EMC EMISSIONS - TEST REPORT (Full)

Test Report No.	**3166782DEN-003c** Issue Date: **Wednesday 19/Nov/08**
Model / Serial No.	**MN: TAD /SN: 9800021**
Product Type	**Transdermal Alcohol Detector**
Client	**BI Inc.**
Manufacturer	**BI Inc.**
License holder	**BI Inc.**
Address	**6400 Lookout Rd** **Boulder CO 80301**
Test Criteria Applied	**FCC 47 CFR Part 15.249** **IC RSS-210 issue 7**
Test Result	**PASS**
Test Project Number	**3166782**
References	Title 47 CFR 15: RADIO FREQUENCY DEVICES Subpart C – Intentional Radiators
Total Pages Including Appendices:	**32**
	Low-power License-exempt Radio Communication Devices (All Frequency Bands): Category I Equipment

Reviewed By : Ty Orosco

Reviewed By : Michael Spataro

REVISION SUMMARY - The following changes have been made to this Report:

Rev.	Revision Statement	Author	Revision Date	Reviewer
	Initial Release of Document	See above	See above	

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D I R E C T O R Y

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty for Conducted Emissions in the frequency range of 150kHz – 30MHz is calculated to be ±3.14dB and for Radiated Emissions is calculated to be ±4.4dB in the frequency range of 10kHz – 1000MHz at 3m and ±4.9dB in the frequency range of 1 – 18GHz at 3m. For testing at 10m ±4.8dB in the frequency range of 30 – 1000MHz. For Disturbance Power, ±3.3dB in the frequency range of 30 – 1000MHz. For Flicker and Harmonics testing the equipment used is calibrated by the manufacture and is with in the tolerances specified in 61000-3-2/3. These uncertainties have been calculated using CISPR 16-4-2:2003 and represent a 95% confidence level (k=2).

EUT Received Date: 29-October-2008

Testing Start Date: 29-October-2008

Testing End Date: 31-October-2008

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The tests were performed according to following regulations:

1. **FCC CFR47 Part 15 subpart C**
2. **IC RSS-210e Issue 7 2007**
3. **IC RSS-GEN Issue 2 2007**

Emission Test Results:

Conducted Emissions 15.207 - NA

Test Result

Minimum limit margin 0.0 dB at 0.0 MHz

Remarks: EUT is battery powered

Radiated Unintentional and Spurious Emissions 15.249(d) /15.205/209 - PASS

Test Result

Minimum limit margin -8.1 dB at 1807.96 MHz

Remarks: Covers RSS-210 tables 1 and 2.

Field Strength of the Fundamental 15.249(a) - PASS

Test Result

Minimum limit margin -6.0 dB at 904.05 MHz

Remarks: Covers RSS-210 A2.9(a).

Field Strength of Harmonics 15.249(a) - PASS

Test Result

Minimum limit margin -1.1 dB at 4520.46 MHz

Remarks: Covers RSS-210 A2.9(a).

Occupied Bandwidth RSS-GEN - PASS

Test Result

Remarks: The 99% emission bandwidth is 350kHz

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GENERAL REMARKS:

The following remarks are to be considered as "where applicable" and are taken into account while completing any FCC/IC/ETSI radio tests at Intertek.

Testing was performed in 3 different orthogonal axis to determine the worst case emissions from the device. The worst case emissions measurements are shown in this report.

FCC CFR47 Part 15.31: Measurement Standards: In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.

FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths: FCC Part 15.35 was utilized when performing the measurements within this report.

Sample:
☒Production ☐Prototype ☐See RFQ

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

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Test-setup photo(s):
Radiated Intentional Emissions:

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Test-setup photo(s):
Radiated Intentional Emissions:

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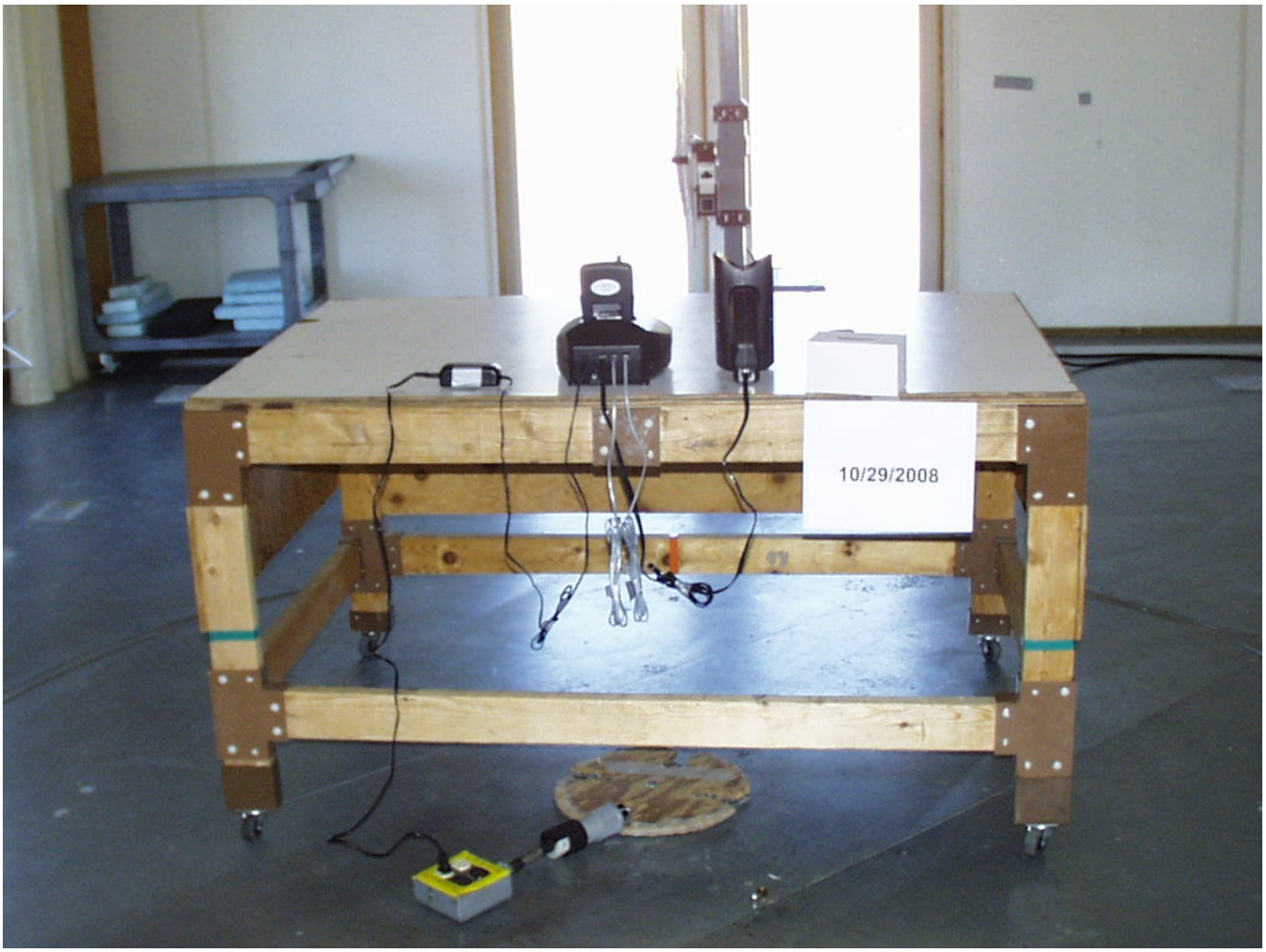
Test-setup photo(s):
Radiated Unintentional Emissions:



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Test-setup photo(s):
Radiated Unintentional Emissions:

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Appendix A

Test Data Sheets

and

Test Equipment Used

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Spurious Emissions
And
Unintentional Emissions

15.249(d) and 15.205/209

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Radiated Electromagnetic Emissions

Test Report #:	**3166782**	Test Area:	Pinewood Site 1 (3m)	Temperature:	24.9	°C
Test Method:	FCC Part 15.209	Test Date:	30-Oct-2008	Relative Humidity:	17.3	%
EUT Model #:	Homebase HB100; TAD	EUT Power:	120VAC; 60Hz; 3.3VDC	Air Pressure:	81	kPa
EUT Serial #:	6100021; 9800021					
Manufacturer:	BI					
EUT Description:	Alcohol Monitoring System; Transdermal Alcohol Detector					
Notes:	Both units were on the table at time of testing.					

