



AS/NZS TEST REPORT

Equipment : Wireless IR Repeater System

Model No. : A-1369

I HEREBY CERTIFY THAT :

The sample was received on Dec. 01, 2016 and the testing was carried out on Dec. 01, 2016 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

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Tested by:

Spree Yei
Engineer

Laboratory Accreditation:

☒ Cerpass Technology Corporation Test Laboratory



☐ Cerpass Technology(SuZhou) Co., Ltd.





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History of this test report

[illegible]



1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

AS / NZS 4268:2012

Test Specification	Test Parameter	Remark
Transmitter parameters		
Table 1 Row 18	Maximum EIRP	PASS
Clause 8.3	Emission Bandwidth	PASS
Clause 8.4	Operating Frequency Range	PASS
Table 1 Row 18	Transmit Spurious Emission	PASS
Receiver parameters		
Clause 9	Receive Spurious Emission	PASS



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Modulation Type	FSK
Operating Frequency	915 MHz~928MHz
Antenna Type/ gain	Spring Antenna / 2dBi

2.2 Carrier Frequency of Channels

Channel	Frequency(MHz)
01	915.1

2.3 Test Mode & Test Software

- During testing, the interface cables and equipment positions were varied according to AS/ZNS 4268.
- The complete test system included Notebook and EUT for the test.

2.4 Description of Test System

Device	Manufacturer	Model No.	Description
Notebook	DELL	LatitudeE5450/5450	Power Cable, Unshielding 1.8m



2.5 General Information of Test

<input checked="" type="checkbox"/> Test Site	CerpPASS Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061, 390316, 228391, 641184
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-3428, R-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz
<input type="checkbox"/> Test Site	CerpPASS Technology (Suzhou) Co., Ltd Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China Tel: +86-512-6917-5888 Fax: +86-512-6917-5666	
	FCC	916572, 331395
	IC	7290A-1, 7290A-2
	VCCI	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test G-227 for radiated disturbance above 1GHz
Test Condition	Normal Voltage : 3 V Extreme Voltage : 2.55 V and 3 V Normal Temperature : 25°C Extreme Temperature : -10°C and 55°C	



3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2016/08/26	2017/08/25
Active Loop Antenna	EMCO	6507	40855	2016/05/11	2017/05/10
Horn Antenna	EMCO	3116	31589	2016/03/22	2017/03/21
Horn Antenna	EMCO	3116	31974	2016/09/01	2017/08/31
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2016/03/16	2017/03/15
Preamplifier	EM	EM330	060659	2016/03/23	2017/03/22
Preamplifier	MITEQ	AMF-7D-0010 100-30-10P	1860212	2016/03/16	2017/03/15
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2016/11/04	2017/11/03
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2016/03/18	2017/03/17
MXG-B RF Vector Signal Generator	KEYSIGHT	N5182B	MY53051383	2016/03/18	2017/03/17
Spectrum Analyzer	R&S	FSP40	100047	2016/03/05	2017/03/04
BLUETOOTH TESTER	R&S	CBT	101133	2016/03/18	2017/03/17
Attenuator	KEYSIGHT	8491B	MY39250703	2016/03/07	2017/03/06
Rotary Attenuator	Agilent	8494B	MY42154466	2016/03/80	2017/03/07
Rotary Attenuator	Agilent	8495B	MY42146680	2016/03/08	2017/03/07
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2016/09/05	2017/09/04
Series Power Meter	Anritsu	ML2495A	1224005	2016/03/03	2017/03/02
Power Sensor	Anritsu	MA2411B	1207295	2016/03/03	2017/03/02
USB Average Power Sensor	Theda	4PS6A	TW5451013~16	2016/11/08	2017/11/07
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	Console	v0.01	N/A	N/A
Software	Keysight	ETSI Standard Test System	v3.160422	N/A	N/A
Software	Keysight	N7607B Signal Studio	v2.0.0.1	N/A	N/A



