

## EMI TEST REPORT

On Model Name: Wireless Communication Station

Model Number: BS-1000, BS-2000, BS-6000

Brand Name: **BlueCard**

Prepared for Bluecard Technologies Corp.

FCC ID Number: 2AIASBS-1000

Test Specification: FCC 47 CFR Part 15, Subpart C

Test Procedure(s): ANSI C63.10-2013



Test Report #: BEI-1604-11487-FCC ID

Prepared by: Nancy ECMG  
Nancy Han /Assistant Company Name

Reviewed by: Jawen Yin ECMG  
Jawen Yin/ Senior Engineer Company Name

QC Manager: Swall Zhang ECMG  
Swall Zhang/QC Manager Company Name

Test Report Released by: Swall Zhang May 28<sup>th</sup>, 2016  
Swall Zhang Date

## **Verdict**

<b>Test Result :</b>	<i>Pass*</i>
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*\*.In the configuration, the EUT complied with the standard specified above.*

### **Revision History**

<i>Rev.</i>	<i>Issue date</i>	<i>Revision</i>	<i>Revised by</i>
01	05/28/2016	Initial review	Jawen Yin
/	/	/	/

### **Test Location**

*Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.*

**Test Site Location:**

*Shenzhen General Testing  
& Inspection Technology  
Co., Ltd.*

*1F, 2 Block, Jiaquan  
Building, Guanlan High-  
tech Park Baoan District,  
Shenzhen, Guangdong,  
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*(86)-755- 86116468*

### **Accreditation Bodies**

*The test facility was recognized, certified, or accredited by the following organizations:*

**IC Registration No.: 9783A**

*The 3m alternate test site of Shenzhen GTI Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.:9783A on Aug, 2011.*

**FCC-Registration No.: 214666**

*Shenzhen GTI Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 214666, Sep 19, 2011*

### **List of Test and Measurement Instruments**

*The following test and measurement equipment was utilized for the tests documented in this report:*

<b>No.#</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Cal. Interval</b>	<b>Cal. Due Date</b>
01	EMI Test Receiver	R&S	ESCI	1 year	2017/01/04
02	Temperature/ Meter Humidity	Anymetre	TH101B	1 year	2017/11/15
03	Pre-Amplifier	HP	8447D	1 year	2017/01/04
04	Loop Antenna	Schwarzbeck	FMZB1519	1 years	2017/01/07
05	LOG-Bicon Antenna	Schwarzbeck	CBL6141A	1 year	2017/01/04
06	Antenna Mast	UC	UC3000	1 year	2017/01/04
07	Turn Table	UC	UC3000	1 year	2017/01/04
08	Cable below 1GHz	Schwarzbeck	AK9515E	1 year	2017/01/04
09	LISN	R&S	ENV216	1 year	2017/01/04
10	EMI Test Receiver	R&S	ESCI	1 year	2017/01/04
11	Spectrum Analyzer	R&S	FSU26	1 year	2017/01/04

*Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.*

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### **List Attached Files**

<b>Exhibit Type</b>	<b>File Description</b>	<b>File Name</b>
<i>Test Report</i>	<i>Test Report</i>	<i>2AIASBS-1000_Test Report.pdf</i>
<i>Operation Description</i>	<i>Technical Description</i>	<i>2AIASBS-1000_Operation description.pdf</i>
<i>External Photos</i>	<i>External Photos</i>	<i>2AIASBS-1000_External Photos</i>
<i>Internal Photos</i>	<i>Internal Photos</i>	<i>2AIASBS-1000_Internal Photos</i>
<i>Block Diagram</i>	<i>Block Diagram</i>	<i>2AIASBS-1000_Block Diagram.pdf</i>
<i>Schematics</i>	<i>Circuit Diagram</i>	<i>2AIASBS-1000_Schematics.pdf</i>
<i>ID Label/Location</i>	<i>Label and Location</i>	<i>2AIASBS-1000_Label &amp; Location.pdf</i>
<i>User Manual</i>	<i>User Manual</i>	<i>2AIASBS-1000_User Manual.pdf</i>
<i>Test setup photos</i>	<i>Test set-up photos</i>	<i>2AIASBS-1000_Test Set-up Photos</i>

### **Government Disclaimer Notice**

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### **Reproduction Clause**

*Any reproduction of this document must be done in full. No single part of this document may be reproduced without permission from ECMG Electronic Technical Testing Corp (Shenzhen).*

### **Opinions and Interpretations**

*This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Electronic Technical Testing Corp (Shenzhen) Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.*

### **Statement of Measurement Uncertainty**

*The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.*

## **Administrative Data**

*Test Sample* : *Wireless Communication Station*

*Model Numbers* : *BS-1000,BS-2000,BS-6000*

*Model Tested* : *BS-1000*

*Date of Receipt* : *May 8<sup>th</sup>, 2016*

*Date Tested* : *May 14<sup>th</sup>,2016 to May 20<sup>th</sup>, 2016*

*Applicant* : *Bluecard Technologies Corp.*

*Address* : *A.A306.Information Center. Zhongguancun Software Park 1#.No8 Northeast Prosperous West Road. Beijing. China.*

*Telephone* : *(86)-10-58741880*

*Fax* : *(86)-10-58741927*

*Manufacturer* : *Bluecard Technologies Corp.*

*Address* : *A.A306.Information Center. Zhongguancun Software Park 1#.No8 Northeast Prosperous West Road. Beijing. China.*

*Telephone* : *(86)-10-58741880*

*Fax* : *(86)-10-58741927*

*Factory* : *Bluecard Technologies Corp.*

*Address* : *A.A306.Information Center. Zhongguancun Software Park 1#.No8 Northeast Prosperous West Road. Beijing. China.*

*Telephone* : *(86)-10-58741880*

*Fax* : *(86)-10-58741927*



## **EUT Description**

*Bluecard Technologies Corp. Model Tested BS-1000 (referred to as the EUT in this report) is a Wireless Communication Station.*

*Technical specifications are as follows:*

<b>Parameters</b>		<b>Ranges</b>
<i>Basic parameters Of EUT</i>	<i>Power Supply</i>	<i>DC 5V by USB or Adapter</i>
	<i>Operating band</i>	<i>125KHz</i>
	<i>Type Of Modulation</i>	<i>FSK</i>
	<i>Number of Channels:</i>	<i>1CH</i>
	<i>Type of Antenna</i>	<i>Integral Loop Antenna</i>

**Note:** *For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.*

## **Measurement Uncertainty**

*The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4:Uncertainty in EMC Measurements and is documented in the Shenzhen General Testing & Inspection Technology Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.*

<b>Test</b>	<b>Range</b>	<b>Measurement Uncertainty</b>	<b>Notes</b>
<i>Conducted Emission</i>	<i>0.15 to 30MHz</i>	<i>3.2 dB</i>	<i>(1)</i>
<i>Radiated Emission</i>	<i>9KHz to 30MHz</i>	<i>3.6 dB</i>	<i>(1)</i>
<i>Radiated Emission</i>	<i>30 to 1000MHz</i>	<i>4.7 dB</i>	<i>(1)</i>

