

Prüfbericht - Nr.: 16008030 001
Test Report No.:

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Auftraggeber: Coligen Corp.
Client:
No. 1 bldg. ,Guantang Ind. Park,
Jingding Zhuhai, Guangdong Province,
P.R. China

Gegenstand der Prüfung: Transmitter Part of Wireless Parking Sensor System
Test item:

Bezeichnung: RF001DTX **FCC ID:** TFKRF001DTX
Identification: *FCC ID*

Wareneingangs-Nr.: 173022104 **Eingangsdatum:** 22.04.2006
Receipt No.: *Date of receipt:*

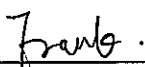
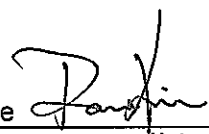
Prüfart: Shenzhen Bureau of Quality Technical Supervision
Testing location: Shenzhen Academy of Metrology and Quality
Inspection
Bldg. of Shenzhen Academy of Metrology and Quality
Inspection, Longzhu Road, Nanshan, Shenzhen,
P.R. China
Listed test laboratory
according to FCC rules
section 2.948 for
measuring devices under
Parts 15

Prüfgrundlage: ANSI C63.4: 2001
Test specification:
Radiated Emissions with limits described at FCC Part 15 Subpart B section
15.109
Radiated Emissions with limits described at FCC Part 15 Subpart C section
15.209 and 15.249

Prüfresultat: Der vorstehend beschriebene Prüfgegenstand wurde geprüft und
Test Result: entspricht oben genannter Prüfgrundlage.
The a. m. test item passed the test specification.

Prüflaboratorium: TÜV Rheinland (Guangdong) Ltd.
Testing Laboratory:

geprüft/tested by: **kontrolliert/** checked by:

21. Jul. 2006	Frank Du		21. Jul. 2006	Dave Xie	
Datum	Name	Unterschrift	Datum	Name	Unterschrift
Date	Name	Signature	Date	Name	Signature

Sonstiges/ Other Aspects:

Abkürzungen: ok / P = entspricht Prüfgrundlage
fail / F = entspricht nicht Prüfgrundlage
n.a. / N = nicht anwendbar

Abbreviations: ok / P = passed
fail / F = failed
n.a. / N = not applicable

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

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TEST SUMMARY

5.1 RADIATED EMISSION FOR FCC PART 15 PER SECTION 15.109(A)

RESULT: ok

5.2 RADIATED EMISSION FOR FCC PART 15 PER SECTION 15.209(A)

RESULT: ok

5.3 FUNDAMENTAL AND HARMONICS RADIATED EMISSION FOR FCC PART 15 PER SECTION 15.249(A)

RESULT: ok

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test result

2 Test Sites

2.1 Test Facilities

Shenzhen SMQ

Shenzhen Bureau of Quality Technical Supervision
Shenzhen Academy of Metrology and Quality Inspection
Bldg, of Shenzhen Academy of Metrology and Quality Inspection
Longzhu Road, Nanshan, Shenzhen,
P.R. China

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2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
BilogAntenna	Chase	CBL6112B	2591	30.01.2007
Horn Antenna	Rohde & Schwarz	HF906	100014	30.01.2007
Antenna	Schwarzbeck	VUBA9117	SB3174	30.01.2007
3m Semi-anechoic chamber	Albatross Projects	9X6X6	---	30.01.2007
EMI Test Receiver	Rohde & Schwarz	ESI26	838786/013	30.01.2007
Communications Test Set	Rohde & Schwarz	CMU200	1100.0008.02	30.01.2007
Communications Test Set	HP	HP8920A	3438A05187	30.01.2007
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	30.01.2007
AMN	Rohde & Schwarz	ESH3-Z5	100002	30.01.2007

2.3 Trace ability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

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2.5 Measurement Uncertainty

The estimated combined standard uncertainty for conducted emissions measurements is ± 3 dB.
The estimated combined standard uncertainty for radiated emissions measurements is ± 3 dB.

2.6 Location of original data

The original copies of all test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangzhou) file for certification follow-up purposes.

2.7 Status of facility used for testing

Shenzhen Bureau of Quality Technical Supervision, Shenzhen Academy of Metrology and Quality Inspection, Bldg. of Shenzhen Academy of Metrology and Quality Inspection, Longzhu Road, Nanshan, Shenzhen, P.R.China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, whose registration number is 97379.

3 General Product Information

Brief description of the test sample:

This product is the transmitter part of a wireless parking sensor system, which is designed with ultrasonic technology to assist the driver to park or reverse the vehicle. It would be operated with the display part and controller part of whole system. The model of controller part is TXPCE801, which generates the ultrasonic, but it does not apply for certification in this report. It is a 900MHz FSK half-duplex transceiver with 2 channels available. Distance message is received from the controller part of the same system via RF link. The antenna type is integrated.

