Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**14018424 002**	Seite 1 von 9 *Page 1 of 9*
Auftraggeber: *Client:*	**Armour Automotive Limited** **Woolmer Way, Bordon** **Hampshire GU35 9QE** **United Kingdom**	
Gegenstand der Prüfung: *Test Item:*	**Bluetooth car kit with remote control function (433MHz receiver)**	
Bezeichnung: *Identification:*	**iOTALK1**	**Serien-Nr.:** *Serial No.:* **Engineering sample**
Wareneingangs-Nr.: *Receipt No.:*	**080515008-1**	**Eingangsdatum:** *Date of Receipt:* **15.05.2008**
Prüfort: *Testing Location:*	**TÜV Rheinland Hong Kong Ltd.** 9th Floor, Oriental News Building, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong **Hong Kong Productivity Council** HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong	
Prüfgrundlage: *Test Specification:*	**FCC Part 15, Subpart B**	
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*	
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland Hong Kong Ltd.** 9th Floor, Oriental News Building, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong	

geprüft / *tested by:*			**kontrolliert** / *reviewed by:*		
24.07.2008	Hugo Wan Project Manager		24.07.2008	Thomas Berns Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges / *Other Aspects:*

FCCID: VUHIOTALK1

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

Spurious Radiated Emissions

Result: Pass

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Contents

List of Test and Measurement Instruments

Hong Kong Productivity Council (Registration number: 90656)

Kind of Equipment	Manufacturer	Type	S/N	Cal Due Date
Semi-anechoic Chamber	Frankonia	Nil	Nil	28 Mar 09
Test Receiver	Rohde & Schwarz	ESU26	100050	06 Aug 08
Biconical Antenna	Rohde & Schwarz	HK116	841489/016	08 Mar 09
Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/020	28 Feb 09
Horn Antenna	EMCO	3115	9002-3351	27 Feb 10
Active Loop Antenna	EMCO	6502	9107-2651	20-Dec-09

General Product Information

Product Function and Intended Use

The product under test is a wireless car kit 433MHz receiver. It consists of a remote control transmitter and a car kit receiver and are powered by batteries and 12V car battery respectively. The car kit, on one hand, can connect with other Bluetooth device for wireless audio link transmission. On the other hand, the remote control transmitter can control the function of car kit wirelessly. Hence the car kit consists of Bluetooth transceiver and 433MHz receiver, the remote control is a 433MHz transmitter.

FCCID: VUHIOTALK1

Model	Product description
iOTALK1	Bluetooth Car Kit with Remote Control

Ratings and System Details

		Receiver
Frequency range	:	433.92MHz
Number of channels	:	1
Type of antenna	:	Integral Antenna
Power supply	:	12V car battery
Ports	:	DC power port and signal ports

Independent Operation Modes

The basic operation mode is:

- Receiving control signal from the corresponding remote control transmitter.

For further information refer to User Manual

Submitted Documents

The submitted documents are listed as follow:

- Circuit diagram
- Block diagram
- User manual
- Label artwork

Related Submittal(s) Grants

This is a single application for certification of the Receiver.

Test Set-up and Operation Mode

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.

Test Operation and Test Software

Test operation should refer to test methodology.

- There was no special software to exercise the device.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- none

Countermeasures to achieve EMC Compliance

- none

Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2003.

The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360 ˚, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + AF + CF + FA – PA

Where FS = Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

Test Results

Spurious Radiated Emissions — Section 15.109

RESULT: **Pass**

Test Specification	:	FCC Part 15 Section 15.109
Test Method	:	ANSI 63.4-2003
Measurement Location	:	Semi Anechoic Chamber
Measurement Distance	:	3m
Detector Function	:	30MHz – 1GHz: CISPR quasi-peak QP 1GHz – 5GHz: PK / AV
Measurement BW	:	30MHz – 1GHz: 120 kHz 1GHz – 5GHz: 1MHz
Supply Voltage	:	DC 12V
Measuring Frequency Range	:	30-5000MHz
Mode of operation	:	Utilizing the menu continuously (with speech)

Polarization: Vertical

Frequency (MHz)	Field strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Delta to Limit (dB)
144.000	21.1	43.5	-22.4
303.999	25.0	46.0	-21.0
*1624.327	48.9 (PK)	74.0 (PK)	-25.1
*1634.968	48.3 (AV)	54.0 (AV)	-5.7

Polarization: Horizontal

Frequency (MHz)	Field strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Delta to Limit (dB)
148.366	21.0	43.5	-22.5
192.000	32.7	43.5	-10.8
287.881	29.5	46.0	-16.5
*329.540	24.7	46.0	-21.3

Remark: (1) ‘ * ‘ indicates the frequency of the emissions fall into the restricted band.
(2) There is no spurious emission found between lowest oscillating frequency to 30 MHz.

Limit **Section 15.109**

The field strength of radiated emissions from unintentional radiators at a distance of 3 meters:

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
30-88	100	20*log(100) = 40.0	3
88-216	150	20*log(150) = 43.5	3
216-960	200	20*log(200) = 46.0	3
Above 960	500	20*log(500) = 54.0	3

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector and above 1000 MHz are based on the measurements employing an average detector.