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

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
200.00	30.6 Qp	1.5 / 11.3 / 27.3	16.0	V / 1.0 / 0.0	-27.5	N/A
959.98	25.8 Qp	3.7 / 22.4 / 27.3	24.6	V / 1.0 / 0.0	-21.4	N/A
224.29	31.4 Qp	1.6 / 10.4 / 27.3	16.0	V / 1.0 / 0.0	-30.0	N/A
254.30	35.0 Qp	1.8 / 11.8 / 27.1	21.4	V / 1.0 / 0.0	-24.6	N/A
408.26	38.1 Qp	2.2 / 18.0 / 27.8	30.5	V / 1.0 / 0.0	-15.5	N/A
234.00	34.0 Qp	1.7 / 10.6 / 27.2	19.1	V / 1.0 / 0.0	-26.9	N/A
313.57	33.0 Qp	1.9 / 14.2 / 27.2	22.1	V / 1.0 / 0.0	-23.9	N/A
408.26	39.2 Qp	2.2 / 18.0 / 27.8	31.6	V / 1.0 / 90.0	-14.4	N/A
959.98	25.9 Qp	3.7 / 22.4 / 27.3	24.7	V / 1.0 / 90.0	-21.3	N/A
254.30	35.6 Qp	1.8 / 11.8 / 27.1	22.0	V / 1.0 / 180.0	-24.0	N/A
250.00	37.2 Qp	1.7 / 11.6 / 27.2	23.4	V / 1.0 / 180.0	-22.6	N/A
620.91	30.5 Qp	2.9 / 18.9 / 28.2	24.1	V / 1.0 / 180.0	-21.9	N/A
818.47	28.8 Qp	3.3 / 21.4 / 27.8	25.7	V / 1.0 / 180.0	-20.3	N/A
846.70	32.2 Qp	3.4 / 21.7 / 27.7	29.6	V / 1.0 / 180.0	-16.4	N/A
620.91	30.7 Qp	2.9 / 18.9 / 28.2	24.3	V / 1.0 / 270.0	-21.7	N/A
290.19	34.2 Qp	1.9 / 13.3 / 27.0	22.4	V / 1.0 / 270.0	-23.6	N/A
299.82	31.2 Qp	1.9 / 13.8 / 27.1	19.7	V / 1.0 / 270.0	-26.3	N/A
338.67	31.5 Qp	2.0 / 14.1 / 27.2	20.3	V / 1.0 / 270.0	-25.7	N/A
339.81	31.2 Qp	2.0 / 14.1 / 27.3	20.0	V / 1.0 / 270.0	-26.0	N/A
790.25	27.3 Qp	3.3 / 20.6 / 27.8	23.4	V / 1.0 / 270.0	-22.6	N/A
The following are maximized.						
408.26	38.8 Qp	2.2 / 18.0 / 27.8	31.2	V / 1.0 / 87.1	-14.8	N/A
818.47	35.1 Qp	3.3 / 21.4 / 27.8	32.1	V / 1.1 / 49.1	-13.9	N/A
846.70	39.6 Qp	3.4 / 21.7 / 27.7	36.9	V / 1.6 / 15.5	-9.1	N/A
278.92	35.4 Qp	1.8 / 12.7 / 27.0	22.9	H / 1.6 / 0.0	-23.1	N/A
299.82	32.6 Qp	1.9 / 13.8 / 27.1	21.2	H / 1.6 / 0.0	-24.8	N/A
339.81	33.3 Qp	2.0 / 14.1 / 27.3	22.1	H / 1.6 / 0.0	-23.9	N/A
790.25	28.3 Qp	3.3 / 20.6 / 27.8	24.4	H / 2.5 / 0.0	-21.6	N/A

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
359.81	31.1 Qp	2.1 / 16.5 / 27.3	22.4	H / 2.5 / 0.0	-23.6	N/A
219.87	31.8 Qp	1.6 / 10.3 / 27.2	16.5	H / 2.5 / 0.0	-29.5	N/A
329.84	27.1 Qp	2.0 / 13.7 / 27.2	15.6	H / 2.5 / 0.0	-30.4	N/A
219.87	36.0 Qp	1.6 / 10.3 / 27.2	20.6	H / 2.5 / 90.0	-25.4	N/A
224.29	32.5 Qp	1.6 / 10.4 / 27.3	17.1	H / 2.5 / 90.0	-28.9	N/A
359.81	34.4 Qp	2.1 / 16.5 / 27.3	25.7	H / 2.5 / 90.0	-20.3	N/A
200.00	34.3 Qp	1.5 / 11.3 / 27.3	19.7	H / 1.6 / 90.0	-23.8	N/A
959.59	26.8 Qp	3.7 / 22.5 / 27.3	25.6	H / 1.6 / 90.0	-20.4	N/A
299.82	33.0 Qp	1.9 / 13.8 / 27.1	21.6	H / 2.5 / 180.0	-24.4	N/A
329.84	30.8 Qp	2.0 / 13.7 / 27.2	19.3	H / 2.5 / 180.0	-26.7	N/A
200.00	38.9 Qp	1.5 / 11.3 / 27.3	24.3	H / 1.6 / 270.0	-19.2	N/A
250.00	41.1 Qp	1.7 / 11.6 / 27.2	27.2	H / 1.6 / 270.0	-18.8	N/A
254.30	39.1 Qp	1.8 / 11.8 / 27.1	25.5	H / 1.6 / 270.0	-20.5	N/A
278.92	37.9 Qp	1.8 / 12.7 / 27.0	25.4	H / 1.6 / 270.0	-20.6	N/A
299.82	34.0 Qp	1.9 / 13.8 / 27.1	22.5	H / 1.6 / 270.0	-23.5	N/A
339.81	36.0 Qp	2.0 / 14.1 / 27.3	24.8	H / 1.6 / 270.0	-21.2	N/A
329.84	31.3 Qp	2.0 / 13.7 / 27.2	19.8	H / 2.5 / 270.0	-26.2	N/A
The following are maximized.						
250.00	47.0 Qp	1.7 / 11.6 / 27.2	33.1	H / 1.0 / 86.4	-12.9	N/A
200.00	39.8 Qp	1.5 / 11.3 / 27.3	25.2	H / 1.7 / 274.9	-18.3	N/A
359.81	37.0 Qp	2.1 / 16.5 / 27.3	28.3	H / 2.5 / 44.1	-17.7	N/A
30.00	35.8 Qp	0.5 / 12.8 / 28.2	20.9	V / 1.0 / 0.0	-19.1	N/A
52.56	44.0 Qp	0.7 / 9.4 / 28.2	25.9	V / 1.0 / 0.0	-14.1	N/A
69.99	39.7 Qp	0.8 / 8.5 / 28.2	20.8	V / 1.0 / 0.0	-19.2	N/A
79.95	35.0 Qp	0.9 / 6.8 / 28.1	14.6	V / 1.0 / 0.0	-25.4	N/A
148.22	35.4 Qp	1.3 / 12.3 / 27.7	21.3	V / 1.0 / 0.0	-22.2	N/A
169.33	33.7 Qp	1.4 / 12.0 / 27.6	19.5	V / 1.0 / 0.0	-24.0	N/A
197.56	37.2 Qp	1.5 / 13.2 / 27.4	24.5	V / 1.0 / 0.0	-19.0	N/A
30.00	36.2 Qp	0.5 / 12.8 / 28.2	21.3	V / 1.0 / 90.0	-18.7	N/A
52.56	45.8 Qp	0.7 / 9.4 / 28.2	27.8	V / 1.0 / 90.0	-12.2	N/A
179.90	30.0 Qp	1.4 / 12.3 / 27.4	16.3	V / 1.0 / 90.0	-27.2	N/A
169.33	37.6 Qp	1.4 / 12.0 / 27.6	23.4	V / 1.0 / 180.0	-20.1	N/A
197.56	41.8 Qp	1.5 / 13.2 / 27.4	29.0	V / 1.0 / 180.0	-14.5	N/A
No higher emissions found between 30 and 200MHz at 270 degrees vertical.						
The following are maximized.						
30.00	36.5 Qp	0.5 / 12.8 / 28.2	21.6	V / 1.0 / 105.3	-18.4	N/A
52.56	46.0 Qp	0.7 / 9.4 / 28.2	27.9	V / 1.0 / 144.8	-12.1	N/A
197.56	42.4 Qp	1.5 / 13.2 / 27.4	29.6	V / 1.0 / 175.1	-13.9	N/A

