


Prüfbericht - Nr.: 14033267 002		Seite 1 von 8	
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Auftraggeber: <i>Client:</i>	DEPO Manufacturing Corp., Ltd. 1206, Block A, Electronic Science & Technology Building 2070 Shennan Zhonglu Shenzhen, China		
Gegenstand der Prüfung: <i>Test Item:</i>	Bluetooth Speaker		
Bezeichnung: <i>Identification:</i>	EBS6001	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	00131129218-001	Eingangsdatum: <i>Date of Receipt:</i>	29.11.2013
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	Test sample(s) is/are not damaged and suitable for testing.		
Prüfort: <i>Testing Location:</i>	Global United Technology Services Co., Ltd. 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China		
Prüfgrundlage: <i>Test Specification:</i>	FCC Part 15 Subpart C ANSI C63.4-2003 CISPR 22:2003		
Prüfergebnis: <i>Test Results:</i>	Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben genannter Prüfgrundlage. The above mentioned product was tested and passed .		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland Hong Kong Ltd. 8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
geprüft/ tested by:		kontrolliert/ reviewed by:	
24.01.2014	Hugo Wan Senior Project Manager		24.01.2014
			Mika Chan Project Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			Name/Stellung <i>Name/Position</i>
			Unterschrift <i>Signature</i>
Sonstiges: FCCID: SLA-EBS5001			
<i>Other Aspects</i>			
Permissive class II change			
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
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. <i>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.</i>			

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Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2402 - 2480 MHz
Type of modulation	GFSK; Pi/4 DPSK; 8 DPSK
Number of channels	79
Channel separation	1 MHz
Type of antenna	Integral antenna
Antenna gain (dBi)	0
Power level	fix
Type of equipment	stand alone radio device
Connection to public utility power line	Yes
Nominal voltage	Internal battery V_{nor} : 3.7V DC Charging: 5.0V DC
Independent Operation Modes	Page scan Inquiry scan Connection state - ACL Link Connection state - SCO Link

Product function and intended use

The test item is a Bluetooth Speaker based on the Bluetooth technology.

Bluetooth is a short-range radio link intended to be a cable replacement between portable and/or fixed electronic devices.

Bluetooth operates in the unlicensed ISM Band at 2.4 GHz. In the US a band of 83.5 MHz width is available. In this band, 79 RF channels spaced 1MHz apart are defined.

The channel is represented by a pseudo-random hopping sequence through the 79 channels. The channel is divided into time slots, with a nominal slot length of 625µs, where each slot corresponds to different RF hop frequencies. The nominal hop rate is 1600 hops/s. The symbol rate on the channel is 1 -3Mbps. The device supports basic rate (BR) and enhanced data rate (EDR).

The USB connector is for charging only, no data exchange supported.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User Manual
Label Artwork

Remark

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases.

The On/Off switch was modified using touch panel method. Hence the test for Part 15.247(b)(1) Peak Output Power and Part 15.247(d) Spurious Radiated Emission were re-evaluated in this test report.

Due to the spurious radiated emission result was worse than the previous, permissive class II change report is submitted to TCB.

Special accessories and auxiliary equipment

Additional accessory used for testing

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

- 1) USB Cable, 1 meter (provided by client)

List of Test and Measurement Instruments

Global United Technology Services Co., Ltd. (Registration number: 600491)

Radiated Emission

Equipment	Manufacturer	Type	S/N	Cal Due Date
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	--	05 Apr 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	--	N/A
ESU EMI Test Receiver	R&S	ESU26	--	28 Jun 2014
Loop Antenna	Zhinan	ZN30900A	--	28 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	--	17 Mar 2014
Double-ridged horn antenna	SCHWARZBECK	9120D	--	17 Mar 2014
Horn Antenna	ETS-LINDGREN	3160-09	--	17 Mar 2014
RF Amplifier	HP	8347A	--	28 Jun 2014
RF Amplifier	HP	8349B	--	28 Jun 2014
EMI Test Software	AUDIX	E3	--	N/A
Coaxial cable	GTS	N/A	--	28 Jun 2014
Coaxial Cable	GTS	N/A	--	28 Jun 2014
Thermo meter	N/A	N/A	--	30 Jun 2014

TÜV Rheinland Hong Kong Ltd.

Radio Frequency Test

Equipment	Manufacturer	Type	S/N	Cal Due Date
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	03 Dec 2014

Results FCC Part 15 – Subpart C

Subclause 15.247 (b)(1) – Peak Output Power					Pass
Test Specification : FCC Part 15 Subpart A – Subclause 15.31 Mode of operation : Tx mode (hopping off) at GFSK, Pi/4 DQPSK, 8 DPSK Port of testing : Temporary antenna port Detector : Peak RBW/VBW : 3 MHz / 10 MHz Supply voltage : 3.7 VDC Temperature : 23°C Humidity : 50%					
Requirement: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 Watt. For all other frequency hopping systems in the 2400 – 2483.5 MHz band: 0.125 Watts.					
Results: For test result plots, please refer to Appendix 1, page 2-7.					
GFSK Modulation					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	-2.42	0.00	-2.42	1 / 30.0	Pass
2441	-2.02	0.00	-2.02	1 / 30.0	Pass
2480	-1.54	0.00	-1.54	1 / 30.0	Pass
π/4-DPSK Modulation					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	-4.34	0.00	-4.34	0.125 / 21.0	Pass
2441	-3.86	0.00	-3.86	0.125 / 21.0	Pass
2480	-3.31	0.00	-3.31	0.125 / 21.0	Pass
8DPSK Modulation					
Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Output power (dBm)	Limit (W/dBm)	Verdict
2402	-4.01	0.00	-4.01	0.125 / 21.0	Pass
2441	-3.55	0.00	-3.55	0.125 / 21.0	Pass
2480	-2.97	0.00	-2.97	0.125 / 21.0	Pass

Tx frequency 2441MHz		Horizontal Polarization	
Frequency (MHz)	Level (dBµV/m)	Limit/ Detector (dBµV/m)	
398.145	41.4	46.0 / QK	
409.851	39.8	46.0 / QK	
4881.987	49.0	74.0 / PK	
4881.907	40.0	54.0 / AV	
Tx frequency 2480MHz		Vertical Polarization	
Frequency (MHz)	Level (dBµV/m)	Limit/ Detector (dBµV/m)	
47.742	35.5	40.0 / QK	
50.471	34.5	40.0 / QK	
447.996	31.5	46.0 / QK	
398.396	30.1	46.0 / QK	
4959.503	54.6	74.0 / PK	
4959.936	46.5	54.0 / AV	
Tx frequency 2480MHz		Horizontal Polarization	
Frequency (MHz)	Level (dBµV/m)	Limit/ Detector (dBµV/m)	
398.120	42.8	46.0 / QK	
4959.279	47.9	74.0 / PK	
4959.872	36.0	54.0 / AV	