*(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.*

### ***E.U.T Model Difference***

*Model BS-2000,BS-6000 is electrically identical to BS-1000 except for appearance, model BS-1000 was selected for final testing. Product just appearance different, the function, principle, the structure is the same.*

### ***E.U.T Operation Mode***

*The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 KHz to 30 MHz), radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).*

*Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases (Y plane) and recorded in this report.*

<b><i>Test Mode</i></b>	<b><i>Description of Test mode</i></b>
<i>Engineering mode</i>	<i>Keep EUT working in continuous transmitting</i>

### **System Test Configuration:**

**Justification:** For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. The worst case data was reported. Only one antenna is used, and all data rate were tested and only the worst case data is shown in the report. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. The rear of unit shall be flushed with the rear of the table.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported. Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

**EUT Exercising Software:** The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

### **Labeling Requirements**

Per 2.1074 & 15.19; Docket 95-19 The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

## **Test Summary**

*The Electromagnetic Compatibility requirements on tested model BS-1000 for this test is stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up. Tested model BS-1000 has been tested to conform to the following parts of the Part 15, Subpart C as detailed belows:*

<b>FCC Rules</b>	<b>Requirement</b>	<b>Result</b>	<b>Remark</b>
§15.203	Antenna Requirement	Compliant	Attachment 1
§15.207	Conducted Emission	Compliant	Attachment 2
§15.209(a)& 15.205(a)	Radiated Emission	Compliant	Attachment 3
§15.215	20 dB Bandwidth	Compliant	Attachment 4
KDB 447498 D01 v05r02	RF Exposure Compliance Requirement	Not Applicable	

**Notes:** *All modes of operation and three orthogonal panel were investigated. The test results shown in the following sections represent the worst case emissions.*

## **Equipment Modification**

*Any modifications installed previous to testing by Bluecard Technologies Corp. will be incorporated in each production model sold or leased in United States.*

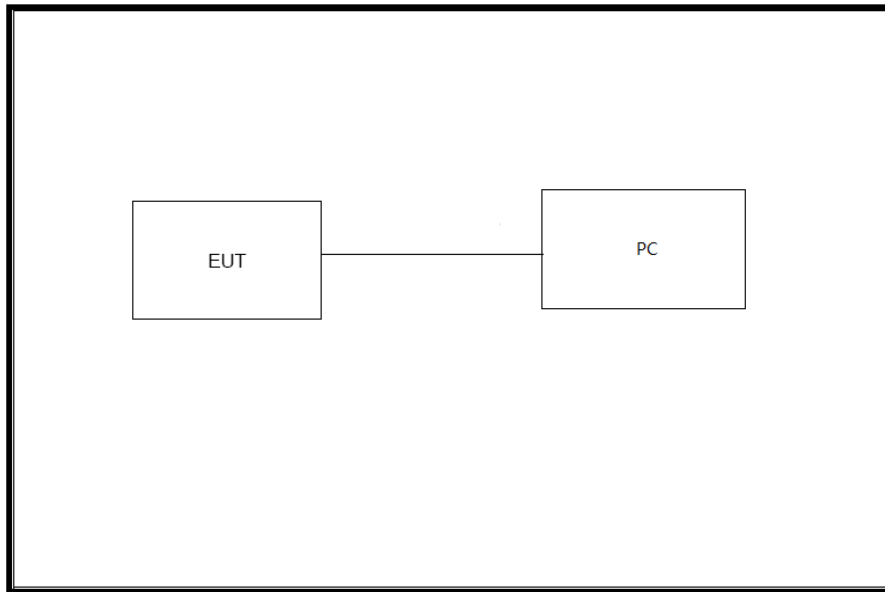
## Test System Details

EUT				
Model Number:	BS-1000/BS-2000/BS-6000			
Description:	Wireless Communication Station			
Manufacturer:	Bluecard Technologies Corp.			
Input Voltage:	DC 5.0V			
Support Equipment				
Description	Model Number	Serial Number	Certificate	Manufacturer
PC	H435	/	DoC	Lenovo
Printer	PJ1008	/	DoC	HP
Display	U2142M	/	DoC	DELL
Mouse	N889	/	DoC	DELL
Keyboard	SK-8185	/	DoC	DELL

Cable Description						
Cable No.	Type of Cable	From	To	Length (Meters)	Shielded (Y/N)	Ferrite (Y/N)
1	USB Cable	PC	EUT	1.2	N	Y
2	VGA	PC	Display	1.2	Y	Y
3	Mouse cable	PC	Mouse	1.2	N	N
4	Keyboard cable	PC	Keyboard	1.2	N	N

**Note:** The EUT has been tested as an independent unit together with other necessary accessories or support units. the above support units or accessories were used to form a representative test configuration during the test tests.

