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FCC Part 15, Subpart C, Section 15.249
Industry Canada, RSS-210 and RSS-GEN
Test Report

On

Wireless Torque Meter
FCC ID: R3W-S1P12
IC: 10704A-S1P12

Customer Name:	Dyno Pro, LLC
Customer P.O:	DV-062615
Date of Report Revision:	August 5, 2015
Test Report No:	R-5976N, Rev. C
Test Start Date:	July 1, 2015
Test Finish Date:	July 2, 2015
Test Technician:	M. Seamans
Revision Approved By:	T. Hannemann
Report Revision Prepared By:	J. Ramsey

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Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document.

Revision	Date	Pages Affected
-	July 27, 2015	Original Release
A	July 30, 2015	Global Changes: • Document changed from R-5976N to R-5976N, Rev. A • Revised Model Number from S1 to Dyno S1 • Removed ANSI C63.10.2013 references from document
B	August 4, 2015	Global Changes: • Document changed from R-5976N, Rev. A to R-5976N, Rev. B • Industry Canada Number changed from 10704A-V1P12 to 10704A-S1P12
C	August 5, 2015	Global Changes: • Document changed from R-5976N, Rev. B to R-5976N, Rev. C • Removed all photographs due to request for confidentiality

Technical Information

Report Number:	R-5976N, Rev. C
Customer:	Dyno Pro, LLC
Address:	8500 Clinton Road, Unit 1104A
	Brooklyn, Ohio 44144
Manufacturer:	Dyno Pro, LLC
Manufacturer Address:	8500 Clinton Road, Unit 1104A
	Brooklyn, OH 44144
Test Sample:	Wireless Torque Meter
Model Number:	Dyno S1
Serial Number:	070215
FCC ID:	R3W-S1P12
IC:	10704A-S1P12
Power Requirements:	3.7VDC Internal Battery - The battery is charged using a USB connection (power only) to any USB power source. The device will not be operational while charging.
Frequency of Operation:	2.4568 GHz
Antenna Type:	PCB Dipole, 2 dBi (no antenna port)
Equipment Use:	Measures torque on a bicycle frame and transmits the data via wireless communication

Test Specification:
FCC Rules and Regulations Part 15, Subpart C, Section 15.249
Radio Standards Specification, RSS-210, Issue 8, June, 2010

Test Procedures:
ANSI C63.4:2009
RSS-GEN, Issue 4, November 2014

Test Facility:
Retlif Testing Laboratories
101 New Boston Road
Goffstown, NH 03045

FCC Registered Test Site Number: 90899
IC Registered Test Site Number: 2047C-1

Tests Performed

The test methods performed on the Wireless Torque Meter are shown below:

FCC Part 15, Subpart C	Industry Canada RSS-210	Test Method
15.249(a)	A2.9	Field Strength of Fundamental Emissions
15.249(d)	A2.9(b)	Field Strength of Emissions
N/A	A1.1.3	99% Bandwidth

General Test Requirements

1. The measurement procedure of ANSI C63.4:2009 was utilized as specified in FCC Part 15, Subpart C, Section 15.31(a)(3) and per the ANSI C63.4 transition period allowed by the FCC and Industry Canada.
2. All radiated emissions measurements were performed on an Open Area Test Site (OATS), listed with the FCC and IC.
3. The level of the fundamental field strength was recorded with a new battery installed in the EUT.
4. All measurements were performed at the specified 3 meter test distance as required by FCC Section 15.249 (c) and RSS-210 Section A2.9 (a).
5. The EUT was rotated throughout 360 degrees for all radiated emissions measurements.
6. All readily accessible EUT controls were adjusted in such a manner as to maximize the level of emissions.
7. Appropriate accessories were attached to all EUT ports during the performance of radiated emissions measurements.
8. The EUT operated at a single frequency of 2.4568 GHz.
9. The frequency spectrum was investigated from the lowest frequency generated in the device up to the 10th harmonic of the highest fundamental frequency. Measurements below 1000 MHz were taken utilizing Peak and/or Average Detector. Measurements above 1 GHz were taken utilizing a Peak Detector. The peak values of the emissions were verified to meet the 20 dB requirement of FCC Section 15.35(b) and RSS-Gen Section 8.1.

EUT Description:
The Dyno Pro S1 is a wireless torque sensor used to measure the torque on a bicycle frame to gauge cyclist performance. The device is comprised of a torque sensor, radio PCB assembly and battery. The torque sensor, battery and PCB assembly slide into the hollow shaft of a bicycle pedal assembly.

EUT Setup & Operation:
The EUT was tested while installed inside the hollow shaft of a bicycle pedal assembly to duplicate normal installation and operation.

