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FCC Part 15, Subpart C, Section 15.231
Industry Canada, RSS-210 and RSS-GEN
Test Report

On

315 MHz Keyfob Transmitter
FCC ID: PQTDORM46
IC: 10735A-DORM46

Customer Name:	Dorman Products, Inc.
Customer P.O:	4200009184
Date of Report:	March 4, 2020
Test Report No:	R-3017P
Test Start Date:	February 27, 2019
Test Finish Date:	March 11, 2019
Test Technicians:	M. Nowak
Test Engineer:	A. Warwick
Approved By:	D. Rybicki
Report Prepared By:	P. Harris

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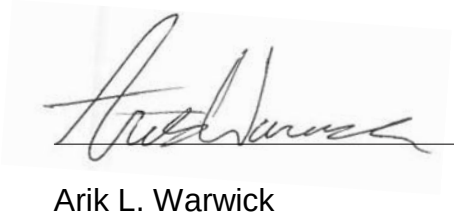
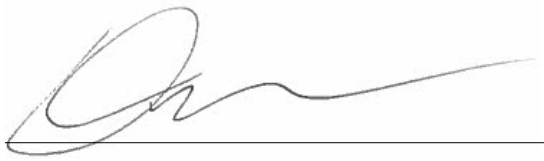
Certification and Signatures

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.



Arik L. Warwick
EMC Test Engineer



David M. Rybicki
Laboratory Supervisor

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 report must not be used by the client to claim product endorsement by ANSI National Accreditation Board (ANAB).

Revision History

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

Revision	Date	Pages Affected
-	March 4, 2020	Original Release

Technical Information

Report Number:	R-3017P
Customer:	Dorman Products, Inc.
Address:	3400 East Walnut Street
	Colmar, PA 18915
Manufacturer:	Dorman Products, Inc.
Manufacturer Address:	3400 East Walnut Street
	Colmar, PA 18915
Test Sample:	315 MHz Keyfob Transmitter
Model Numbers:	99105, 99106, 99107
FCC ID:	PQTDORM46
IC:	10735A-DORM46
Type:	Security / Remote Control Transmitter
Power Requirements:	3 VDC Derived from a CR2032 Battery
Frequency of Operation:	315 MHz
Equipment Class:	DSC
Equipment Use:	Portable < 2.5 cm

Test Specification:
FCC Rules and Regulations Part 15, Subpart C, Section 15.231
Radio Standards Specification, RSS-210, Issue 9, August, 2016

Test Procedure:
ANSI C63.10:2013
RSS-GEN, Issue 5, April 2018

Test Site:
ANSI C63.4:2014

Test Facility:
Retlif Testing Laboratories
3131 Detwiler Road
Harleysville, PA 19438

FCC Accreditation Designation Number: US2321
ISED Test Site Registration Number: 2047B

Tests Performed

The test methods performed on the 315 MHz Keyfob Transmitter are shown below:

FCC Part 15, Subpart C	Industry Canada RSS-210	Industry Canada RSS-GEN	Test Method	Test Results
15.231(b)	A1.1.2(1)	N/A	Field Strength of Emissions	Complied
15.231(b)(2)	A1.1.2(2)	4.5	Duty Cycle Determination	Complied
15.231(b)(3)	A1.1.2(3)	N/A	Field Strength of Spurious Emissions	Complied
15.231(c)	A1.1.3	N/A	Bandwidth of Emission	Complied

All test methods listed above are included in Retlif Testing Laboratories ANSI National Accreditation Board (ANAB), ISO/IEC 17025 Scope of Accreditation.