### ***Set up Diagram For Tests***

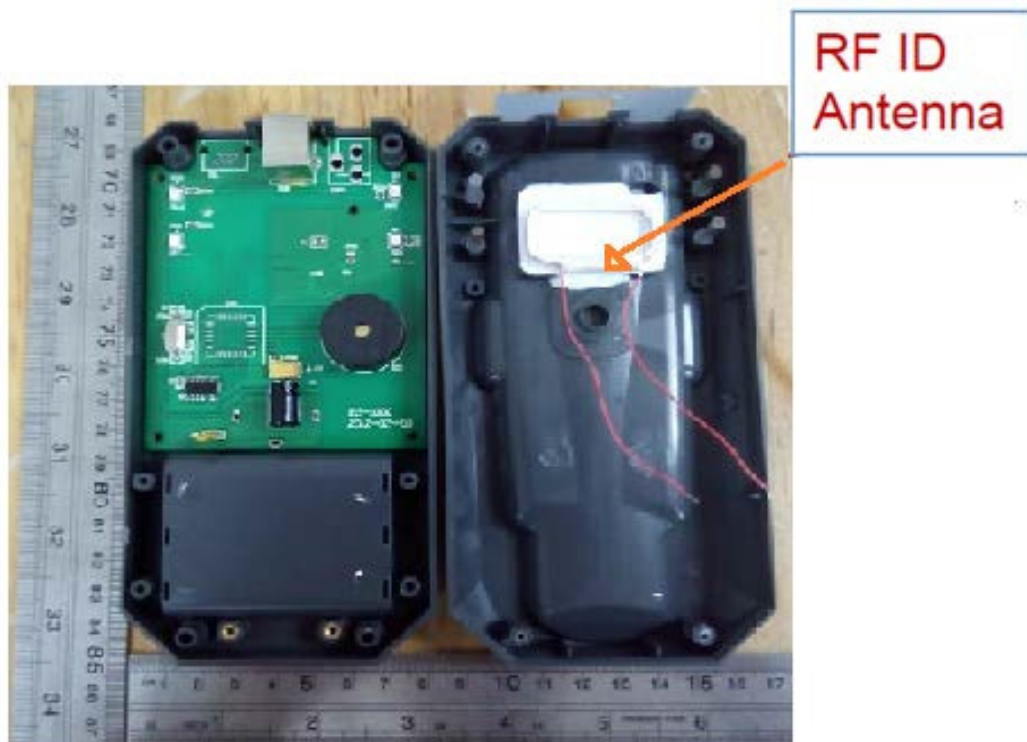


## ATTACHMENT 1 - ANTENNA REQUIREMENT

### **§15.203 Requirements:**

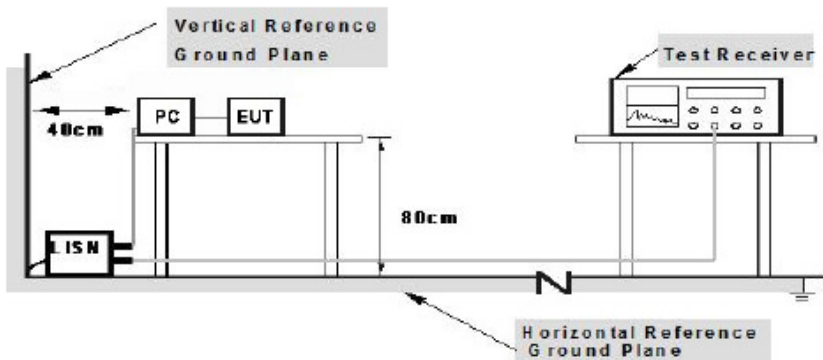
*An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.*

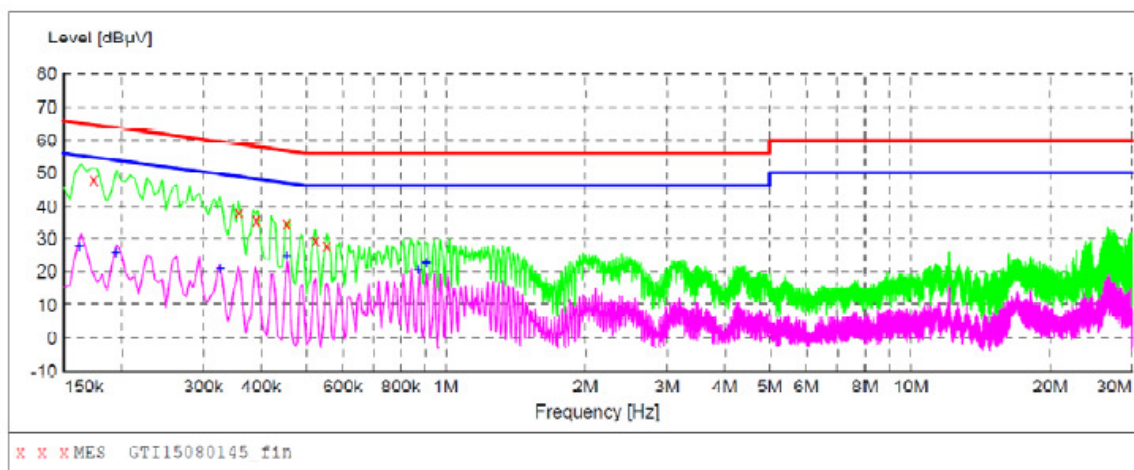
FCC Section	FCC Rules	Conclusion
§15.203	<p><i>Described how the EUT complies with the requirements that either its antenna is permanently attached, or that it employ a unique antenna connector, for every antenna proposed for use with the EUT.</i></p> <p><i>The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed:</i></p> <ol style="list-style-type: none"><li><i>1. The application (or intended use) of the EUT.</i></li><li><i>2. The installation requirements of the EUT.</i></li><li><i>3. The method by which the EUT will be marketed.</i></li></ol>	<p><i>The EUT utilizes an integrated Loop Antenna and no consideration of replacement.</i></p> <p><i>So the unit do meet requirement.</i></p>



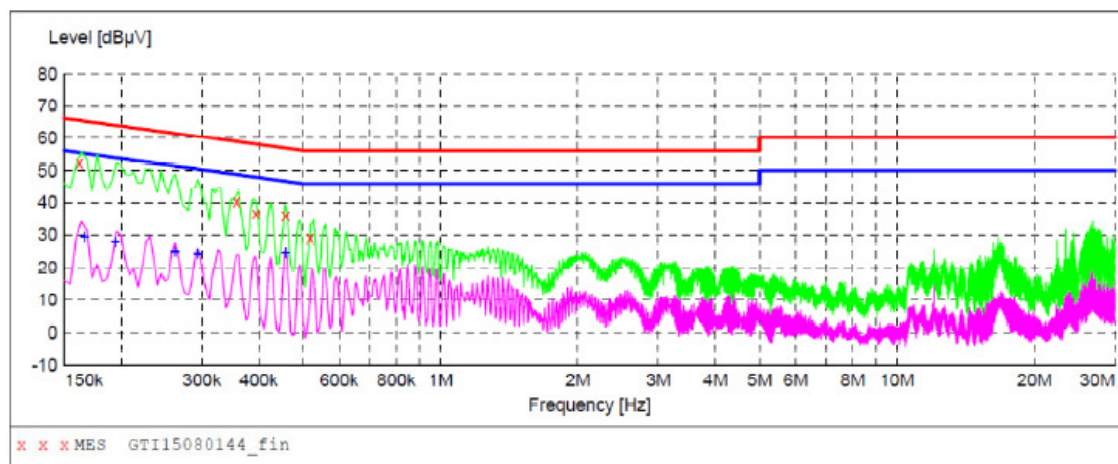


## ATTACHMENT 2 - CONDUCTED EMISSION TEST RESULTS

<b>CLIENT:</b>	Bluecard Technologies Corp.	<b>TEST STANDERD:</b>	Section 15.207
<b>MODEL NUMBERS:</b>	BS-1000/BS-2000/BS-6000	<b>PRODUCT:</b>	Wireless Communication Station
<b>EUT MODEL:</b>	BS-1000	<b>EUT DESIGNATION:</b>	RFID Reader
<b>TEMPERATURE:</b>	23°C	<b>HUMIDITY:</b>	47%RH
<b>ATM PRESSURE:</b>	101.0kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Thomas Morgan	<b>DATE OF TEST:</b>	May 18 <sup>th</sup> , 2016
<b>TEST REFERENCE:</b>	ANSI C63.10: 2013		
<b>TEST PROCEDURE:</b>	The EUT was set up according to the guidelines of ANSI C63.10:2013 for conducted emissions. The measurement was using an AMN on each line and an EMI receiver peak scan was made at the frequency measurement range. The six highest significant peaks were then marked, and these signals were then quasi-peaked and averaged.		
<b>TEST SETUP:</b>	 <p><b>Note: 1. Support units were connected to second LISN.</b>  <b>2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes</b></p>		
<b>DESCRIPTIONS OF TEST MODE:</b>	The EUT was connected to the artificial main network, and the test was conducted with the EUT in Tx transmit mode.		
<b>TESTED RANGE:</b>	150kHz to 30MHz		
<b>TEST VOLTAGE:</b>	DC 5V by USB		
<b>RESULTS:</b>	The EUT meets the requirements of test reference for conducted emissions at AC input port. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.		