Support Equipment:
The bicycle pedal assembly was the only support equipment used during testing.

Certification and Signatures

We certify that this report is a true representation of the results obtained from the tests of the equipment stated. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.

Todd Hannemann
Laboratory Supervisor
iNARTE Certified Technician ATL-0255-T

Non-Warranty Provision
The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

Non-Endorsement
This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Requirements and Test Results

Requirement:
FCC Section 15.249(a) and (d) - Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz and 24.0 - 24.25 GHz

IC RSS-210, A2.9(a) and (b):
This section provides standards for low-power devices that can be used for any application provided the following condition is met:

FCC Section 15.249(a): Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with Table 1.

IC A2.9(a): The field strengths measured at 3 meters shall not exceed the limits specified in Table 1.

Table 1 - Field Strength of Emissions

Fundamental Frequency	Field Strength - Fundamental (millivolts/meter)	Field Strength - Harmonics (microvolts/meter)
902 to 928 MHz	50	500
2400 to 2483.5 MHz	50	500
5725 to 5875	50	500
24.0 to 24.25 GHz	250	2500

- Results:
  The EUT was operated at 2.4568 GHz. The field strength of the fundamental did not exceed 50 mV/M peak. The field strength of the harmonics did not exceed 500 µV/M peak.

FCC Section 15.249(d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

IC A2.9(b): Emissions radiated outside of the frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general limits of RSS-Gen, whichever is the less stringent.

Table 2 – General Radiated Emissions Limits

Spurious Frequency MHz	Field Strength/Measurement Distance (microvolts/meter)
.009 – 0.490	2400/F (kHz) @ 300 meters
0.490 – 1.705	2400/F (kHz) @ 30 meters
1.705 – 30	30 @ 30 meters
30 - 88	100 @ 3 meters
88 - 216	150 @ 3 meters
216 - 960	200 @ 3 meters
Above 960	500 @ 3 meters

Requirements and Test Results (con't)

- Results:
  Emissions radiated at the Band Edges and outside the specified frequency band were did not exceed the general radiated emissions limits of 15.209 and RSS-Gen as shown in Table 2.

Requirement:
IC RSS-GEN, 6.6 – Occupied Bandwidth
When an occupied bandwidth value is not specified in the applicable RSS, the 99% bandwidth of the transmitted signal shall be reported.

- Results:
  The 99% emission bandwidth was measured and recorded.

General Requirements FCC and IC

Duty Cycle Determination-Pulsed Operation

When the field strength (or envelope power) is not constant or when it is in pulses, and an average detector is specified to be used, the value of field strength or power shall be determined by averaging over one complete pulse train, including blanking intervals within the pulse train, as long as the pulse train does not exceed 0.1 seconds. In cases where the pulse train exceeds 0.1 seconds, the average value (of field strength or output power) shall be determined during a 0.1 second interval during which the field strength or power is at its maximum value.

The unit's RF output was coupled to the input of the spectrum analyzer. The analyzer was set for a frequency span of 0 Hz. The sweep time was then adjusted in order to display one full pulse train. The transmitter on time was then summed and compared to the time for one full cycle in order to obtain the duty cycle. See Duty Cycle Plots for additional information.

- Results:
  See below for the exact method of calculating the duty cycle and average field strength.

The duty cycle of the test sample was evaluated in all possible operating modes and the worst case duty cycle was determined. The following calculation was used to determine the duty cycle correction factor.

Transmitter On Time =	0.19796	milliseconds (maximum per cycle)
Transmitter Cycle Time =	100	milliseconds
Transmitter Duty Cycle =	.027	%

CALCULATION

Total on time =	0.19796	milliseconds
Duty Cycle (0.19796/100 =	.0019796	%
Correction Factor = 20 log (0.0019796) =	-54.0	dB
Max Correction factor =	-20	dB

Requirements and Test Results (con't)

Field Strength Calculation:

The final average field strength of the emission was calculated by subtracting the duty cycle factor in dB from the maximized corrected peak reading in dBuV/m.

