

Meteorcomm LLC.

TEST REPORT FOR

**Locomotive Transceiver
Model: 63020**

Tested To The Following Standards:

FCC Part 90I and RSS-119 Issue 11

Report No.: 93779-2

Date of issue: November 1, 2012



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 EMC 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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Meteorcomm LLC.
1201 SW 7th Street
Renton, WA 98057

Representative: Bernd Friedrich
Customer Reference Number: 12095

DATE OF EQUIPMENT RECEIPT:**DATE(S) OF TESTING:****REPORT PREPARED BY:**

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 93779

October 24, 2012

October 24, 2012

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment 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.

A handwritten signature in black ink that reads "Steve Behm". The signature is written in a cursive style and is positioned above a horizontal line.

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.
22116 23rd Drive S.E., Suite A
Bothell, WA 98021-4413

Site Registration & Accreditation Information

Location	CB #	Taiwan	Canada	FCC	Japan
Bothell	US0081	SL2-IN-E-1145R	3082C-1	318736	R-2296 C-2506 T-1489 G-284

SUMMARY OF RESULTS

Standard / Specification: FCC Part 90I and RSS - 119 Issue 11

Description	Test Procedure/Method	Results
Emissions Mask	FCC Part 90I § 210(f)	Pass
Transmitter Unwanted Emissions	RSS-119 § 5.8	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Locomotive Transceiver

Manuf: Meteorcomm LLC.

Model: 63020

Serial: 63LR000102BK

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Programmable Power Supply

Manuf: AMETEK

Model: XG100-17MGA

Serial: 1051A05348

50 ohm Terminator

Manuf: Bird

Model: 100-A-MFN-30

Serial: 0524

FCC PART 90I & RSS-119

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) requirements for licensed devices.

FCC Part 90I § 210(f) Emissions Mask & RSS-119 § 5.8 Transmitter Unwanted Emissions

Test Set up / Conditions

The EUT is located on the center of the test table 80cm above the ground plane. The Power supply is located under the table on the ground plane. The RF port is terminated into a 50ohm terminator.

EUT's duty cycle is 30%

The Engineer tested Low and High channels at 15w and 50w.

Testing performed per TIA/603C

Temp: 22°C, Relative Humidity: 33%, Pressure: 101.7kPa

Freq: 0.009-2220MHz

Engineer: A. del Angel

Test Equipment					
Asset #	Description	Manufacturer	Model	Cal Date	Cal Due
AN01517	Preamp	HP	8447D	2/24/2011	2/24/2013
AN01993	Biconilog Antenna	Chase	CBL6111C	3/2/2012	3/2/2014
AN03227	Cable	Astrolab	32026-29080-29080-84	5/2/2011	5/2/2013
ANP05360	Cable	Belden	RG214	11/8/2010	11/8/2012
ANP05366	Cable	Belden	RG-214	10/14/2011	10/14/2013
AN02871	Spectrum Analyzer	Agilent	E4440A	4/22/2011	4/22/2013
AN01271	Preamp	HP	83017A	8/18/2011	8/18/2013
AN01467	Horn Antenna-ANSI C63.5 Calibration	Horn Antenna	3115	10/19/2011	10/19/2013
AN03123	Cable	Astrolab	32026-2-29801-12	10/14/2011	10/14/2013
ANP05542	Cable	Andrews	Helix	9/27/2011	9/27/2013
AN00052	Loop Antenna	EMCO	6502	5/16/2012	5/16/2014

Test Data

Operating Frequency: 220-222 MHz
 Channels: Low and High
 Highest Measured Output
 Power: 46.99 (dBm)= 50 (Watts)
 Distance: 3 meters
 Limit: $55+10\log(P)=$ 71.99 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
440.03	-39.20070004	Vert	86.19
443.97	-44.10070004	Vert	91.09
1,099.98	-51.20070004	Vert	98.19
1,100.03	-52.20070004	Vert	99.19
1,997.94	-53.50070004	Vert	100.49
2,200.05	-55.20070004	Vert	102.19
1,980.13	-56.70070004	Vert	103.69
2,219.91	-57.10070004	Vert	104.09
2,219.88	-57.90070004	Vert	104.89
1,775.96	-59.30070004	Vert	106.29
660.03	-59.40070004	Vert	106.39
880.04	-60.00070004	Horiz	106.99
1,760.10	-60.10070004	Vert	107.09
1,553.91	-61.70070004	Vert	108.69
1,331.92	-62.00070004	Vert	108.99
1,540.09	-62.20070004	Vert	109.19
1,109.97	-62.30070004	Vert	109.29
1,320.09	-62.80070004	Vert	109.79
665.97	-67.10070004	Vert	114.09
887.96	-67.40070004	Horiz	114.39

Test Setup Photos

