



Nemko Test Report: 10234762RUS1rev1

Applicant: ABG Tag and Traq
2300 Joe Ramsey Blvd E.
Greenville, TX 75401

**Equipment Under Test:
(E.U.T.)** Traq Tag

FCC Identifier: 2AAXVTNTRFMOD1

Industry Canada Identifier: 11400A-TNTRFMOD1

In Accordance With: **FCC Part 15, Subpart F, Paragraph 15.517 and
Industry Canada RSS-220, Issue 1**
Ultra Wide Band Operation

Tested By: Nemko USA Inc.
802 N. Kealy
Lewisville, TX 75057

TESTED BY:

A handwritten signature in black ink, appearing to read "David Light", written over a horizontal line.

David Light, Wireless Engineer

DATE: 04 September 2013

APPROVED BY:

A handwritten signature in black ink, appearing to read "Tom Tidwell", written over a horizontal line.

Tom Tidwell, Reviewer

DATE: 23 September 2013

Total Number of Pages: 14

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Section 1. Summary Of Test Results

Manufacturer: ABG Tag and Traq

Model No.: Traq Tag

Serial No.: Nemko sample #497

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C, Paragraph 15.517 and Industry Canada RSS-220, Issue 1 for ultra wide band operation. All tests were conducted using measurement procedure in FCC Report and Order FCC 02-48 (ET Docket 98-153), KDB Publication No. 393764, and ANSI C63.4-2003. Radiated Emissions were made on an open area test site.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE
See " Summary of Test Data".



This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. Nemko USA, Inc. is a NVLAP accredited laboratory.

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This report applies only to the items tested.

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207 / RSS-Gen Para. 7.2.4	NA
Definition of UWB	15.503(d) / RSS-220 Para. 2	Complies
Radiated Emissions	15.517(c) / RSS-220 Para 5.2.1(d)	Complies
Radiated Emissions	15.517(d) / RSS-220 Para. 5.2.1(e)	Complies
Peak Emission at f_M	15.517(e) / RSS-220 Annex 4(c)	Complies

Footnotes:

The device is battery powered.

Revisions:

Rev1: Revised radiated emissions data page 8.

Section 2. General Equipment Specification

Frequency Range:	Single	
Operating Frequency(ies) of Sample:	5.991 to 6568 MHz (10 dB BW)	
Center Frequency:	6250 MHz	
Tunable Bands:	Single	
10 dB Occupied Bandwidth:	577 MHz	
User Frequency Adjustment:	None	
Integral Antenna	Yes ☒	No ☐

Description of Device Tested

Ultra wide band RFID tag for indoor use only.

Section 3. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: FCC 15.517(c)&(d)
	RSS-220 5.2.1(d)&(e)
TESTED BY: David Light	DATE: 03 September 2013

Limits below 960 MHz

Frequency (MHz)	Field Strength Limits (microvolts/m)	Measuring RBW	Distance (Meters)
0.009-0.490	2400/F(kHz)	1 kHz	300
0.490-1.705	24000/F(kHz)	10 kHz	30
1.705-30.0	30	10 kHz	30
30-88	100	100 kHz	3
88-216	150	100 kHz	3
216-960	200	100 kHz	3

Limits above 960 MHz (15.509)

Frequency (MHz)	E.I.R.P. (dBm)	Measuring RBW	Distance (Meters)
960-1610	-75.3	1 MHz	3
1610-1990	-53.3	1 MHz	3
1990-3100	-51.3	1 MHz	3
3100-10600	-41.3	1 MHz	3
Above 10600	-51.3	1 MHz	3
1164-1240	-85.3	1 kHz	3
1559-1610	-85.3	1 kHz	3

Maximizing Emission Levels:

The emissions were scanned from 30 MHz to 15000 MHz.