The maximized peak field strength of the emission was obtained as follows:

$P_C = M_R + C_F$

Where:
P_C = Corrected Peak Reading in dBµV/m
M_R = Uncorrected Meter Reading in dBµV
C_F = Correction Factor in dB (Pre-Amp + Antenna Factor + Cable Loss)

The final average field strength of the emission was obtained as follows:

$A_F = P_C - D_F$

Where:

A_F = Average Field Strength in dBµV/m
P_C= Corrected Peak Reading in dBµV/m
D_F = Duty Cycle Factor in dB

The following spectrum analyzer settings were used:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f ≤ 1 GHz

VBW ≥ RBW

Detector Function = Peak or Average as applicable

Trace = Max Hold

Sweep = Auto

Requirements and Test Results (con't)

RF Exposure Limits

The following power was calculated from field strength measurements using the calculation below:

$$EIRP = \frac{(FS \times D)^2}{30}$$

FS = Field Strength = 0.028248 V/M (Peak)
D = Distance = 3 M

EIRP = 0.239 mW

In accordance with Paragraph 2.5.1 of RSS-102, Issue 4 this device is exempt from SAR evaluation as the power is less than 20 mW. Using a very conservative 5mm separation distance this device is exempt from SAR evaluation as the power is less than 10mW in accordance with FCC KDB 447498.

Equipment Lists

FCC Section 15.249(a) and IC RSS-GEN, A2.9
Field Strength of Fundamental Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4029	RETLIF	OPEN AREA TEST SITE, FILING	3 / 10 Meters	RNH	5/15/2013	5/31/2016
4984B	MICROLAB / FXR	ANTENNA, HIGH GAIN HORN	1.7 - 2.6 GHz	R638A	No Calibration Required	
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	10/29/2014	10/31/2016

FCC Section 15.249(d) and IC RSS-GEN, A2.9(b)
Field Strength of Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
1232	AGILENT / HP	PRE-AMPLIFIER	1 - 26.5 GHz	8449B	6/17/2015	6/30/2016
3258	ETS / EMCO	ANTENNA, DOUBLE RIDGED GUIDE	1 - 18 GHz	3115	3/24/2015	9/30/2016
3430	MCS	ANTENNA, HORN	18 - 26.5 GHz	K-5039	No Calibration Required	
4029	RETLIF	OPEN AREA TEST SITE, FILING	3 / 10 Meters	RNH	5/15/2013	5/31/2016
R462	AGILENT / HP	ANALYZER, SPECTRUM	9 kHz - 26.5 GHz	E7405A	1/8/2015	1/31/2016

IC RSS-GEN, 99% Bandwidth

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5070	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 40 GHz	ESIB40	10/29/2014	10/31/2016
5135	NARDA MICROWAVE	ATTENUATOR, COAXIAL	10 dB, DC - 12.4 GHz	757C-10	10/28/2014	10/31/2015

FCC Section 15.249(a) and IC RSS-GEN, A2.9
Field Strength of Fundamental Emissions
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Fundamental Field Strength**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	FCC Part 15, Subpart C	Paragraph: 15.249 (a)(e)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 1st, 2015	

Notes: Test Distance: 3 meters Detector: Peak Resolution BW: 1 MHz

TEST PARAMETERS

Frequency	Antenna Position	Measured level	Correction Factor	Corrected Peak Reading	Average Limit at 3m		Converted Peak Reading	Average Limit at 3m
GHz	**(H/V)**	**dBuV**	**dB**	**dBuV/m**	**dBuV/m**		**mV/m**	**mV/m**
2.4568	H	67.82	22.00	89.82	93.98		30.97	50.00

Data Sheet 1 of 1

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Fundamental Field Strength**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	RSS-210, Issue 8	Paragraph: A2.9(a)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 1st, 2015	

Notes: Test Distance: 3 meters Detector: Peak Resolution BW: 1 MHz

TEST PARAMETERS

Frequency	Antenna Position	Measured level	Correction Factor	Corrected Peak Reading	Average Limit at 3m		Converted Peak Reading	Average Limit at 3m
GHz	**(H/V)**	**dBuV**	**dB**	**dBuV/m**	**dBuV/m**		**mV/m**	**mV/m**
2.4568	H	67.82	22.00	89.82	93.98		30.97	50.00

Data Sheet 1 of 1

FCC Section 15.249(d) and IC RSS-GEN, A2.9(b)
Field Strength of Harmonics, Spurious & Band Edge Emissions
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions - Band Edge**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	FCC Part 15, Subpart C	Paragraph: 15.249 (d)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Peak Resolution BW: 1 MHz		

TEST PARAMETERS

Frequency	Antenna Position	Measured level	Correction Factor	Corrected Peak Reading	Average Limit at 3m		Converted Peak Reading	Average Limit at 3m
GHz	**(H/V)**	**dBuV**	**dB**	**dBuV/m**	**dBuV/m**		**uV/m**	**uV/m**
2.4000*	V	43.93	-6.00	37.93	54.00		78.80	500.00
2.4835*	V	44.05	-6.00	38.05	54.00		79.89	500.00

* This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 1

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions - Band Edge**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	RSS-210, Issue 8	Paragraph: A2.9(b)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	