General Test Requirements

1. The measurement procedures of ANSI C63.10:2013 were utilized as specified in FCC Part 15, Subpart C, Section 15.31(a)(3) and IC RSS-GEN Section 4.1.
2. All radiated emissions measurements were performed on an Open Area Test Site (OATS), listed with the FCC and IC, in accordance with FCC Section 15.31(d) and IC Section 4.2.
3. The level of the fundamental field strength was recorded with a new battery installed in the EUT, in accordance with FCC Section 15.231(e) and IC Section 4.3(e).
4. All measurements were performed at the specified 3 meter test distance as required by FCC Section 15.31(f) and IC Section 7.25.
5. The EUT was rotated throughout 360 degrees for all radiated emissions measurements as specified in FCC Section 15.31(f)(5) and IC Section 4.3(h).
6. All readily accessible EUT controls were adjusted in such a manner as to maximize the level of emissions in accordance with FCC Section 15.31(g) and IC Section 4.3(h).
7. Appropriate accessories were attached to all EUT ports during the performance of radiated emissions measurements as required by FCC Section 15.31(i) and IC Section 4.3(d).
8. The EUT operated at the frequency of 315 MHz and was tested at that frequency in accordance with FCC Section 15.31(m) and IC Section 4.3(f)(g).
9. The frequency spectrum was investigated from the lowest frequency generated in the device up to the 10^{th} harmonic of the highest fundamental frequency in accordance with FCC Section 15.33(a)(1) and IC Section 4.9.
10. All measurements were taken with a peak detector function as specified in FCC Section 15.35(a) and IC Section 4.4. The duty cycle, calculated in accordance with FCC Section 15.35(c) and IC Section 4.5, was applied to the peak readings in order to obtain the average value of emissions. The peak value of emissions was verified to meet the 20 dB requirement of FCC Section 15.35(b) and IC Section 7.2.1.

Requirements and Test Results

Requirement:
FCC Section 15.231(a) - Periodic operation in the band 40.66 - 40.7 MHz and above 70 MHz
The provisions of this Section are restricted to periodic operation within the band 40.66-40.7 MHz and above 70 MHz. Except as shown in Paragraph (e) of this Section, the intentional radiator is restricted to the transmissions of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal.

IC RSS-210, A1.1 - Momentarily Operated Devices
The frequency bands and field strength limits in Tables 4 and 5 are only for the transmission of a control signal such as that used with alarm systems, door openers, remote switches, etc. Radio control of toys or model aircrafts, and continuous transmissions such as voice or video are not permitted except as provided in A1.1.5. Data is permitted to be sent with a control signal.

- Results:
  The device was operated at a frequency of 315 MHz and is for the transmission of a control signal used with remote switches. Data is sent with the control signal.

Requirement:
FCC Sections 15.231(a)(1)-(5) - Periodic operation in the band 40.66 - 40.7 MHz and above 70 MHz
The following conditions were met in order to comply with the provisions for momentary operation:

IC RSS-210, A1.1.1(a)-(d) - Types of Momentary Signals
The following conditions were met in order to comply with the provisions for momentary operation:

FCC 15.231(a)(1): A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

IC A1.1.1(a): A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds of operation).

- Results:
  The device is a manually operated, push to operate transmitter under manual control. The device ceased transmission within 5 seconds of deactivation. This was verified by a spectrum analyzer and manual deactivation of the transmitter in accordance with C63.10, 2013, Paragraph 7.4.

FCC 15.231(a)(2): A transmitter activated automatically shall cease transmission within 5 seconds after activation.

IC A1.1.1(b): A transmitter activated automatically shall cease transmission with 5 seconds after activation, (i.e. maximum 5 seconds of operation).

- Results:
  Transmission is not automatically activated.

FCC 15.231(a)(3): Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

IC A1.1.1(c): Periodic transmissions at regular predetermined intervals are not permitted, except as provided in A1.1.5. However, polling or supervision transmissions, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed 2 seconds per hour for each transmitter.

- Results:
  The transmitter does not perform periodic transmissions.

FCC 15.231(a)(4): Intentional radiators which are employed for radio control purposes during emergencies involving fire, security and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

IC A1.1.1(d): Intentional radiators employed for radio control purposes during emergencies involving fire, security of goods (e.g. burglar alarms), and safety-of-life, when activated to signal an alarm, may operate during the interval of the alarm condition.

- Results:
  This device is not employed for radio control purposes during emergencies involving fire, security and safety for life.

FCC 15.231(a)(5): Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

- Results:
  The device is not employed for security systems.

Requirement:

FCC Section 15.231(b) - Field Strength of Emissions

In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the limits specified in Table 1.