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3.1 Product Function and Intended Use

For details, refer to technical document and the user manual.

3.2 Ratings and System Details

RF Frequency range	:	915.11MHz, 916.58 MHz
Modulation Type	:	2FSK
Ultrasonic Frequency range:		40KHz±2KHz
Number of channels	:	2 channels
Type of antenna	:	Integral antenna
FCC ID	:	TFKRF001DTX
Power supply	:	DC power of vehicle
Ports	:	5V DC input
RF Power level		<50 mV/m
Protection Class	:	III

Note: The product operates in 2 frequencies only, 915.11MHz and 916.58 MHz, but manufacture defines these 2 frequencies as Channel 1 and Channel 3, Channel 2 is unavailable.

Refer to the technical document for further information

3.3 Independent Operation Modes

The basic operation modes are:
Receiving, Transmitting.

For further information refer to User Manual.

3.4 Submitted Documents

Block Diagram
Circuit Diagram
PCB layout
Components List
FCC label
User Manual
Photo document

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4 Test Set-up and Operation Mode

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Refer to Test set-up in chapter 5.

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with 5V DC power supply and controller part TXPCE801.

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

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4.5 Test set-up

Diagram 1 of Measurement Equipment Configuration for Testing Radiated Emission

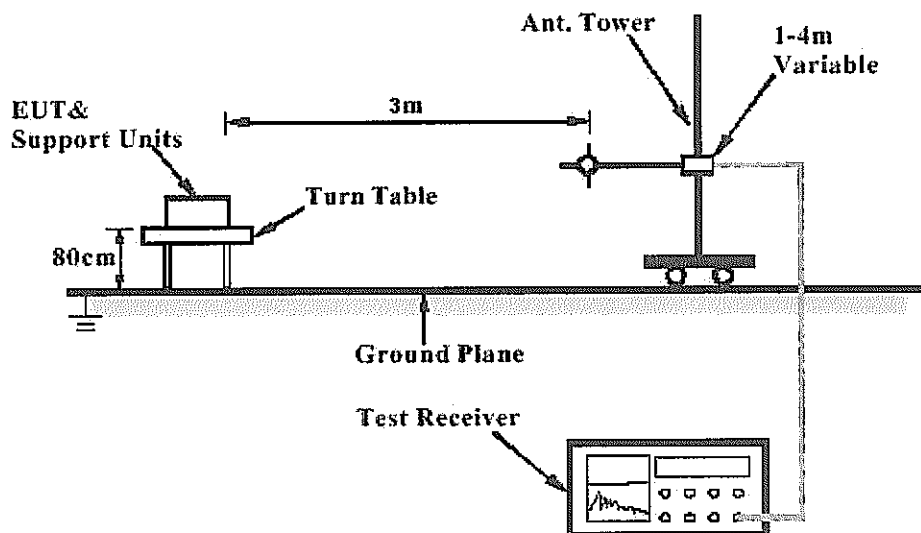
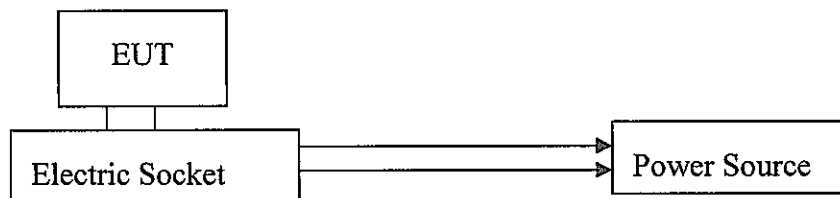


Diagram 2 of Equipment Configuration for Testing Radiated Emission



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5 Test Results EMISSION

5.1 Radiated Emission for FCC Part 15 Per Section 15.109(a)

RESULT:

ok

Date of testing : 21.06.2006
Test specification : FCC Part 15 Per Section 15.109(a)
Limit : FCC Part 15 Per Section 15.109(a)
Operation mode: Receiving (transmitting function is off)
Deviations from Standard Test procedures : None
Test procedure : Procedure specified in ANSI C63.4 were followed
Kind of test site : 3m Semi-anechoic chamber
Temperature : 25°C
Humidity : 62%

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector; the final measurement for frequencies above 1000MHz is performed with Average detector.

Disturbances other than those mentioned are small or not detectable.

Refer to appendix 1 for test result. The spectrum diagrams in appendix 1 display the measurement of un-weighted peak values.