For measurements below 960 MHz the emissions were made using a PEAK detector
RBW=VBW=100 kHz

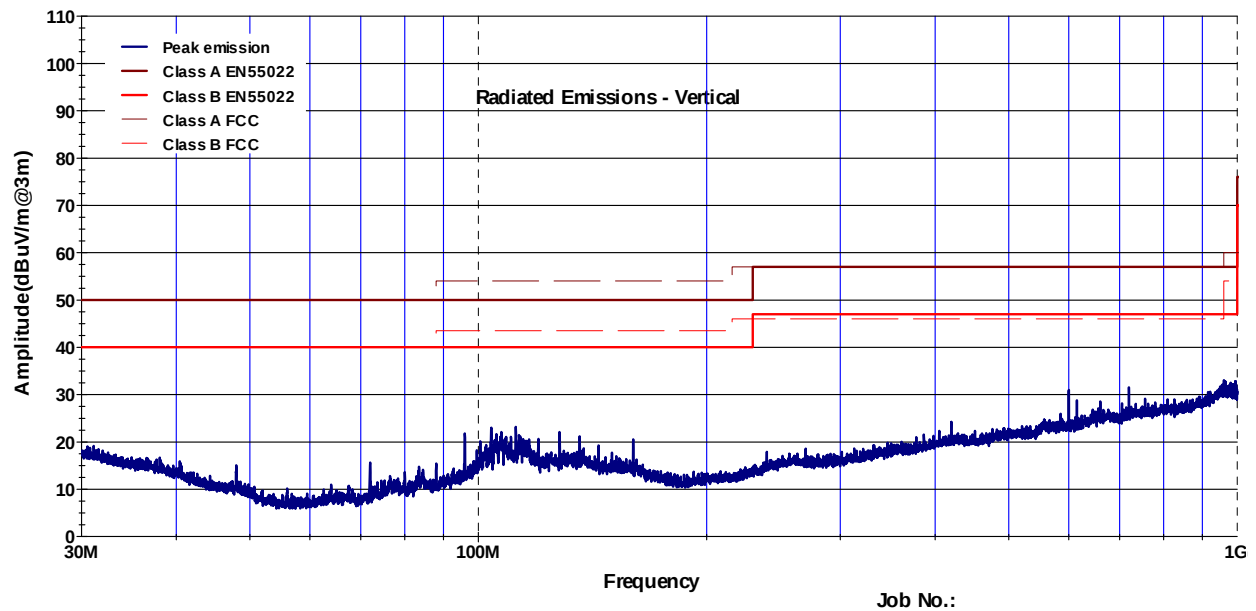
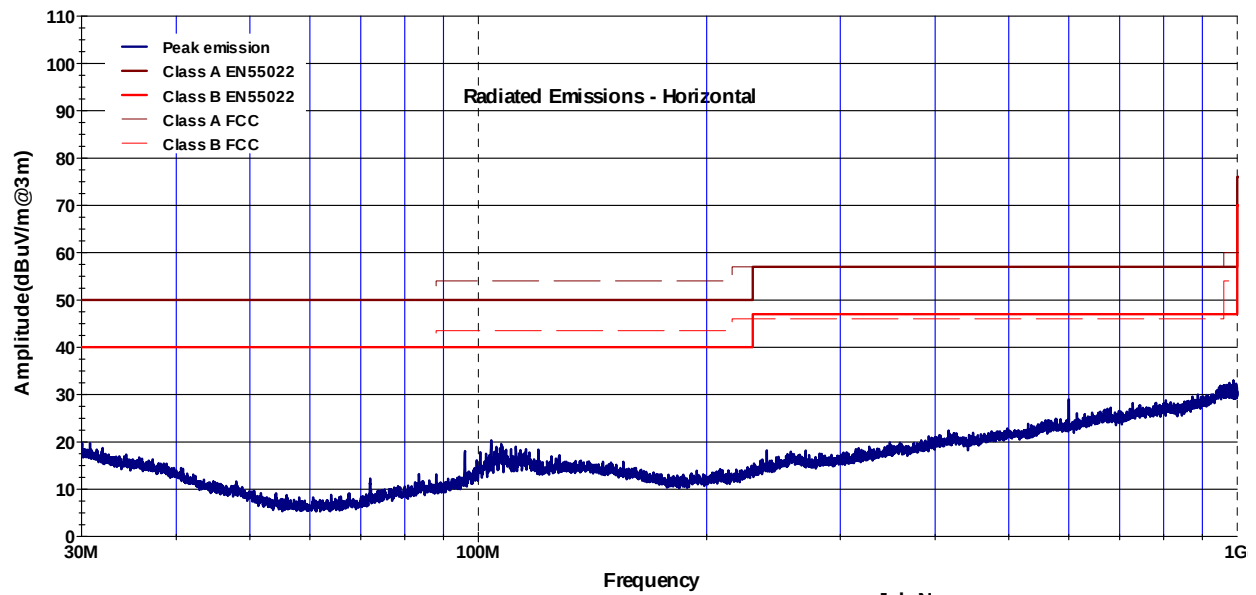
For Frequency above 960 MHz and outside the below frequency bands, the emissions were measured using RMS detector, RBW=1MHz, VBW=3MHz

☐ For frequencies fall inside 1164-1240 and 1559-1610 MHz, the emissions were measured using EMI RMS Detector, RBW = 1 KHz, VBW = 1 MHz

Test Results: Complies

Measurement Data: See attached table(s).

