



FCC Test Report

Applicant : BQT Solutions (Australia) Pty Ltd.

Address : Unit 29,1 Talavera Road,North Ryde,NSW2113, Australia

Equipment : 13.56MHz/125KHz Dual Frequency Contactless Smart Card Reader

Model No. : BT950-DT

FCC ID : QVL-BT950-2

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History of this test report

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☐ Additional attachment as following record:

Attachment No.	Date	Description



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Model No. : BT950-DT
Trade Name : BQT Solutions
FCC ID : QVL-BT950-2

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2009** and the energy emitted by this equipment was **passed** **CISPR PUB. 22 and FCC Part 15** in radiated emission class B limits.

Testing was carried out on Apr.07, 2014 at **Cerpass Technology (Suzhou) Co., Ltd.**

Signature

Miro Chueh

EMC/RF B.U. Manager



1. Summary of Test Procedure and Test Result

Test Item	Normative References	Test Result
Conducted Emission	15.207	N/A
Radiated Emission	15.209	PASS

Note: "N/A" denotes test is not applicable in this test report.



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Equipment	13.56MHz/125KHz Dual Frequency Contactless Smart Card Reader
Model No.	BT950-DT
Frequency	125KHz
Number of Channel	1 channel
Modulation type	ASK
Antenna type	N/A
Power Supply	12V DC

2.2. Test Manner

- Test Mode & Test Software
- During testing, the interface cables and equipment positions were varied according to ANSI C63.4
- The complete test system included EUT for RF test.
- The test mode was performed for radiation test.

2.3. Description of Test System

No	Device	Manufacturer	Model No.	FCC ID	Series No.	Data Cable	Power Cord
1	DC Power Supply	TOPWARD	3303D	N/A	N/A	Unshielded	Unshielded

**2.4. 4General Information of Test**

Test Site:	Cerpass Technology (Suzhou) Co., Ltd.
Test Site Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 18GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

2.5. Measurement Uncertainty

Test results and Measurement uncertainty without any relationship in the test report.

Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ± 3.89 dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.74 dB
(1G-18GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.



3. Test of Radiated Emission

3.1. Test Limit

3.2. Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

According to § 15.209(a), the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(MHz)	FIELD STRENGTH(microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

