



Test Report

Product Name	Passive Keyless Entry System
Model No.	2102T
FCC ID.	EZSDEI2102

Applicant	DEI Headquarters, Inc.
Address	One Viper Way, Vista CA 92081

Date of Receipt	May 29, 2012
Issued Date	Aug. 22, 2012
Report No.	126028R-RFUSP38V01
Report Version	V1.0



The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

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

Test Report Certification

Issued Date: Aug. 22, 2012

Report No.: 126028R-RFUSP38V01



Product Name	Passive Keyless Entry System
Applicant	DEI Headquarters, Inc.
Address	One Viper Way, Vista CA 92081
Manufacturer	NUTEK CORPORATION
Model No.	2102T
FCC ID.	EZSDEI2102
EUT Rated Voltage	DC 12V (Power by Battery)
EUT Test Voltage	DC 12V (Power by Battery)
Trade Name	DIRECTED
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
Test Result	Complied

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(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Passive Keyless Entry System
Trade Name	DIRECTED
Model No.	2102T
FCC ID.	EZSDEI2102
Frequency Range	125kHz
Type of Modulation	OOK-Modulation
Type of antenna	Coil Antennas
Number of Channel	1
Power Cable	Non-shielded, 0.7m, with two ferrite core bonded

Frequency of Each Channel:

Channel	Frequency
Channel 1:	125 kHz

Note:

1. The EUT is a Passive Keyless Entry System with a built-in 125kHz transmitter.
2. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
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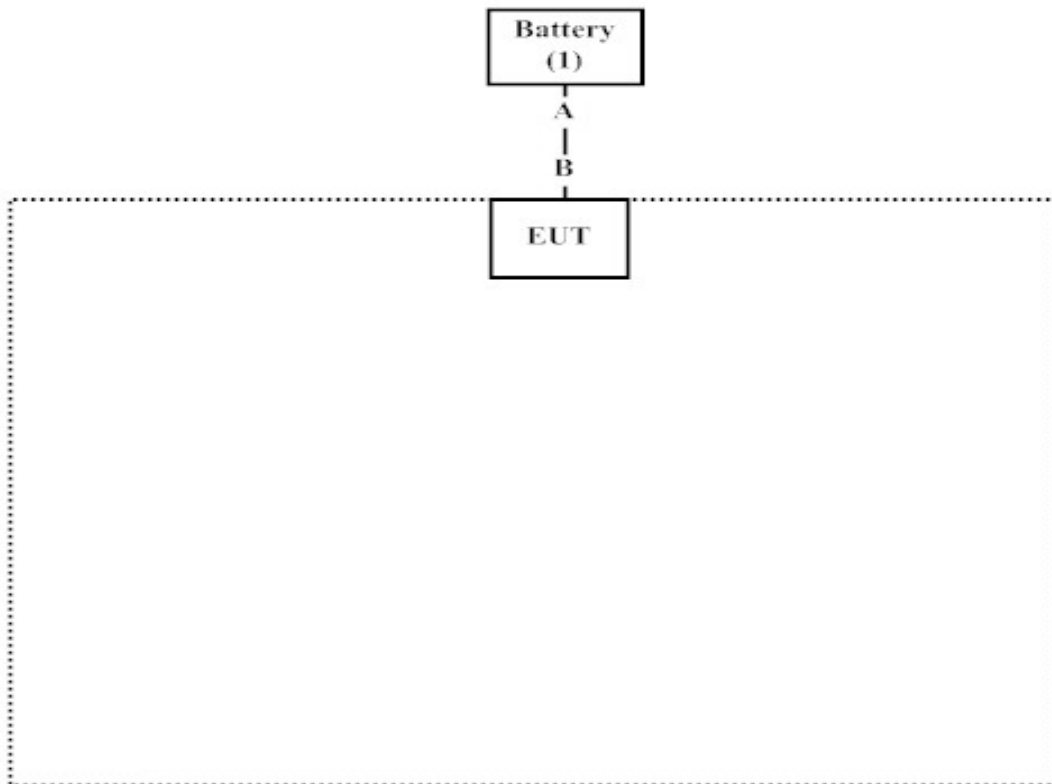
1.3. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Battery	GLOBAL	40B19L	N/A	N/A

Signal Cable Type	Signal cable Description
A Power Cable	Non-shielded, 0.8m, with one ferrite core bonded.
B Power Cable	Non-shielded, 0.7m, with one ferrite core bonded.