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
159.99	33.4 Qp	1.4 / 12.0 / 27.7	19.1	H / 2.5 / 0.0	-24.4	N/A
No higher emissions found between 30 and 200MHz at 90 degrees horizontal.						
No higher emissions found between 30 and 200MHz at 180 degrees horizontal.						
No higher emissions found between 30 and 200MHz at 270 degrees horizontal.						
The following emission is maximized.						
159.99	42.0 Qp	1.4 / 12.0 / 27.7	27.7	H / 2.5 / 267.4	-15.8	N/A
The following are noise floor between 30 and 200MHz horizontal.						
35.00	28.2 Qp	0.6 / 12.0 / 28.2	12.6	H / 2.5 / 0.0	-27.4	N/A
185.00	30.1 Qp	1.4 / 12.5 / 27.5	16.6	H / 2.5 / 0.0	-26.9	N/A
1128.93	40.1 Av	2.1 / 23.7 / 38.3	27.6	V / 1.0 / 0.0	N/A	-26.4
1185.37	38.2 Av	2.2 / 23.9 / 38.3	26.1	V / 1.0 / 0.0	N/A	-27.9
1213.99	36.8 Av	2.2 / 24.2 / 38.2	24.9	V / 1.0 / 0.0	N/A	-29.1
1241.83	38.0 Av	2.2 / 24.3 / 38.1	26.4	V / 1.0 / 0.0	N/A	-27.6
1298.27	36.6 Av	2.3 / 24.2 / 37.9	25.3	V / 1.0 / 0.0	N/A	-28.7
1354.71	40.3 Av	2.4 / 24.1 / 37.7	29.1	V / 1.0 / 0.0	N/A	-24.9
1580.50	35.9 Av	2.6 / 24.6 / 37.4	25.7	V / 1.0 / 0.0	N/A	-28.3
1608.72	35.8 Av	2.6 / 24.8 / 37.4	25.7	V / 1.0 / 0.0	N/A	-28.3
1665.17	35.6 Av	2.7 / 25.3 / 37.5	26.1	V / 1.0 / 0.0	N/A	-27.9
1693.40	35.9 Av	2.7 / 25.5 / 37.6	26.4	V / 1.0 / 0.0	N/A	-27.6
1807.96	47.6 Av	2.8 / 26.5 / 38.1	38.9	V / 1.0 / 0.0	N/A	-15.1
2333.45	37.0 Av	3.2 / 27.4 / 38.4	29.1	V / 1.0 / 0.0	N/A	-24.9
2344.01	37.5 Av	3.2 / 27.5 / 38.5	29.7	V / 1.0 / 0.0	N/A	-24.3
2731.49	38.4 Av	3.5 / 28.2 / 38.1	32.0	V / 1.0 / 0.0	N/A	-22.0
1693.40	36.2 Av	2.7 / 25.5 / 37.6	26.8	V / 1.0 / 90.0	N/A	-27.2
1072.48	38.2 Av	2.1 / 23.9 / 38.4	25.8	V / 1.0 / 90.0	N/A	-28.2
1128.93	40.5 Av	2.1 / 23.7 / 38.3	28.0	V / 1.0 / 180.0	N/A	-26.0
1580.50	36.5 Av	2.6 / 24.6 / 37.4	26.4	V / 1.0 / 180.0	N/A	-27.6
1665.17	36.4 Av	2.7 / 25.3 / 37.5	26.8	V / 1.0 / 180.0	N/A	-27.2
1693.40	37.8 Av	2.7 / 25.5 / 37.6	28.4	V / 1.0 / 180.0	N/A	-25.6
1807.96	51.8 Av	2.8 / 26.5 / 38.1	43.0	V / 1.0 / 180.0	N/A	-11.0
1016.04	35.8 Av	2.0 / 23.4 / 38.2	23.0	V / 1.0 / 180.0	N/A	-31.0
1636.95	36.0 Av	2.6 / 25.1 / 37.5	26.3	V / 1.0 / 180.0	N/A	-27.7
1749.84	36.0 Av	2.7 / 26.3 / 37.9	27.2	V / 1.0 / 180.0	N/A	-26.8
1806.30	36.5 Av	2.8 / 26.5 / 38.1	27.8	V / 1.0 / 180.0	N/A	-26.2
No higher emissions found between 1 and 4GHz at 270 degrees vertical.						
The following are maximized.						