4. Transmitter Parameters

4.1 Maximum EIRP

4.1.1 Standard Applicable

Operating Frequency	EIRP
915 MHz to 928MHz	3mW (4.77dBm)

4.1.2 Test Procedure

ETSI EN 300 220-1 V2.3.1 Clause 7.2 for equipment with a permanent external antenna connector presenting an impedance of 50 Ω ; use Clause 7.3 for all other equipment

4.1.3 Test Result and Data

Test Date: Dec. 01, 2016

Temperature: 25°C

Atmospheric pressure: 1026 hPa

Humidity: 62%

Channel	Frequency(MHz)	EIRP Avg(dBm)	Limit (dBm)	Parameter
Lowest	915.1	-2.69	4.77	Default
Measurement uncertainty: ± 4.11 dB				



4.2 Emission Bandwidth

4.2.1 Standard Applicable

NA

4.2.2 Test Procedure

A spectrum analyser or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output. The frequencies of the upper and lower markers indicating the edges of the transmitters '99% power' emission bandwidth shall be recorded. The emission bandwidth shall then be calculated. When making a measurement of the emission bandwidth: (a) An rms detector function must be used. The measurement bandwidth used must be stated with the result. The rms detector used must comply with AS/NZS CISPR 16. (b) A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process. (c) The measurement instrument bandwidth and span must be set sufficiently wide, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result. (d) 'Maximum Hold' mode may be used to accumulate the measurement result over

4.2.3 Test Result and Data

Channel	Frequency (MHz)	Test Conditions		Occupied BW(MHz)
Lowest	919.8	Tmon	Vmon	0.25
		Tmin	Vmin	0.25
			Vmax	0.24
		Tmax	Vmin	0.25
			Vmax	0.24
Measurement uncertainty: ±1506Hz				



4.3 Operating Frequency Range

4.3.1 Standard Applicable

The permitted range of the modulation bandwidth shall be within the limits of the assigned frequency band stated in AS/NZS 4268.

Limit: 915~928MHz

4.3.2 Test Procedure

The transmitter shall be connected to an artificial antenna or if the transmitter has an integral antenna a test fixture shall be used . The RF output of the equipment shall be connected to a spectrum analyzer via a 50Ω variable attenuator.

The transmitter shall be operated at the nominal carrier power or field strength measured under normal test conditions.

The attenuator shall be adjusted to an appropriate level displayed at the spectrum analyzer screen.

The transmitter shall be modulated with standard test modulation. If the equipment cannot be modulated externally, the internal modulation shall be used. For transmitters using a continuous wideband swept carrier the measurement shall be made with the sweep on.

The output of the transmitter, with or without test fixture, shall be measured by using a spectrum analyzer with a resolution bandwidth appropriate to accept all major side bands. The power level calibration of the spectrum analyzer shall then be related to the power level or field strength measured. The calculation will be used to calculate the absolute level of the sideband power.

The test laboratory shall ensure that the spectrum analyzer's span is sufficiently wide enough to ensure that the carrier and all its major side bands are captured.

The frequencies of the upper and lower points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level defined are recorded as the modulation bandwidth.



4.3.3 Test Result and Data

Test Date: Dec. 01, 2016

Temperature: 25°C

Atmospheric pressure: 1026 hPa

Humidity: 62%

Channel	Frequency (MHz)	Test Conditions		Occupied BW(MHz)	F _L >915 (MHz)	F _H <928 (MHz)
Lowest	915.1	Tmon	Vmon	0.25	915.0110	915.2610
		Tmin	Vmin	0.25	915.0180	915.2680
			Vmax	0.24	915.0110	915.2610
		Tmax	Vmin	0.25	915.0010	915.2510
			Vmax	0.24	915.0110	915.2610
Measurement uncertainty: ±1506Hz						



4.4 Transmit Spurious Emission

4.4.1 Standard Applicable

The spurious emissions of the transmitter shall not exceed 0.1 uW / MHz.

4.4.2 Test Procedure

The EUT and its simulators are placed on a turn table which is 1.5 meters above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 4 meters.