Test Data – Radiated Emissions



Test Data – Radiated Emissions

Frequency (MHz)	Meter Reading (dBm)	Substitution Level (dBm)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarity	Comments
1100	-85.0	-84.5		31.2	5.9	-78.6	-75.3	-3.3000	H	Noise Floor
1200	-106.0	-105.5		31.2	5.9	-99.6	-85.3	-14.3000	H	Noise Floor
1600	-103.0	-100.7		31.2	8.4	-92.3	-85.3	-7.0000	H	Noise Floor
1697	-81.2	-80.2		31.5	8.4	-71.8	-70.0	-1.8000	H	Noise Floor
2500	-82.0	-81.0		31.6	9.3	-71.7	-70.0	-1.7000	H	Noise Floor
5835	-73.0	-67.4		31	10.6	-56.8	-41.3	-15.5000	H	
15000	-85.0	-70.0		33.2	13.2	-56.8	-51.3	-5.5000	H	Noise Floor
1100	-85.0	-84.4		31.2	5.9	-78.5	-75.3	-3.2000	V	Noise Floor
1200	-106.0	-105.4		31.2	5.9	-99.5	-85.3	-14.2000	V	Noise Floor
1600	-103.0	-103.1		31.2	8.4	-94.7	-85.3	-9.4000	V	Noise Floor
1697	-81.2	-81.6		31.5	8.4	-73.2	-70.0	-3.2000	V	Noise Floor
2500	-82.0	-80.1		31.6	9.3	-70.8	-70.0	-0.8000	V	Noise Floor
5835	-75.0	-65.6		31	10.6	-55.0	-41.3	-13.7000	V	
15000	-85.0	-71.8		33.2	13.2	-58.6	-51.3	-7.3000	V	Noise Floor
Notes:										

The spectrum was searched from 30 MHz to 40 GHz.

Spectrum Analyzer Settings:

Below 1000 MHz: RBW=VBW=100 kHz Peak detector

Above 1000 MHz: RBW=1 MHz VBW=3MHz RMS detector

GPS Bands: RBW=1 kHz VBW=1 MHz RMS detector

Equipment Used: 1036-993-1783-1480-1016-1025

Measurement Uncertainty: +/-1.7 dB

Temperature: 21 °C

Relative Humidity: 48 %

Section 4. Peak Emissions

NAME OF TEST: Peak Emissions

PARA. NO.: FCC 15.517(e)

RSS-220 Annex 4(c)

TESTED BY: David Light

DATE: 03 September 2013

Limits:

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit

Equipment Used: 1036-993-1783**Measurement Uncertainty:** +/-1.7 dB**Temperature:** 21 °C**Relative Humidity:** 48 %**Test Data:**

Frequency (MHz)	Meter Reading (dBm)	Substitution Leve (dBm)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarity	Comments
6250.0	-	-29.8		30.0	11.3	-18.5	0.0	-18.5	V	F _M
6250.0	-	-29.6		30.0	11.3	-18.3	0.0	-18.3	H	F _M
Notes:										

The measurement was made using a RBW = 1 MHz and VBW = 3 MHz, Peak detector. The total power was integrated across 50 MHz as a peak channel power.

Section 5. Definition of UWB Transmitter

NAME OF TEST: Definition of UWB Transmitter

PARA. NO.: FCC 15.503(d)
RSS-220 Para. 2

TESTED BY: David Light

DATE: 03 September 2013

Limits: *Ultra-wideband (UWB) transmitter.* An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