**Line L Conducted Emission Graph**



**Line N Conducted Emission Graph**

**Test Data:**

<i>Lines</i>	<i>Frequency (MHz)</i>	<i>Corrected QP Level (dBuV)</i>	<i>Limits QP (dBuV)</i>	<i>Over Limit QP(dB)</i>	<i>Frequency (MHz)</i>	<i>Corrected AV Level (dBuV)</i>	<i>Limits AV (dBuV)</i>	<i>Over Limit QP(dB)</i>
L	0.174	47.8	65	-17.2	0.454	31.9	47	-21.9
L	0.358	38.0	59	-19.0	0.872	20.6	46	-25.4
L	0.390	35.6	58	-22.4	0.908	22.7	46	-23.3
L	/	/	/	/	/	/	/	/
L	/	/	/	/	/	/	/	/
L	/	/	/	/	/	/	/	/
N	0.162	52.3	65	-12.7	0.166	29.5	55	-25.5
N	0.350	40.3	59	-18.7	0.194	27.8	54	-26.2
N	0.394	36.8	58	-21.2	0.262	25.0	51	-25.1
N	/	/	/	/	/	/	/	/
N	/	/	/	/	/	/	/	/
N	/	/	/	/	/	/	/	/

Note :

- 1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not use.
- 2) "QP" means "Quasi-Peak" values, "AV" means "Average" values.
- 3) The symbol "/" means other emission readings are too low against official limits that are not be recorded.

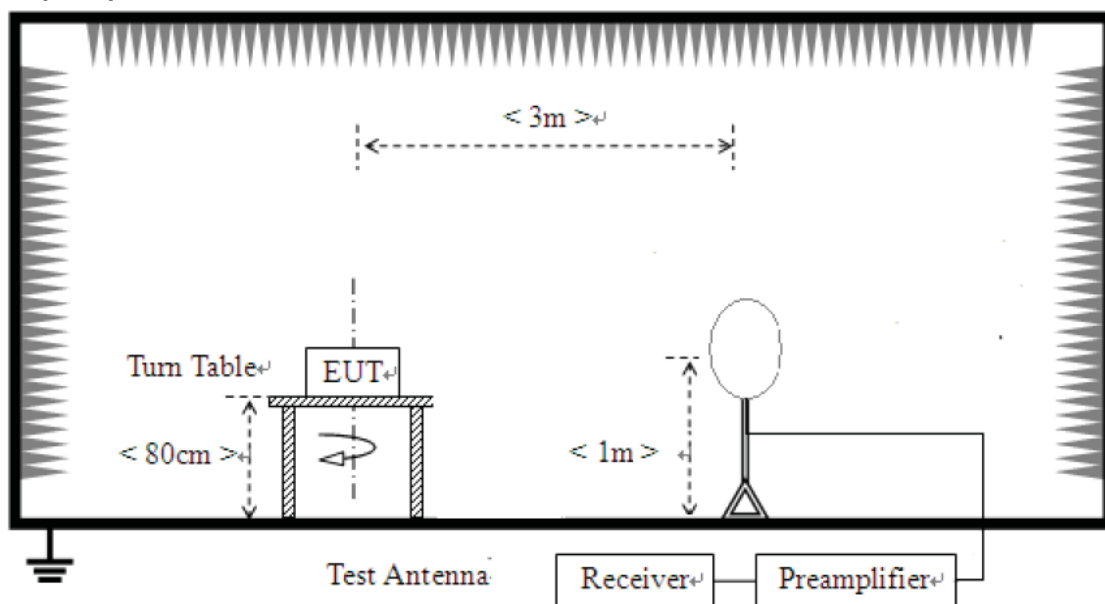
**ATTACHMENT 3 – RADIATED EMISSION MEASUREMENT**

<b>CLIENT:</b>	Bluecard Technologies Corp.	<b>TEST STANDERD:</b>	Section 15.209(a), 15.205(a)
<b>MODEL NUMBERS:</b>	BS-1000/BS-2000/BS-6000	<b>PRODUCT:</b>	Wireless Communication Station
<b>EUT MODEL:</b>	BS-1000	<b>EUT DESIGNATION:</b>	RFID Reader
<b>TEMPERATURE:</b>	23°C	<b>HUMIDITY:</b>	47%RH
<b>ATM PRESSURE:</b>	101.0kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Thomas Morgan	<b>DATE OF TEST:</b>	May 17 <sup>th</sup> , 2016
<b>TEST REFERENCE:</b>	ANSI C63.10: 2013		
<b>TEST PROCEDURE:</b>	<p>The EUT was set up according to the guidelines of ANSI C63.10: 2013 for radiated emissions. An EMI receiver peak scan was made at the frequency measurement range (pre-scan) in an Anechoic chamber. Test procedure as follow:</p> <ul style="list-style-type: none"><li>a) The EUT is placed on a turntable, which is 0.8 m(1.5m for above 1GHz) above ground plane.The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.</li><li>b) The EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.</li><li>c) Maximum procedure was performed on the six highest emissions to ensure EUT compliance.</li><li>d) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.</li><li>e) Repeat above procedures until the measurements for all frequencies are complete.</li></ul> <p>The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:</p> $FS = RA + AF + CL - AG$ <p>Where FS = Field Strength; AF = Antenna Factor; RA = Reading Amplitude; CL = Cable Attenuation Factor (Cable Loss); AG = Amplifier Gain.</p>		