IC RSS-210, A1.1.2(1) - Field Strengths and Frequency Bands

The field strength of emissions from momentarily operated intentional radiators shall not exceed the limits specified in Table 1:

Table 1 - Test Limits, Field Strength of Emissions

Fundamental Frequency (MHz)	Field Strength of Fundamental microvolts/meter @3 meters (watts, e.i.r.p.) Average	Field Strength of Spurious Emissions microvolts/meter @3 meters Average
40.66 to 40.70	2,250	225
70 to 130	1,250 (470 nW)	125
130 to 174	1,250 to 3,750**	125 to 375**
174 to 260	3,750 (4.2 µW)	375
260 to 470	3,750 to 12,500**	375 to 1,250**
Above 470	12,500 (47 µW)	1,250

**Linear Interpolations
For 130-174 MHz: FS (microvolts/m) = (56.82 x F) - 6,136
For 260-470 MHz: FS (microvolts/m) = (41.67 x F) - 7,083
The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

The Fundamental and Harmonic Emissions limits for a device operating at 315 MHz are listed in Table 2.

Table 2 - Fundamental and Harmonic Limits

Frequency of Operation (MHz)	Fundamental (µV/m)		Harmonics (µV/m)	
	Average	Peak	Average	Peak
315	6,041.8	60,418	604.1	6041.8

- Results:
  The Fundamental and Harmonics field strengths did not exceed the limits specified in Table 2 at a test distance of 3 meters. See Table 3 for the Fundamental and Harmonic emissions test results.

Table 3 - Fundamental and Harmonics Test Results

Fundamental Frequency (MHz)	Maximum Fundamental µV/m		Maximum Harmonics µV/m	
	Average	Peak	Average	Peak
315	4,502.98	9,772.38	106.79	231.74

Requirement:

FCC Section 15.231(b)(2) - Duty Cycle Determination-Pulsed Operation

Intentional radiators operating under the provisions of the Section shall demonstrate compliance with the limits on the field strength emissions, as shown in Table 1, based on the average value of the measured emissions. As an alternative, compliance with the limits in the Table 1 may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified int eh application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that Section.

IC RSS-GEN, Paragraph 4.5, 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 directly 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 plots for additional information).

- Results:
  The emissions did not exceed the limits specified in Table 1. See below for the exact method of calculating the average field strength.

Transmitter On Time = 14.94 milliseconds (maximum per cycle)

Transmitter Cycle Time = 32.40 milliseconds (100 ms maximum)

Transmitter Duty Cycle = 46.1 %

CALCULATION

1 pulse of 0.136 msec = 0.136 milliseconds

106 pulses of 0.108 msec = 11.448 milliseconds

15 pulses of 0.224 msec = 3.360 milliseconds

0.136 + 11.448 + 3.360 = 14.944 milliseconds

Duty Cycle (14.94/32.4) = 46.10 %

Correction Factor =20 log (0.4610) = -6.73 dB

Requirement:
FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions
The limits on the field strength of the spurious emissions specified in Table 1 are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in Table 1 or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions
The limits on the field strength of unwanted emissions in Table 4 of RSS-210 are based on the fundamental frequency of the intentional radiator. Unwanted emissions shall be attenuated to the limits shown in Table 2 of RSS-210 or to the limits shown in Table 4 of RSS-210, whichever is less stringent.

- Results:
  No spurious emissions were observed within 20 dB of the specified limit.

Requirement:
FCC Section 15.231(c) - Bandwidth of Emissions
The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals
For the purpose of Section A1.1, the 99% bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

- Results:
  The bandwidth was measured and found to be 40 kHz, 20 dB of the center frequency.

  The bandwidth was measured and found to be 84.17 kHz, 99% of the center frequency.

Requirement:

FCC Section 15.109(a) - Receiver Radiated Emissions

Except for Class A digital devices, the field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the values shown in Table 4.

IC RSS-GEN, 7.2.3 - Receiver Spurious Emission Limits

Receiver spurious emissions at any discrete frequency shall not exceed 2 nanowatts in the band 30-1000 MHz, or 5 nanowatts above 1 GHz. All spurious emissions shall comply with the limits specified in Table 4.

Table 4 - Radiated Emission Limits

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

- Results:
  The spurious emissions observed did not exceed the limits specified in Table 4.

