

FCC TEST REPORT
for
PRADOTEC CORPORATION SDN. BHD. (807780-P)

Bluetooth Biometric Contact Card Reader
Model No.: BCR200BT

Prepared for : PRADOTEC CORPORATION SDN. BHD. (807780-P)
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Report Number : R011412112E
Date of Test : Dec. 15, 2014~ Jan. 19, 2015
Date of Report : Jan. 19, 2015

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TEST REPORT

Applicant : PRADOTEC CORPORATION SDN. BHD. (807780-P)
Manufacturer : OPTIMA KLASIK SDN. BHD. (807783-T)
EUT : Bluetooth Biometric Contact Card Reader
Model No. : BCR200BT
Serial No. : N.A.
Trade Mark : 
Rating : DC 5V, 1A Via Adapter (AC 100-240V, 50/60Hz, 0.2A) /
DC 5V Via USB Port

Measurement Procedure Used:

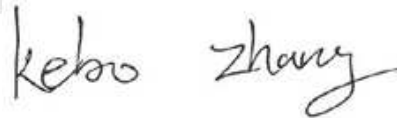
FCC Part15 Subpart C, Paragraph 15.207, 15.247 & 15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without

written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Dec. 15, 2014~ Jan. 19, 2015



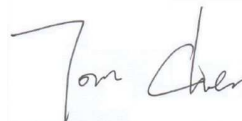
Prepared by :

(Tested Engineer / Kebo Zhang)



Reviewer :

(Project Manager / Amy Ding)



Approved & Authorized Signer :

(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	: Bluetooth Biometric Contact Card Reader
Model Number	: BCR200BT
Test Power Supply	: AC 120V, 60Hz for adapter/ DC 5V Via USB Port/ DC 5V(With DC 3.7V Battery inside)
Adapter	: Model: AC/DC Adapter Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5V, 1A
Frequency	: 2402~2480MHz
Antenna Specification	: Chip Antenna: 0.5dBi
Modulation	: GFSK, $\pi/4$ DQPSK, 8DPSK
Applicant Address	: PRADOTEC CORPORATION SDN. BHD. (807780-P) IRIS Smart Technology Complex, Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia
Manufacturer Address	: OPTIMA KLASIK SDN. BHD. (807783-T) IRIS Smart Technology Complex, Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia
Factory Address	: OPTIMA KLASIK SDN. BHD. (807783-T) IRIS Smart Technology Complex, Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia
Date of receipt	: Dec. 15, 2014
Date of Test	: Dec. 15, 2014~ Jan. 19, 2015

1.2 Auxiliary Equipment Used during Test

PC	: Manufacturer: DELL M/N: OPTIPLEX 380 S/N: 1J63X2X CE , FCC: DOC
MONITOR	: Manufacturer: DELL M/N: E170Sc S/N: CN-00V539-64180-055-0UPS CE , FCC: DOC
KEYBOARD	: Manufacturer: DELL M/N: SK-8115 S/N: CN-0DJ313-71616-06C-02XN CE , FCC: DOC Cable: 1m, unshielded
MOUSE	: Manufacturer: DELL M/N: M-UARDEL7 S/N: N/A CE , FCC: DOC Cable: 1m, unshielded
Printer	: Manufacturer: Brother M/N: MFC-3360C S/N: N/A CE, FCC: DOC
Power Line	: Non-Shielded, 1.5m
VGA Cable	: Non-Shielded, 1.5m

1.3 Description of Test Facility

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

CNAS - LAB Code: L3503

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, 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 752021, July 10, 2013.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, February 22, 2013.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC
Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong,
China

1.4 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.3dB
Conduction Uncertainty	:	Uc = 3.4dB

2. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

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 Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

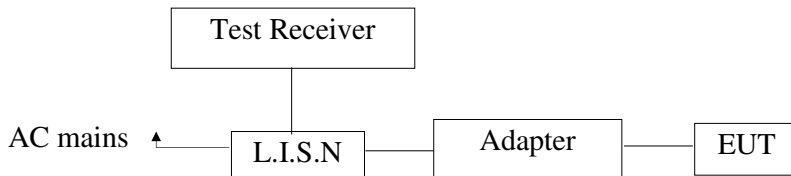
ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

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.

