Prüfbericht - Nr.: *Test Report No.:*	**16022628 001**	**Seite 1 von 19** *Page 1 of 19*

Auftraggeber: *Client:*	**Zhongshan K-mate General Elec. Co., Ltd. Fuwan Industrial Zone, Fuwan South Road, Sunwen East Road, East District, Zhongshan, Guangdong, P.R. China**		
Gegenstand der Prüfung: *Test item:*	**FM Transmitter**		
Bezeichnung: *Identification:*	**AT001**	**FCC ID:** *FCC ID*	**WAD-AT001**
Wareneingangs-Nr.: *Receipt No.:*	**173051682**	**Eingangsdatum:** *Date of receipt:*	**Mar. 19, 2010**
Prüfort: *Testing location:*	**TÜV Rheinland (Guangdong) Ltd. EMC Laboratory Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650, P. R. China**		**Listed test laboratory according to FCC rules section 2.948 for measuring devices under Parts 15**
Prüfgrundlage: *Test specification:*	**ANSI C63.4: 2009 FCC Part 15: July 10, 2008 Subpart C 15.239**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Guangdong) Ltd.**		

geprüft/ *tested by*:			**kontrolliert**/ *reviewed by*:		
Mar. 26, 2010	Ken Kuang Project Engineer		Mar. 26. 2010	Ricky Liu Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ Other Aspects:

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

Test Summary

FCC Rules		Test items	Result
Paragraph	**Released Date**		
Part 15 Per Section 15.239(c)	**July 10, 2008**	**Radiated Spurious Emission**	**Pass**
Part 15 Per Section 15.239(b)	**July 10, 2008**	**Inband Radiated Emission**	**Pass**
Part 15 Per Section 15.239(a)	**July 10, 2008**	**26dB Bandwidth**	**Pass**

Contents

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

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Guangzhou Auto Market, Yuan Gang Section of Guangshan Road
Guangzhou 510650

P. R. China

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	16.Mar.2011	1 year
Spectrum Analyzer	E4404B	Angilent	MY41440753	15.Oct.2010	1 year
Trilog-Broadband Antenna	VULB9168 (30MHz-1GHz)	SCHWARZBECK MESSELEKTRONIK	209	21.Aug.2011	2 years
Double-Ridged Waveguide Horn Antenna	HF906 (1-18GHz)	Rohde & Schwarz	100385	24.Aug.2011	2 years
Pre-amplifier	AFS42-00101800-25-S-42	MITEQ	1101599	31.Jul.2009	2 years
Pre-amplifier	AFS33-18002650-30-8P-44	MITEQ	1108282	16.Mar.2012	2 years
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	10.Feb.2011	1 year
Loop Antenna	HFH2-Z2 (<30MHz)	Rohde & Schwarz	100111	25-Nov-2011	2 years

2.3 Traceability

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.

2.5 Measurement Uncertainty

Uncertainty for conducted emissions measurements is ± 2.68dB.
Uncertainty for radiated emissions measurements is ± 4.94dB (30M-1GHz) and ± 4.88dB (> 1GHz)

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor k=2, providing a level of confidence of approximately 95%.

2.6 Location of original data

The original copies of 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 (Guangdong) file for certification follow-up purposes.

2.7 Status of facility used for testing

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory; Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650, P. R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 833845

3 General Product Information

Brief description of the test sample:

The submitted sample is a FM transmitter powered by DC 12V vehicle battery.

Audio Stream, including music or voice (while acts as mobile phone handsfree) from the Mini-USB port of myTouch mobile phone is modulated to FM radio signal and transmitted to FM receiver.

Voice can also be input by a built-in microphone which acts as mobile phone handsfree.

An USB port with DC +5V output only can provide charge function to the other USB device. And no data communications happen via this port.

3.1 Product Function and Intended Use

Refer to the Technical Documentation and user manual.