General Requirements FCC and IC

Spectrum Analyzer Desensitization Considerations

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements. The following formula was utilized:

minimum bandwidth = 1/[minimum pulse width (in seconds) x 1.5] = Hz

Setting pulse desensitization equal to zero and utilizing the minimum observed pulse width of 108 µs yields a minimum required bandwidth of 6172.84 Hz. FCC specified bandwidths of 100 kHz and 1 MHz were utilized below and above 1GHz, respectively.

Open Area Test Site

For testing radiated measurements from 1 GHz to 40 GHz, a test site must satisfy either option in Section 5.5 of ANSI C63.4:2014.

First Option: Section 5.5.1 a) 1) of ANSI C63.4:2014, requires compliance with the site validation criterion called out in CISPR 16-1-4: 2010-04, which is the site validation by means of SVSWR measurements.

Second Option: Section 5.5.1 a) 2) of ANSI C63.4:2014, alternative site validation without SVSWR measurements – test site shall have a minimum area of the ground plane covered with RF absorbing material as specified in this clause and as shown in Figure 6 of ANSI C63.4:2014.

The Open Area Test Site used within this test program utilized the second option, with the RF Absorber placed directly on the ground plane. The RF Absorber had a maximum thickness of 30 cm and a minimum rated attenuation of 20 dB at all frequencies from 1 GHz to 18 GHz.

Equipment Lists

FCC Section 15.231(b) - Field Strength of Emissions
IC RSS-210, A1.1.2(1) - Field Strength and Frequency Bands

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
8016	ETS / EMCO	ANTENNA, LOG PERIODIC	200 MHz - 1 GHz	3146	2/7/2018	8/31/2019
8017	ETS / EMCO	ANTENNA, DOUBLE RIDGED GUIDE	1 - 18 GHz	3115	9/26/2017	3/31/2019
8300	RETLIF	OPEN AREA TEST SITE, ATTENUATION	3/10 Meter OATS	RPA	3/28/2018	3/31/2020
8300C	UNKNOWN	CABLE, COAXIAL	3/10 METER	3 METER CABLE	10/30/2018	10/31/2019
8317	AGILENT / HP	PRE-AMPLIFIER	1 - 26.5 GHz, 30 dB	8449B	5/16/2018	5/31/2019
8398	ETS / EMCO	ANTENNA, BICONICAL	20 - 200 MHz	3104C	2/13/2018	8/31/2019
8644	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 22 GHz	85662A	9/18/2018	9/30/2019
8644A	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 22.5 GHz	8566B	9/18/2018	9/30/2019
8644B	AGILENT / HP	ANALYZER, RF PRESELECTOR	20 Hz - 2 GHz	85685A	9/28/2018	9/30/2019
8644C	AGILENT / HP	ANALYZER, QUASI-PEAK ADAPTOR	100 Hz - 22 GHz	85650A	9/24/2018	9/30/2019
8726	RETLIF	CABLE, COAXIAL	10 kHz - 18 GHz	3' TYPE N	5/2/2018	5/31/2019

FCC Section 15.231(b)(2) - Duty Cycle Determination - Pulsed Operation
IC RSS-210, A1.1.2(2), RSS-GEN, 4.5 - Pulsed Operation

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
7016	AGILENT / HP	ANALYZER, SPECTRUM	9 KHz - 1.8 GHz	8591EM	2/13/2019	2/29/2020
8388	TEKTRONIX	OSCILLOSCOPE	350 MHz	DPO 4032	7/10/2018	7/31/2019
8410A	ETS / EMCO	Field Probe, 6 cm Loop	790 MHz	7405-901	No Calibration Required	

FCC Section 15.231(b)(3) - Field Strength of Spurious Emissions
IC RSS-210, A1.1.2(3) - Field Strength of Unwanted Emissions