Table 2: Radiated Emission

Frequency [MHz]	QP [dB μ V/m]	AV [dB μ V/m]	Polarity	Limit [dB μ V/m]
*	---			

*) The disturbance measured is far below the limit and therefore, no final measurement was performed

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5.2 Radiated Emission for FCC Part 15 Per Section 15.209(a)

RESULT:

ok

Date of testing : 15.05.2006
Test specification : FCC Part 15 Per Section 15.209(a)
Limits : FCC Part 15 Per Section 15.209(a)
Deviations from Standard Test procedures : None
Test procedure : Procedure specified in ANSI C63.4 were followed
Kind of test site : 3m Semi-anechoic chamber
Operation mode : Transmitting at channel 1 and channel 3
Temperature : 25°C
Humidity : 62%

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector; the final measurement for frequencies above 1000MHz is performed with Average detector.

While testing, the EUT is placed in 3 orthogonal planes and the maximum reading is recorded.

Disturbances other than those mentioned are small or not detectable.

Refer to appendix 1 for test result. The spectrum diagrams in appendix 1 display the measurement of un-weighted peak values.

Table 3: Radiated Emission above 30MHz

Frequency [MHz]	QP [dB μ V/m]	AV [dB μ V/m]	Polarity	Limit [dB μ V/m]
---	*			

*) The disturbance measured is far below the limit and therefore, no final measurement was performed.

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5.3 Fundamental and harmonics Radiated Emission for FCC Part 15 Per Section 15.249(a)

RESULT:

ok

Date of testing : 15.05.2005
Test specification : FCC Part 15 Per Section 15.249(a)
Limits : FCC Part 15 Per Section 15.249(a)
Deviations from Standard Test procedures : None
Test procedure : Procedure specified in ANSI C63.4 were followed
Kind of test site : 3m Semi-anechoic chamber
Operation mode : Transmitting at channel 1 and channel 3
Temperature : 25°C
Humidity : 62%

Channel 1:

Test conditions		Fundamental Frequency		2nd Harmonics		3rd Harmonics	
		(915.1MHz)		(1830.2MHz)		(2732.2MHz)	
T _{nom} (22°C)	Unit	(dBμV/m)	(mV/m)	(dBμV/m)	(μV/m)	(dBμV/m)	(μV/m)
	Horizontal	69.9	3.1	43.0	0.14	32.3	0.04
	Vertical	80.0	10.0	47.1	0.26	34.2	0.05
Limit		93.979	50	53.979	500	53.979	500

Channel 3:

Test conditions		Fundamental Frequency		2nd Harmonics		3rd Harmonics	
		(916.6MHz)		(1833.2MHz)		(2749.8MHz)	
T _{nom} (22°C)	Unit	(dBμV/m)	(mV/m)	(dBμV/m)	(μV/m)	(dBμV/m)	(μV/m)
	Horizontal	71.1	3.6	43.9	0.14	28.5	0.03
	Vertical	80.2	10.2	47.1	0.26	29.4	0.03
limit		93.979	50	53.979	500	53.979	500

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector; the final measurement for frequencies above 1000MHz is performed with Average detector.

While testing, the EUT is placed in 3 orthogonal planes and the maximum reading is recorded.

Disturbances other than those mentioned are small or not detectable.