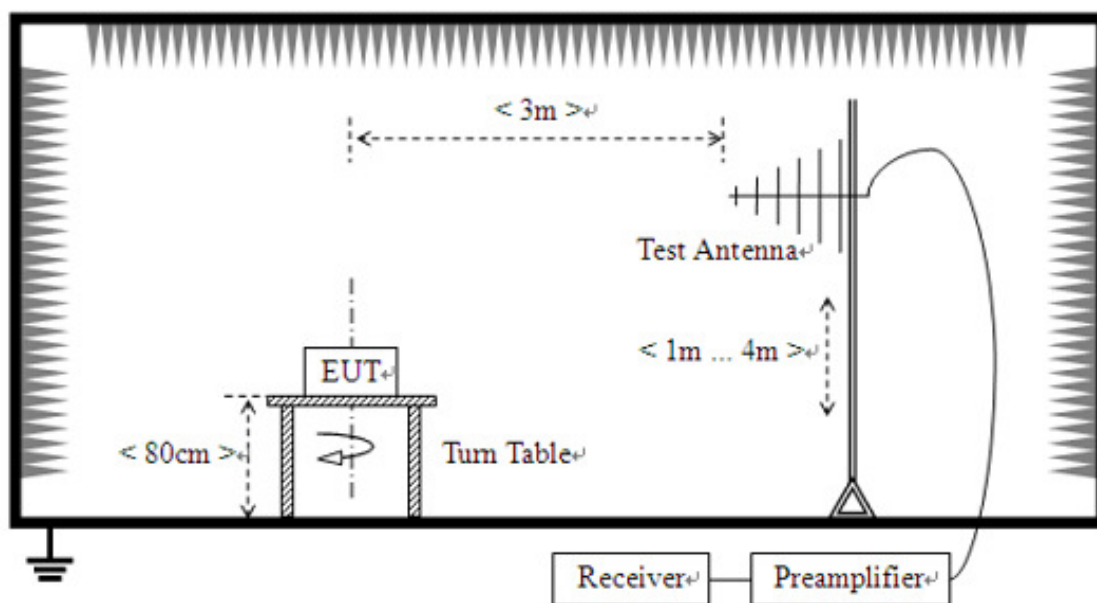
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**TEST SET UP:**

**Frequency measured at 9KHz to 30MHz:**

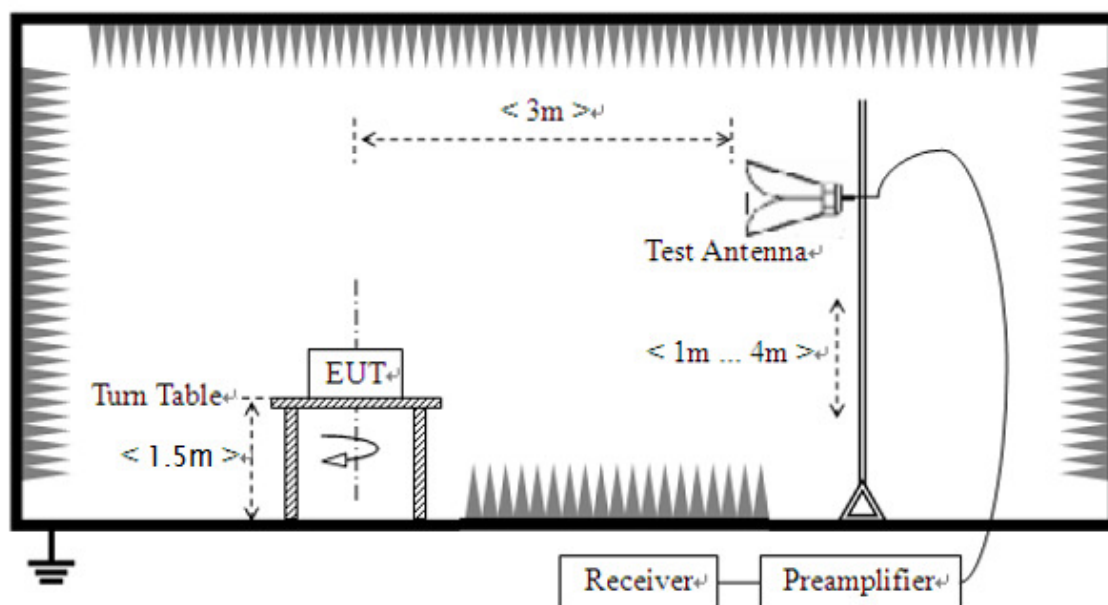


**Frequency measured at 30MHz to 1000MHz:**



Continue on to next page...

**Frequency measured at Above 1GHz:**



<b>TESTED RANGE:</b>	9KHz to 1000MHz
<b>TEST VOLTAGE:</b>	DC 3V by Battery
<b>TEST MODE:</b>	The EUT was activated with a Tx transmit mode.
<b>RESULTS:</b>	According to the data in the following,the EUT complied with the FCC Part 15.209&15.205 . The test results relate only to the equipment under test provided by client.
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.

Continue on to next page...

**Receiver Set-up:**

Frequency [MHz]	RBW	VBW	Detector
0.009-0.015	200Hz	1KHz	Quasi-peak
0.015-30	9KHz	30KHz	Quasi-peak
30-1000	120KHz	300KHz	Quasi-peak

**Note :** The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

**Radiated Emission Limit:**

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field strength [V/m]	Distance [Meters]
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Note:**

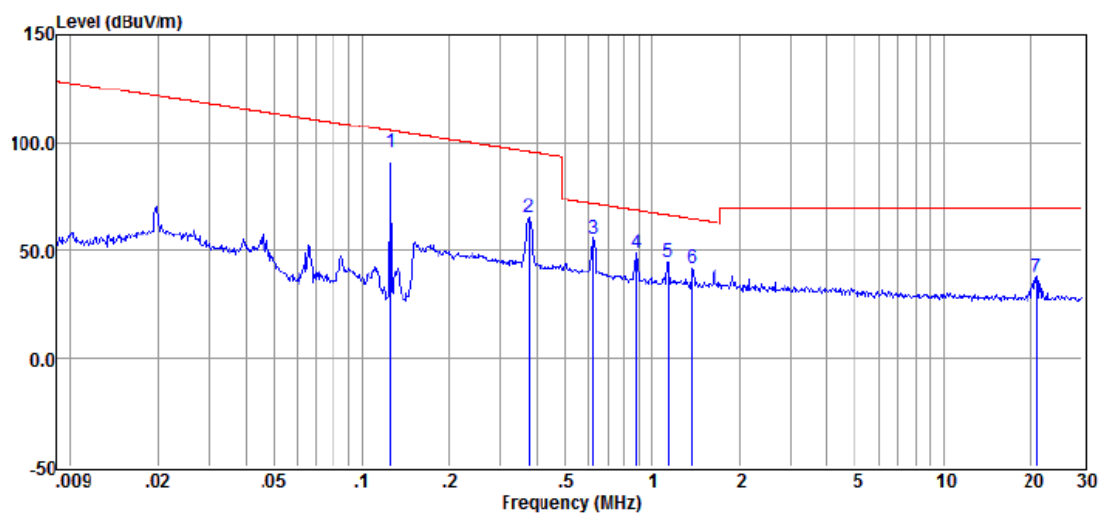
(105) For test distance other than what is specified, but fulfilling the requirements of section 15.31(f) (2) the field strength is calculated by adding additionally an extrapolation factor of 40dB/decade (inverse linear distance for field strength measurements).

So the Distance Extrapolation Factor in dB is  $40 \cdot \log(D_{TEST} / D_{SPEC})$  where  $D_{TEST}$  = Test Distance and  $D_{SPEC}$  = Specified Distance.