Notes: Test Distance: 3 meters Detector: Peak Resolution BW: 1 MHz

TEST PARAMETERS

Frequency	Antenna Position	Measured level	Correction Factor	Corrected Peak Reading	Average Limit at 3m		Converted Peak Reading	Average Limit at 3m
GHz	**(H/V)**	**dBuV**	**dB**	**dBuV/m**	**dBuV/m**		**uV/m**	**uV/m**
2.4000	V	43.93	-6.00	37.93	54.00		78.80	500.00
2.4835	V	44.05	-6.00	38.05	54.00		79.89	500.00

Data Sheet 1 of 1

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Harmonics, 30 MHz to 25 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Part Number	DYNO S1	
Serial Number	070215	
Test Specification	FCC Part 15, Subpart C	Paragraph: 15.249 (a)(e)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Peak		

TEST PARAMETERS

Transmitter Frequency	Antenna Position	Peak Corrected Reading	Peak Limit (20dB Higher than Average)		Duty Cycle Factor	Corrected Average Reading	Average Limit
MHz	**(H/V)**	**dBuV/m**	**dBuV/m**		**dB**	**dBuV/m**	**dBuV/m**
30.00	-	-	74.00		-	-	54.00
|	-	-	|		-	-	|
4914.00	V	58.95	|		-20	38.95	|
7371.00	V	58.07	|		-20	38.07	|
9828.00*	V	48.74	|		-	24.87	|
12285.00*	V	50.82	|		-	29.88	|
14742.00*	V	54.99	|		-	34.81	|
17199.00*	V	60.57	|		-	38.88	|
19656.00*	V	34.94	|		-	14.94	|
22113.00*	V	36.80	|		-	16.89	|
24570.00*	V	40.95	|		-	19.57	|
|	-	-	|		-	-	|
25000.00	-	-	74.00		-	-	54.00

EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 1

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Harmonics, 30 MHz to 25 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Part Number	DYNO S1	
Serial Number	070215	
Test Specification	RSS-210, Issue 8	Paragraph: A2.9(a)(b)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Peak		

TEST PARAMETERS

Transmitter Frequency	Antenna Position	Peak Corrected Reading	Peak Limit (20dB Higher than Average)		Duty Cycle Factor	Corrected Average Reading	Average Limit
MHz	**(H/V)**	**dBuV/m**	**dBuV/m**		**dB**	**dBuV/m**	**dBuV/m**
30.00	-	-	74.00		-	-	54.00
|	-	-	|		-	-	|
4914.00	V	58.95	|		-20	38.95	|
7371.00	V	58.07	|		-20	38.07	|
9828.00*	V	48.74	|		-	24.87	|
12285.00*	V	50.82	|		-	29.88	|
14742.00*	V	54.99	|		-	34.81	|
17199.00*	V	60.57	|		-	38.88	|
19656.00*	V	34.94	|		-	14.94	|
22113.00*	V	36.80	|		-	16.89	|
24570.00*	V	40.95	|		-	19.57	|
|	-	-	|		-	-	|
25000.00	-	-	74.00		-	-	54.00

EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 1

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Spurious, 30 MHz to 1 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	FCC Part 15, Subpart C	Paragraph: 15.249 (d)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Quasi-Peak		

TEST PARAMETERS

Frequency	Antenna Position	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading			Limit at 3M
MHz	**(H/V) / Height**	**Degrees**	**dBuV**	**dB**	**dBuV/m**			**dBuV/m**
30.00	-	-	-	-	-			40.0
|	-	-	-	-	-			|
35.00	V-1m	0.0	3.98	15.72	19.70	*		|
|	-	-	-	-	-			|
88.00	-	-	-	-	-			40.0
88.00	-	-	-	-	-			43.5
|	-	-	-	-	-			|
105.00	H-1m	0.0	13.29	10.31	23.60	*		|
105.00	V-1m	0.0	14.19	10.31	24.50	*		|
205.00	H-1m	0.0	7.56	13.64	21.20	*		|
|	-	-	-	-	-			|
216.00	-	-	-	-	-			43.5
216.00	-	-	-	-	-			46.0
|	-	-	-	-	-			|
247.43	V-1m	0.0	5.74	16.06	21.80			|
600.00	H-1m	0.0	-3.59	27.29	23.70	*		|
600.00	V-1m	0.0	-3.69	27.29	23.60	*		|
|	-	-	-	-	-			|
960.00	-	-	-	-	-			46.0
960.00	-	-	-	-	-			54.0
|	-	-	-	-	-			|
1000.00	-	-	-	-	-			54.0

EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 2

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Spurious, 1 GHz to 25 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	FCC Part 15, Subpart C	Paragraph: 15.249 (d)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Peak		