3.2 Ratings and System Details

Frequency range	:	88.1 MHz -107.9 MHz
Number of channels	:	199
Channel Bandwidth	:	200kHz
Type of antenna	:	Integral antenna
Power supply	:	DC 12V
Ports	:	Audio input & output (myTouch phone Mini-USB port) +5V USB Charge port output 3.5mm stereo audio input port
RF Power level		<50nW
Protection Class	:	III

Refer to the Technical Documentation for further information

3.3 Independent Operation Modes

1. FM: RF Transmitting

For further information refer to User Manual

3.4 Submitted Documents

Block Diagram
Schematics
Operation Description
Components List
FCC label and location
User Manual
Internal Photos
External Photos
Application form

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

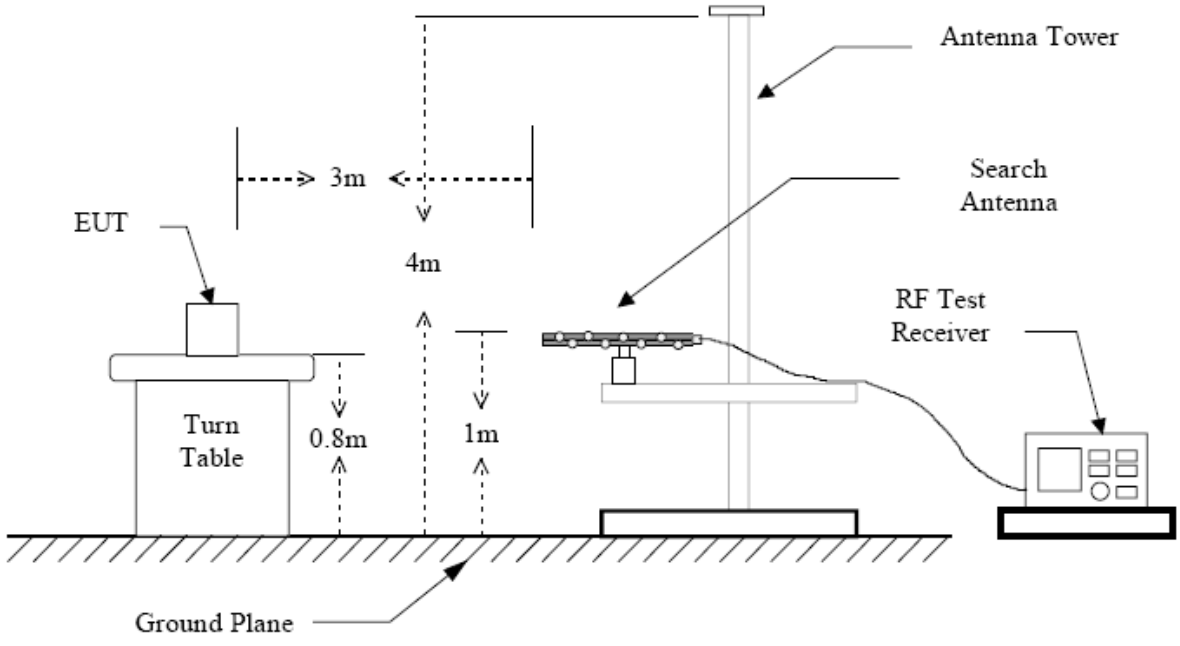
None.

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.

4.5 Test set-up

Diagram 1 of Configuration for Testing Radiated Emission



5 Test Results E M I S S I O N

5.1 Radiated Spurious Emission

RESULT: **Pass**

Date of testing	:	Mar. 17, 2010
Test specification	:	FCC Part 15 Per Section 15.239(c)
Limits	:	FCC Part 15 Per Section 15.209(a)
Test procedure	:	Procedure specified in ANSI C63.4
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	FM RF transmitting at fix channel (High, Low, Mid)
Power supply	:	DC 12V
Temperature	:	22°C
Humidity	:	50%

Test procedure:

1. The EUT was placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal direction and be kept close enough to the receiving antenna. The table was rotated 360 degrees to determine the suspected emission frequency and the position of the worst radiation case with both horizontal and vertical antenna polarization.

2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.

3. For each suspected emission frequency recorded in step 1, the EUT was arranged to its worst case that the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to read the maximum emission.

