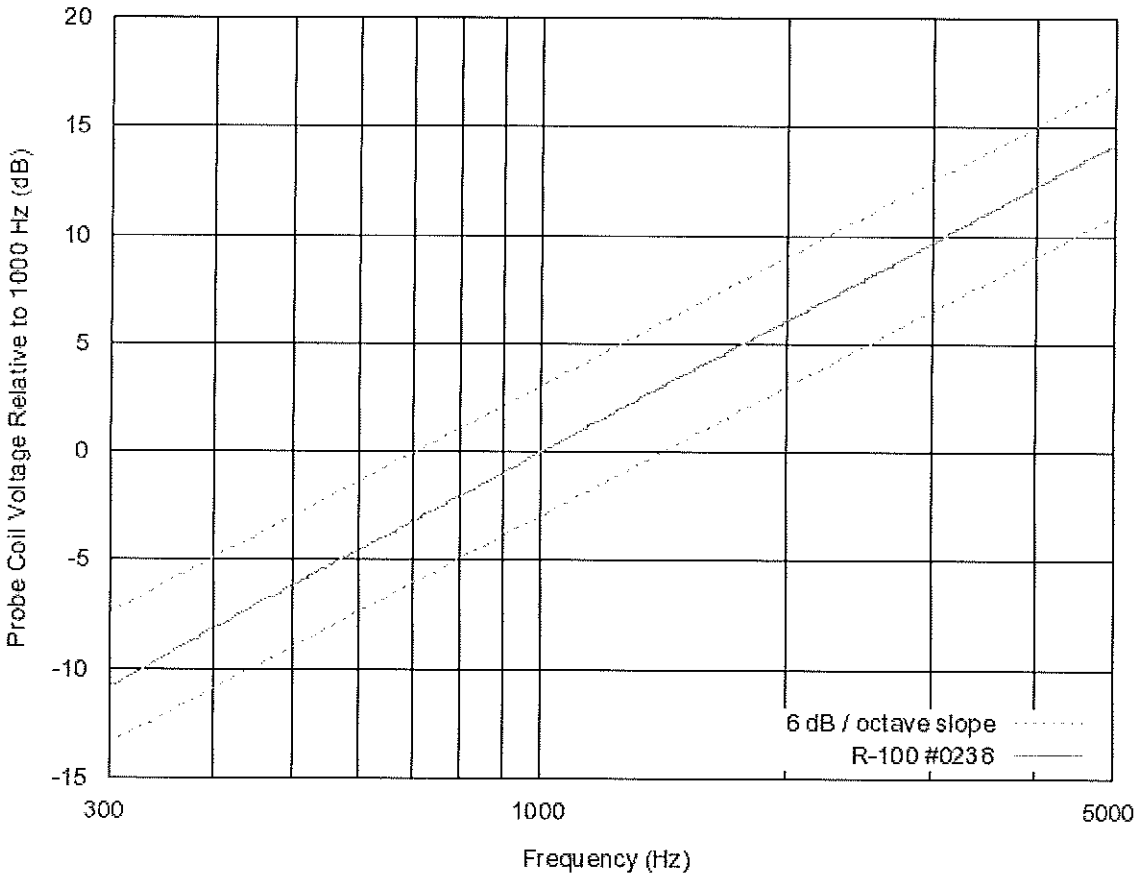
Serial Number: 0238

Data Form: P1

Specification Reference: IEEE Standard 1027, Sections 5.1 and 5.2

Sensitivity at 1000 Hz: -60 dBV/(A/m)

Frequency Response:



* The measurement uncertainty of the probe is ± 0.13

Humidity:	20%	Temperature:	65 °F
Test Equipment:	Signal Power B - Bar Code 533	Date:	11-Feb-10
Test Operator:	RRF		

Communication Certification Laboratory

Hearing Aid Probe Calibration

Model: R-100

Data Form: P1

Serial Number: 0238

Specification Reference: IEEE Standard 1027, Sections 5.1 and 5.2

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