3. Conducted Emission Test

3.1 Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2 Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3 Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4 Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown as Section 3.1.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. Let the EUT work in test mode (Charging to adapter) and measure it.

3.5 Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6 Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 22, 2014	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 22, 2014	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 22, 2014	1 Year

3.7 Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150KHz to 30 MHz is investigated.

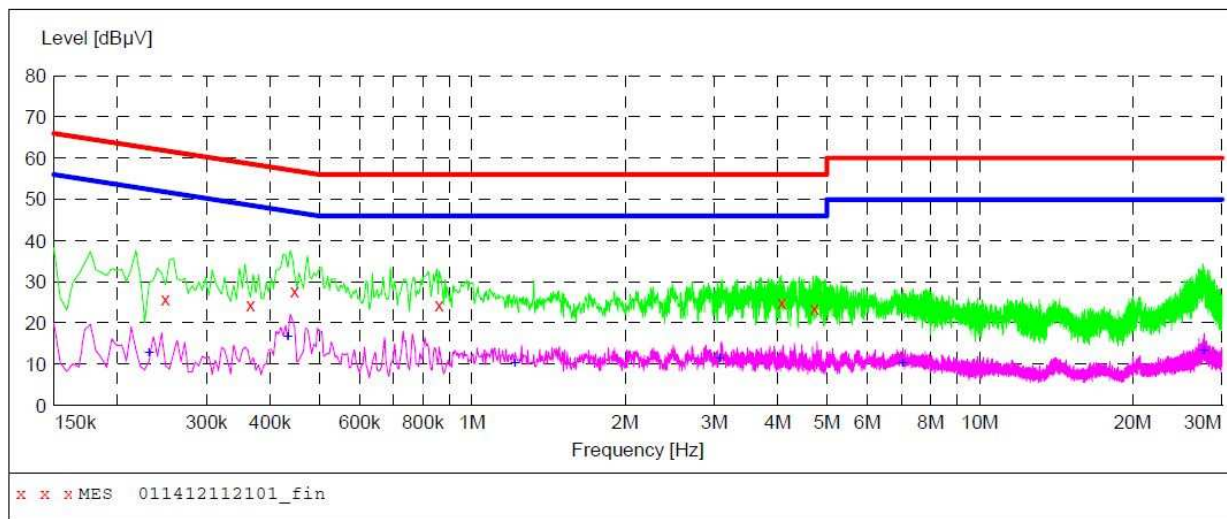
Please refer the following pages.

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: Charging to adapter
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "011412112101_fin"

12/16/2014 6:16PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.249000	25.90	20.1	62	35.9	QP	L1	GND
0.366000	24.50	20.1	59	34.1	QP	L1	GND
0.447000	27.90	20.1	57	29.0	QP	L1	GND
0.861000	24.50	20.1	56	31.5	QP	L1	GND
4.078000	25.10	20.5	56	30.9	QP	L1	GND
4.726000	23.70	20.5	56	32.3	QP	L1	GND

MEASUREMENT RESULT: "011412112101_fin2"

12/16/2014 6:16PM

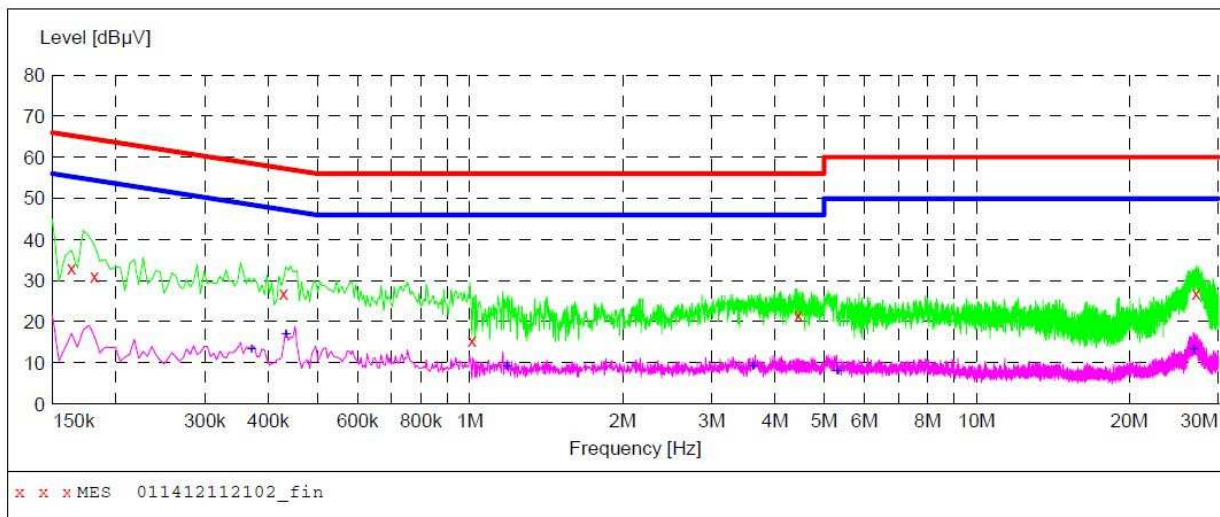
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.231000	12.90	20.1	52	39.5	AV	L1	GND
0.433500	16.70	20.1	47	30.5	AV	L1	GND
1.216000	10.30	20.2	46	35.7	AV	L1	GND
3.074500	11.40	20.4	46	34.6	AV	L1	GND
7.043500	10.10	20.5	50	39.9	AV	L1	GND
27.631000	13.20	20.9	50	36.8	AV	L1	GND

