

Produkte
Products



Prüfbericht - Nr.: 14039649 001			Seite 1 von 11		
<i>Test Report No.:</i>			<i>Page 1 of 11</i>		
Auftraggeber: <i>Client:</i>		ALDI Sourcing Asia Limited Suite 2506, 25/F., Tower 1 The Gateway, Harbour City Kowloon, Hong Kong			
Gegenstand der Prüfung: <i>Test Item:</i>		Short Range Device - 434MHz Transmitter			
Bezeichnung: <i>Identification:</i>	92596	Serien-Nr.: <i>Serial No.:</i>	Engineering sample		
Wareneingangs-Nr.: <i>Receipt No.:</i>	A000223150-002	Eingangsdatum: <i>Date of Receipt:</i>	06.07.2015		
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>		Test sample(s) is/are not damaged and suitable for testing.			
Prüfört: <i>Testing Location:</i>		TÜV Rheinland Hong Kong Ltd. 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong Hong Kong Productivity Council HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong			
Prüfgrundlage: <i>Test Specification:</i>		FCC Part 15 Subpart C ANSI C63.4-2003			
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:		
<div style="display: flex; justify-content: space-between;"> <div> 27.07.2015 Benny Lau Senior Project Manager </div> <div>  Unterschrift <i>Signature</i> </div> </div>			<div style="display: flex; justify-content: space-between;"> <div> 27.07.2015 Sharon Li Department Manager </div> <div>  Unterschrift <i>Signature</i> </div> </div>		
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: <i>Other Aspects</i>		FCC ID: 2AEWF00092596S			
Abkürzungen:		Abbreviations:			
P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		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>					

Table of Content

	Page
Cover Page	1
Table of Content	2
Test Summary	4
Product information.....	5
Manufacturers declarations	5
Product function and intended use	5
Submitted documents.....	5
Independent Operation Modes	5
Related Submittal(s) Grants	5
Remark	5
Test Set-up and Operation Mode.....	6
Principle of Configuration Selection	6
Test Operation and Test Software.....	6
Special Accessories and Auxiliary Equipment.....	6
Countermeasures to achieve EMC Compliance.....	6
Test Methodology	7
Radiated Emission	7
Field Strength Calculation.....	7
List of Test and Measurement Instruments.....	8
Results FCC Part 15 – Subpart C	9
Subclause 15.203 – Antenna Information	Pass..... 9
Subclause 15.207 – Conducted Emission on AC Mains.....	N/A..... 9
Subclause 15.231 (c) – 20 dB Bandwidth.....	Pass..... 9
Subclause 15.231 (e) – Radiated Emission (Fundamental and Harmonics).....	Pass..... 10
Subclause 15.205 – Spurious Radiated Emissions	Pass..... 11
Subclause 15.231 (e) – Transmission Timing Requirement	Pass..... 11
Appendix 1 – Test Results.....	6 pages
Appendix 2 – Test Setup Photos.....	2 pages
Appendix 3 – EUT External Photos.....	3 pages
Appendix 4 – EUT Internal Photos	3 pages

Appendix 5 – Label, Operational Description, Block, Schematics and User Manual..... 34 pages

Appendix 6 – RF Exposure Information..... 2 pages

Test Summary

Conducted Emissions

Result: N/A

20dB bandwidth

Result: Pass

Radiated Emission of Carrier Frequency

Result: Pass

Spurious Radiated Emissions

Result: Pass

Transmission duration and silent period

Result: Pass

Product information

Manufacturers declarations

	Transmitter
Operating frequency range	434 MHz
Type of modulation	ASK
Number of channels	1
Type of antenna	Integral Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	V_{nor} : 3.0Vdc (2 x 1.5V "AAA" battery)

Product function and intended use

The equipment under test (EUT) is a transmitter operating at 434MHz. And it is powered by 3.0Vdc (2 x 1.5V "AAA" battery).

FCC ID: 2AEWF00092596S

Models	Product description
92596	Temperature Sensor

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

Independent Operation Modes

The basic operation modes are:

- Transmitting mode .

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter. The FCC ID of the corresponding receiver is 2AEWF00092596V and 2AEWF00092596H.

Remark

- None.

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.

- No testing software is provided by the applicant.

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.

List of Test and Measurement Instruments

Hong Kong Productivity Council (Registration number: 90656)

Radiated Emission

Equipment	Manufacturer	Type	Cal. date	Cal. Due date
Semi-anechoic Chamber	Frankonia	Nil	14-Apr-15	14-Apr-16
New Fully Anchoic Chamber	TDK	N/A	15-Apr-15	15-Apr-16
Cable	Hubersuhner	SUCOFLEX 104	31-Mar-14	31-Mar-16
Test Receiver	R & S	ESU26	12-Feb-15	12-Feb-16
Test Receiver	R & S	ESU40	20-Jun-14	20-Jun-15
Bi-conical Antenna	R & S	HK116	22-Aug-13	22-Aug-15
Log Periodic Antenna	R & S	HL223	16-Aug-13	16-Aug-15
Coaxial cable	Harbour	LL335	10-Jun-14	10-Jun-16
Microwave amplifier 0.5-26.5GHz, 25dB gain	HP	83017A	17-Jul-14	17-Jul-16
High Pass Filter (cutoff freq. =1000MHz)	Trilithic	23042	28-Oct-13	28-Oct-15
Horn Antenna	EMCO	3115	7-Aug-13	7-Aug-15
FSP 30 Spectrum Analyzer	Frankonia	FSP 30	12-Jan-16	12-Jan-17

Results FCC Part 15 – Subpart C

Subclause 15.203 – Antenna Information		Pass
Requirement:	No antenna other than that furnished by the responsible party shall be used with the device	
Results:	Permanent attached antenna	
Verdict:	Pass	

Subclause 15.207 – Conducted Emission on AC Mains		N/A
There is no AC power input or output ports on the EUT.		

Subclause 15.231 (c) – 20 dB Bandwidth		Pass
Requirement: The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.		
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100kHz/300kHz Supply voltage : 3.0VDC Temperature : 23°C Humidity : 50%		
Results:	Pass	
Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
434.00	550.00	<1085

Subclause 15.231 (e) – Radiated Emission (Fundamental and Harmonics)		Pass
Test Specification : ANSI C63.4 – 2003 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 120 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC Frequency range : 9kHz to tenth harmonic Temperature : 23°C Humidity : 50%		
Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following limit.		
Results: Pass		
Fundamental Frequency		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
434.012	58.9	72.9 / AV
Fundamental Frequency		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
434.012	46.8	72.9 / AV
Harmonics		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
868.025	31.1	52.9 / AV
3038.25	40.2	52.9 / AV
Harmonics		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
868.025	24.9	52.9 / AV
3038.39	43.2	52.9 / AV

Subclause 15.205 – Spurious Radiated Emissions		Pass
Test Specification : ANSI C63.4 - 2003 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 120 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.0VDC Frequency range : 9kHz to tenth harmonic Temperature : 23°C Humidity : 50%		
Requirement:	The field strength of emissions appearing within the restricted frequency bands shall not exceed the limits shown in §15.209.	
Results:	Pass	
Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	---
Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	---

Subclause 15.231 (e) – Transmission Timing Requirement			Pass
Requirement: Devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.			
Results: Pass			
Freq MHz	Transmission Duration Sec	Limit Sec	
434.00	0.894	<1	
Results: Pass			
Freq MHz	Silent Period Sec	Limit Sec	
434.00	57	>27	