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
1807.96	54.6 Av	2.8 / 26.5 / 38.1	45.9	V / 1.0 / 175.6	N/A	-8.1
2344.01	39.1 Av	3.2 / 27.5 / 38.5	31.3	V / 1.5 / 207.5	N/A	-22.7
2731.49	41.6 Av	3.5 / 28.2 / 38.1	35.3	V / 1.6 / 356.6	N/A	-18.7
1072.48	38.4 Av	2.1 / 23.9 / 38.4	25.9	H / 1.0 / 0.0	N/A	-28.1
2124.50	33.6 Av	3.1 / 26.7 / 38.2	25.2	H / 1.0 / 0.0	N/A	-28.8
2427.99	37.1 Av	3.2 / 27.6 / 38.6	29.4	H / 1.0 / 0.0	N/A	-24.6
No higher emissions found between 1 and 4GHz at 90 degrees horizontal.						
1298.27	36.6 Av	2.3 / 24.2 / 37.9	25.2	H / 1.0 / 180.0	N/A	-28.8
No higher emissions found between 1 and 4GHz at 270 degrees horizontal.						
The following are maximized.						
2427.99	41.2 Av	3.2 / 27.6 / 38.6	33.5	H / 1.8 / 346.3	N/A	-20.5
1072.48	39.0 Av	2.1 / 23.9 / 38.4	26.5	H / 1.1 / 16.6	N/A	-27.5
1298.27	37.2 Av	2.3 / 24.2 / 37.9	25.9	H / 1.0 / 220.7	N/A	-28.1
No emissions found between 4 and 10GHz.						
The following are noise floor.						
4500.00	34.4 Av	5.2 / 31.3 / 40.7	30.2	H / 1.0 / 0.0	N/A	-23.8
4000.00	32.6 Av	4.8 / 31.4 / 39.9	28.9	H / 1.0 / 0.0	N/A	-25.1
5000.00	33.6 Av	5.8 / 32.5 / 40.1	31.8	H / 1.0 / 0.0	N/A	-22.2
4100.00	33.5 Av	4.8 / 31.4 / 40.4	29.3	V / 1.0 / 0.0	N/A	-24.7
4600.00	34.0 Av	5.3 / 31.4 / 40.8	30.0	V / 1.0 / 0.0	N/A	-24.0
4900.00	33.6 Av	5.7 / 32.4 / 40.5	31.2	V / 1.0 / 0.0	N/A	-22.8
6500.00	31.5 Av	8.5 / 34.9 / 39.1	35.8	H / 1.0 / 0.0	N/A	-18.2
7900.00	32.1 Av	8.3 / 36.9 / 39.9	37.3	H / 1.0 / 0.0	N/A	-16.7
8000.00	41.0 Av	8.3 / 36.9 / 45.5	40.7	H / 1.0 / 0.0	N/A	-13.3
9500.00	42.4 Av	9.4 / 37.9 / 47.8	41.9	H / 1.0 / 0.0	N/A	-12.1
8500.00	42.0 Av	8.5 / 37.2 / 45.0	42.7	V / 1.0 / 0.0	N/A	-11.3
10000.0	42.3 Av	9.5 / 38.4 / 48.3	41.9	V / 1.0 / 0.0	N/A	-12.1

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(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
********** Measurement Summary **********						
1807.96	54.6 Av	2.8 / 26.5 / 38.1	45.9	V / 1.0 / 175.6	N/A	-8.1
846.70	39.6 Qp	3.4 / 21.7 / 27.7	36.9	V / 1.6 / 15.5	-9.1	N/A
8500.00	42.0 Av	8.5 / 37.2 / 45.0	42.7	V / 1.0 / 0.0	N/A	-11.3
52.56	46.0 Qp	0.7 / 9.4 / 28.2	27.9	V / 1.0 / 144.8	-12.1	N/A
10000.0	42.3 Av	9.5 / 38.4 / 48.3	41.9	V / 1.0 / 0.0	N/A	-12.1
9500.00	42.4 Av	9.4 / 37.9 / 47.8	41.9	H / 1.0 / 0.0	N/A	-12.1
250.00	47.0 Qp	1.7 / 11.6 / 27.2	33.1	H / 1.0 / 86.4	-12.9	N/A
8000.00	41.0 Av	8.3 / 36.9 / 45.5	40.7	H / 1.0 / 0.0	N/A	-13.3
197.56	42.4 Qp	1.5 / 13.2 / 27.4	29.6	V / 1.0 / 175.1	-13.9	N/A
818.47	35.1 Qp	3.3 / 21.4 / 27.8	32.1	V / 1.1 / 49.1	-13.9	N/A
408.26	39.2 Qp	2.2 / 18.0 / 27.8	31.6	V / 1.0 / 90.0	-14.4	N/A
159.99	42.0 Qp	1.4 / 12.0 / 27.7	27.7	H / 2.5 / 267.4	-15.8	N/A
7900.00	32.1 Av	8.3 / 36.9 / 39.9	37.3	H / 1.0 / 0.0	N/A	-16.7
359.81	37.0 Qp	2.1 / 16.5 / 27.3	28.3	H / 2.5 / 44.1	-17.7	N/A
6500.00	31.5 Av	8.5 / 34.9 / 39.1	35.8	H / 1.0 / 0.0	N/A	-18.2
200.00	39.8 Qp	1.5 / 11.3 / 27.3	25.2	H / 1.7 / 274.9	-18.3	N/A
30.00	36.5 Qp	0.5 / 12.8 / 28.2	21.6	V / 1.0 / 105.3	-18.4	N/A
2731.49	41.6 Av	3.5 / 28.2 / 38.1	35.3	V / 1.6 / 356.6	N/A	-18.7
69.99	39.7 Qp	0.8 / 8.5 / 28.2	20.8	V / 1.0 / 0.0	-19.2	N/A
169.33	37.6 Qp	1.4 / 12.0 / 27.6	23.4	V / 1.0 / 180.0	-20.1	N/A
959.59	26.8 Qp	3.7 / 22.5 / 27.3	25.6	H / 1.6 / 90.0	-20.4	N/A
254.30	39.1 Qp	1.8 / 11.8 / 27.1	25.5	H / 1.6 / 270.0	-20.5	N/A
2427.99	41.2 Av	3.2 / 27.6 / 38.6	33.5	H / 1.8 / 346.3	N/A	-20.5
278.92	37.9 Qp	1.8 / 12.7 / 27.0	25.4	H / 1.6 / 270.0	-20.6	N/A
339.81	36.0 Qp	2.0 / 14.1 / 27.3	24.8	H / 1.6 / 270.0	-21.2	N/A
959.98	25.9 Qp	3.7 / 22.4 / 27.3	24.7	V / 1.0 / 90.0	-21.3	N/A
790.25	28.3 Qp	3.3 / 20.6 / 27.8	24.4	H / 2.5 / 0.0	-21.6	N/A
620.91	30.7 Qp	2.9 / 18.9 / 28.2	24.3	V / 1.0 / 270.0	-21.7	N/A
148.22	35.4 Qp	1.3 / 12.3 / 27.7	21.3	V / 1.0 / 0.0	-22.2	N/A
5000.00	33.6 Av	5.8 / 32.5 / 40.1	31.8	H / 1.0 / 0.0	N/A	-22.2
2344.01	39.1 Av	3.2 / 27.5 / 38.5	31.3	V / 1.5 / 207.5	N/A	-22.7
4900.00	33.6 Av	5.7 / 32.4 / 40.5	31.2	V / 1.0 / 0.0	N/A	-22.8
299.82	34.0 Qp	1.9 / 13.8 / 27.1	22.5	H / 1.6 / 270.0	-23.5	N/A
290.19	34.2 Qp	1.9 / 13.3 / 27.0	22.4	V / 1.0 / 270.0	-23.6	N/A
4500.00	34.4 Av	5.2 / 31.3 / 40.7	30.2	H / 1.0 / 0.0	N/A	-23.8
313.57	33.0 Qp	1.9 / 14.2 / 27.2	22.1	V / 1.0 / 0.0	-23.9	N/A
4600.00	34.0 Av	5.3 / 31.4 / 40.8	30.0	V / 1.0 / 0.0	N/A	-24.0
4100.00	33.5 Av	4.8 / 31.4 / 40.4	29.3	V / 1.0 / 0.0	N/A	-24.7
1354.71	40.3 Av	2.4 / 24.1 / 37.7	29.1	V / 1.0 / 0.0	N/A	-24.9
2333.45	37.0 Av	3.2 / 27.4 / 38.4	29.1	V / 1.0 / 0.0	N/A	-24.9
4000.00	32.6 Av	4.8 / 31.4 / 39.9	28.9	H / 1.0 / 0.0	N/A	-25.1
79.95	35.0 Qp	0.9 / 6.8 / 28.1	14.6	V / 1.0 / 0.0	-25.4	N/A
219.87	36.0 Qp	1.6 / 10.3 / 27.2	20.6	H / 2.5 / 90.0	-25.4	N/A
1693.40	37.8 Av	2.7 / 25.5 / 37.6	28.4	V / 1.0 / 180.0	N/A	-25.6