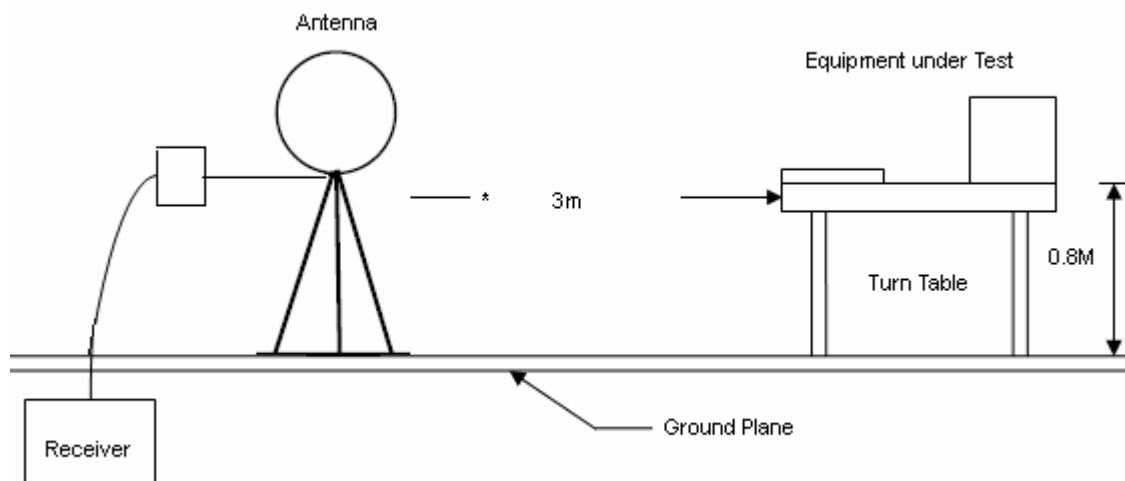


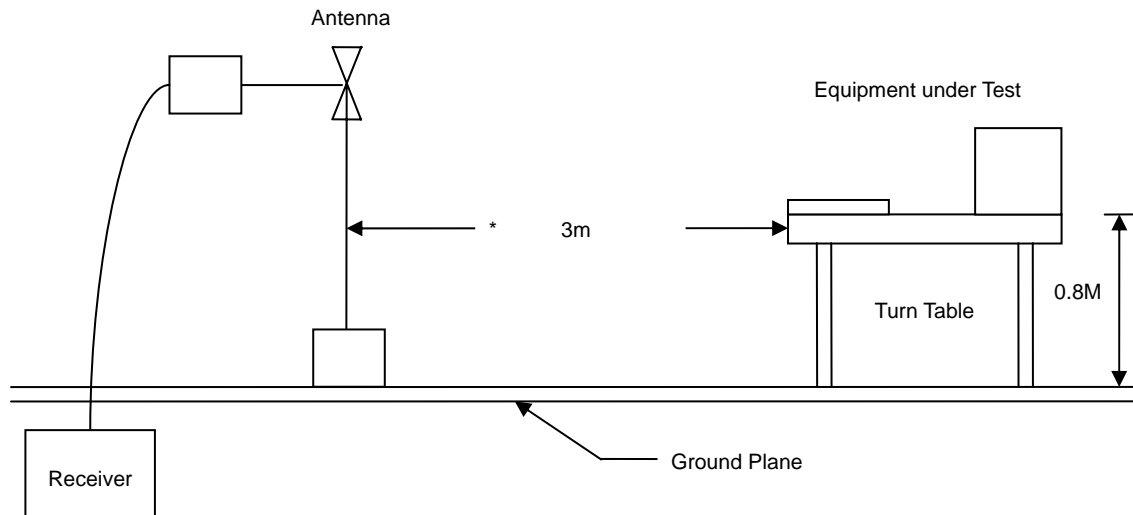
3.3. Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4. Typical Test Setup

9kHz~30MHz Test Setup



**30MHz~1000MHz Test Setup****3.5. Measurement equipment**

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100563	2015.03.29	2016.03.28
Preamplifier	Agilent	87405B	My39500554	2015.03.29	2016.03.28
Preamplifier	Agilent	8449B	3008A02342	2015.03.29	2016.03.28
Bilog Antenna	Sunol Science	JB1	A072414-3	2014.08.05	2015.08.04
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2014.05.24	2015.05.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-348	2014.11.04	2015.11.03
Spectrum Analyzer	R&S	FSP40	100324	2015.03.29	2016.03.28
Loop Antenna	R&S	HFH2-Z2	100150	2014.08.30	2015.08.29
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-001	2015.04.02	2016.04.01

**3.6. Test Result and Data**

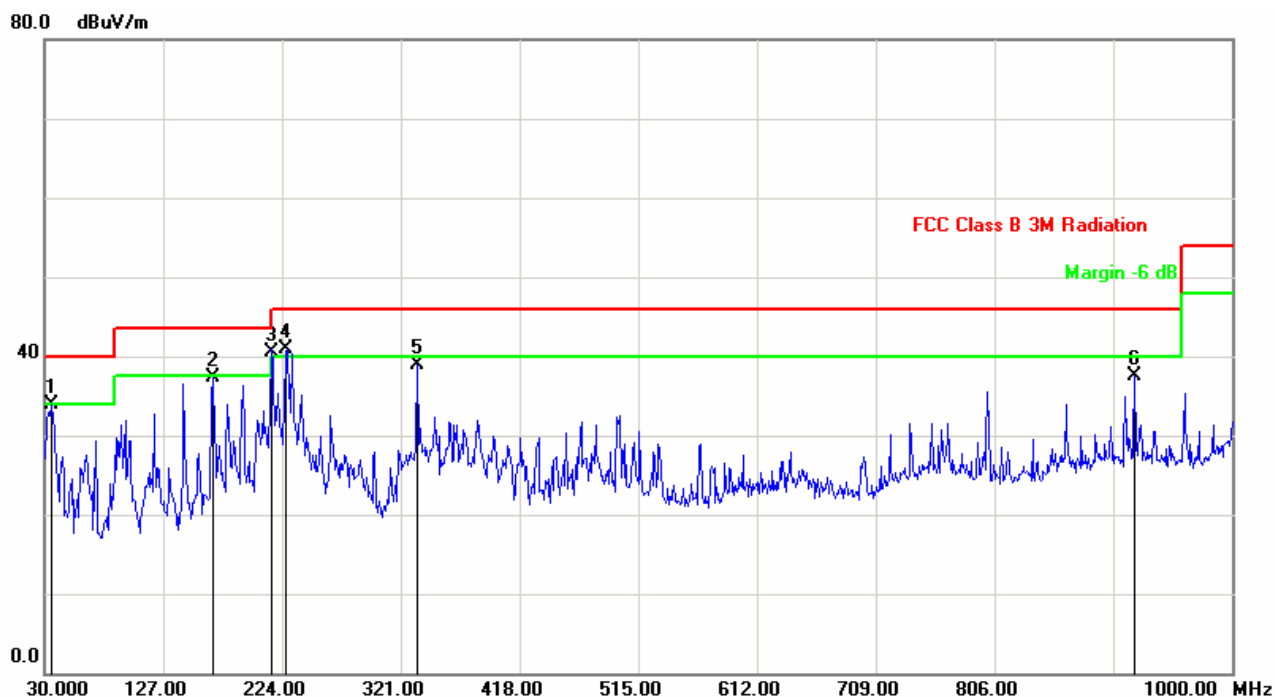
Test Mode :	Normal		
Frequency Range:	9K-30MHz	Test Date :	2015/04/07
Temp :	23℃	Humidity :	52%
Measured Distance	3m	Test Result:	Pass