TEST PARAMETERS

Frequency	Antenna Position	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading			Limit at 3M
MHz	**(H/V) / Height**	**Degrees**	**dBuV**	**dB**	**dBuV/m**			**dBuV/m**
1000.00	-	-	-	-	-			54.0
|	-	-	-	-	-			|
|	-	-	-	-	-			|
9828.00*	V	0.0	20.73	4.14	24.87			|
12285.00*	V	0.0	21.75	8.13	29.88			|
14742.00*	V	0.0	24.18	10.63	34.81			|
17199.00*	V	0.0	23.21	15.67	38.88			|
19656.00*	V	0.0	22.94	-8.00	14.94			|
22113.00*	V	0.0	24.39	-7.50	16.89			|
24570.00*	V	0.0	25.57	-6.00	19.57			|
|	-	-	-	-	-			|
25000.00	-	-	-	-	-			54.0

EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 2 of 2

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Spurious, 30 MHz to 1 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	DYNO S1	
Serial Number	070215	
Test Specification	RSS-210 ,Issue 8	Paragraph: A2.9(b)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Quasi-Peak		

TEST PARAMETERS

Frequency	Antenna Position	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading			Limit at 3M
MHz	**(H/V) / Height**	**Degrees**	**dBuV**	**dB**	**dBuV/m**			**dBuV/m**
30.00	-	-	-	-	-			40.0
|	-	-	-	-	-			|
35.00	V-1m	0.0	3.98	15.72	19.70	*		|
|	-	-	-	-	-			|
88.00	-	-	-	-	-			40.0
88.00	-	-	-	-	-			43.5
|	-	-	-	-	-			|
105.00	H-1m	0.0	13.29	10.31	23.60	*		|
105.00	V-1m	0.0	14.19	10.31	24.50	*		|
205.00	H-1m	0.0	7.56	13.64	21.20	*		|
|	-	-	-	-	-			|
216.00	-	-	-	-	-			43.5
216.00	-	-	-	-	-			46.0
|	-	-	-	-	-			|
247.43	V-1m	0.0	5.74	16.06	21.80			|
600.00	H-1m	0.0	-3.59	27.29	23.70	*		|
600.00	V-1m	0.0	-3.69	27.29	23.60	*		|
|	-	-	-	-	-			|
960.00	-	-	-	-	-			46.0
960.00	-	-	-	-	-			54.0
|	-	-	-	-	-			|
1000.00	-	-	-	-	-			54.0

EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 1 of 2

RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET		
Test Method	**Field Strength of Emissions – Spurious, 1 GHz to 25 GHz**	
Customer	Dyno Pro, LLC	
Job Number	R-5976N	
Test Sample	Wireless Torque Meter	
Model Number	Dyno V1	
Serial Number		
Test Specification	RSS-210 ,Issue 8	Paragraph: A2.9(b)
Operating Mode	Transmitting modulated signal at 2.4568 GHz	
Technician	M. Seamans	
Date	July 2nd, 2015	
Notes: Test Distance: 3 meters Detector: Peak		

TEST PARAMETERS

Frequency	Antenna Position	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading			Limit at 3M
MHz	**(H/V) / Height**	**Degrees**	**dBuV**	**dB**	**dBuV/m**			**dBuV/m**
1000.00	-	-	-	-	-			54.0
|	-	-	-	-	-			|
|	-	-	-	-	-			|
9828.00*	V	0.0	20.73	4.14	24.87			|
12285.00*	V	0.0	21.75	8.13	29.88			|
14742.00*	V	0.0	24.18	10.63	34.81			|
17199.00*	V	0.0	23.21	15.67	38.88			|
19656.00*	V	0.0	22.94	-8.00	14.94			|
22113.00*	V	0.0	24.39	-7.50	16.89			|
24570.00*	V	0.0	25.57	-6.00	19.57			|
|	-	-	-	-	-			|
25000.00	-	-	-	-	-			54.0