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: Charging to adapter
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "011412112102_fin"

12/16/2014 6:19PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.163500	33.30	20.1	65	32.0	QP	N	GND
0.181500	31.10	20.1	64	33.3	QP	N	GND
0.429000	27.00	20.1	57	30.3	QP	N	GND
1.009000	15.70	20.2	56	40.3	QP	N	GND
4.451500	21.70	20.5	56	34.3	QP	N	GND
27.118000	27.20	20.9	60	32.8	QP	N	GND

MEASUREMENT RESULT: "011412112102_fin2"

12/16/2014 6:19PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.370500	13.30	20.1	49	35.2	AV	N	GND
0.433500	17.10	20.1	47	30.1	AV	N	GND
1.184500	9.20	20.2	46	36.8	AV	N	GND
3.623500	9.20	20.4	46	36.8	AV	N	GND
5.306500	8.00	20.5	50	42.0	AV	N	GND
26.798500	13.40	20.9	50	36.6	AV	N	GND

4. Radiation Interference

4.1 Requirements (15.247, 15.209):

4.1.1. Test Limits (< 30 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

4.1.2. Test Limits ($\geq$ 30 MHz)

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHz		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBuV/m @3m	54 dBuV/m @3m	ABOVE 960 MHz	54dBuV/m

For range 9KHz~30MHz, The measured value is really too low to be recorded.

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

4.2 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber.

For 30MHz to 1000MHz:

Set the spectrum analyzer as:
RBW = 120kHz, VBW =120kHz,
Detector= Quasi-Peak
Trace mode= Max hold.
Sweep- auto couple.

For Above 1GHz (Peak Measurement):

Set the spectrum analyzer as:
RBW = 1MHz, VBW =3MHz,
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.

For Above 1GHz (Average Measurement):

Set the spectrum analyzer as:

RBW =1MHz, VBW =10Hz

Detector=Peak

Trace mode= Max hold.

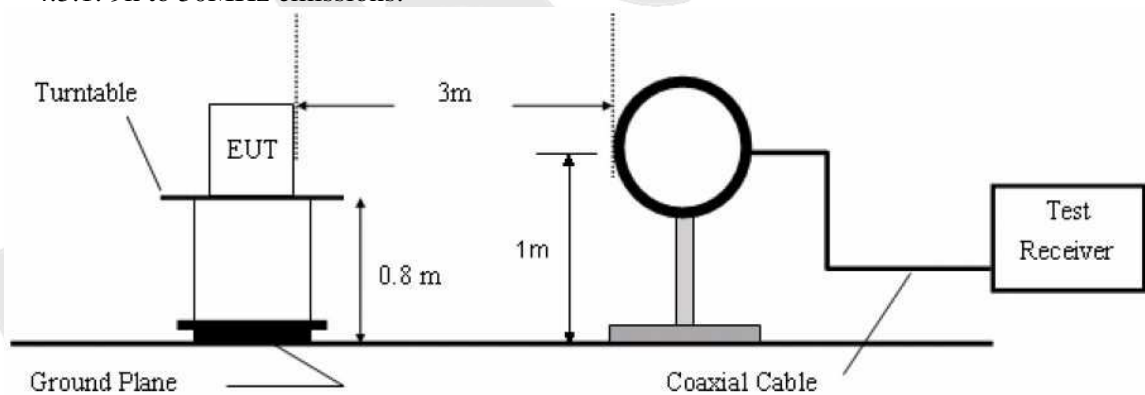
Sweep- auto couple.