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FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	15.209 >1GHz
338.67	31.5 Qp	2.0 / 14.1 / 27.2	20.3	V / 1.0 / 270.0	-25.7	N/A
1128.93	40.5 Av	2.1 / 23.7 / 38.3	28.0	V / 1.0 / 180.0	N/A	-26.0
329.84	31.3 Qp	2.0 / 13.7 / 27.2	19.8	H / 2.5 / 270.0	-26.2	N/A
1806.30	36.5 Av	2.8 / 26.5 / 38.1	27.8	V / 1.0 / 180.0	N/A	-26.2
1749.84	36.0 Av	2.7 / 26.3 / 37.9	27.2	V / 1.0 / 180.0	N/A	-26.8
185.00	30.1 Qp	1.4 / 12.5 / 27.5	16.6	H / 2.5 / 0.0	-26.9	N/A
234.00	34.0 Qp	1.7 / 10.6 / 27.2	19.1	V / 1.0 / 0.0	-26.9	N/A
179.90	30.0 Qp	1.4 / 12.3 / 27.4	16.3	V / 1.0 / 90.0	-27.2	N/A
1665.17	36.4 Av	2.7 / 25.3 / 37.5	26.8	V / 1.0 / 180.0	N/A	-27.2
35.00	28.2 Qp	0.6 / 12.0 / 28.2	12.6	H / 2.5 / 0.0	-27.4	N/A
1072.48	39.0 Av	2.1 / 23.9 / 38.4	26.5	H / 1.1 / 16.6	N/A	-27.5
1241.83	38.0 Av	2.2 / 24.3 / 38.1	26.4	V / 1.0 / 0.0	N/A	-27.6
1580.50	36.5 Av	2.6 / 24.6 / 37.4	26.4	V / 1.0 / 180.0	N/A	-27.6
1636.95	36.0 Av	2.6 / 25.1 / 37.5	26.3	V / 1.0 / 180.0	N/A	-27.7
1185.37	38.2 Av	2.2 / 23.9 / 38.3	26.1	V / 1.0 / 0.0	N/A	-27.9
1298.27	37.2 Av	2.3 / 24.2 / 37.9	25.9	H / 1.0 / 220.7	N/A	-28.1
1608.72	35.8 Av	2.6 / 24.8 / 37.4	25.7	V / 1.0 / 0.0	N/A	-28.3
2124.50	33.6 Av	3.1 / 26.7 / 38.2	25.2	H / 1.0 / 0.0	N/A	-28.8
224.29	32.5 Qp	1.6 / 10.4 / 27.3	17.1	H / 2.5 / 90.0	-28.9	N/A
1213.99	36.8 Av	2.2 / 24.2 / 38.2	24.9	V / 1.0 / 0.0	N/A	-29.1
1016.04	35.8 Av	2.0 / 23.4 / 38.2	23.0	V / 1.0 / 180.0	N/A	-31.0

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Fundamental field strength
And
Harmonics of the Fundamental

15.249

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Field Strength Measurements
Fundamental and Spurious of the Transmitter

Test Report #:	**3166782**	Test Area:	Pinewood Site 1 (3m)	Temperature:	23.9	°C
Test Method:	FCC CFR47 Part 15.249	Test Date:	30-Oct-2008	Relative Humidity:	20.6	%
EUT Model #:	TAD	EUT Power:	3.3VDC	Air Pressure:	80	kPa
EUT Serial #:	9800021			Page:		
Manufacturer:	BI					
EUT Description:	Transdermal Alcohol Detector					
Notes:						

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

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.								
The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.249 emissions and delta limits were calculated as follows:								
Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission								
The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.249 and the emission/limit delta was calculated, the DTCF is calculated as follows 20*$\log_{10}$(duty cycle in 100mS) “not to exceed 20dB”								
Axis 1 EUT is vertical on the table.								
904.05	62.3 Pk	3.6 / 22.2 / 0.0	88.0	V / 1.1 / 349.0	0.0	88.0	94	-6.0
904.1	51.3 Pk	3.6 / 22.2 / 0.0	77.0	H / 1.8 / 290.4	0.0	77.0	94	-17.0
Axis 2 EUT is flat on the table.								
904.05	57.8 Pk	3.6 / 22.2 / 0.0	83.5	H / 1.4 / 276.3	0.0	83.5	94	-10.5
904.05	54.0 Pk	3.6 / 22.2 / 0.0	79.8	V / 1.0 / 345.4	0.0	79.8	94	-14.2
Axis 3 EUT is on Vertical on the table rotated 90deg.								
904.05	54.1 Pk	3.6 / 22.2 / 0.0	79.9	V / 1.6 / 149.5	0.0	79.9	94	-14.1
904.05	60.1 Pk	3.6 / 22.2 / 0.0	85.8	H / 1.0 / 116.8	0.0	85.8	94	-8.2
Axis 1 was found to be the worst case orientation.								
All harmonics will be measured in axis 1.								
1808.13	53.4 Pk	2.8 / 26.5 / 38.1	44.6	H / 1.0 / 254.0	0.0	44.6	54	-9.4
1808.13	55.5 Pk	2.8 / 26.5 / 38.1	46.7	V / 1.0 / 285.0	0.0	46.7	54	-7.3
2712.2	53.4 Pk	3.5 / 28.3 / 38.1	47.0	V / 1.2 / 182.9	0.0	47.0	54	-7.0
2712.26	50.9 Pk	3.5 / 28.3 / 38.1	44.5	H / 1.5 / 179.1	0.0	44.5	54	-9.5
3616.33	44.8 Pk	4.5 / 30.9 / 38.5	41.7	V / 1.0 / 229.0	0.0	41.7	54	-12.3
3616.34	45.8 Pk	4.5 / 30.9 / 38.5	42.6	H / 1.1 / 221.7	0.0	42.6	54	-11.4
4520.44	55.0 Pk	5.3 / 31.3 / 40.7	50.9	V / 1.4 / 300.4	0.0	50.9	54	-3.1
4520.46	57.0 Pk	5.3 / 31.3 / 40.7	52.9	H / 1.6 / 63.9	0.0	52.9	54	-1.1
5424.51	41.2 Pk	6.0 / 33.3 / 39.9	40.7	V / 1.0 / 230.0	0.0	40.7	54	-13.3
5424.54	40.2 Pk	6.0 / 33.3 / 39.9	39.7	H / 1.6 / 341.4	0.0	39.7	54	-14.3
6328.51	41.7 Pk	6.6 / 33.8 / 40.4	41.7	H / 1.3 / 224.3	0.0	41.7	54	-12.3
6328.54	42.4 Pk	6.6 / 33.8 / 40.4	42.4	V / 1.4 / 85.1	0.0	42.4	54	-11.6
7232.57	43.5 Pk	7.3 / 35.9 / 39.9	46.8	H / 1.6 / 285.2	0.0	46.8	54	-7.2
7232.76	42.9 Pk	7.3 / 35.9 / 39.9	46.2	V / 1.1 / 338.5	0.0	46.2	54	-7.8
8136.55	43.5 Pk	7.8 / 36.3 / 47.5	40.0	V / 1.0 / 0.0	0.0	40.0	54	-14.0
8136.56	43.2 Pk	7.8 / 36.3 / 47.5	39.7	H / 1.0 / 0.0	0.0	39.7	54	-14.3
9040.61	45.0 Pk	8.4 / 36.6 / 48.5	41.5	V / 1.0 / 0.0	0.0	41.5	54	-12.5
9040.61	44.7 Pk	8.4 / 36.6 / 48.5	41.3	H / 1.0 / 0.0	0.0	41.3	54	-12.7