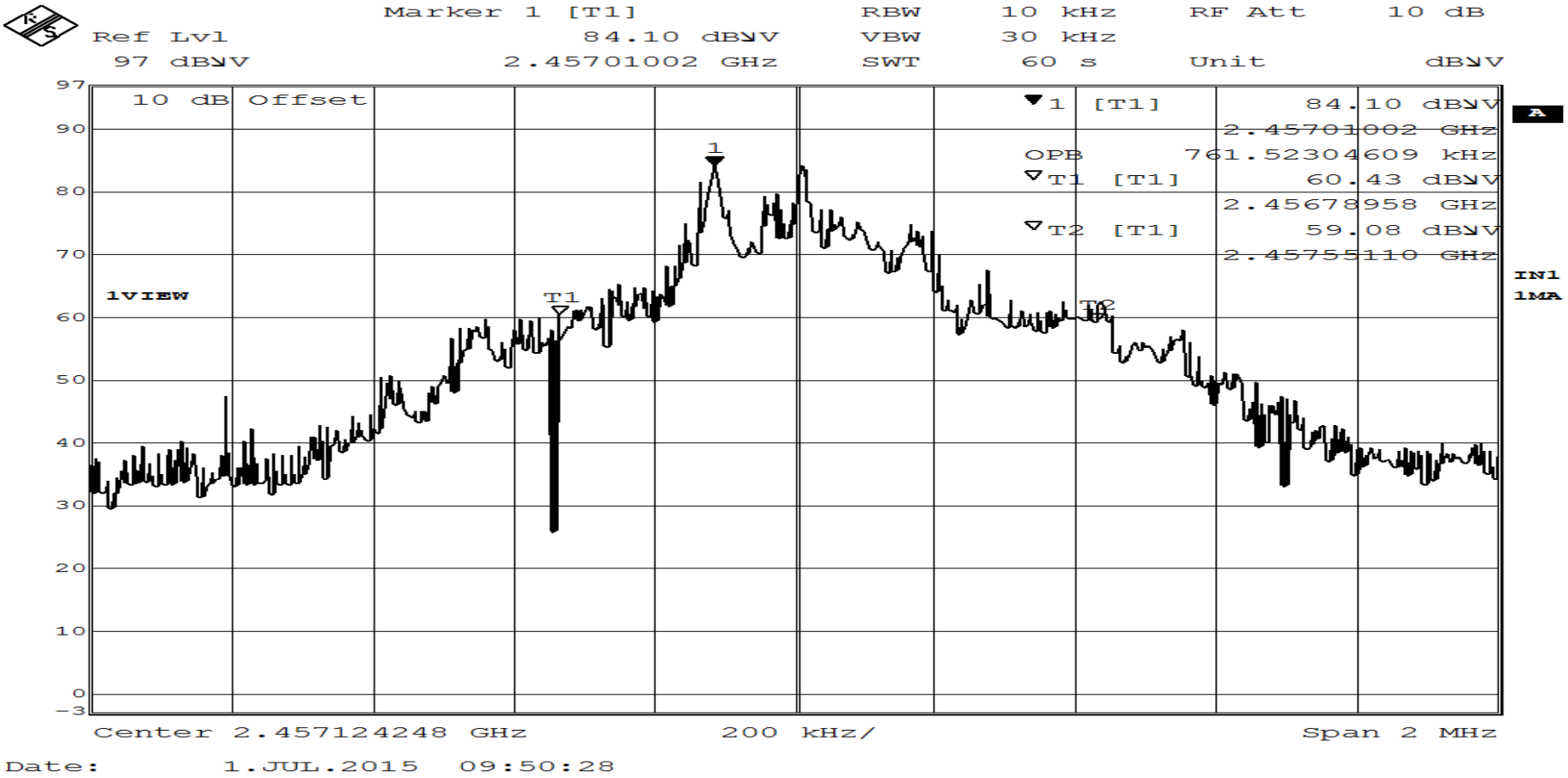
EUT emissions within 10 dB of the specified test limit were observed at the specified test distance throughout the given frequency spectrum. * This emission is not from the EUT. It is a measurement of minimum measurement system sensitivity (Noise Floor).