Test Equipment

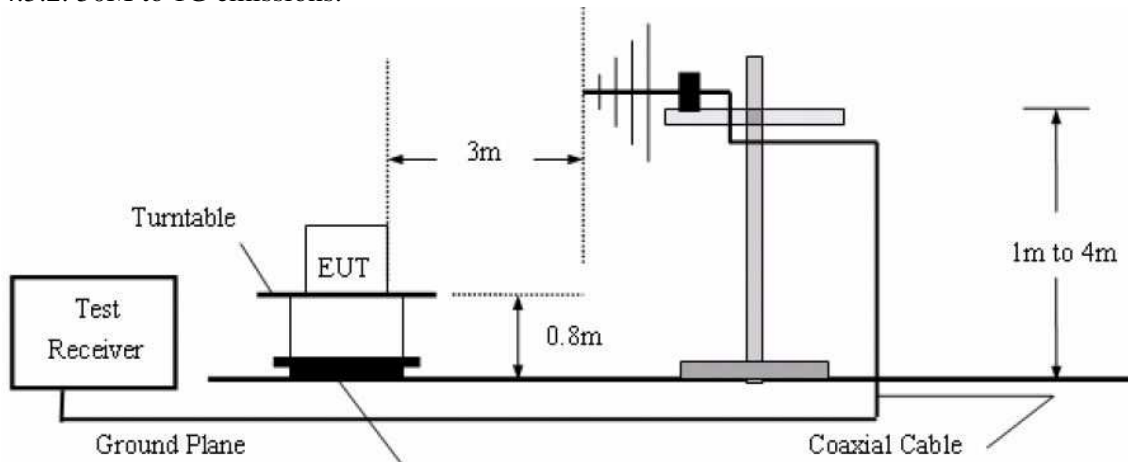
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

4.3 Test Configuration

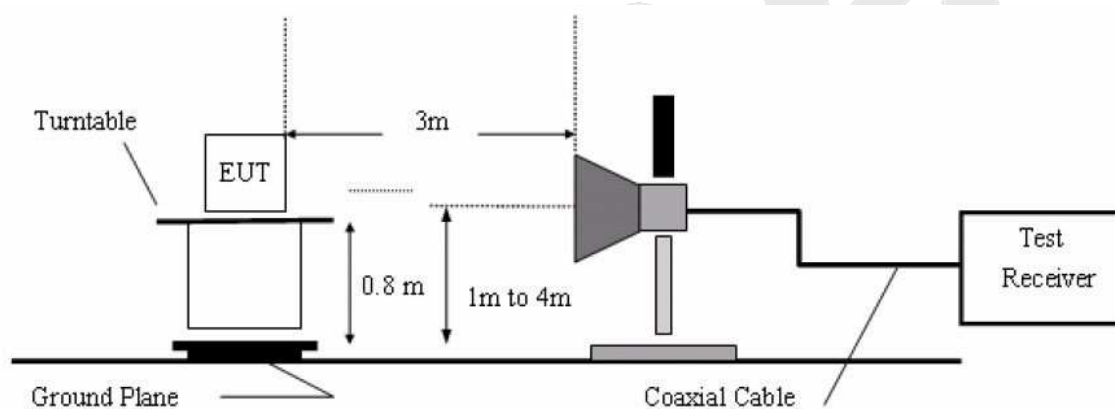
4.3.1. 9k to 30MHz emissions:



4.3.2. 30M to 1G emissions:



4.3.3. 1G to 40G emissions:

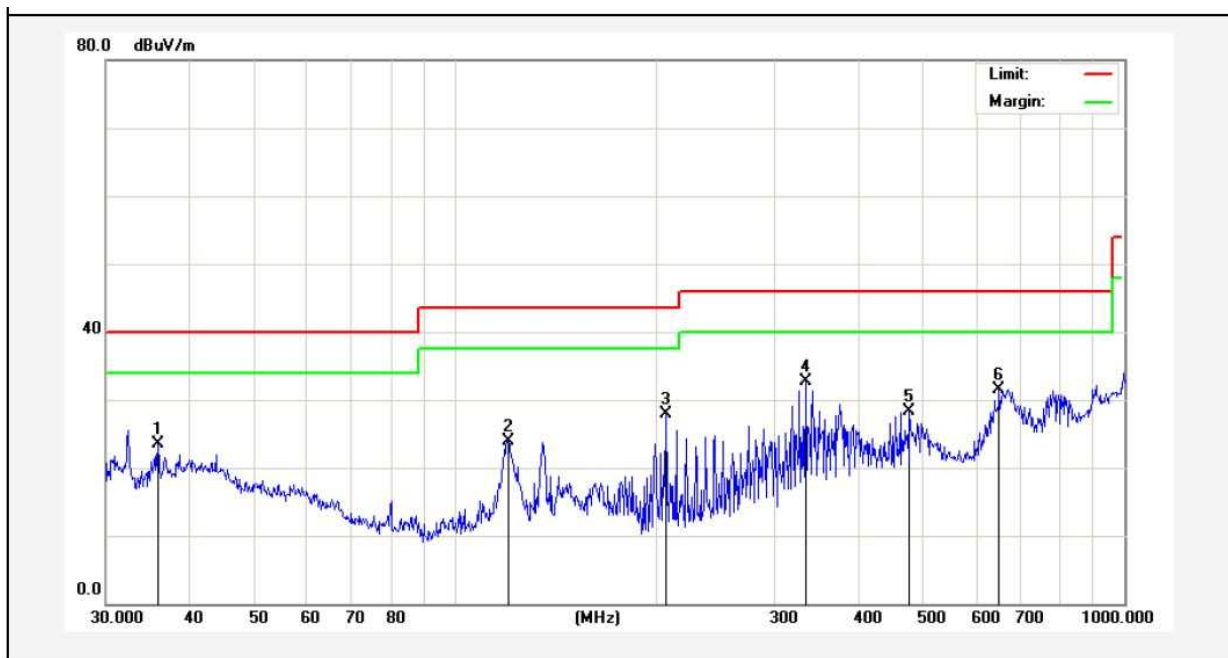


4.4 Test Results

PASS.

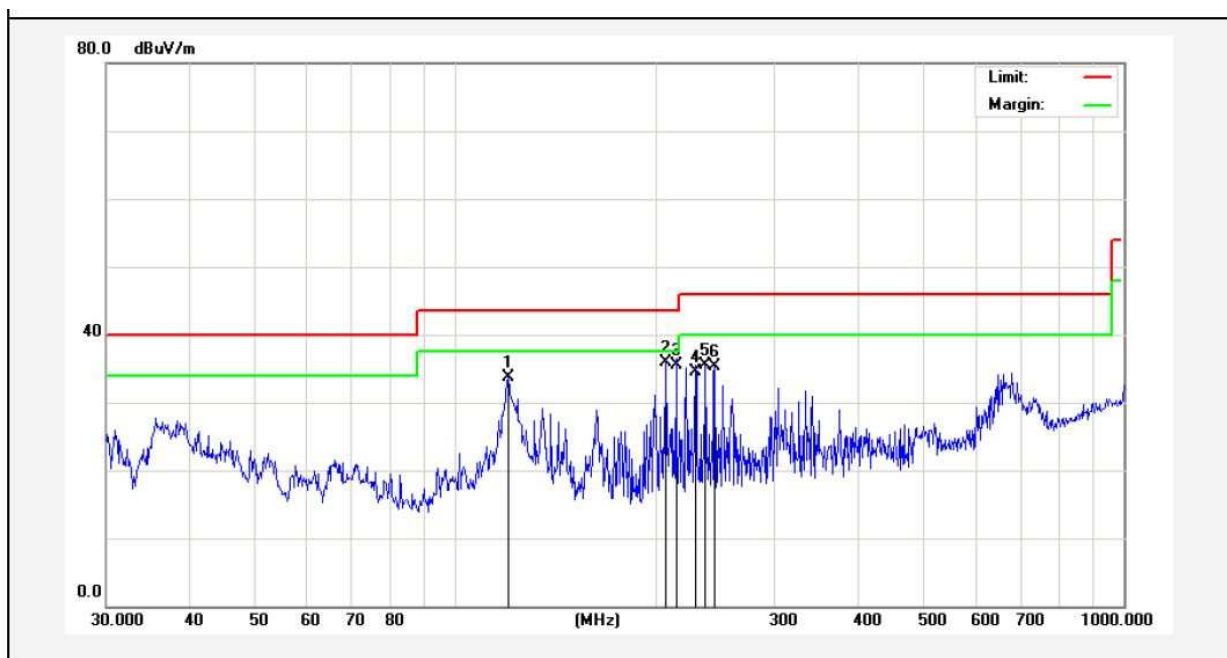
Please refer the following pages.