Field strength limit (dBμV/m)@test distance= Field strength limit (dBμV/m)@specified distance –Distance Extrapolation Factor.

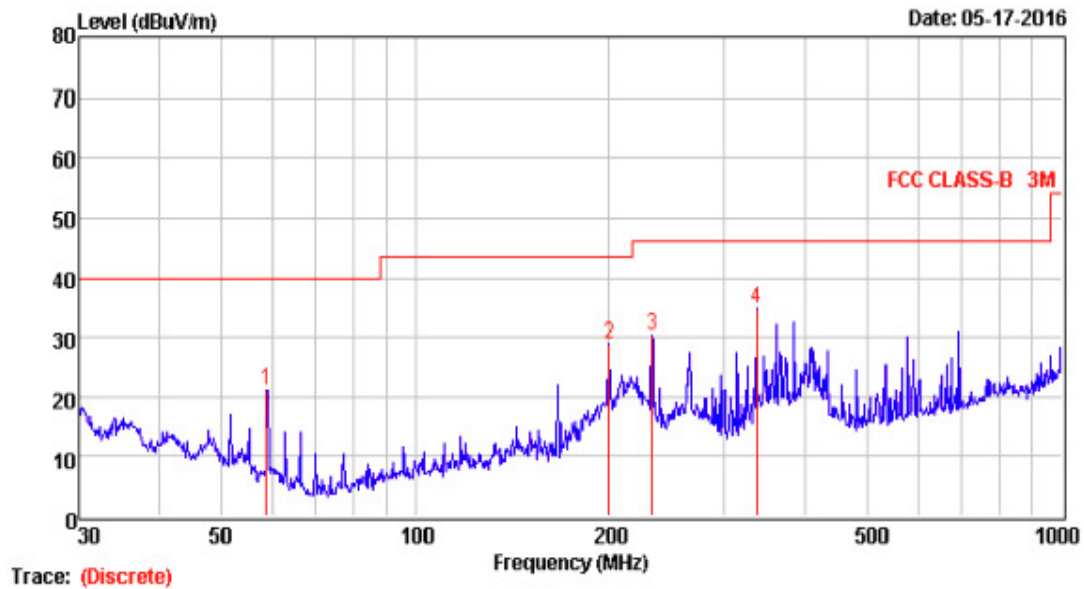
(2) The lower limit shall apply at the transition frequencies.

### ***Radiated Emission Plot From 9KHz to 30MHz***

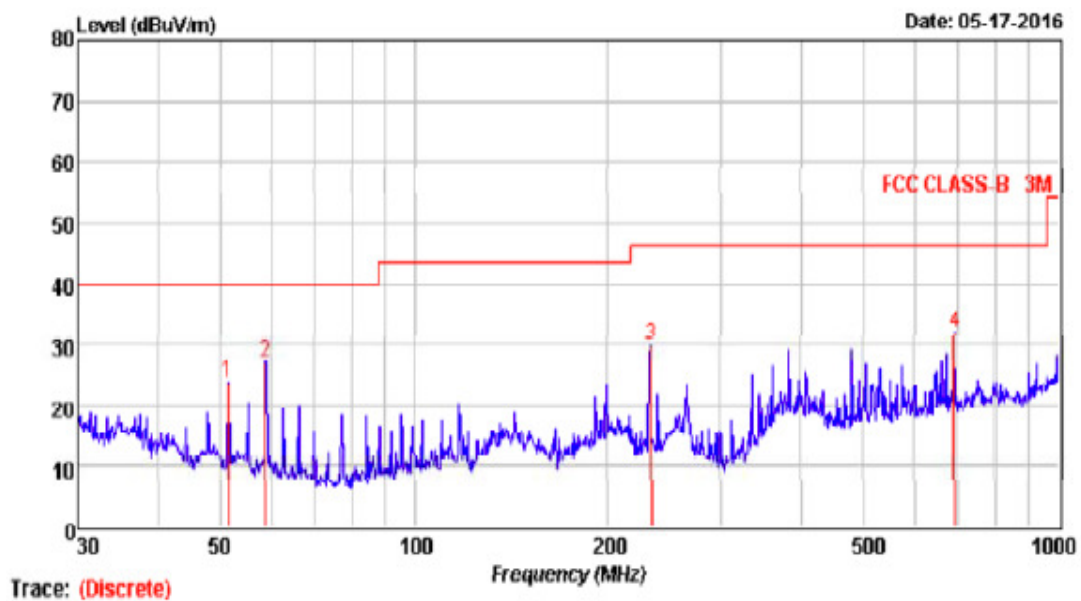




### ***Radiated Emission Plot From 30 to 1000MHz:***



***Horizontal: Radiated Emission Test Plot***



***Vertical: Radiated Emission Test Plot***

**Radiated Emission from 9KHz to 30MHz:  
Fundamental:**

Test No. #:	Frequency (MHz)	Measured Level @3m (dBuV/m)		Limit@3m (dBuV/m)		Over Limit PK (dB)	Over Limit AV (dB)	Pol./ Ant.
		PK	AV	PK	AV			
1	0.125	87.5	85.1	125.7	105.7	-38.2	-20.6	/
/	/	/	/	/	/	/	/	/

**Harmonics and Others:**

Test No. #:	Mark	Frequency (MHz)	Measured Level (dBuV/m)		Over Limit (dB)		Limit (dBuV/m)		Factor (dB)
			PK	AV	PK	AV	PK	AV	
1	*	0.110	48.10	40.70	-78.7	-66.1	126.8	106.8	/
2	/	0.250	/	/	/	/	119.65	99.65	/
3	/	0.375	/	/	/	/	116.12	96.12	/
4	/	0.500	/	/	/	/	73.62	/	/
5	/	0.625	/	/	/	/	71.69	/	/
6	/	0.750	/	/	/	/	70.10	/	/

**Note:**

1. Measure Level(dBuV/m) = Reading Level(dBuV/m) + Factor(dB);
2. Factor(dB)= Cable Loss(dB)+ Antenna Factor(dB).
3. Mark "\*" means that measured level is failed in restricted band.
4. All other emission levels are too low against limits are not reported.