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4.
- (2) Provide the DC Power Source.
- (3) Start transmits continually.
- (4) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng,
Linkou Dist. New Taipei City 24451,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Radiated Emission

2.1. Test Equipment

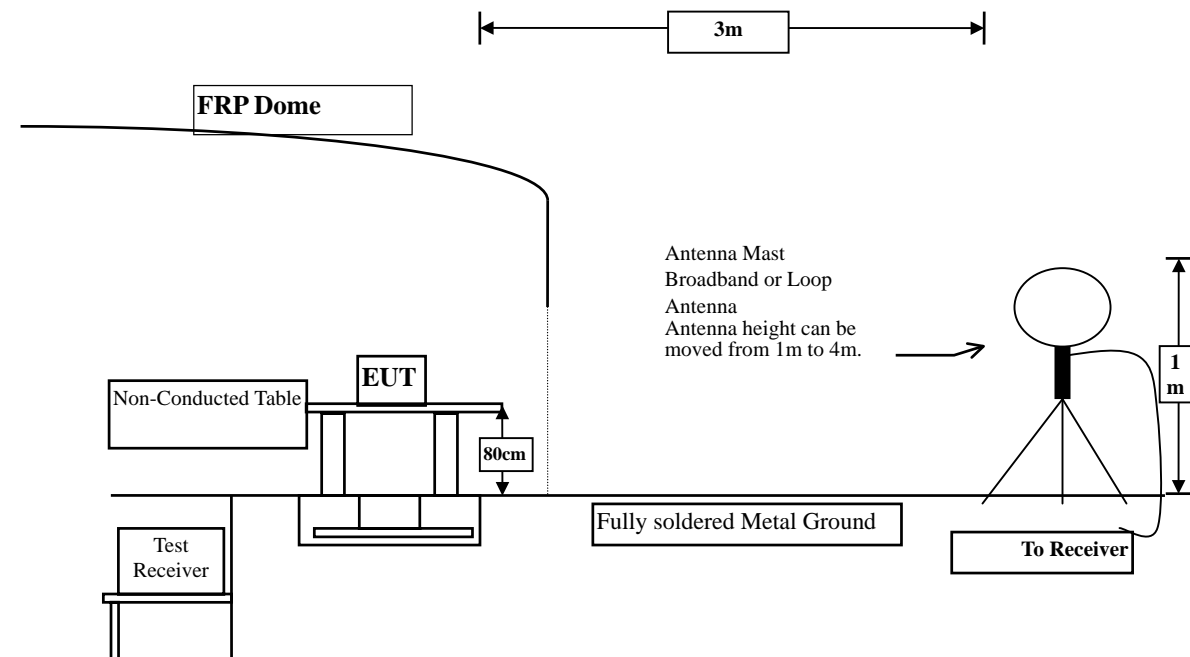
The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2012
	X Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2012
	X Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