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
8016	ETS / EMCO	ANTENNA, LOG PERIODIC	200 MHz - 1 GHz	3146	2/7/2018	8/31/2019
8300	RETLIF	OPEN AREA TEST SITE, ATTENUATION	3/10 Meter OATS	RPA	3/28/2018	3/31/2020
8300C	UNKNOWN	CABLE, COAXIAL	3/10 METER	3 METER CABLE	10/30/2018	10/31/2019
8322	ETS / EMCO	ANTENNA, LOOP	10 KHz - 30 MHz	6512	4/18/2018	4/30/2020
8398	ETS / EMCO	ANTENNA, BICONICAL	20 - 200 MHz	3104C	2/13/2018	8/31/2019
8411	SONOMA INSTRUMENT	PRE-AMPLIFIER	9 KHz - 1 GHz	310N	9/14/2018	9/30/2019
8644	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 22 GHz	85662A	9/18/2018	9/30/2019
8644A	AGILENT / HP	ANALYZER, SPECTRUM	100 Hz - 22.5 GHz	8566B	9/18/2018	9/30/2019
8644B	AGILENT / HP	ANALYZER, RF PRESELECTOR	20 Hz - 2 GHz	85685A	9/28/2018	9/30/2019
8644C	AGILENT / HP	ANALYZER, QUASI-PEAK ADAPTOR	100 Hz - 22 GHz	85650A	9/24/2018	9/30/2019

FCC Section 15.231(c) - Bandwidth of Emission
IC RSS-210, A1.1.3 - Bandwidth of Momentary Signals

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
8410A	ETS / EMCO	Field Probe, 6 cm Loop	790 MHz	7405-901	No Calibration Required	
8575	RIGOL	ANALYZER, SPECTRUM	9 kHz - 1.5 GHz	DSA815-TG	1/30/2019	1/31/2020

99% Occupied Bandwidth

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
713	ROHDE & SCHWARZ	RECEIVER, EMI	20 Hz - 26.5 GHz	ESIB26	3/25/2019	3/31/2020
8410A	ETS / EMCO	Field Probe, 6 cm Loop	790 MHz	7405-901	No Calibration Required	

FCC Section 15.231(b) - Field Strength of Emissions
IC RSS-210, A1.1.2(1) - Field Strength and Frequency Bands
Test Data, Field Strength of Emissions

Test Method:	FCC Part 15 Subpart C, Field Strength of Emissions, Paragraph 15.231(b)		
	IC RSS-210, A1.1.2 (1) Field Strengths and Frequency Bands		
Customer:	Dorman Products, Inc	**Job No.:**	R-3017P
Test Sample:	315.00 MHz Remote Keyless Transmitter		
Model No.:	PQTDORM46		
Operating Mode:	Continuously Transmitting a RF Signal at 315 MHz		
Technician:	M. Nowak	**Date:**	03/08/2019 – 03/11/2019
Notes:	Detector: Peak, Unless otherwise specified	Test Distance: 3 Meters	

Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)/Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
315.00	V / 2.05	X / 274.3	60.8	17.1	77.9	7852.36	60418
315.00	V / 2.12	Y / 82.7	60.1	17.1	77.2	7244.36	|
315.00	V / 1.23	Z / 271.7	45.9	17.1	63.0	1412.54	|
315.00	H / 2.68	X / 11.2	54.6	17.1	71.7	3845.92	|
315.00	H / 2.79	Y / 328.3	55.7	17.1	72.8	4365.16	|
315.00	H / 1.00	Z / 19.1	62.7	17.1	79.8	9772.38	60418
630.00	V / 1.00	X / 80.5	6.5	23.4	29.9	31.27	6041
630.00	V / 1.00	Y / 232.2	7.6	23.4	31.0	35.49	|
630.00	V / 1.03	Z / 211.9	7.4	23.4	30.8	34.68	|
630.00	H / 1.70	X / 218.4	8.6	23.4	32.0	39.82	|
630.00	H / 1.68	Y / 242.2	7.4	23.4	30.8	34.68	|
630.00	H / 1.64	Z / 257.7	7.6	23.4	31.0	35.49	6041
945.00	V / 1.55	X / 205.7	15.4	27.8	43.2	144.55	6041
945.00	V / 1.91	Y / 149.7	10.0	27.8	37.8	77.63	|
945.00	V / 1.00	Z / 128.4	10.4	27.8	38.2	81.29	|
945.00	H / 1.68	X / 164.3	8.7	27.8	36.5	66.84	|
945.00	H / 2.10	Y / 348.8	18.4	27.8	46.2	204.18	|
945.00	H / 1.00	Z / 173.0	19.5	27.8	47.3	231.74	6041
1260.00	V / 1.12	X / 324.8	39.5	-1.7	37.8	77.63	6041
1260.00	V / 1.50	Y / 12.5	36.4	-1.7	34.7	54.33	|
*1260.00	V / 1.00	Z / 180.0	35.2	-1.7	33.5	47.32	|
1260.00	H / 1.00	X / 348.8	38.2	-1.7	36.5	66.84	|
1260.00	H / 1.00	Y / 172.6	39.3	-1.7	37.6	75.86	|
1260.00	H / 1.00	Z / 344.7	38.7	-1.7	37.0	70.80	6041
1575.00	V / 1.79	X / 10.7	44.1	-1.1	43.0	141.26	5000
1575.00	V / 1.28	Y / 166.9	39.8	-1.1	38.7	86.10	|
1575.00	V / 1.00	Z / 324.4	36.7	-1.1	35.6	60.26	|
1575.00	H / 1.79	X / 161.5	39.1	-1.1	38.0	79.44	|
1575.00	H / 1.46	Y / 192.2	44.8	-1.1	43.7	153.11	|
1575.00	H / 1.45	Z / 192.3	43.2	-1.1	42.1	127.36	5000