Table 2: Radiated Spurious Emission (Transmitting at channel low)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
42.6	10.1	N/A	N/A	H	40.0	N/A	N/A
152.1	11.7	N/A	N/A	H	43.5	N/A	N/A
176.2	9.1	N/A	N/A	H	43.5	N/A	N/A
264.3	9.3	N/A	N/A	H	46.0	N/A	N/A
802.0	21.5	N/A	N/A	H	46.0	N/A	N/A
36.8	19.0	N/A	N/A	V	43.5	N/A	N/A
160.3	11.1	N/A	N/A	V	43.5	N/A	N/A
176.2	9.2	N/A	N/A	V	43.5	N/A	N/A
264.3	9.3	N/A	N/A	V	46.0	N/A	N/A
779.9	21.3	N/A	N/A	V	46.0	N/A	N/A
*)---							

Table 3: Radiated Spurious Emission (Transmitting at channel mid)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
49.8	10.3	N/A	N/A	H	40.0	N/A	N/A
147.1	11.6	N/A	N/A	H	43.5	N/A	N/A
196.2	7.2	N/A	N/A	H	43.5	N/A	N/A
294.3	10.5	N/A	N/A	H	46.0	N/A	N/A
621.4	19.1	N/A	N/A	H	46.0	N/A	N/A
36.8	18.8	N/A	N/A	V	40.0	N/A	N/A
146.3	11.5	N/A	N/A	V	43.5	N/A	N/A
196.2	7.3	N/A	N/A	V	43.5	N/A	N/A
294.3	10.5	N/A	N/A	V	43.5	N/A	N/A
777.5	21.3	N/A	N/A	V	46.0	N/A	N/A
*)---							

Table 4: Radiated Spurious Emission (Transmitting at channel high)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
42.1	10.6	N/A	N/A	H	40.0	N/A	N/A
149.5	11.3	N/A	N/A	H	43.5	N/A	N/A
215.8	7.3	N/A	N/A	H	43.5	N/A	N/A
323.7	11.5	N/A	N/A	H	46.0	N/A	N/A
602.4	18.5	N/A	N/A	H	46.0	N/A	N/A
36.85	18.6	N/A	N/A	V	40.0	N/A	N/A
149.2	11.0	N/A	N/A	V	43.5	N/A	N/A
215.8	7.3	N/A	N/A	V	43.5	N/A	N/A
323.7	11.5	N/A	N/A	V	46.0	N/A	N/A
789.0	21.4	N/A	N/A	V	46.0	N/A	N/A
*)---							

*) Note: Measurement is made from 9 kHz to 1080 MHz with following resolution bandwidth. Disturbances other than those mentioned above are small or not detectable.

	Bandwidth
Frequencies up to 150 kHz:	200 Hz
Frequencies from 150 kHz to 30 MHz:	9 kHz
Frequencies from 30 MHz to 1 GHz:	120 kHz
Frequencies above 1GHz:	1 MHz

5.2 Inband Radiated Emission

RESULT: **Pass**

Date of testing	:	Mar. 17, 2010
Test specification	:	FCC Part 15 Per Section 15.239(b)
Limits	:	FCC Part 15 Per Section 15.239(b)
Test procedure	:	Procedure specified in ANSI C63.4
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	FM RF transmitting at fix channel (High, Low, Mid)
Power supply	:	DC 12V
Temperature	:	22°C
Humidity	:	50%

Test procedure:

1. The EUT was placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal direction and be kept close enough to the receiving antenna. The table was rotated 360 degrees to determine the suspected emission frequency and the position of the worst radiation case with both horizontal and vertical antenna polarization.

2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.

3. For each suspected emission frequency recorded in step 1, the EUT was arranged to its worst case that the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to read the maximum emission.

Table 5: Radiated Inband Emission (Transmitting at channel low)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
88.100	N/A	6.4	15.8	H	N/A	48	68
88.100	N/A	12.2	18.5	V	N/A	48	68
*)---							

Table 6: Radiated Inband Emission (Transmitting at channel mid)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
98.100	N/A	8.4	17.3	H	N/A	48	68
98.100	N/A	16.1	22.7	V	N/A	48	68
*)---							

Table 7: Radiated Inband Emission (Transmitting at channel high)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
107.900	N/A	7.2	16.2	H	N/A	48	68
107.900	N/A	15.2	21.0	V	N/A	48	68
*)---							

*) Note:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz at frequency below 1GHz.

Measurement is made from carrier frequency-100 kHz to carrier frequency+100 kHz and maximum reading among the range is listed.

