

Produkte
Products

Prüfbericht - Nr.: 14038898 001 <i>Test Report No.:</i>		Seite 1 von 10 <i>Page 1 of 10</i>	
Auftraggeber: <i>Client:</i>		Shantou City Hengdi Industry Co., Ltd West of NingchuanBei Road and South of Huancui Roda Guangyi St, Chenghai District Shantou, Guangdong CHINA	
Gegenstand der Prüfung: <i>Test Item:</i>		Short Range Device - LCD display with radio control function (2.4GHz)	
Bezeichnung: <i>Identification:</i>	FC043TFTCPT40A-03E	Serien-Nr.: <i>Serial No.:</i>	Engineering sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	A000180038-001 A000180038-004	Eingangsdatum: <i>Date of Receipt:</i>	31.03.2015
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>		Test samples received are not damaged and suitable for testing.	
Prüfort: <i>Testing Location:</i>		TÜV Rheinland Hong Kong Ltd. 8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong 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 C63.4-2009	
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:	
06.05.2015 Datum <i>Date</i>	Joey Leung Name/Stellung <i>Name/Position</i>	 Unterschrift <i>Signature</i>	06.05.2015 Datum <i>Date</i>
	Benny Lau Name/Stellung <i>Name/Position</i>	 Unterschrift <i>Signature</i>	
Sonstiges: <i>Other Aspects</i>			
FCCID: 2AAL AFC043TFTCPT40A			
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>			

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Product information

Manufacturers declarations

	Transceiver
Operating frequency range	2410 - 2475 MHz
Type of modulation	GFSK
Number of channels	6
Type of antenna	Dedicated Antenna
Power level	fix
Connection to public utility power line	No
Nominal voltage	3.7 V

Product function and intended use

The equipment under test (EUT) is a LCD display embedded with radio control function. It is operating at 2.4GHz and powered by battery only.

Submitted documents

Circuit Diagram
Block Diagram
Bill of material
User manual
Rating Label

Special accessories and auxiliary equipment

Client provide a test mode enabled radio control transmitter for assessment of radiated emission of LCD display.

Independent Operation Modes

The basic operation modes are:

- Transmitting control signal for the associate camera,
- Receiving and storing (in memory card) data from associate camera.

For further information refer to User Manual

Related Submittal(s) Grants

This is a single application for certification of the transmitter.

List of Test and Measurement Instruments

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

Equipment	Manufacturer	Type	S/N	Cal. interval	Last cal.
3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	---	2 year	28 Mar 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	---	1 year	N/A
ESU EMI Test Receiver	R&S	ESU26	---	1 year	27 Jun 2014
Loop Antenna	Zhinan	ZN30900A	---	1 year	27 Jun 2014
Bi-log Hybrid Antenna	SCHWARZBECK	VULB9163	---	1 year	08 Mar 2015
Double-ridged horn antenna	SCHWARZBECK	9120D	---	1 year	08 Mar 2015
RF Amplifier	HP	8347A	---	1 year	27 Jun 2014
RF Amplifier	HP	8349B	---	1 year	27 Jun 2014
EMI Test Software	AUDIX	E3	---	1 year	N/A
Coaxial cable	GTS	N/A	---	1 year	27 Jun 2014
Coaxial Cable	GTS	N/A	---	1 year	27 Jun 2014
Thermo meter	N/A	N/A	---	1 year	27 Jun 2014
Spectrum Analyzer	Rohde & Schwarz	FSP30	100007	1 year	12 Jan 2015

Results FCC Part 15 – Subpart C

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

Subclause 15.205 – Restricted bands – Spurious Emissions – Band edge		Pass
Test Specification : ANSI C63.4 – 2009 Mode of operation : Tx mode Port of testing : Enclosure Detector : Peak RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.7V, Internal batteries has been activated Temperature : 23°C Humidity : 50%		
Requirement:	Radiated emissions which fall in the restricted bands, as defined in 15.205 (a), must also comply with the radiated emission limits specified in 15.209(a).	
Results:	Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing. For test protocols refer to Appendix 1, page 4-7.	
Tx frequency 2410MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2410MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A
Tx frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
No peak found	---	74.0 / P
No peak found	---	54.0 / A

