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: _____ **DATE:** 04 September 2013
David Light, Wireless Engineer

APPROVED BY: _____ **DATE:** 23 September 2013
Tom Tidwell, Reviewer

Total Number of Pages: 14

Table Of Contents

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".

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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)

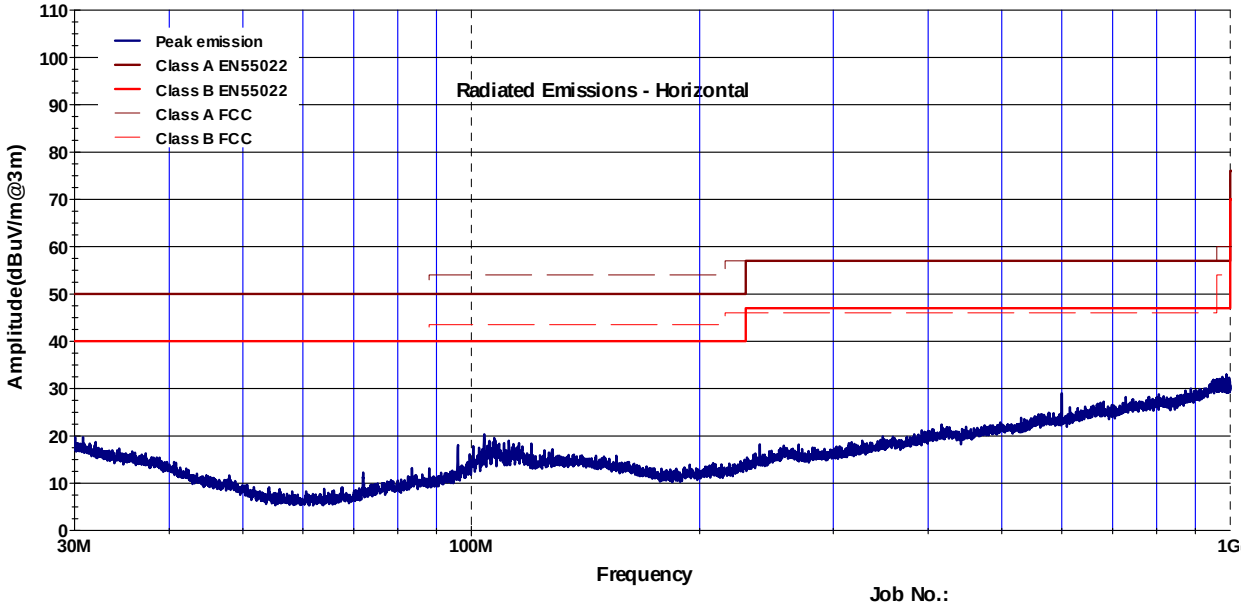
Frequency (MHz)	E.I.R.P. (dBm)	Measuring RBW	Distance (Meters)
960-1610	-75.3	1 MHz	3
1610-1990	-53.3	1 MHz	3
1990-3100	-51.3	1 MHz	3
3100-10600	-41.3	1 MHz	3
Above 10600	-51.3	1 MHz	3
1164-1240	-85.3	1 kHz	3
1559-1610	-85.3	1 kHz	3

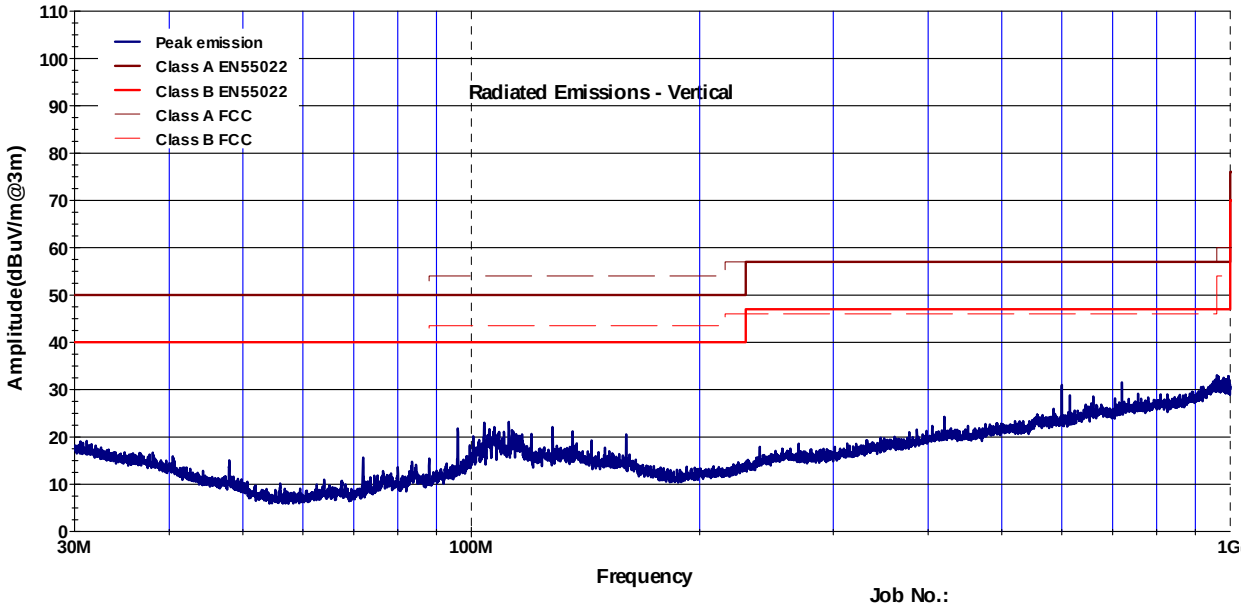
Maximizing Emission Levels:
The emissions were scanned from 30 MHz to 15000 MHz.
For measurements below 960 MHz the emissions were made using a PEAK detector RBW=VBW=100 kHz
For Frequency above 960 MHz and outside the below frequency bands, the emissions were measured using RMS detector, RBW=1MHz, VBW=3MHz
□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, fM . 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.