Test Method:	FCC Part 15 Subpart C, Field Strength of Emissions, Paragraph 15.231(b)		
	IC RSS-210, A1.1.2 (1) Field Strengths and Frequency Bands		
Customer:	Dorman Products, Inc	**Job No.:**	R-3017P
Test Sample:	315.00 MHz Remote Keyless Transmitter		
Model No.:	PQTDORM46		
Operating Mode:	Continuously Transmitting a RF Signal at 315 MHz		
Technician:	M. Nowak	**Date:**	03/08/2019 – 03/11/2019
Notes:	Detector: Peak, unless otherwise specified	Test Distance: 3 Meters	

Test Freq.	Antenna Pol./Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Peak Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV	dB	dBµV/m	uV/m	uV/m
1890.00	V / 1.72	X / 330.0	40.2	2.0	42.2	128.83	6041
1890.00	V / 1.60	Y / 33.4	41.6	2.0	43.6	151.36	|
*1890.00	V / 1.00	Z / 180.0	35.7	2.0	37.7	76.74	|
1890.00	H / 1.77	X / 351.6	43.7	2.0	45.7	192.76	|
1890.00	H / 1.68	Y / 342.0	40.0	2.0	42.0	125.90	|
1890.00	H / 1.69	Z / 125.1	41.1	2.0	43.1	142.89	6041
*2205.00	V / 1.00	X / 180.0	35.5	3.4	38.9	88.11	5000
*2205.00	V / 1.00	Y / 180.0	35.5	3.4	38.9	88.11	|
*2205.00	V / 1.00	Z / 180.0	35.5	3.4	38.9	88.11	|
*2205.00	H / 1.00	X / 180.0	35.5	3.4	38.9	88.11	|
*2205.00	H / 1.00	Y / 180.0	35.5	3.4	38.9	88.11	|
*2205.00	H / 1.00	Z / 180.0	35.5	3.4	38.9	88.11	5000
*2520.00	V / 1.00	X / 180.0	32.8	5.1	37.9	78.53	6041
*2520.00	V / 1.00	Y / 180.0	32.8	5.1	37.9	78.53	|
*2520.00	V / 1.00	Z / 180.0	32.8	5.1	37.9	78.53	|
*2520.00	H / 1.00	X / 180.0	32.8	5.1	37.9	78.53	|
*2520.00	H / 1.00	Y / 180.0	32.8	5.1	37.9	78.53	|
*2520.00	H / 1.00	Z / 180.0	32.8	5.1	37.9	78.53	6041
*2835.00	V / 1.00	X / 180.0	33.0	6.5	39.5	94.41	5000
*2835.00	V / 1.00	Y / 180.0	33.0	6.5	39.5	94.41	|
*2835.00	V / 1.00	Z / 180.0	33.0	6.5	39.5	94.41	|
*2835.00	H / 1.00	X / 180.0	33.0	6.5	39.5	94.41	|
*2835.00	H / 1.00	Y / 180.0	33.0	6.5	39.5	94.41	|
*2835.00	H / 1.00	Z / 180.0	33.0	6.5	39.5	94.41	5000
*3150.00	V / 1.00	X / 180.0	33.1	9.3	42.4	131.83	6041
*3150.00	V / 1.00	Y / 180.0	33.1	9.3	42.4	131.83	|
*3150.00	V / 1.00	Z / 180.0	33.1	9.3	42.4	131.83	|
*3150.00	H / 1.00	X / 180.0	33.1	9.3	42.4	131.83	|
*3150.00	H / 1.00	Y / 180.0	33.1	9.3	42.4	131.83	|
*3150.00	H / 1.00	Z / 180.0	33.1	9.3	42.4	131.83	6041