5.3 26dB Bandwidth

RESULT: **Pass**

Date of testing	:	Mar.18.2010
Test specification	:	FCC Part 15 Per Section 15.239(a)
Limits	:	200kHz, FCC Part 15 Per Section 15.239(a)
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4
Operation mode	:	FM continuously transmitting on the measured channel with maximum volume specified by the applicant.
Kind of test site	:	Shielded room
Power supply	:	DC 12V
Temperature	:	22°C
Humidity	:	50%

Test procedure:

1. Set the EUT to proper test channel.
2. Spectrum analyzer setting: Centered Frequency= measured channel, RBW=3kHz, VBW=3kHz.
3. Mark the peak power frequency point and the -26dB upper and lower frequency points.
4. Read the frequency delta value between the -26dB upper and lower frequency points.
5. Repeat step 1 to 4 until all the channels required are finished.

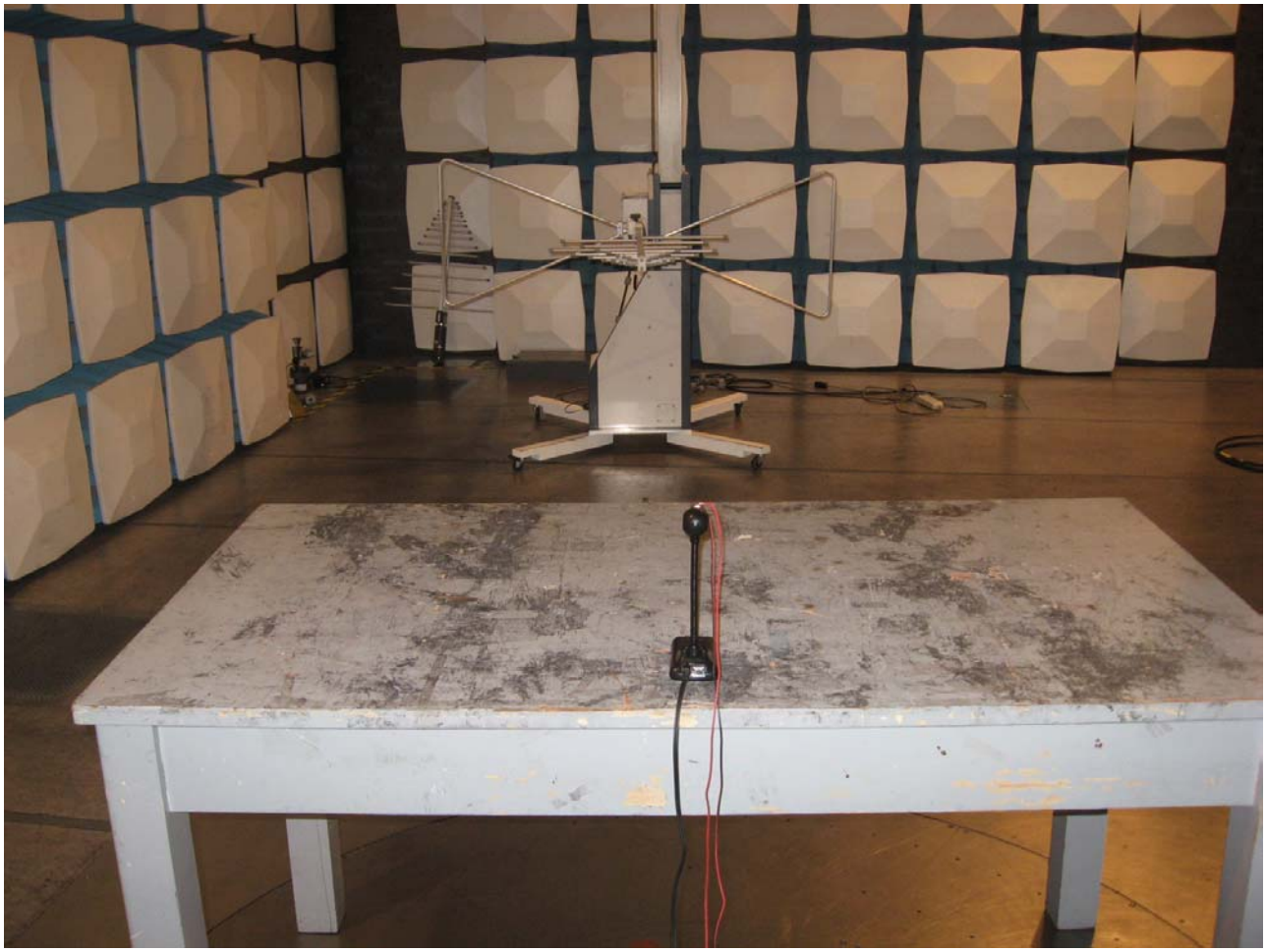
Table 8: 26dB Bandwidth

Channel	Lowest Frequency (MHz)	Highest Frequency (MHz)	Test Result (kHz)
Lowest 88.100MHz	88.035	88.171	136
Middle 98.100MHz	97.940	98.067	127
Highest 107.900MHz	107.837	107.970	133

Please refer to Appendix 1 for measurement data.