Frequency (MHz)	Ant. Polarization H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
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Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported

**(30MHz ~ 1000MHz)**

Test Mode :	Normal Link		
DC Power :	12V	Ant. Polarization:	Horizontal
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2015/04/07

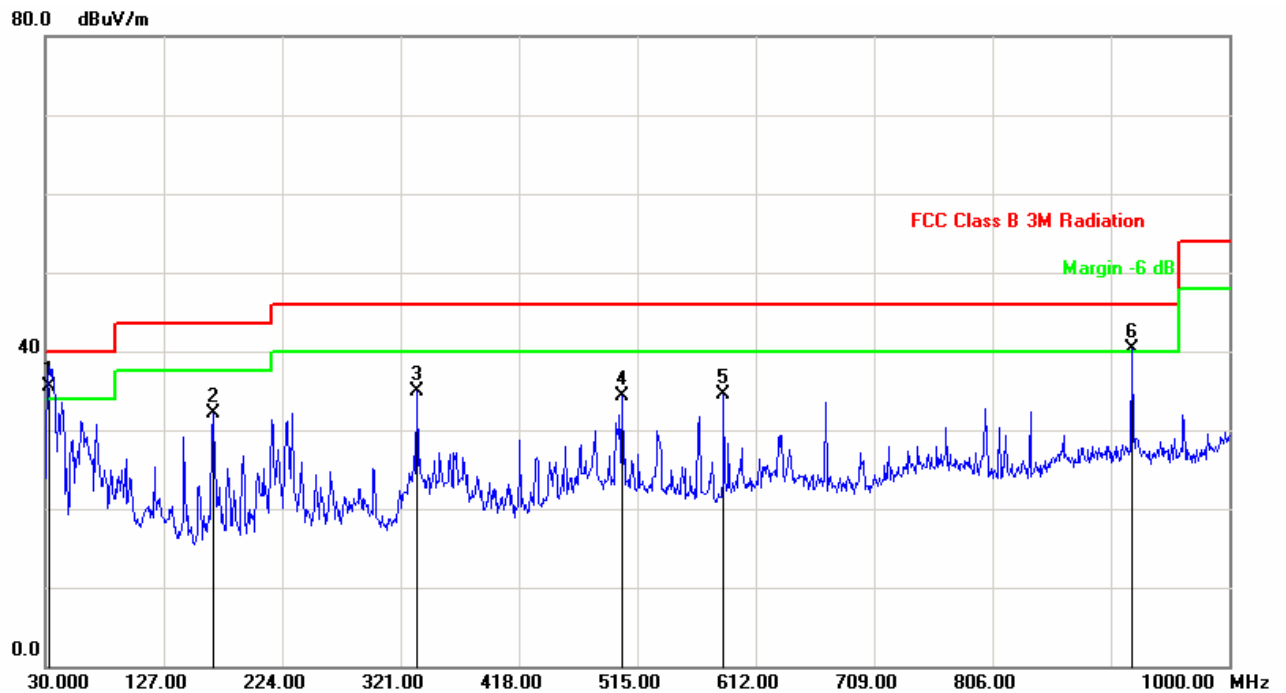


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	35.8200	-6.56	40.46	33.90	40.00	-6.10	QP	400	6
2	167.7400	-11.97	49.27	37.30	43.50	-6.20	QP	300	191
3	215.2700	-9.59	50.16	40.57	43.50	-2.93	QP	100	279
4	227.8799	-9.56	50.40	40.84	46.00	-5.16	QP	100	271
5	334.5799	-4.19	43.02	38.83	46.00	-7.17	QP	200	0
6	920.4600	3.76	33.83	37.59	46.00	-8.41	QP	200	244

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Normal Link		
DC Power :	12V	Ant. Polarization:	Vertical
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2015/04/07



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	32.9099	-4.78	40.23	35.45	40.00	-4.55	QP	100	282
2	167.7400	-11.97	44.00	32.03	43.50	-11.47	QP	200	309
3	334.5799	-4.19	39.02	34.83	46.00	-11.17	QP	200	189
4	502.3899	-2.26	36.61	34.35	46.00	-11.65	QP	100	360
5	585.8099	-2.42	36.97	34.55	46.00	-11.45	QP	100	255
6	920.4600	3.76	36.56	40.32	46.00	-5.68	QP	100	324

Note: Measurement Level = Reading Level + Correct Factor



4. Antenna Requirements

4.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

4.3. Antenna Construction

N/A