The antenna to find out the maximum emission level. Broadband antenna (calibrated bi-log and horn antenna) are used as a receiving antenna. 30MHz-1000MHz Test for each spurious component at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

Both horizontal and vertical polarization of the antenna are set on measurement. And a high frequency preamplifier were used increase the sensitivity of the measuring. In order to find the maximum emission, all of the interface cables must be manipulated according to AS/NZS 4268: 2012 on radiated measurement.

4.4.3 Test Result and Data

Test Date: Dec. 01, 2016

Temperature: 25°C

Atmospheric pressure: 1026 hPa

Humidity: 62%

25MHz ~ 1GHz

Lowest frequency(MHz) 915.1					
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Spurious emission level (dBm)	Correct Factor	Limit (dBm)
25.00	V	-57.19	-57.82	-0.63	-40.00
69.85	V	-63.73	-59.43	4.30	-40.00
518.35	V	-72.51	-63.58	8.93	-40.00
30.85	H	-64.55	-65.15	-0.60	-40.00
69.85	H	-68.65	-64.44	4.21	-40.00
500.80	H	-68.28	-59.48	8.80	-40.00
Measurement uncertainty: ±4.11dB					



1GHz ~ 12.75GHz

Lowest frequency(MHz) 915.1					
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Spurious emission level (dBm)	Correct Factor	Limit (dBm)
1830.20	V	-34.13	-52.37	-18.24	-40.00
2745.30	V	-41.12	-54.77	-13.65	-40.00
3660.40	V	-41.81	-49.69	-7.88	-40.00
1830.20	H	-32.76	-50.90	-18.14	-40.00
2745.30	H	-40.93	-54.55	-13.62	-40.00
3660.40	H	-42.12	-50.16	-8.04	-40.00
Measurement uncertainty: ± 4.11 dB					



5. Receiver Parameters

5.1 Receiver Spurious Emissions

5.1.1 Standard Applicable

Receiver emissions 25 MHz to 1 GHz 3.3 nW EIRP or 2.0 nW ERP, Above 1GHz 32.8 nW EIRP or 20 nW ERP.

5.1.2 Test Procedure

The EUT and its simulators are placed on a turn table which is 1.5 meters above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 4 meters. The antenna to find out the maximum emission level. Broadband antenna (calibrated bi-log and horn antenna) are used as a receiving antenna. 30MHz-1000MHz Test for each spurious component at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

Both horizontal and vertical polarization of the antenna are set on measurement. And a high frequency preamplifier were used increase the sensitivity of the measuring. In order to find the maximum emission, all of the interface cables must be manipulated according to AS/NZS 4268: 2012 on radiated measurement.

5.1.3 Test Result and Data

Test Date: Dec. 01, 2016

Temperature: 25°C

Atmospheric pressure: 1026 hPa

Humidity: 62%

25MHz ~ 1GHz

Lowest frequency(MHz) 915.1					
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Spurious emission level (dBm)	Correct Factor	Limit (dBm)
26.95	V	-64.36	-64.99	-0.63	-54.80
67.90	V	-69.06	-64.59	4.47	-54.80
500.80	V	-70.40	-61.64	8.76	-54.80
67.90	H	-70.81	-66.27	4.54	-54.80
114.70	H	-65.05	-66.70	-1.65	-54.80
491.05	H	-72.14	-63.60	8.54	-54.80
Measurement uncertainty: ± 4.11 dB					



1GHz ~ 12.75GHz

Lowest frequency(MHz) 919.8					
Frequency (MHz)	Antenna Polarization	Read level (dBm)	Spurious emission level (dBm)	Correct Factor	Limit (dBm)
1830.20	V	-32.73	-50.97	-18.24	-44.80
2745.30	V	-40.90	-54.55	-13.65	-44.80
1830.20	H	-32.56	-50.70	-18.14	-44.80
2745.30	H	-40.87	-54.49	-13.62	-44.80
Measurement uncertainty: ± 4.11 dB					