6 Photographs of the Test Set-Up

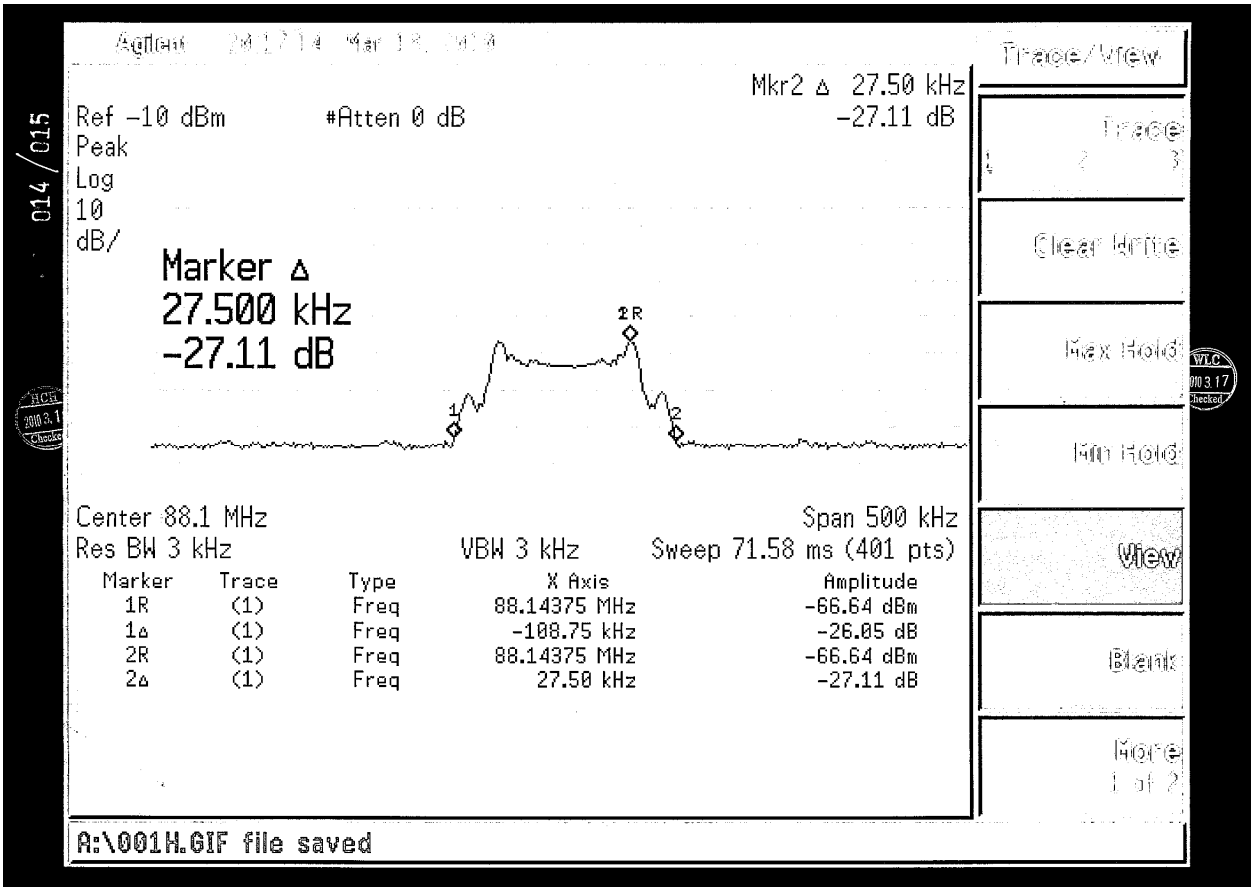
Photograph 1: Set-up for Radiated Emission

