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FCC PART 15.241
BIOMEDICAL TELEMETRY DEVICES
TEST REPORT

APPLICANT	H.A.B.I.T Research Ltd.
ADDRESS	692 Sumas Street Victoria BC V8T 4S6 Canada
FCC ID	TKE70
PRODUCT DESCRIPTION	215 MHz Locator
DATE SAMPLE RECEIVED	June 12, 2007
DATE TESTED	July 6, 2007
TESTED BY	Richard Block
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	2288AUT7TestReport.pdf
TEST RESULTS	☒ PASS ☐ FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

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ATTESTATION STATEMENT

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.



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All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

Authorized by: Mario de Aranzeta
Signature: On File
Function: Test Lab Supervisor
Date: July 11, 2007



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REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.
Purpose of Test	To show the DUT in compliance with FCC CFR 47, Part 15 requirements for Low Power Radio Service
Test Standards	ANSI/TIA 603-C: 2004, FCC CFR 47 Part 15.241, ANSI C63.4: 2003
Related Report(s)/Approval(s)	2288BUT7TestReport.pdf (RSS-210 Test Report)

TEST ENVIRONMENT AND TEST SETUP

Test Facility	All tests were conducted by Timco Engineering Inc. located at 849 NW State Road 45, Newberry, FL 32669 USA
Laboratory Test Condition	The temperature was 26°C with a relative humidity of 50%.
Deviation from the standards	No deviation
Modification to the DUT	No modification was made.
Test Exercise (software etc.)	The DUT was placed in continuous transmitting mode of operation.
System Setup	Stand alone device.



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DUT DESCRIPTION

Manufactured by	H.A.B.I.T Research Ltd.
Product Description	
FCC ID	TKE70
M/N	1070
S/N	N/A
Power Source	Battery Operated Exclusively (Battery coin cell)
Test Item	Pre-production
Type of DUT	Portable
Antenna Spec	Permanently attached antenna



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TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 12/7/05	12/7/07
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 12/7/05	12/7/07
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Antenna: Biconnical	Electro- Metrics	BIA-25	1171	CAL 4/29/07	4/29/09
Antenna: Log-Periodic	Electro- Metrics	LPA-25	1122	CAL 12/1/06	12/1/08
Antenna: Double- Ridged Horn	Electro- Metrics	RGA-180	2319	CAL 12/29/06	12/29/08
LISN	Electro- Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 3/15/07	3/15/09



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TEST PROCEDURE

RADIATION INTERFERENCE

The test procedure used was ANSI/TIA-603-C: 2004 and ANSI C63.4-2003 using an Agilent spectrum receiver with preselector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS

The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the pre-selector was accounted for in the spectrum analyzer meter reading.

Example:

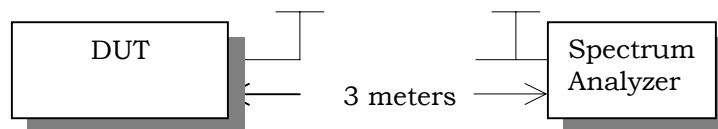
Freq (MHz) METER READING + ACF = FS

33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

FIELD STRENGTH OF SPURIOUS EMISSIONS

The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per ANSI/TIA 603-C: 2004.

Test Setup Block Diagram



ANSI C63.4-2003 MEASUREMENT PROCEDURES

The DUT test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.



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RADIATION INTERFERENCE

Rules Part No.: 15.241

Requirements: Carrier frequency will not exceeds 63.5 dbuv/m at 3m or 1500uV/m @3M

Out-of-band emissions shall not exceed: 43.5dbuv/m @ 3M for any emission outside the 200kHz BW.

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Duty Cycle dB	Field Strength dBuV/m	Margin dB
215.5	215.46	40.7	V	0.93	11.43	10.5	42.56	20.94
215.5	215.46	56.7	H	0.93	11.68	10.5	58.81	4.69
215.5	430.90	8.2	H	1.23	16.53	10.5	15.46	28.04
215.5	430.90	16.7	V	1.23	16.12	10.5	23.55	19.95
215.5	646.30	9.3	H	1.65	20.09	10.5	20.54	22.96
215.5	646.30	11.6	V	1.65	19.79	10.5	22.54	20.96
215.5	861.80	7.9	H	1.93	22.84	10.5	22.17	21.33
215.5	861.80	13.4	V	1.93	22.40	10.5	27.23	16.27
215.5	1,077.30	12.3	H	2.16	27.44	10.5	31.40	12.10
215.5	1,077.30	18.6	V	2.16	27.44	10.5	37.70	5.80
215.5	1,292.70	12.8	V	2.33	27.83	10.5	32.46	11.04
215.5	1,292.70	13.6	H	2.33	27.83	10.5	33.26	10.24
215.5	1,508.20	13.0	H	2.51	28.25	10.5	33.26	10.24
215.5	1,508.20	13.0	V	2.51	28.25	10.5	33.26	10.24
215.5	1,723.70	13.8	H	2.68	29.54	10.5	35.52	7.98
215.5	1,723.70	14.1	V	2.68	29.54	10.5	35.82	7.68
215.5	1,939.10	14.2	H	2.85	30.83	10.5	37.38	6.12
215.5	1,939.10	15.0	V	2.85	30.83	10.5	38.18	5.32
215.5	2,154.60	7.2	V	3.01	31.63	10.5	31.34	12.16
215.5	2,154.60	7.4	H	3.01	31.63	10.5	31.54	11.96