***Radiated Emission from 30MHz to 1GHz:***

<i>Frequency (MHz)</i>	<i>Antenna Polarity</i>	<i>Reading Level (dBuV/m)</i>	<i>Ant./CL/ Amp. CF</i>	<i>Emission Level (dBuV/m)</i>	<i>QP Limit (dBuV/m)</i>	<i>Over Limit(dB)</i>	<i>Pass/Fail</i>
58.82	H	40.00	-18.88	21.12	40.0	-18.88	Pass
199.99	H	46.68	-17.86	28.82	43.5	-14.68	Pass
232.53	H	48.00	-17.68	30.32	46.0	-15.68	Pass
336.04	H	50.54	-15.80	34.74	46.0	-11.26	Pass
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
51.48	V	39.66	-15.77	23.89	40.0	-16.11	Pass
58.82	V	46.05	-18.88	27.17	40.0	-12.83	Pass
233.35	V	47.45	-17.68	29.77	46.0	-16.23	Pass
691.99	V	41.24	-9.47	31.77	46.0	-14.23	Pass
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

***Note:***

- 1. The field strength is calculated by adding the Antenna Factor, Cable Loss& Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.*
- 2. Other emission levels are too low against official limits that are not recorded.*

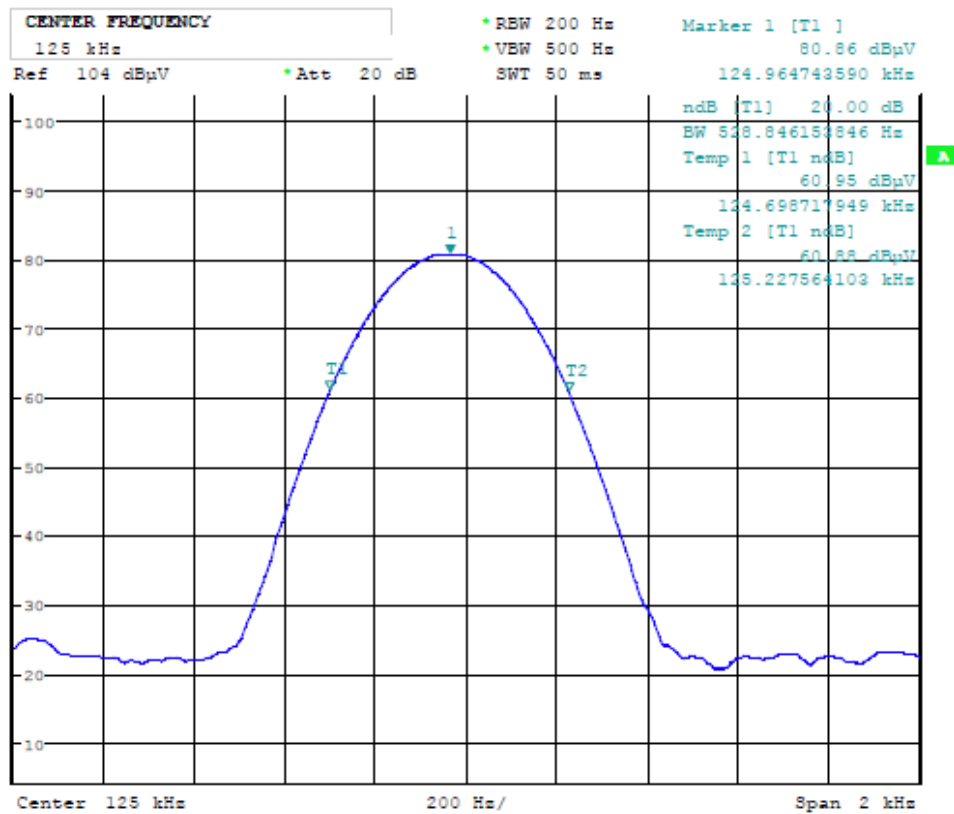
**ATTACHMENT 4 – 20dB BANDWIDTH**

<b>CLIENT:</b>	Bluecard Technologies Corp.	<b>TEST STANDERD:</b>	Section 15.215
<b>MODEL NUMBERS:</b>	BS-1000/BS-2000/BS-6000	<b>PRODUCT:</b>	Guard Tour Reader
<b>EUT MODEL:</b>	BS-1000	<b>EUT DESIGNATION:</b>	RFID Reader
<b>TEMPERATURE:</b>	23°C	<b>HUMIDITY:</b>	47%RH
<b>ATM PRESSURE:</b>	101.0kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Thomas Morgan	<b>DATE OF TEST:</b>	May 20 <sup>th</sup> , 2016
<b>TEST REFERENCE:</b>	ANSI C63.10:2013		
<b>REQUIREMENTS</b>	Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.		
<b>TEST PROCEDURE</b>	The transmitter output was connected to the spectrum analyzer through a low loss RF cable. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 200Hz RBW and 500Hz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.		
<b>TEST SETUP:</b>	 <p style="text-align: center;"><b>Spectrum Analyzer</b> <span style="margin-left: 200px;"><b>EUT</b></span></p>		
<b>TEST VOLTAGE:</b>	DC 5V		
<b>RESULTS:</b>	The EUT meet the requirements of test reference for 20dB bandwidth. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen) test personnel.		
<b>M. UNCERTAINTY:</b>	±5 %		

**Test Data:**

Modulation	20dB Bandwidth(KHz)	Pass/Fail
FSK	0.529	Pass

Test result: The unit does meet the requirements.