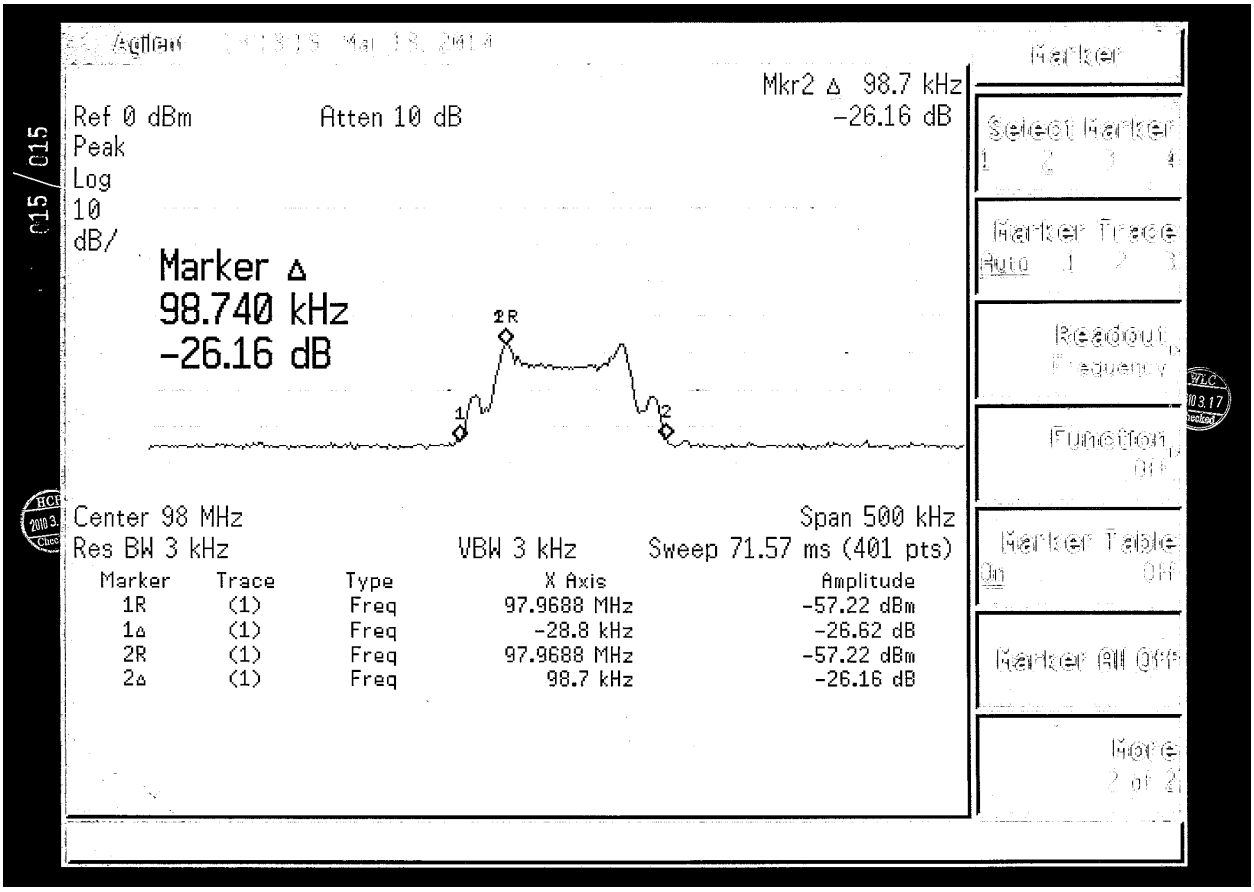


7 List of Tables

8 List of Photographs

Prüfbericht - Nr.: **16022628 001**
Test Report no.:

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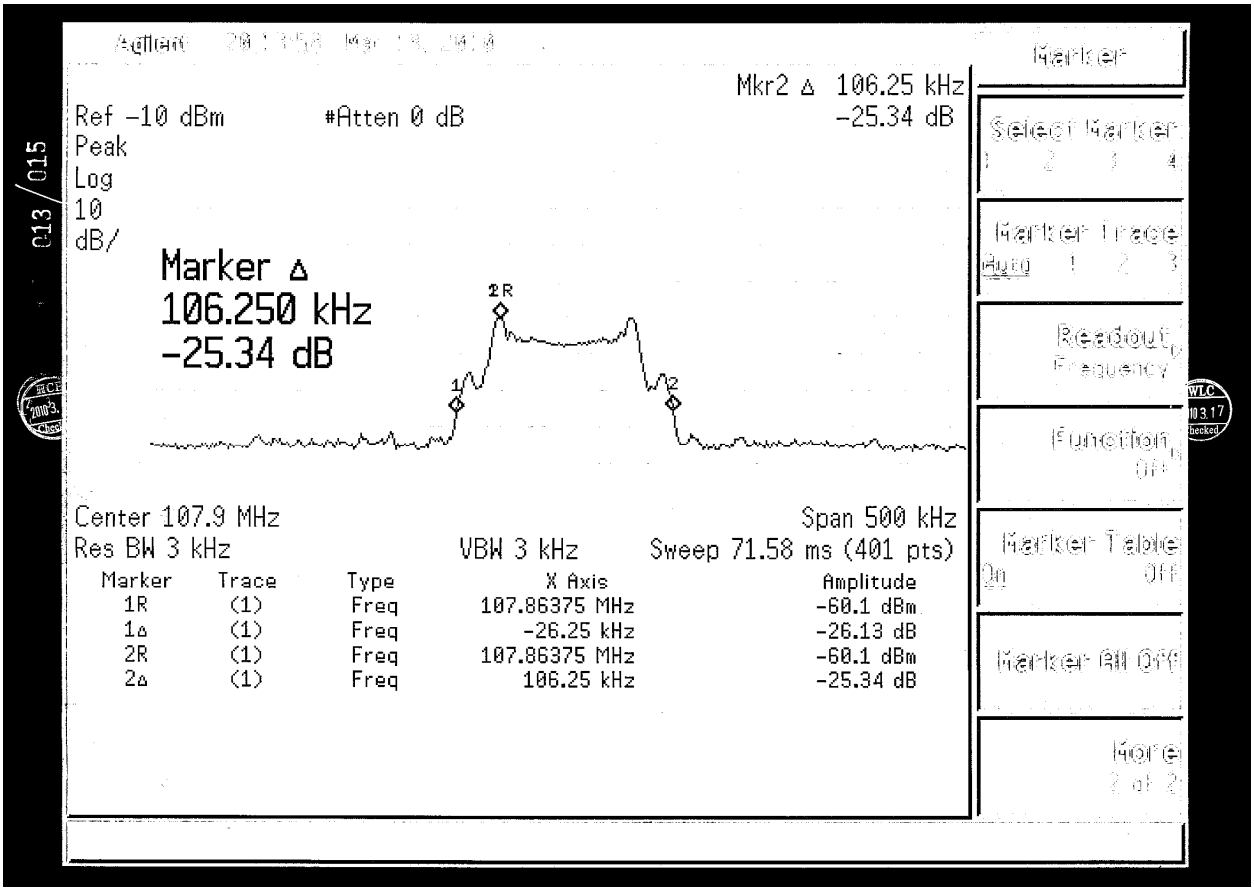
Mkr2 Δ 98.7 kHz
-26.16 dB
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Marker Δ
98.740 kHz
-26.16 dB
2R
1
2
Center 98 MHz
Res BW 3 kHz
VBW 3 kHz
Span 500 kHz
Sweep 71.57 ms (401 pts)
Marker Trace Type X Axis Amplitude
1R (1) Freq 97.9688 MHz -57.22 dBm
1Δ (1) Freq -28.8 kHz -26.62 dB
2R (1) Freq 97.9688 MHz -57.22 dBm
2Δ (1) Freq 98.7 kHz -26.16 dB
Marker
Select Marker
Marker Trace
Readout
Function
Marker Table
Marker All Off
More


Agilent
Mkr2 Δ 106.25 kHz
-25.34 dB
Ref -10 dBm
#Atten 0 dB
Peak
Log
10
dB/
Marker Δ
106.250 kHz
-25.34 dB
2R
1
2
Center 107.9 MHz
Res BW 3 kHz
VBW 3 kHz
Span 500 kHz
Sweep 71.58 ms (401 pts)
Marker Trace Type X Axis Amplitude
1R (1) Freq 107.86375 MHz -60.1 dBm
1Δ (1) Freq -26.25 kHz -26.13 dB
2R (1) Freq 107.86375 MHz -60.1 dBm
2Δ (1) Freq 106.25 kHz -25.34 dB
Marker
Select Marker
Marker Trace
Readout
Frequency
Function
Marker Table
On Off
Marker All Off
More
1 of 2