[Continued]



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Emissions from 30 – 1000 MHz

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
39.18	3.0	V	0.45	9.83	13.28	26.72
46.40	3.2	V	0.48	10.38	14.06	25.94
47.98	3.1	H	0.49	11.20	14.79	25.21
64.01	3.5	V	0.55	9.82	13.87	26.13
64.04	4.6	H	0.55	10.37	15.52	24.48
143.66	15.8	V	0.69	13.02	29.51	13.99
143.67	28.5	H	0.69	13.39	42.58	0.92

Applicant: H.A.B.I.T Research

FCC ID: TKE70

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DUTY CYCLE DECLARATION

The period of the pulse train is determined by observing it on an oscilloscope or a spectrum analyzer with zero (0) frequency span. A plot is then made of the pulse train with a sweep time of 100 milliseconds. This sweep determines the duration of the pulse train, which in this case is millisecond. This sweep allows the determination of the number of and type of pulses, i.e. long & short. Plots are then made showing the duration of each type of pulse and its duration. From the 100 millisecond Plot, the number of a given type of pulse is then multiplied by the duration of that type pulse. This allows the calculation of the amount of time the DUT is on within 100 ms. If the pulse train is longer than 100 ms then this number is multiplied by 100 to determine the percentage ON TIME. If the pulse train is less than 100 ms the total on time is divided by the length of the pulse train and then multiplied by 100 to determine the percentage ON TIME.