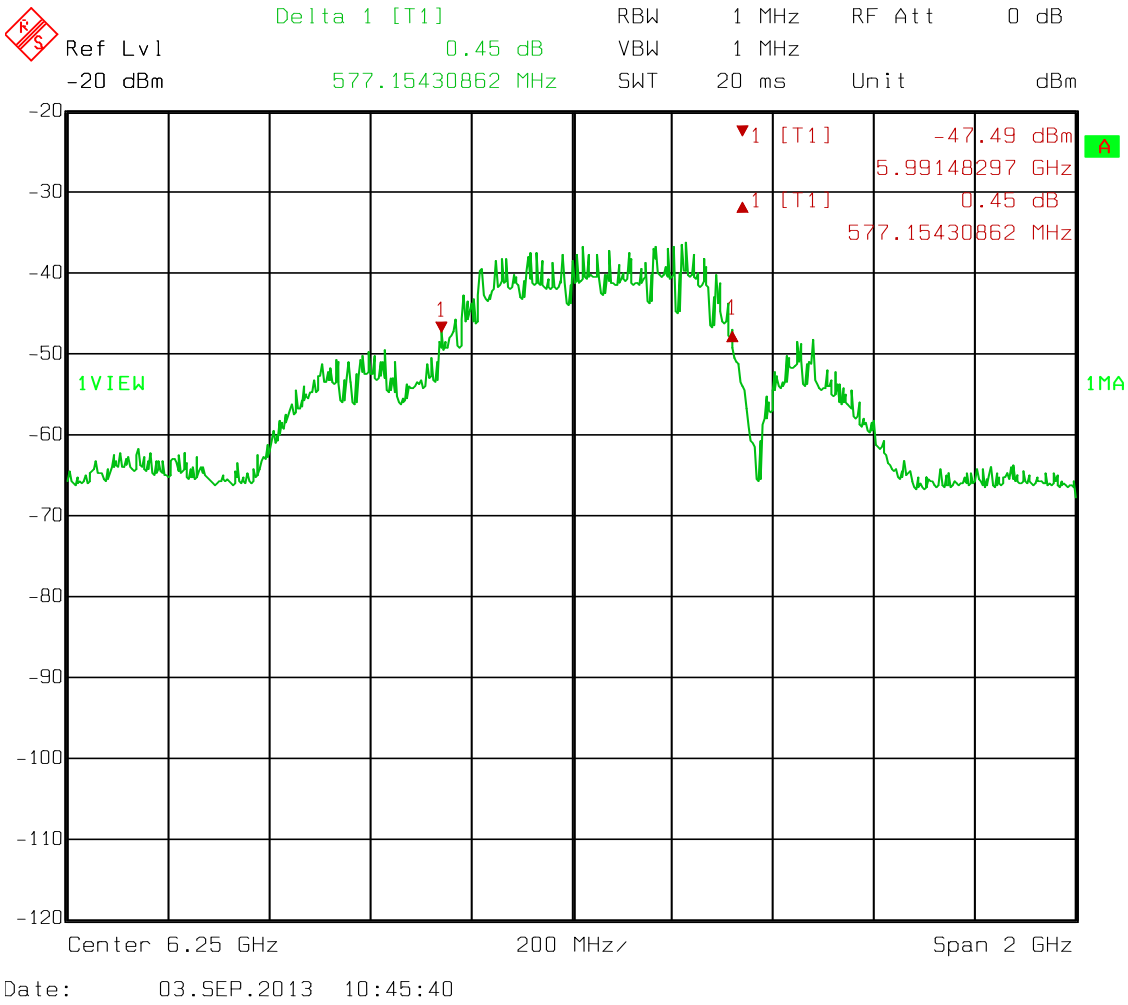
Equipment Used: 1036-993-1783

Measurement Uncertainty: +/-1.7 dB

Temperature: 21 °C

Relative Humidity: 48 %

Test Data


Delta 1 [T1]
0.45 dB
577.15430862 MHz
RBW 1 MHz
VBW 1 MHz
SWT 20 ms
RF Att 0 dB
Unit dBm
Ref Lvl
-20 dBm
1 [T1] -47.49 dBm
5.99148297 GHz
1 [T1] 0.45 dB
577.15430862 MHz
1VIEW
1MA
A
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
Center 6.25 GHz
200 MHz/
Span 2 GHz
Date: 03.SEP.2013 10:45:40

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