**Test Plot As Below:**

#### **ATTACHMENT 4-TEST SET-UP PHOTOGRAPH**

##### ***Conducted Emission Test Set-up :***

***150KHz to 30MHz***



##### ***Radiated Emission Test Set-up :***

***9KHz to 30MHz***



**30 to 1000MHz**





## **ATTACHMENT 5 -EUT SAMPLE PHOTOGRAPH**

***EUT Model: BS-1000***

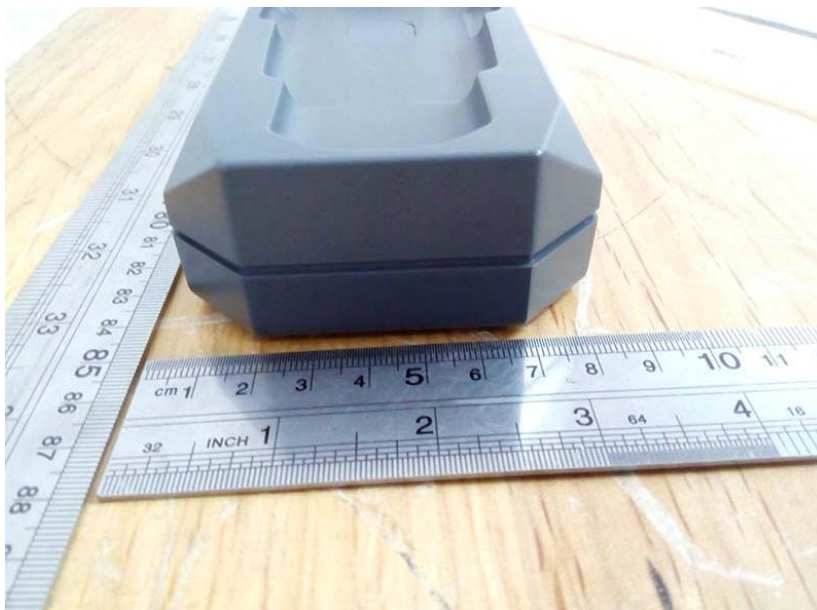


***EUT- Front View***

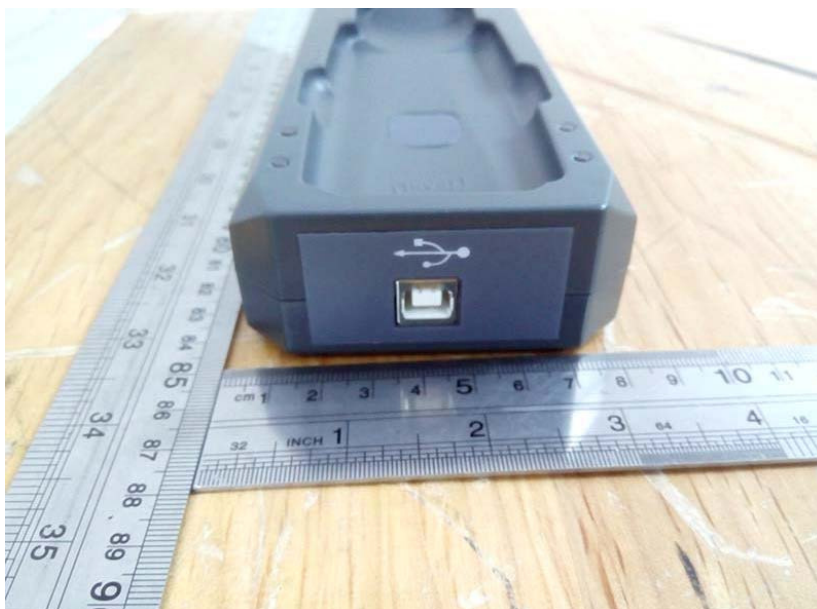


***EUT- Rear View***





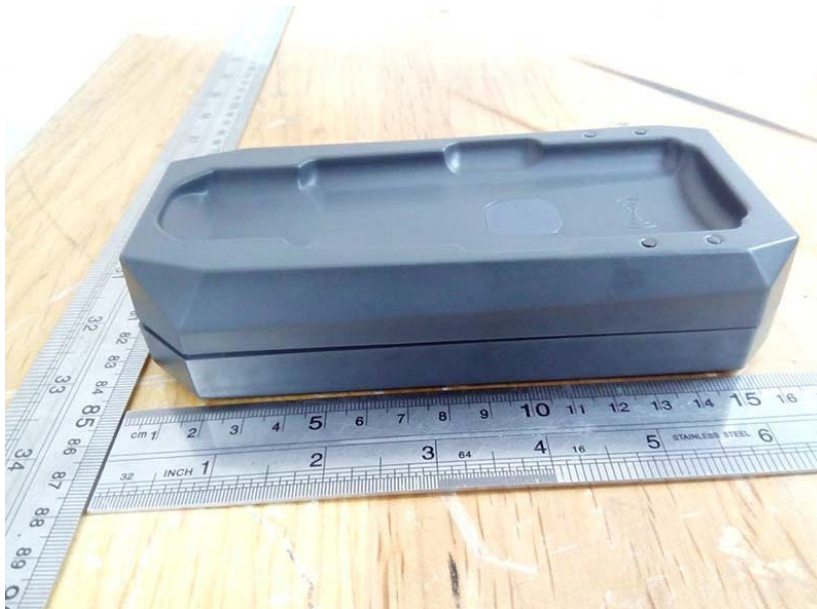
**EUT- Bottom View**



**EUT- Top View**



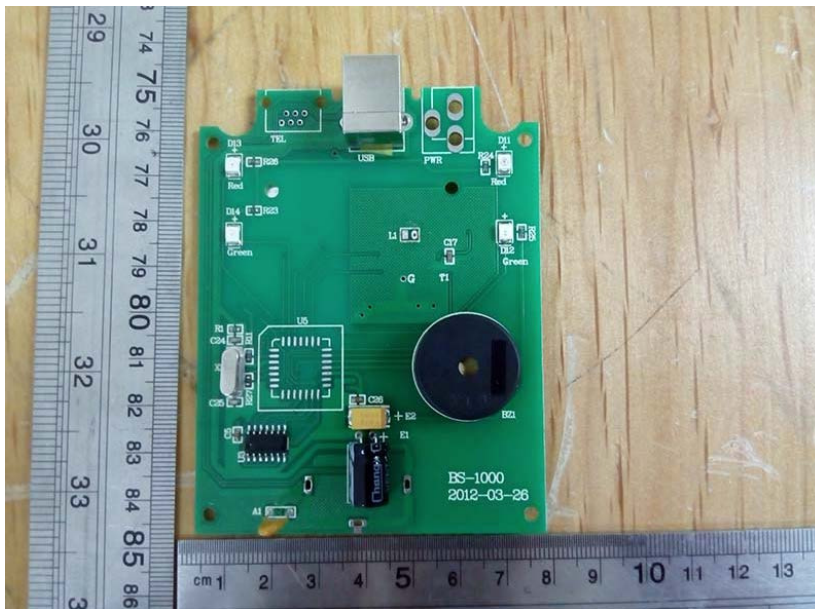
***EUT- Left Side View***



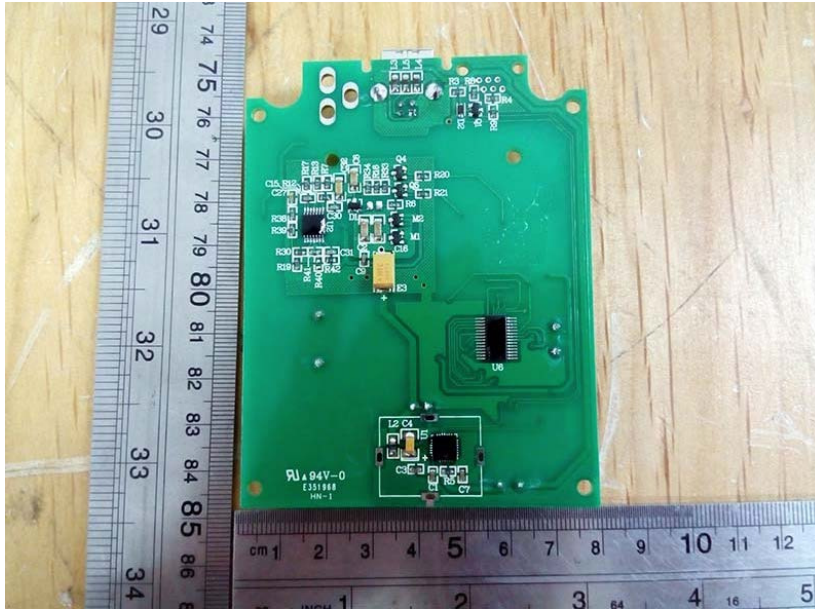
***EUT- Right Side View***



***EUT-Uncovered View #1***



***Mother board- Top View***



***Mother board- Bottom View***

***\*\*\* End Of Report \*\*\****