Analog Devices

TEST REPORT FOR

Eterna 2 (LTP5902IPC)
Model: Eterna 2

Tested to The Following Standards:

EN 300 328 v2.2.2

Report No.: 105175-3

Date of issue: June 16, 2021

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Test Certificate # 803.01

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Analog Devices
32990 ALVARADO-NILES RD Ste 910
Union City, CA 94587

Representative: C Niglio
Customer Reference Number:45863030

REPORT PREPARED BY:

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Project Number: 105175

DATE OF EQUIPMENT RECEIPT: May 26, 2021
DATE(S) OF TESTING: May 26, 2021

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.
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Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.19

SUMMARY OF RESULTS

Standard / Specification: EN 300 328 v2.2.2

Test Procedure/Method	Description	Modifications	Results
Transmitter Requirements			
Sub clause 4.3.2.2	RF Power Output	NA	NP
Sub clause 4.3.2.3	Power Spectral Density	NA	NP
Sub clause 4.3.2.4	Duty Cycle, Tx Sequence, Tx-gap	NA	NA1
Sub clause 4.3.2.5	Medium Utilisation (MU) Factor	NA	NA1
Sub clause 4.3.2.6	Adaptivity	NA	NA1
Sub clause 4.3.2.7	Occupied Channel Bandwidth	NA	NP
Sub clause 4.3.2.8	Transmitter Unwanted Emissions in the OOB Domain	NA	NP
Sub clause 4.3.2.9	Transmitter Unwanted Emissions in the Spurious Domain - Conducted	NA	NP
Sub clause 4.3.2.9	Transmitter Unwanted Emissions in the Spurious Domain - Radiated	NA	NP
Receiver Requirements			
Sub clause 4.3.2.10	Receiver Spurious Emissions - Conducted	NA	NP
Sub clause 4.3.2.10	Receiver Spurious Emissions - Radiated	NA	NP
Sub clause 4.3.2.11	Receiver Blocking	NA	PASS
Sub clause 4.3.2.12	Geo-location capability	NA	NA2

NA = Not Applicable
NA1 = Not applicable because a device has output power <10mW EIRP.
NA2 = Not applicable because a device is not used for geographical location.
NP = CKC Laboratories was not contracted to perform test.

ISO/IEC 17025 Decision Rule
The declaration of pass or fail herein is based upon assessment to the specification(s) listed above, including where applicable, assessment of measurement uncertainties. For performance related tests, equipment was monitored for specified criteria identified in that section of testing.

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 2

***Equipment Under Test*:**

Device Name	Manufacturer	Model #	S/N
Eterna 2 (LTP5902IPC)	Analog Devices	Eterna 2	6A4643 (MAC ID)

Support Devices:

Device Name	Manufacturer	Model #	S/N
Eterna 1 (LTP5900IPC)	Analog Devices	Eterna 1	330EB2 (MAC ID)
Laptop	Dell	Latitude E7240	NA
Program Board for Eterna 2	Analog Devices	DC9010	536
Program Board for Eterna 1	Analog Devices	DC9010	1188

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	IEEE-802.15.4 TDMA
Operating Frequency Range:	2400-2483.5MHz
Output Power:	8dBm
Modulation Type(s):	OQPSK
Nominal Channel Bandwidth(s):	2.7MHz (OCBW)
Number of TX Chains:	1
Number of RX Chains:	1
Antenna Gain (A):	2 dBi (LT5901)
Beamforming Gain (Y):	NA
Antenna Connection Type:	MMCX
Nominal Input Voltage:	3.3V (2.1V to 3.76V Operating voltage)
Operating Temperature Range:	-40 to +85°C
Firmware / Software used for Test:	Eterna\Radio Certification\mote_hart_1_2_4_2_oski.bin
Geo-Location Capability:	Not Supported

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4.3.2 Technical Requirements

4.3.2.11 Receiver Blocking

Test Setup/Conditions			
Test Location:	Fremont Lab Bench	Test Engineer:	Hieu Song Nguyenpham
Test Method:	EN 300 328 v2.2.2 §5.4.11	Test Date(s):	5/26/2021
Configuration:	2		
Test Setup:	The EUT was operate as intended. Blocking signal level was set at the antenna port of the EUT. The Data transfer rate between EUT and a support board was set at Maximum Output Power. The Attenuators was used to adjust to wanted signal as the standard required		