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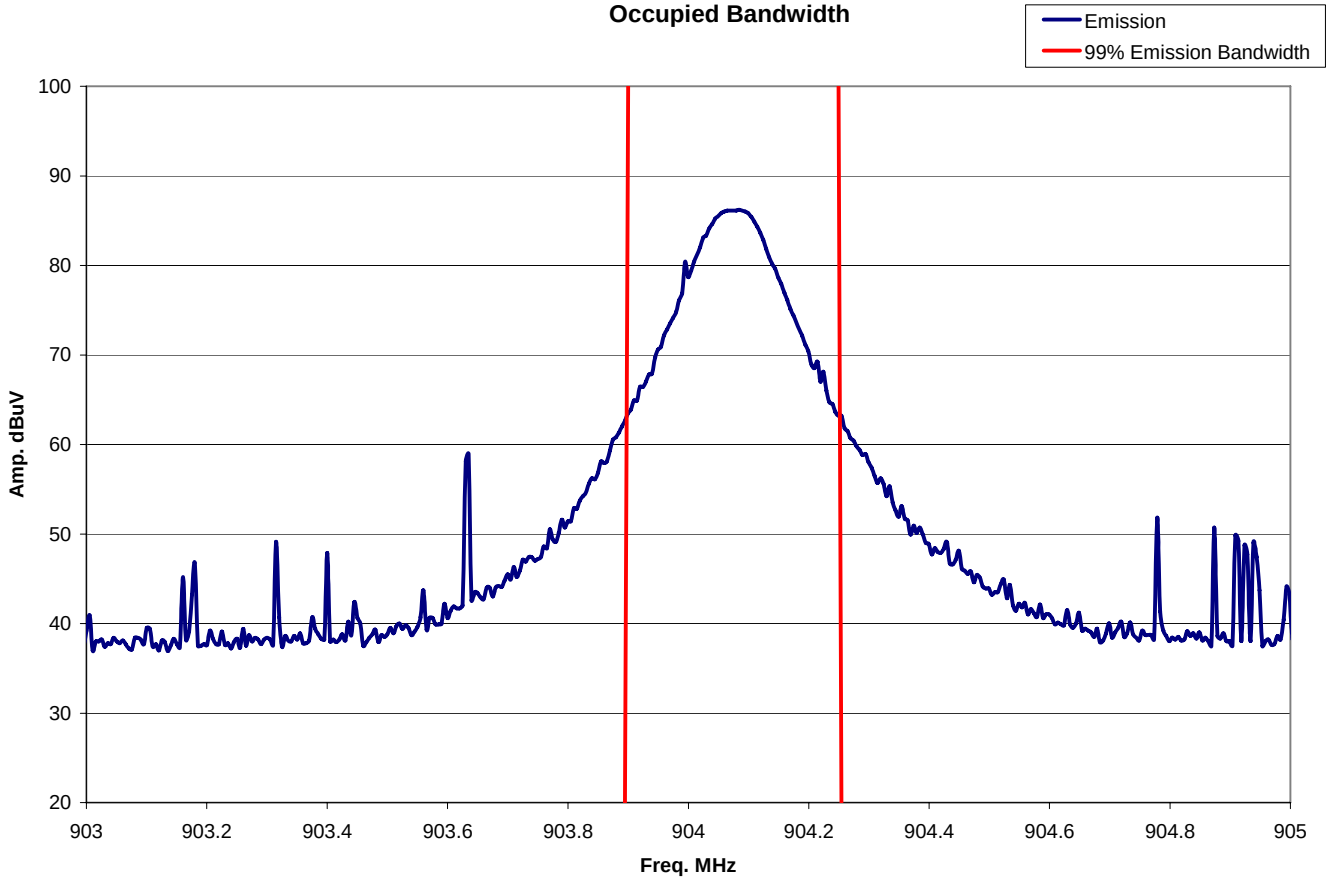
Occupied Bandwidth

Test Report #:	**3166782**	Test Area:	Pinewood Site 1 (3m)	Temperature:	23.7	°C
Test Method:	RSS-GEN	Test Date:	30-Oct-2008	Relative Humidity:	19.9	%
EUT Model #:	TAD	EUT Power:	3.3VDC	Air Pressure:	101	kPa
EUT Serial #:	9800021					
Manufacturer:	BI					
EUT Description:	Transdermal Alcohol Detector					
Notes:						

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

The 99% emission bandwidth is 350kHz



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List of Equipment Utilized for Final Test

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Project Report

Begin Date: 10/29/2008 **End Date:** 10/31/2008

Technician Ty Orosco **Project** 3166782

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
18880	Hewlett-Packard	85650A	2811A01300	Q.P Adapter	R Radiated Emissions	For Cal	11/15/2007	11/15/2008
18882	Hewlett-Packard	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	R Radiated Emissions	For Cal	11/13/2007	11/13/2008
18886	TENSOR	4105	2020	Ridged Guide Antenna 1-18GHz	R Radiated Emissions	For Cal	3/6/2008	3/6/2009
18888	EMCO	3146	9402-3775	Log Periodic Antenna (200-1000MHz)	R Radiated Emissions	For Cal	11/8/2007	11/8/2008
18889	EMC TEST SYSTEMS	3109	3142	Biconical Antenna 30-300MHz	R Radiated Emissions	For Cal	11/11/2007	11/11/2008
18900	Avantek	AFT97-8434-10F	1007	RF Pre-Amplifier (4-8 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18901	Avantek	AWT-18037	1002	RF Pre-Amplifier (8-18 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18906	Mini-Circuits Lab	ZHL-42	N052792-2	Amplifier	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18912	Hewlett-Packard	8447F	3113A05545	9 kHz- 1.3GHz Pre Amp	R Radiated Emissions	For Ver	5/2/2008	5/2/2009

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Appendix B

Test Plan

and

Constructional Data Form

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Request for Quotation and Test Plan (Non Medical Devices)

Contact Information:

Company:	BI
Address:	6400 Lookout Road, Boulder, CO 80301
Contact:	HIGHTec Consulting, Inc., Kevin J. Hight
Title:	President
Phone Number:	303-633-5444
Fax Number:	720-304-8724
Email Address:	Kevin@HIGHTecConsulting.com

Date samples and documentation will be ready for testing:		Requested completion date:	

Please fill out the pertinent pages within this document and email this form to Bryant Hart at Bryant.Hart@Intertek.com for a quotation. Pages that do not pertain to your device can be left blank.