$$\text{dB} = 20 \cdot \log(\text{ON TIME}) / \text{PERIOD}$$

$$\text{dB} = 20 \cdot \log(30 / 100)$$

$$\text{dB} = 20 \cdot \log(0.3)$$

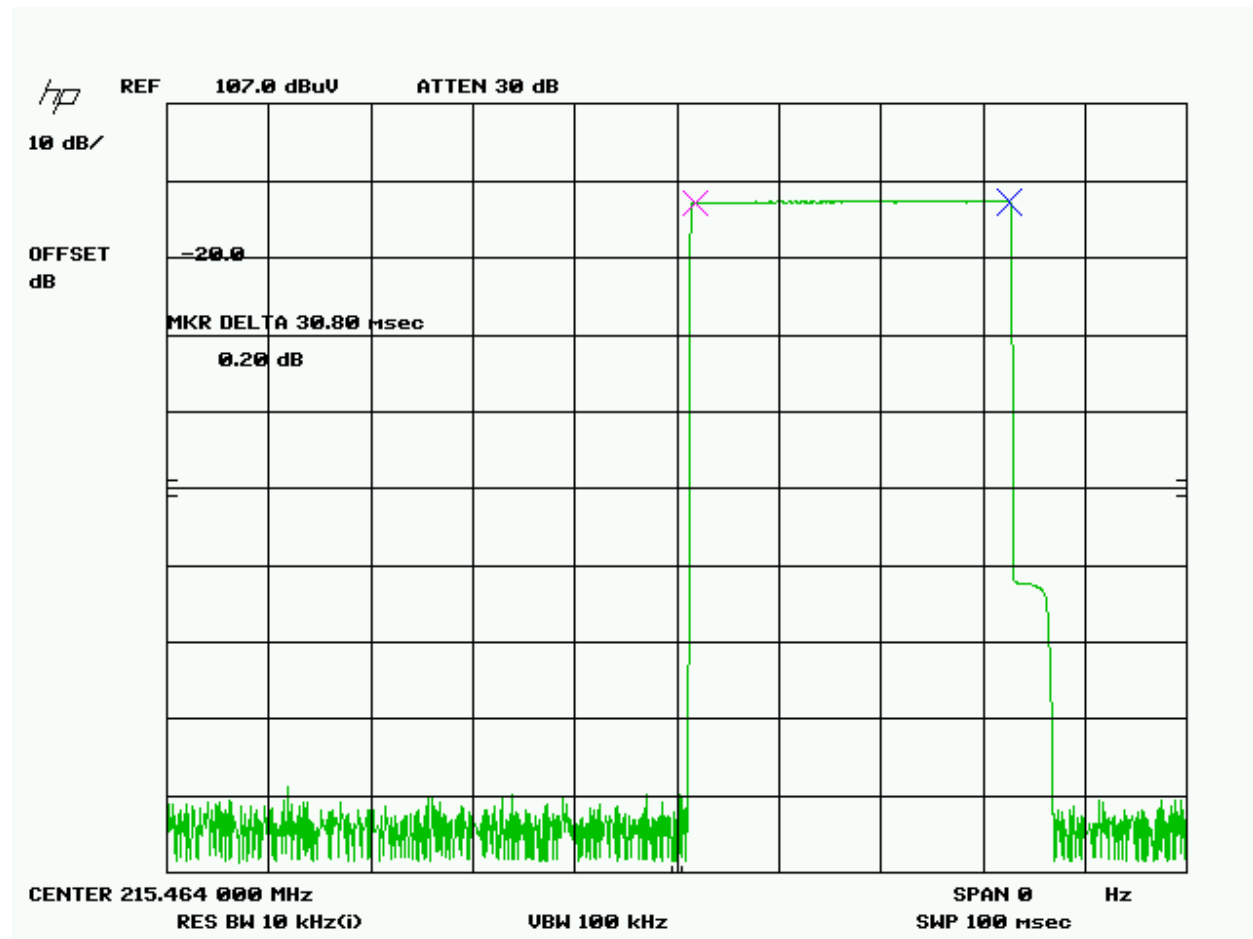
$$\text{dB} = -10.46$$

Plots are included below.



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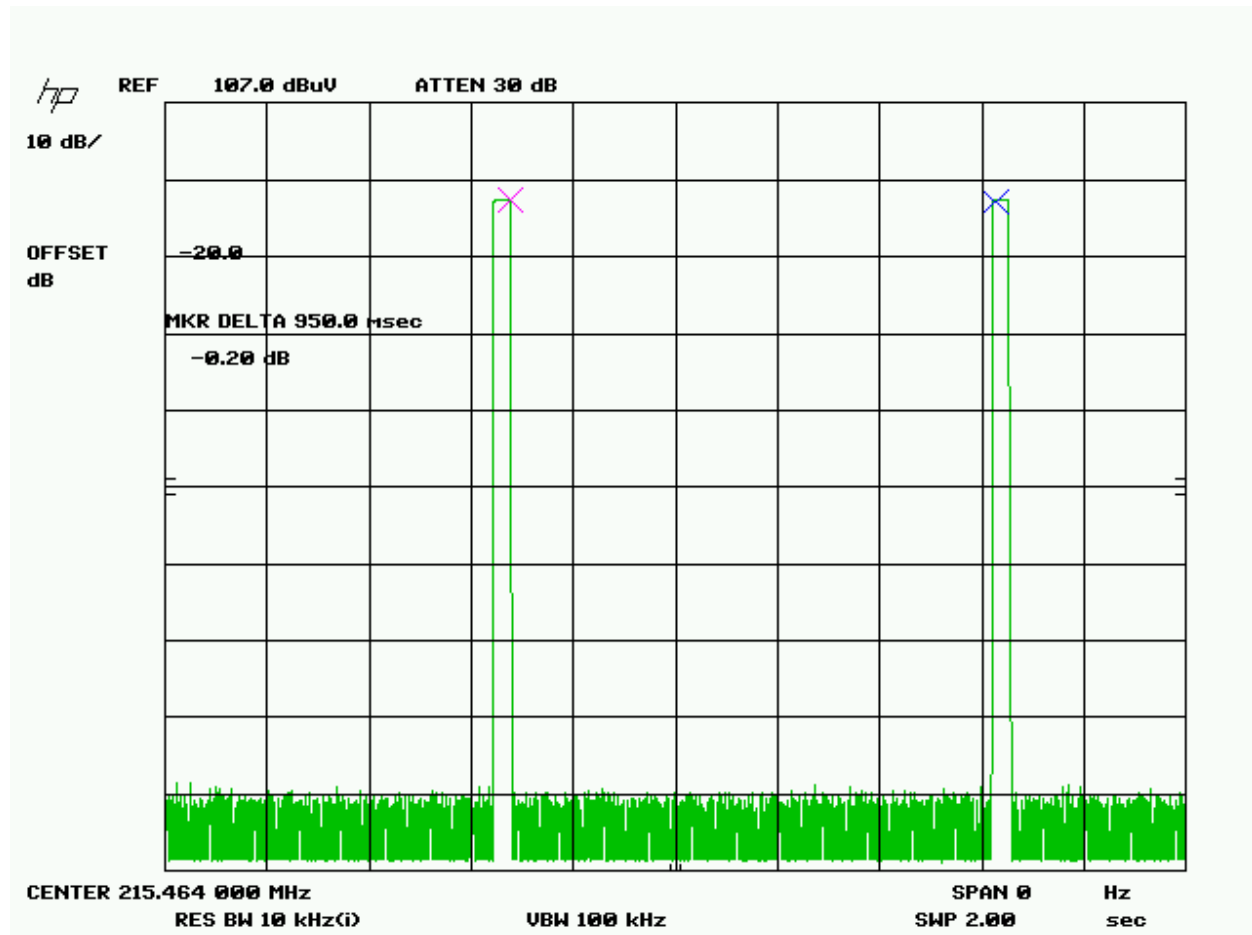
Duty Cycle On





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Duty Cycle Off





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OCCUPIED BANDWIDTH

Rules Part No.: Pt 15.241

Requirements: The field strength of any emissions appearing outside the 200kHz allowed Bandwidth shall be attenuated at least 20dB, or shall not exceed the limit of 43.5dBuV/m on any frequency outside the 200kHz authorized bandwidth.

Test Data: Refer to the following plot