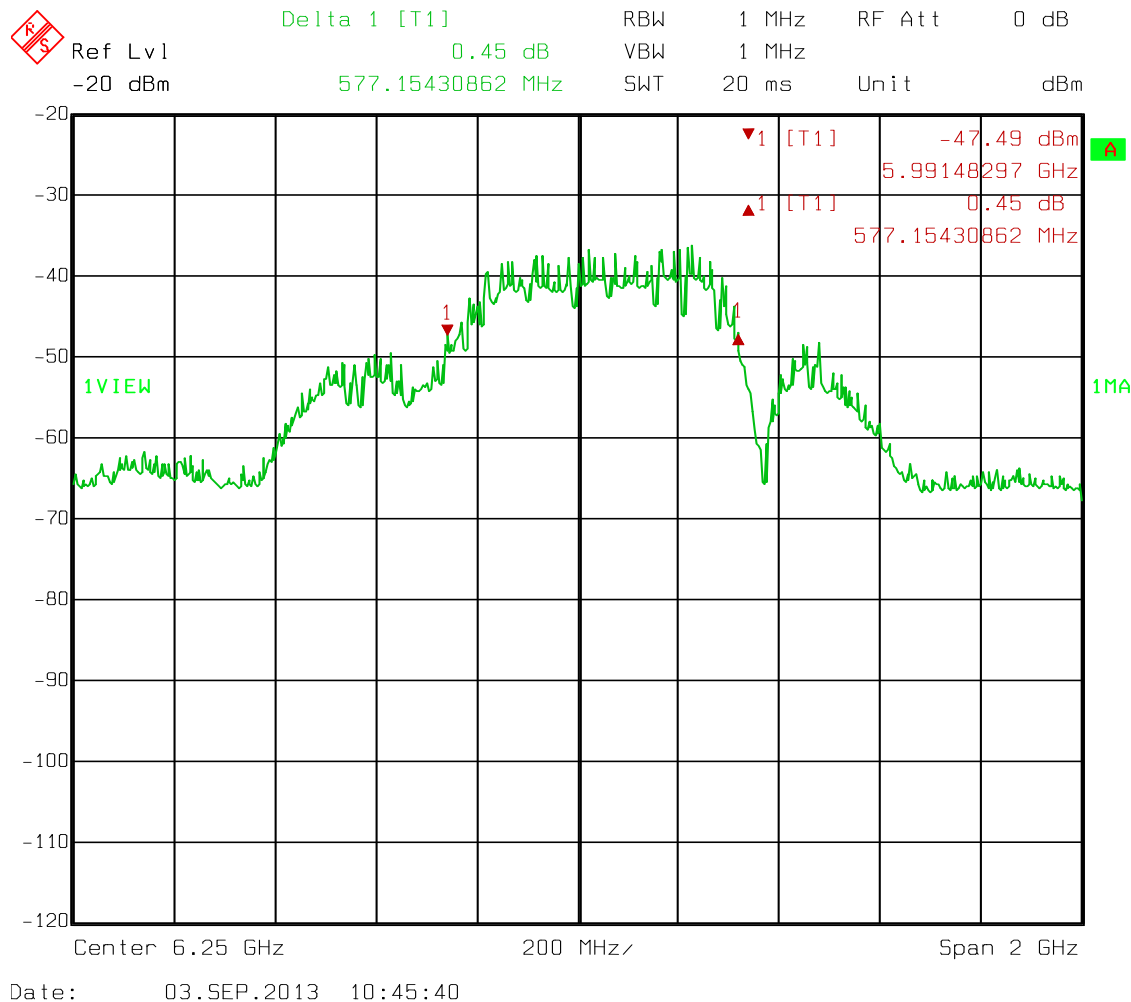
Equipment Used: 1036-993-1783

Measurement Uncertainty: +/-1.7 dB

Temperature: 21 °C

Relative Humidity: 48 %

Test Data



Section 6. Test Equipment List

Asset Tag	Description	Manufacturer	Model	Serial #	Last Cal	Next Cal
993	Antenna, Horn	A.H. Systems	SAS-200/571	162	22-Sep-2011	22-Sep-2013
1016	Preamplifier	Hewlett Packard	8449A	2749A00159	20-Aug-2013	20-Aug-2014
1025	Preamplifier,	Nemko USA, Inc.	LNA25	399	05-Mar-2013	05-Mar-2014
1036	Spectrum Analyzer	Rohde & Schwartz	FSEK30	830844/006	15-Jul-2013	15-Jul-2015
1480	Antenna, Bilog	Schaffner- Chase	CBL6111C	2572	25-Feb-2013	25-Feb-2014
1783	Cable Assy,	Nemko	Chamber		26-Sep-2012	26-Sep-2013

ANNEX A

TEST DIAGRAMS

Radiated Emissions