This document is compiled as a WORD FORM. To enable the FORM tool, right click on the tool bar and select FORMS. You will then be able to add attachments, drawings etc by clicking on the "Lock" Graphic to unlock the FORM document. To make all the check boxes work within the FORM, the "Lock" graphic must be selected.

Estimates Requested:

EMC Testing and Services	
☒ Compliance Testing	☐ Compliance testing at your location
☐ Pre-Compliance Scans / Engineering testing	☐ Pre-Compliance testing at your location

Radio Device Testing and Certification	
☒ FCC Certification	☒ Canada Certification (Transmitters and Receivers)
☐ Europe	☒ TCB Services

Safety Testing and Certification	
☐ ETL Listing For US	☐ ETL Listing for Canada
☐ Preliminary Design Review	☐ CB Report and Certificate
☐ CE Testing for Europe	☐ Other:

Additional Services	
☐ Global Market Access Program	☐ Energy Star Compliance
☐ IntertekCheck Performance Mark	☐ Green Services (RoHS, WEEE, REACH, Prop. 65)
☐ Environmental Testing	☐ Hazardous Location (Intrinsic Safety, Ex-Proof, ATEX)
☐ Shock and Vibration Testing	☐ Other:

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General Product Information: (Required for all Devices)

Product/Model Number(s):	Dual Mode FMD (Fixed Monitoring Device) & TAD (Transthermic Alcohol Device)
Description of product(s): Please provide product literature if available.	The Dual Mode FMD is the Home based box which interfaces with the TAD. The FMD receives data in the 310 MHz to 320 MHz range and in the 902 MHz to 928 MHz. The frequencies will operate at one fixed frequency within these ranges, depending on location. The TAD receives in the range of 902 MHz to 928 MHz. It also transmits data to the FMD in this same frequency range. The TAD also Transmits in the 310 MHz to 320 MHz range.
Intended Use:	☒ Household/Office ☐ Commercial ☐ Industrial
Intended Location:	☒ Dry ☐ Damp ☐ Wet ☐ Hazardous Location
Product Type:	☒ Prototype ☐ Production Sample ☐ Revision of already listed product

If part of a system, please describe system parts and accessories:

If there is more than one product/model what are the differences?

Is the Product Enclosure:	☐ Metal	☒ Plastic	☐ Both	
Size:	FMD is a desktop unit	TAD is an ankle braclet:		Weight: TBD

☒ AC Wall Adapter ☐ AC Internal Power Supply ☒ Battery ☐ External DC Power Supply	Rated Voltage: 115 VAC Rated Current: < 3A # of Phases/Conductors: single # of Power Cords: 1
Are their multiple suppliers of power supplies?	☐ Yes ☒ No If Yes Please Describe:

Are there Multiple Modes of Operation?
☐ Yes ☒ No If Yes Please Describe:

Is there programmable software?
☒ Yes ☐ No

Can all modes of operation be operated simultaneously?
☐ Yes ☐ No Explain: TBD

In which countries will you be selling the product? USA and Canada

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EMC Specific Information: (Required only if EMC work is requested)

What EMC certifications are desired?	
☒ FCC/ICES (US & Canada)	☐ SII (Israel)
☐ CE (Europe)	☐ AS/NZS (Australia/New Zealand)
☐ BSMI (Taiwan)	☐ Korea MIC Certification / RRL
☐ VCCI (Japan)	☐ Other: Please Specify

Highest frequency utilized for device operation:
928 MHz

List of Clock Frequencies: unknown

For each mode of operation, please list the amount of time required to notice degradation of performance (cycle time) immediate/realtime

Total Number of I/O Cables:	___1___
# Greater than 3m (9.75 feet) in Length	_____
# Greater than 30m (97.5 feet) in Length	_____
# of cables at a longer length (specify)	_____

Number of Earth Ground Connections (Do NOT include AC Mains Ground):

Please list all Ethernet, USB, Parallel and/or Telecommunications Ports and their function

One TELCO RG68 and One Cellular Module.

When the device is a compilation of subsystems (in separate chassis) how many interconnecting I/O cables are greater than 1 meter in length between the Subsystem chassis?

Please list any specific test requirements or standards:

Unknown

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General Safety Information: (Required only if Safety Listing/Certification/Testing is requested)

Please provide product literature or photos if possible.

What Safety certifications are desired?	
☐ Listing US/Canada	☐ Limited Production Certification
☐ CB Certification (Worldwide outside of US/Canada)	☐ S Mark
☐ EU Investigation (EU – LVD/MDD)	☐ GS Mark
☐ Field Label (Onsite Inspection)	☐ Other: Please Specify

Please list all applicable safety standards that you would like your device certified under:

Has the device been tested and certified for product safety before? A. If it has been previously tested, to which standard and by which organization? B. Can you provide the test report?	☐ Yes ☐ No Standard tested to: Tested by: ☐ Yes ☐ No

Can you provide manuals, installation instructions or data sheets at this time?	☐ Yes ☐ No

Power Supply Safety Information: A. Is the Power Supply Listed or Recognized? B. Can you provide the test report/CB Report?	☐ Yes ☐ No Standard tested to: Tested by: ☐ Yes ☐ No

Does the device contain batteries?	☐ Yes ☐ No What Type? How Many?

What technology is used? (i.e., lasers, X Ray, resistance heating, etc.)	

If Laser:	Class:	Output Power:	Beam Divergence Angle:	Wavelength:

Preferred testing location:	☐ Intertek Local Lab ☐ Customer site ☐ First Available Intertek Lab

NEMA Rating:	
IP Rating:	

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Radio Specific Information: (Required only if the device contains an intentional transmitter)

What Radio certifications are desired?	
☒ FCC (USA) ☒ Industry Canada ☐ ETSI (R&TTE)	☐ Notified or Competent Body TCF Review ☐ Other: Please Specify

Please list the particular radio standards that apply.

Operating Frequency:	314 MHz and 904 MHz
RF Output Power:	unknown
Is there an RF Conducted Port?	☒ Yes ☐No Description:Antenna
Number of Antennas & Description: (Internal, External, Known Gain, etc.)	Three internal
Modulation Technique:	Half-Duplex FSK
Number of Channels/Number of Discrete frequencies per Channel:	Only one will be used in each range and approved cellular module
Can the device be operated in CW Mode?	☐ Yes ☐ No Unknown
What is the lowest utilized frequency within the device?	Unknown

Notes: Please ensure to bring a notch filter covering your fundamental operating frequency.

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Appendix C

Measurement Protocol

And

Test Procedures

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MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

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

Justification

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

CONDUCTED EMISSIONS

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

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

- dBμV = 20(log μV)
- μV = Inverse log(dBμV/20)

RADIATED EMISSIONS

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

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

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

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DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI 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."