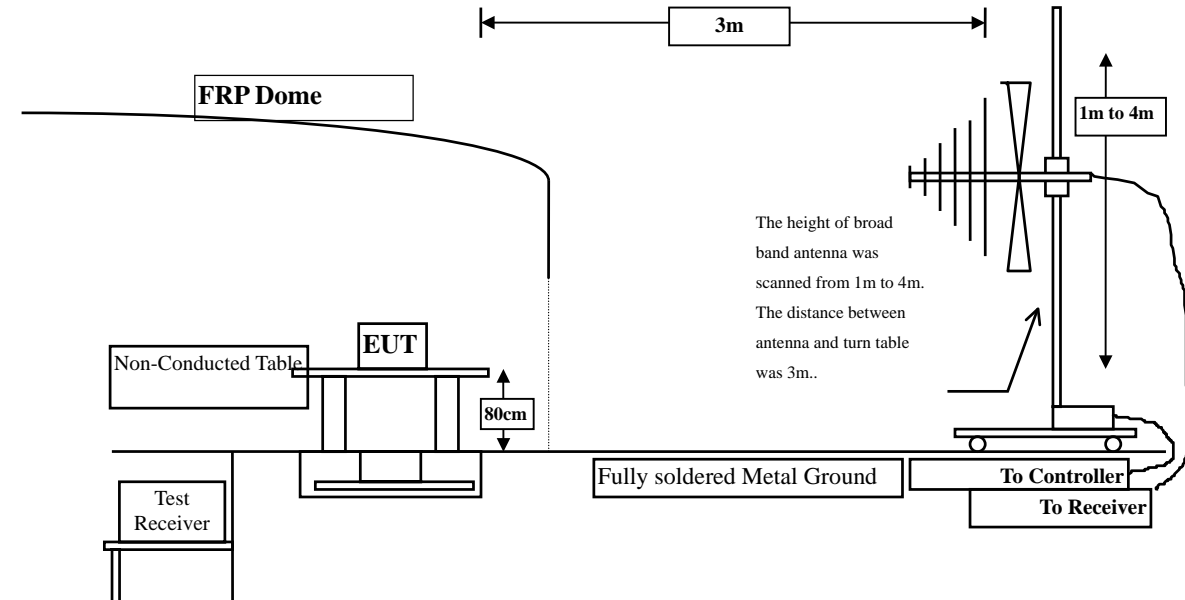
- Note:
1. All equipments are calibrated every one year.
 2. The test equipments marked by "X" are used to measure the final test results.

2.2. Test Setup

Under 30MHz Test Setup



Radiated Emission Below 1GHz



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400/F(kHz)	300
0.490- 1.705	24,000/F(kHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

2.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

2.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

2.6. Test Result of Radiated Emission

Product : Passive Keyless Entry System
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit

9kHz~30MHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Quasi-Peak					
Horizontal					
0.110	24.400	-1.890	22.510	-98.720	121.230
0.250	24.400	12.520	36.920	-74.204	111.124
0.375	24.400	12.750	37.150	-64.951	102.101
0.500	24.400	9.880	34.280	-39.431	73.711
0.625	24.400	13.450	37.850	-34.747	72.597
0.750	24.400	8.540	32.940	-38.542	71.482
0.875	24.400	9.410	33.810	-36.558	70.368
1.000	24.400	9.070	33.470	-35.784	69.254
1.125	24.400	12.040	36.440	-31.700	68.140
1.250	24.400	7.280	31.680	-35.346	67.026
Vertical					
0.110	19.820	7.090	26.910	-94.320	121.230
0.250	19.820	19.000	38.820	-72.304	111.124
0.375	19.820	23.820	43.640	-58.461	102.101
0.500	19.820	15.840	35.660	-38.051	73.711
0.625	19.820	20.990	40.810	-31.787	72.597
0.750	19.820	14.870	34.690	-36.792	71.482
0.875	19.820	18.820	38.640	-31.728	70.368
1.000	19.820	13.650	33.470	-35.784	69.254
1.125	19.820	16.120	35.940	-32.200	68.140
1.250	19.820	11.750	31.570	-35.456	67.026

Note:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement Level = Reading Level + Correct Factor.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Passive Keyless Entry System
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit

30MHz~1GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
QP Detector					
35.820	1.610	30.156	31.766	-8.234	40.000
113.420	-10.000	36.696	26.696	-16.804	43.500
404.420	-1.480	23.765	22.285	-23.715	46.000
602.300	3.790	23.127	26.917	-19.083	46.000
786.600	4.170	23.436	27.606	-18.394	46.000
953.440	4.720	24.289	29.009	-16.991	46.000
Vertical					
QP Detector					
62.980	-15.460	41.256	25.796	-14.204	40.000
185.200	-4.830	30.260	25.430	-18.070	43.500
423.820	-2.230	25.138	22.908	-23.092	46.000
625.580	0.580	24.267	24.847	-21.153	46.000
831.220	3.400	23.211	26.611	-19.389	46.000
935.980	5.460	24.956	30.416	-15.584	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak.
2. Measurement Level = Reading Level + Correct Factor.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. EMI Reduction Method During Compliance Testing

No modification was made during testing.