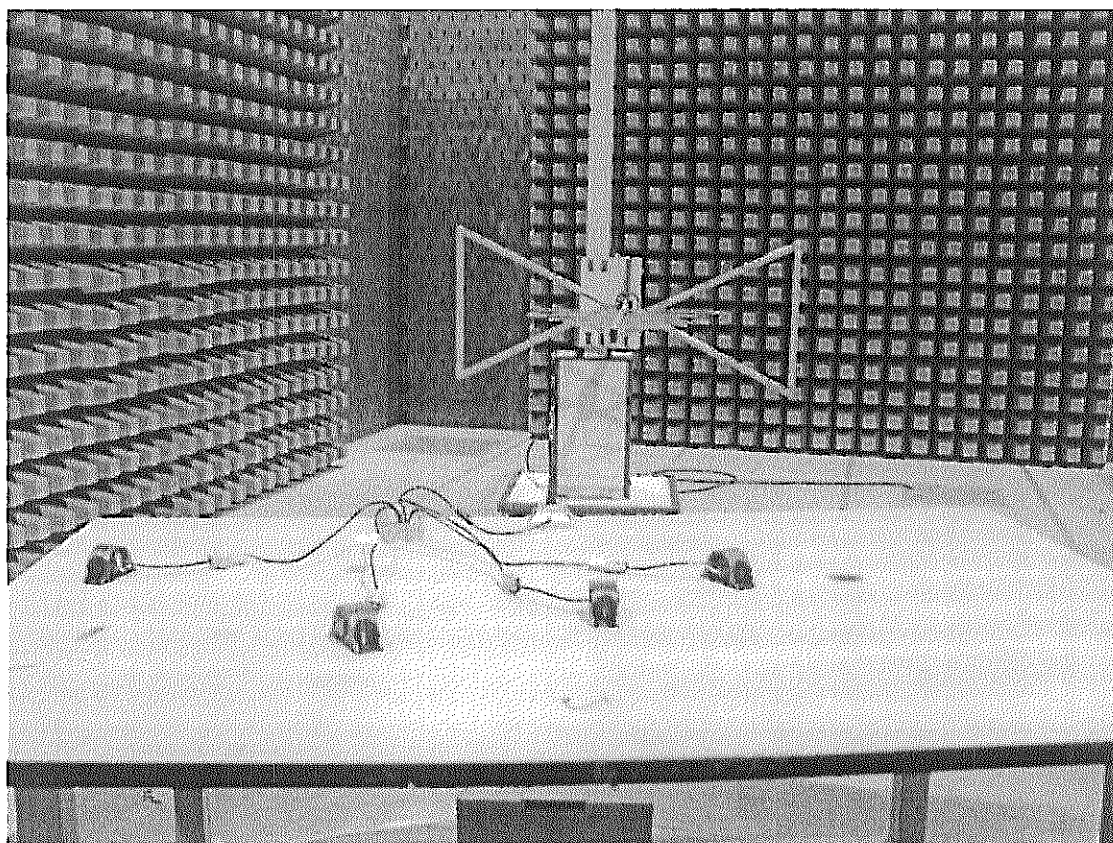
The spectral diagrams in appendix 1 display the measurement of un-weighted peak values.

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6 Photographs of the Test Set-Up

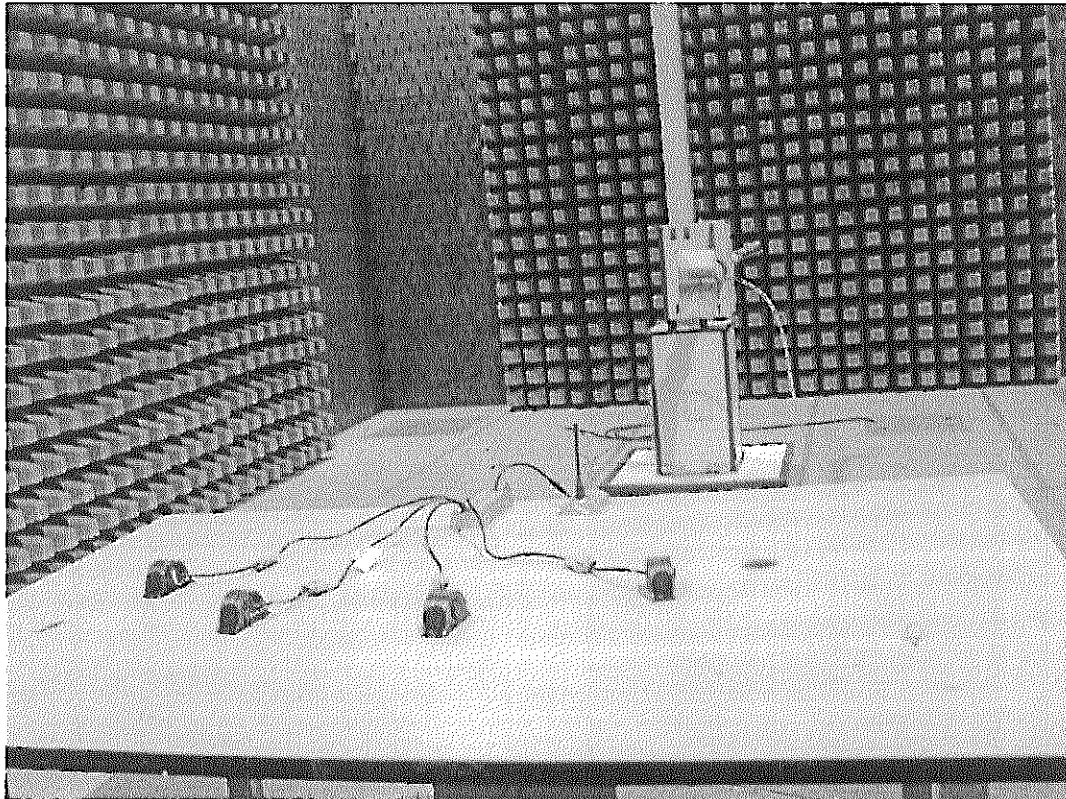
Photograph 1: Set-up for Radiation Measurement Below 1GHz



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Photograph 2: Set-up for Radiation Measurement Above 1GHz



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