Conducted Emissions

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

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 22GHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

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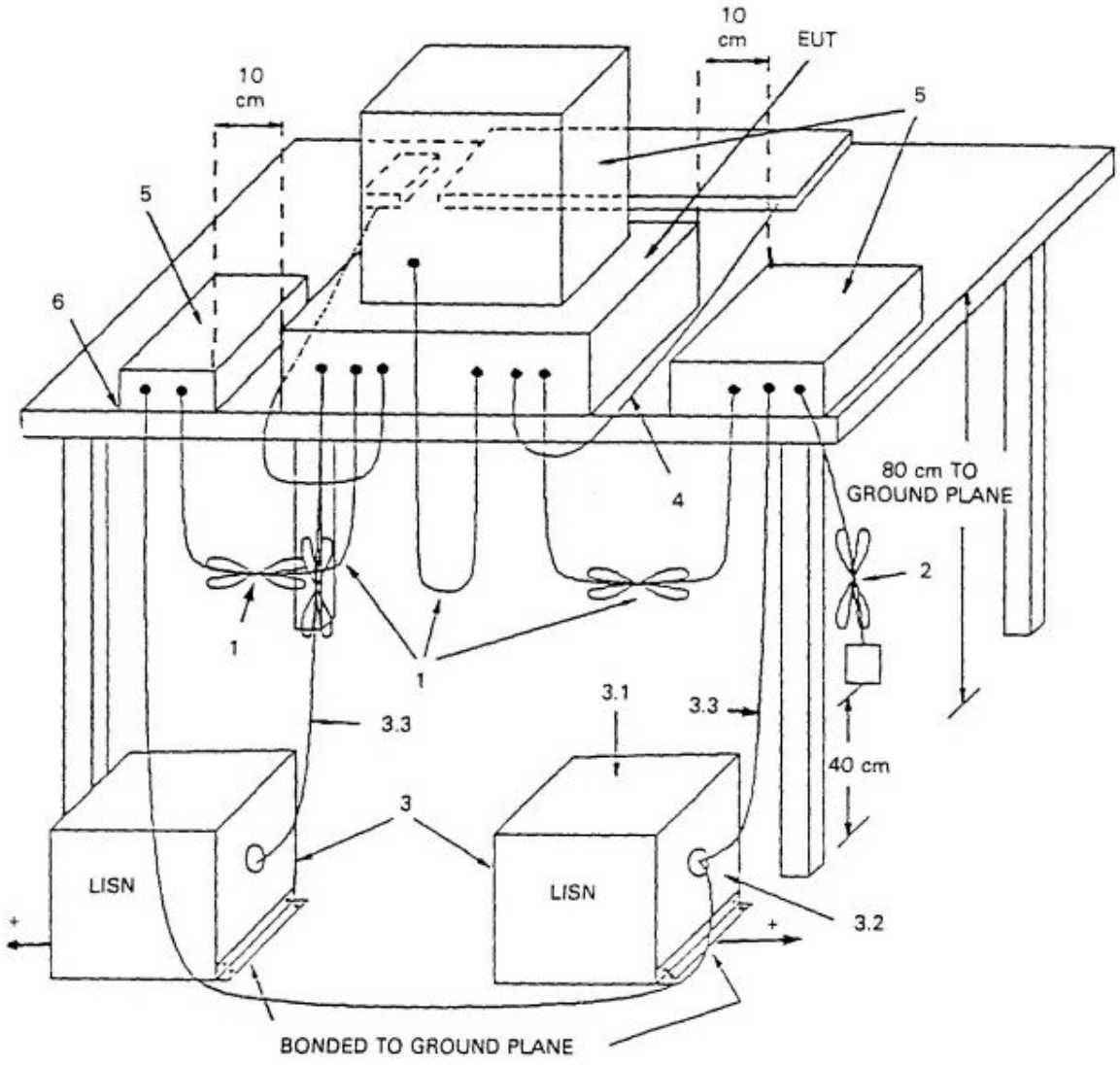
Conducted Emissions Diagram:



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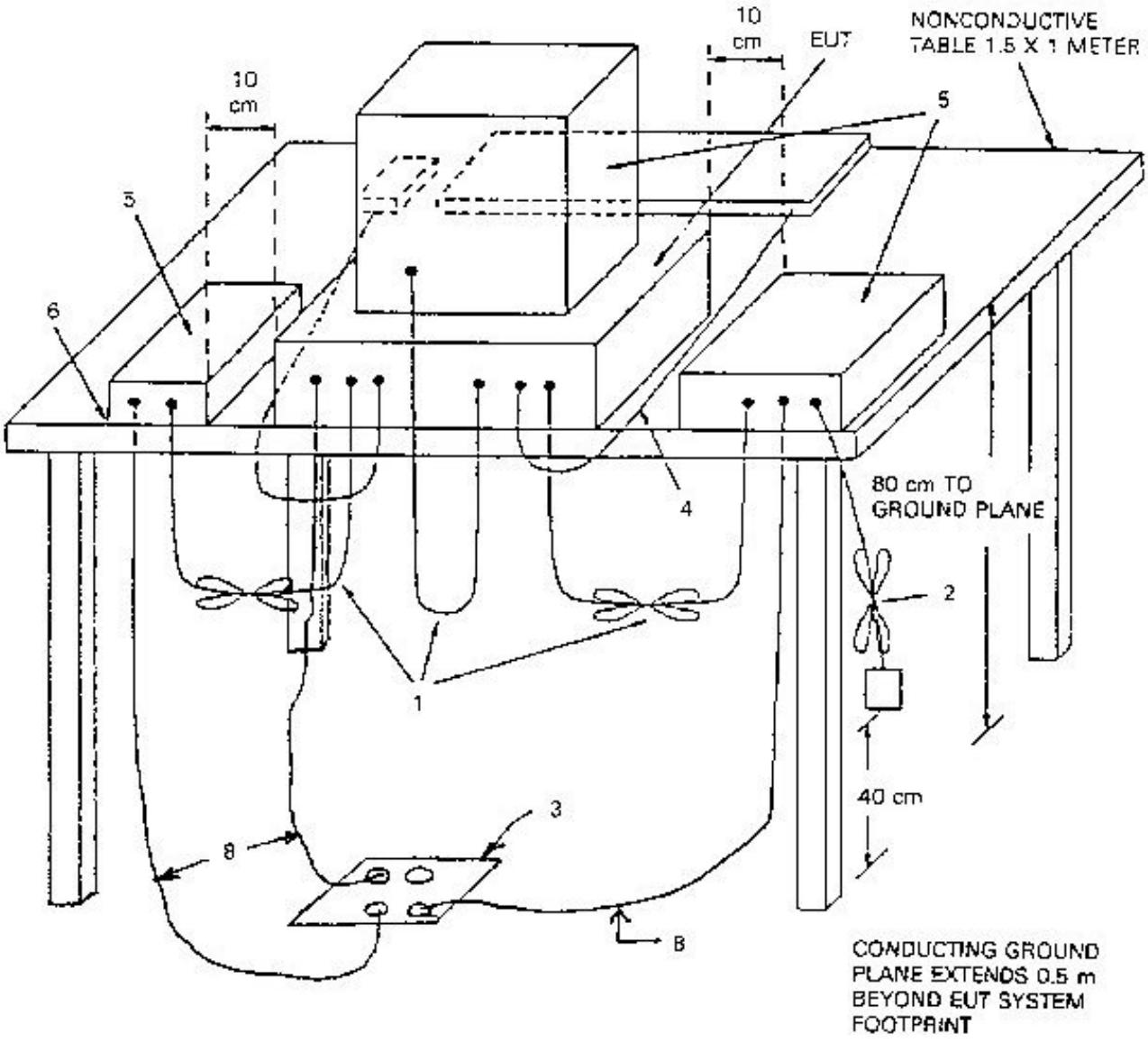
Radiated Emissions Diagram:



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