Data Sheet 2 of 2

IC RSS-GEN, 99% Bandwidth
Test Data

RETLIF TESTING LABORATORIES

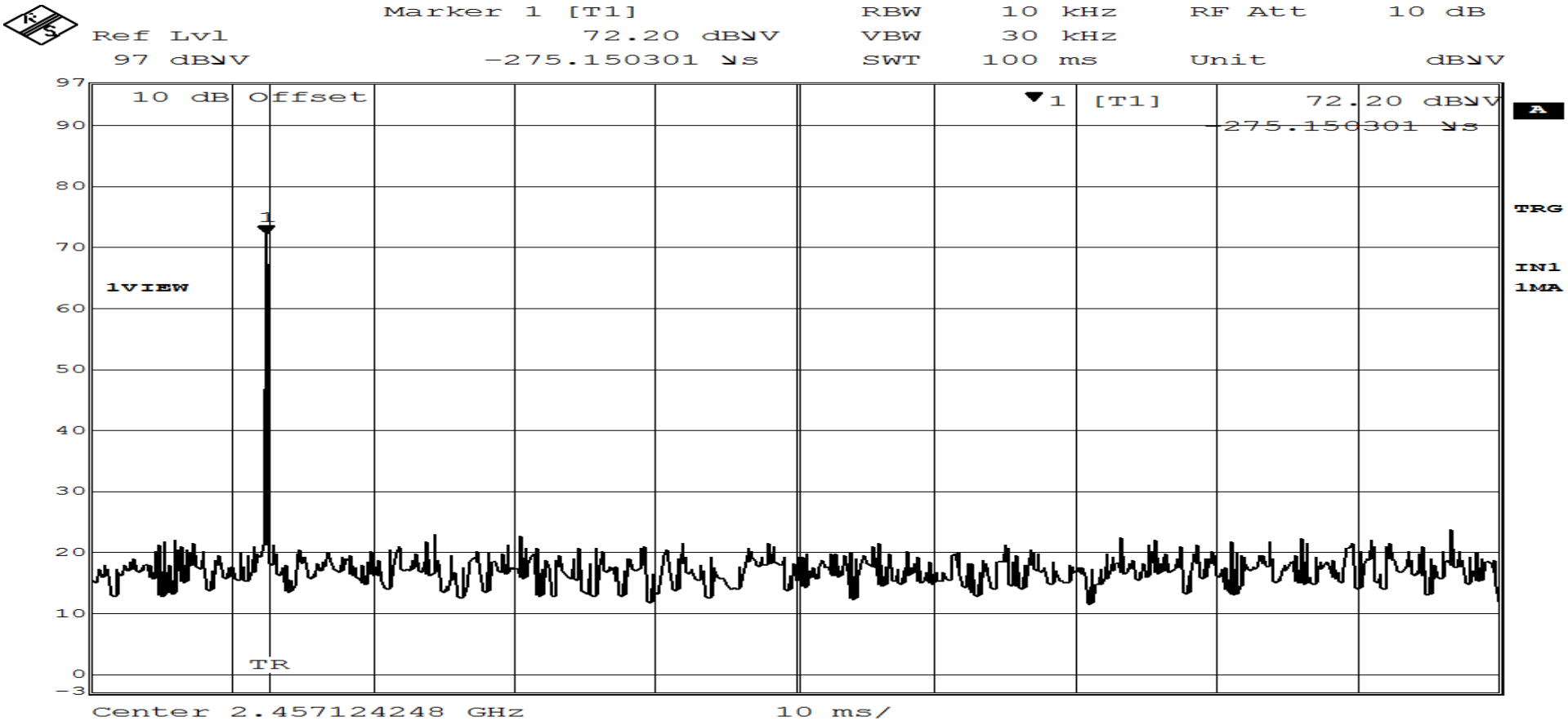
Test Method:	99% Bandwidth		
Customer	Dyno Pro, LLC	**Job No.**	R-5976N
Test Sample	Wireless Torque Meter		
Model Number	DYNO S1	**Serial No.**	070215
Operating Mode	Transmitting modulated signal at 2.4568 GHz		
Test Specification	RSS-Gen, 6.6		
Technician	M. Seamans	**Date**	July 1st, 2015
Climatic Conditions	Temp: 22.0 °C Relative Humidity: 48.0 %		
Notes	99% Bandwidth: 761.52 kHz		



1 of 1

RETLIF TESTING LABORATORIES

Test Method:	Transmitter Duty Cycle		
Customer	Dyno Pro, LLC	**Job No.**	R-5976N
Test Sample	Wireless Torque Meter		
Model Number	DYNO S1	**Serial No.**	070215
Operating Mode	Transmitting modulated signal at 2.4568 GHz		
Test Specification	FCC part 15.249 / RSS-210, Issue 8		
Technician	M. Seamans	**Date**	July 1st, 2015
Climatic Conditions	Temp: 22.0 °C Relative Humidity: 48.0 %		
Notes	Measured maximum transmit time: 197.963us		