Job No.:	011412112E	Polarization:	Horizontal
Standard:	(RE)FCC PART 15C _3m	Power Source:	AC 120V, 60Hz for adapter
Test item:	Radiation Test (30~1000MHz)	Temp.(C)/Hum.(% RH):	24.3(C)/55% RH
Test Mode:	Charging to adapter	Distance:	3m



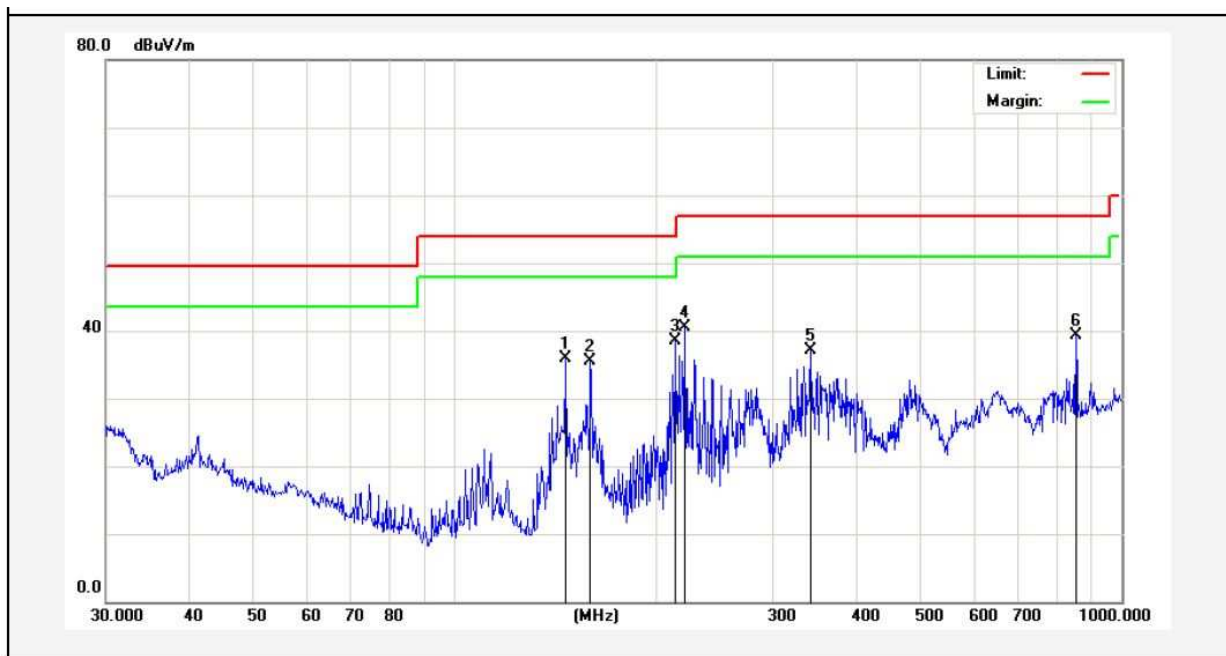
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	35.8746	37.03	-13.61	23.42	40.00	-16.58	peak			
2	119.8555	45.28	-21.32	23.96	43.50	-19.54	peak			
3	206.3976	48.48	-20.63	27.85	43.50	-15.65	peak			
4	333.6867	47.22	-14.61	32.61	46.00	-13.39	peak			
5	477.1693	40.02	-11.62	28.40	46.00	-17.60	peak			
6	649.6597	41.43	-9.86	31.57	46.00	-14.43	peak			