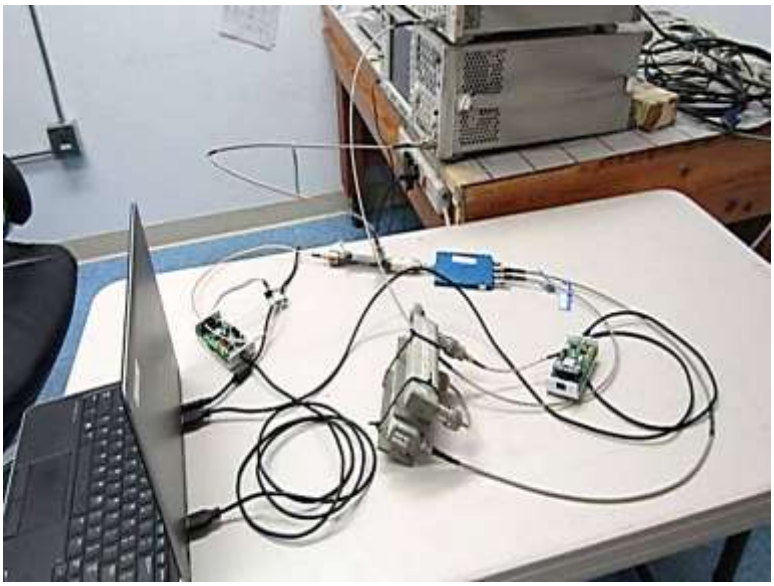
Environmental Conditions			
Temperature (ºC)	20.5	Relative Humidity (%):	46.5

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
03360	Cable	Astrolab	32022-2-29094-36TC	4/9/2020	4/9/2022
03471	Spectrum Analyzer	Agilent	E4440A	2/11/2020	2/11/2022
P06898	Cable	Astrolab	32022-29094K-29094K-48TC	3/25/2020	3/25/2022
03429	Attenuator	HP	8496B	3/23/2021	3/23/2023
02475	Attenuator	HP	8494B	3/23/2021	3/23/2023
C00087	Site Equipment	Anaren	44000	11/27/2019	11/27/2021
C00082	Directional Coupler	MECA Electronics, Inc	722-10-1.500V	11/27/2019	11/27/2021
P06903	Cable	Astrolab	32022-29094K-29094K-36TC	1/7/2020	1/7/2022
03418	Signal Generator	Agilent	E4438C	4/27/2021	4/27/2023

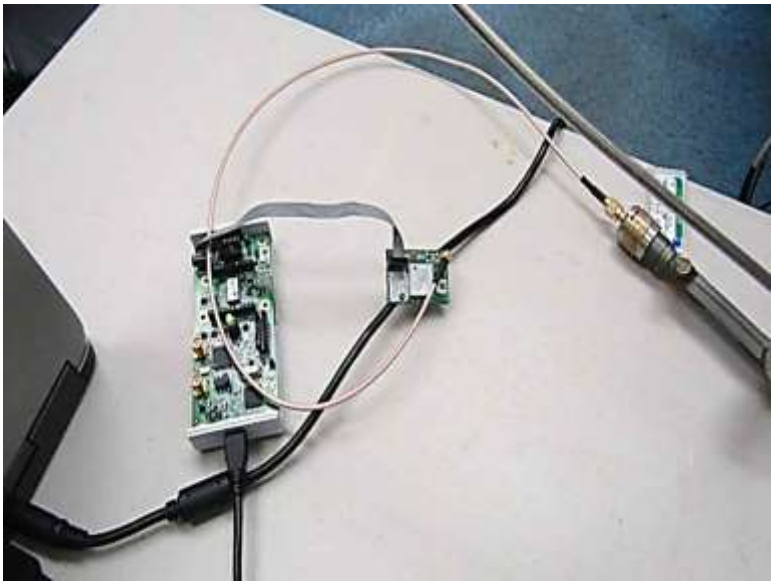
Receiver Blocking				
Wanted Signal mean power from companion device (dBm)	**Blocking Freq (MHz)**	**Blocking Signal power (dBm) CW**	**Degradation Observed**	**Results**
-64.69	2380	-34	No degradation	Pass
-64.69	2504	-34	No degradation	Pass
-64.69	2300	-34	No degradation	Pass
-64.69	2584	-34	No degradation	Pass

Note: Receiver Category 2

Test Setup Photos



Overall Test Setup; View 1



Overall Test Setup; View 2

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Parameter Uncertainty	Actual	Limit	Unit of Measure
Uncertainty Parameter	**Actual**	**Limit**	**Unit of Measure**
Occupied Channel Bandwidth	1	5	%
RF output power, conducted	0.67	1.5	dB
Power Spectral Density, conducted	0.67	3	dB
Unwanted Emissions, conducted	0.67	3	dB
All emissions, radiated	3.73	6	dB
Temperature	1	3	ºC
Humidity	3.4	5	%
DC and low frequency voltages	2	3	%
Time	1.1	5	%

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2.
Compliance is deemed to occur provided measurements are below the specified limits.