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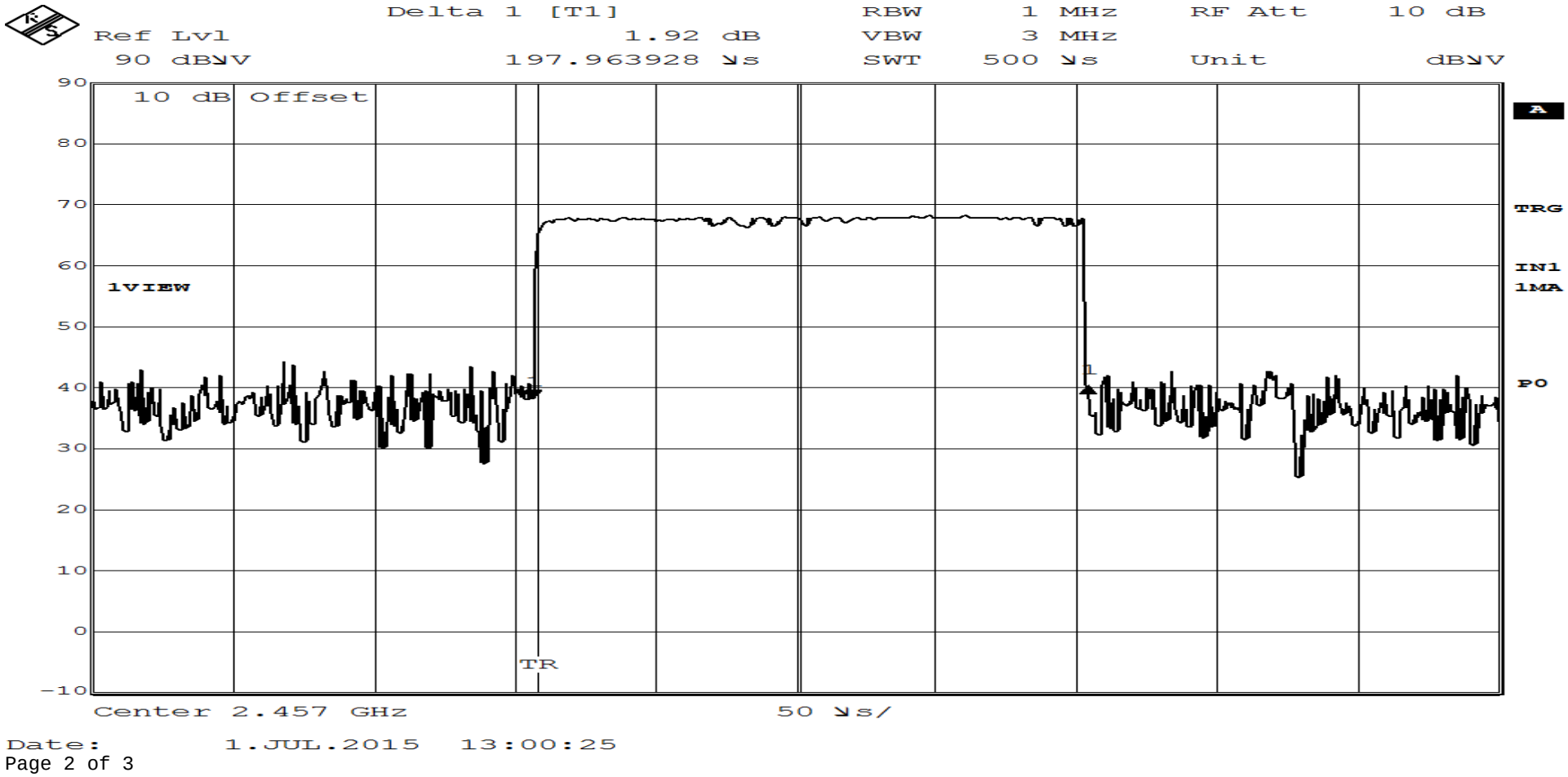
RETLIF TESTING LABORATORIES

Test Method:	Transmitter Duty Cycle		
Customer	Dyno Pro, LLC	**Job No.**	R-5976N
Test Sample	Wireless Torque Meter		
Model Number	DYNO S1	**Serial No.**	070215
Operating Mode	Transmitting modulated signal at 2.4568 GHz		
Test Specification	FCC part 15.249 / RSS-210, Issue 8		
Technician	M. Seamans	**Date**	July 1st, 2015
Climatic Conditions	Temp: 22.0 °C Relative Humidity: 48.0 %		
Notes	Measured maximum transmit time: 197.963us		



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RETLIF TESTING LABORATORIES

EMISSIONS TEST DATA SHEET	
Test Method	**Transmitter Duty Cycle**
Customer	Dyno Pro, LLC
Job Number	R-5976N
Test Sample	Wireless Torque Meter
Model Number	DYNO S1
Serial Number	070215
Test Specification	FCC part 15.249 / RSS-210, Issue 8
Operating Mode	Transmitting modulated signal at 2.4568 GHz
Technician	M. Seamans
Date	July 1st, 2015
Notes: Measured maximum transmit time: 197.963us	

TEST PARAMETERS

Measured on time	Measured time interval	Duty Cycle Factor Calculation	Result	Duty Cycle Factor Allowed
msec	**msec**		**dB**	**dB**
0.19796	100	= 20*Log_{10} (0.19796 ms/ 100 ms)	-54.068	-20

Data Sheet 3 of 3