Subclause 15.215 (c) – 20 dB Bandwidth				Pass
Test Specification : ANSI C63.4 – 2009 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100 kHz / 300 kHz Supply voltage : 3.7V, Internal batteries has been activated Temperature : 23°C Humidity : 50%				
Requirement: The intentional radiators must be designed to ensure that the 20dB bandwidth of the emission, is contained within the frequency band designated in the rule section under which the equipment is operated.				
Results: For test protocols refer to Appendix 1, page 2-3.				
Frequency (MHz)	20 dB left (MHz)	Limit (MHz)	20 dB right (MHz)	Limit (MHz)
2410	2407.840	> 2400	2412.372	< 2483.5
2445	2442.820	> 2400	2447.420	< 2483.5
2475	2472.760	> 2400	2477.510	< 2483.5

Subclause 15.249 (a) – Field Strength of Fundamental and Harmonics				Pass
Test Specification : ANSI C63.4 – 2009 Mode of operation : Tx mode Port of testing : Enclosure RBW/VBW : 100 kHz / 300 kHz for f < 1 GHz 1 MHz / 3 MHz for f > 1 GHz Supply voltage : 3.7V, Internal batteries has been activated 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: Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing. PASS				
Fundamental Frequency 2410MHz		Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.900	85.97	114.0 / P		
2409.900	69.47	94.0 / A		
Fundamental Frequency 2410MHz		Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m		
2409.900	96.37	114.0 / P		
2409.900	80.47	94.0 / A		

Harmonics 2410MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4820.000	51.32	74.0 / P	4820.000	44.58	54.0 / A
4820.000					
Harmonics 2410MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4820.000	62.73	74.0 / P	4820.000	52.80	54.0 / A
4820.000					
Fundamental Frequency 2445MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2445.100	82.96	114.0 / P	2445.100	66.96	94.0 / A
2445.100					
Fundamental Frequency 2445MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2445.100	95.76	114.0 / P	2445.100	79.46	94.0 / A
2445.100					
Harmonics 2445MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4890.000	48.56	74.0 / P	4890.000	42.23	54.0 / A
4890.000					
Harmonics 2445MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4890.000	59.53	74.0 / P	4890.000	51.14	54.0 / A
4890.000					
Fundamental Frequency 2475MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.070	81.57	114.0 / P	2475.070	65.47	94.0 / A
2475.070					
Fundamental Frequency 2475MHz			Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
2475.070	93.27	114.0 / P	2475.070	76.87	94.0 / A
2475.070					
Harmonics 2475MHz			Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m	Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.000	48.57	74.0 / P	4950.000	42.10	54.0 / A
4950.000					

Harmonics 2475MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
4950.000	51.26	74.0 / P
4950.000	44.17	54.0 / A

Subclause 15.249 (d) – Emissions radiated outside of the specified frequency bands Pass

Test Specification : ANSI C63.4 - 2009
 Mode of operation : Tx mode
 Port of testing : Enclosure
 Detector : Peak
 RBW/VBW : 100 kHz / 300 kHz for $f < 1$ GHz
 1 MHz / 3 MHz for $f > 1$ GHz
 Supply voltage : 3.7V, Internal batteries has been activated
 Temperature : 23°C
 Humidity : 50%

Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Results: Both transmitter and LCD display are test mode enabled and transmit at the same channel simultaneously during testing.

 All three transmit frequency modes comply with the field strength within the restricted bands. There is no spurious found below 30MHz.

Tx frequency 2410MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
511.835	27.65	46.0 / QP
528.246	31.90	46.0 / QP
537.589	31.53	46.0 / QP
545.183	32.95	46.0 / QP
552.883	31.59	46.0 / QP
576.644	35.41	46.0 / QP
672.845	26.41	46.0 / QP
Tx frequency 2410MHz		Horizontal Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
239.987	30.17	46.0 / QP
576.644	26.89	46.0 / QP
Tx frequency 2445MHz		Vertical Polarization
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
520.888	28.94	46.0 / QP
528.246	32.11	46.0 / QP
545.183	30.94	46.0 / QP
560.693	32.14	46.0 / QP

576.644	34.88	46.0 / QP
593.050	29.12	46.0 / QP
Tx frequency 2445MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
576.644	27.07	46.0 / QP
768.748	26.03	46.0 / QP
815.968	27.18	46.0 / QP
Tx frequency 2475MHz Vertical Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
528.246	31.08	46.0 / QP
560.693	30.90	46.0 / QP
576.644	35.17	46.0 / QP
593.050	28.78	46.0 / QP
672.845	26.58	46.0 / QP
Tx frequency 2475MHz Horizontal Polarization		
Freq MHz	Level dBuV/m	Limit/ Detector dBuV/m
239.987	27.44	46.0 / QP
576.644	27.59	46.0 / QP
768.748	26.89	46.0 / QP
815.968	27.71	46.0 / QP