Job No.:	011412112E	Polarization:	Vertical
Standard:	(RE)FCC PART 15C _3m	Power Source:	AC 120V, 60Hz for adapter
Test item:	Radiation Test (30~1000MHz)	Temp.(C)/Hum.(%RH):	24.3(C)/55% RH
Test Mode:	Charging to adapter	Distance:	3m



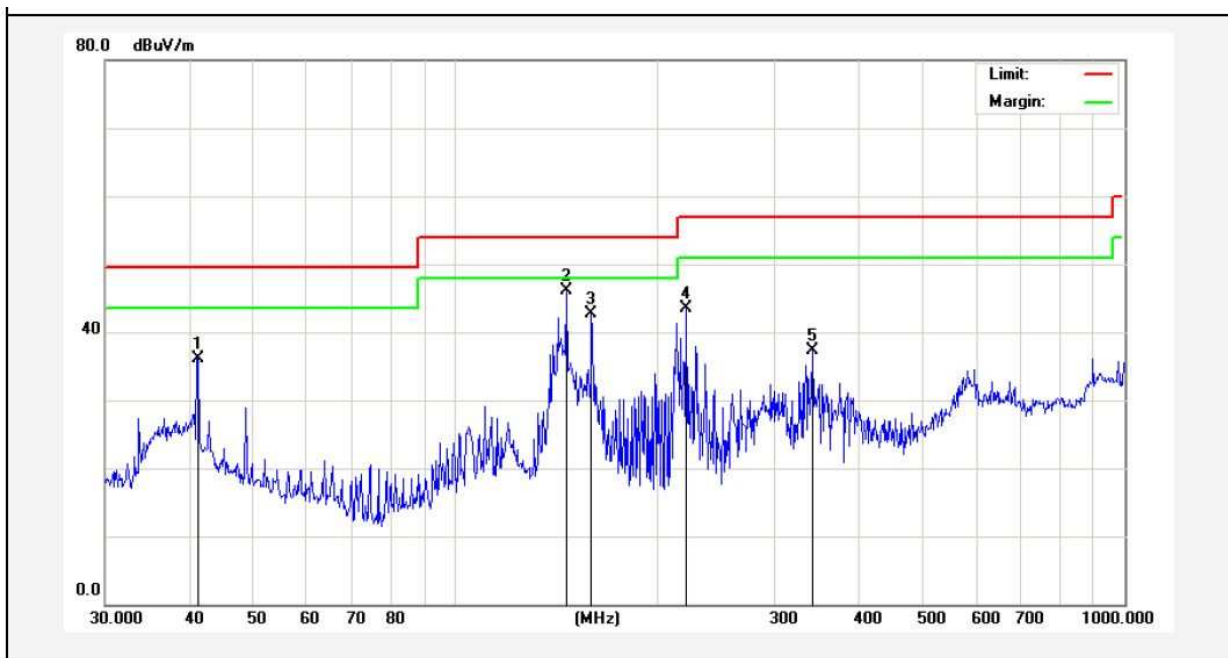
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	119.8555	50.02	-16.32	33.70	43.50	-9.80	peak			
2	206.3976	51.59	-15.63	35.96	43.50	-7.54	QP	100	0	
3	213.7634	50.87	-15.35	35.52	43.50	-7.98	QP	100	360	
4	228.4903	49.18	-14.68	34.50	46.00	-11.50	QP	100	0	
5	236.6447	49.71	-14.26	35.45	46.00	-10.55	peak			
6	244.2321	49.29	-14.07	35.22	46.00	-10.78	peak			

Job No.:	011412112E	Polarization:	Horizontal
Standard:	(RE)FCC PART 15C _3m	Power Source:	DC 5V Via USB Port
Test item:	Radiation Test (30~1000MHz)	Temp.(C)/Hum.(%RH):	24.3(C)/55% RH
Test Mode:	USB Mode	Distance:	3m



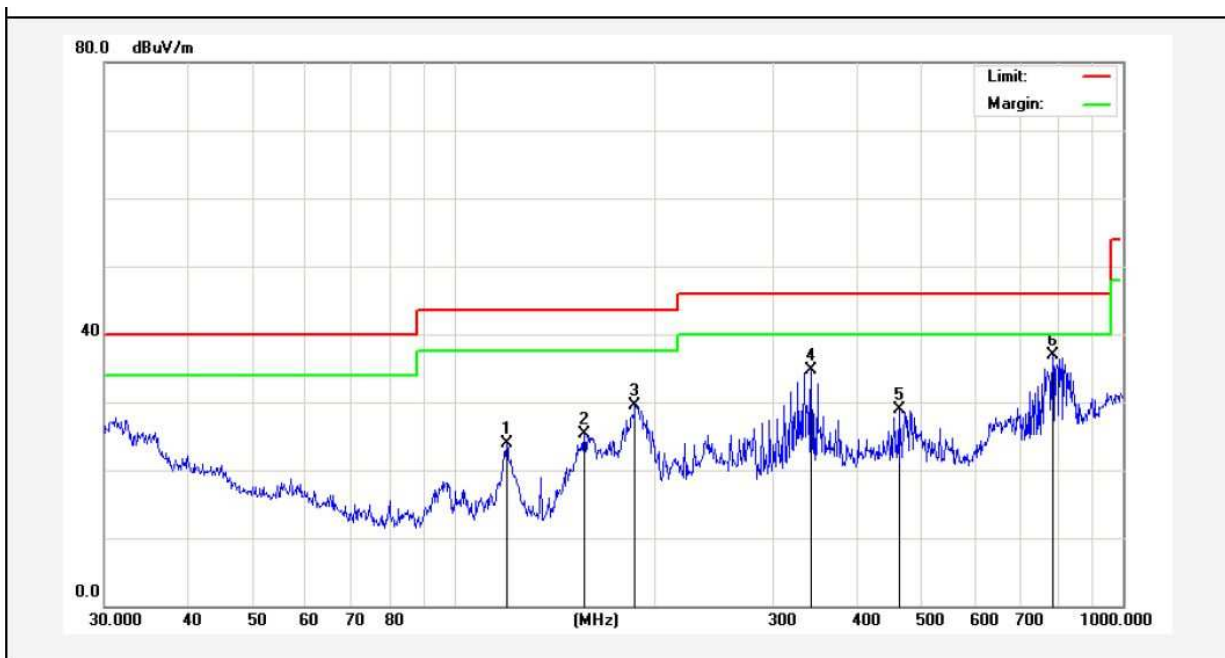
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	146.8877	59.33	-23.38	35.95	54.00	-18.05	peak			
2	159.7844	58.43	-22.88	35.55	54.00	-18.45	peak			
3	213.7634	58.82	-20.35	38.47	54.00	-15.53	peak			
4	221.3921	60.55	-19.97	40.58	56.90	-16.32	peak			
5	341.9786	51.29	-14.24	37.05	56.90	-19.85	peak			
6	854.0247	44.81	-5.54	39.27	56.90	-17.63	peak			

Job No.:	011412112E	Polarization:	Vertical
Standard:	(RE)FCC PART 15C _3m	Power Source:	DC 5V Via USB Port
Test item:	Radiation Test (30~1000MHz)	Temp.(C)/Hum.(% RH):	24.3(C)/55% RH
Test Mode:	USB Mode	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.2765	46.91	-10.87	36.04	49.50	-13.46	peak			
2	146.8877	64.47	-18.38	46.09	54.00	-7.91	peak			
3	159.7844	60.65	-17.88	42.77	54.00	-11.23	peak			
4	221.3921	58.60	-15.04	43.56	56.90	-13.34	peak			
5	341.9786	50.50	-13.24	37.26	56.90	-19.64	peak			

Job No.:	R011412112E	Polarization:	Horizontal
Standard:	(RE)FCC PART 15C _3m	Power Source:	DC 3.7V
Test item:	Radiation Test (30~1000MHz)	Temp.(C)/Hum.(%RH):	24.3(C)/55% RH
Test Mode:	BT Mode	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	119.8556	45.31	-21.32	23.99	43.50	-19.51	peak			
2	156.4578	48.33	-23.04	25.29	43.50	-18.21	peak			
3	186.4409	50.66	-21.25	29.41	43.50	-14.09	peak			
4	341.9786	49.03	-14.24	34.79	46.00	-11.21	peak			
5	462.3455	40.85	-12.03	28.82	46.00	-17.18	peak			
6	785.0935	43.81	-6.86	36.95	46.00	-9.05	peak			