The frequency range was scanned from 30 MHz to 3.2 GHz.
Emissions from the EUT do not exceed the specified limits.
*Noise floor measurement, minimum sensitivity of measurement system.

Test Method:	FCC Part 15 Subpart C, Field Strength of Emissions, Paragraph 15.231(b)		
	IC RSS-210, A1.1.2 (1) Field Strengths and Frequency Bands		
Customer:	Dorman Products, Inc	**Job No.:**	R-3017P
Test Sample:	315.00 MHz Remote Keyless Transmitter		
Model No.:	PQTDORM46		
Operating Mode:	Continuously Transmitting a RF Signal at 315 MHz		
Technician:	M. Nowak	**Date:**	03/08/2019 – 03/11/2019

Notes: Average values calculated from Peak readings Duty Cycle: 46.1% Correction -6.73 dB

Test Freq.	Antenna Pol./Height	EUT Orientation	Peak Reading	Duty Cycle Correction	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV/m	dB	dBµV/m	uV/m	uV/m
315.00	V / 2.05	X / 274.3	77.9	-6.73	71.17	3618.27	6041
315.00	V / 2.12	Y / 82.7	77.2	-6.73	70.47	3338.11	|
315.00	V / 1.23	Z / 271.7	63.0	-6.73	56.27	650.88	|
315.00	H / 2.68	X / 11.2	71.7	-6.73	64.97	1772.15	|
315.00	H / 2.79	Y / 328.3	72.8	-6.73	66.07	2011.41	|
315.00	H / 1.00	Z / 19.1	79.8	-6.73	73.07	4502.98	6041
630.00	V / 1.00	X / 80.5	29.9	-6.73	23.17	14.41	604.1
630.00	V / 1.00	Y / 232.2	31.0	-6.73	24.27	16.35	|
630.00	V / 1.03	Z / 211.9	30.8	-6.73	24.07	15.98	|
630.00	H / 1.70	X / 218.4	32.0	-6.73	25.27	18.35	|
630.00	H / 1.68	Y / 242.2	30.8	-6.73	24.07	15.98	|
630.00	H / 1.64	Z / 257.7	31.0	-6.73	24.27	16.35	604.1
945.00	V / 1.55	X / 205.7	43.2	-6.73	36.47	66.61	604.1
945.00	V / 1.91	Y / 149.7	37.8	-6.73	31.07	35.77	|
945.00	V / 1.00	Z / 128.4	38.2	-6.73	31.47	37.46	|
945.00	H / 1.68	X / 164.3	36.5	-6.73	29.77	30.80	|
945.00	H / 2.10	Y / 348.8	46.2	-6.73	39.47	94.09	|
945.00	H / 1.00	Z / 173.0	47.3	-6.73	40.57	106.79	604.1
1260.00	V / 1.12	X / 324.8	37.8	-6.73	31.07	35.77	604.1
1260.00	V / 1.50	Y / 12.5	34.7	-6.73	27.97	25.04	|
*1260.00	V / 1.00	Z / 180.0	33.5	-	33.50	47.32	|
1260.00	H / 1.00	X / 348.8	36.5	-6.73	29.77	30.80	|
1260.00	H / 1.00	Y / 172.6	37.6	-6.73	30.87	34.96	|
1260.00	H / 1.00	Z / 344.7	37.0	-6.73	30.27	32.63	604.1
1575.00	V / 1.79	X / 10.7	43.0	-6.73	36.27	65.09	500
1575.00	V / 1.28	Y / 166.9	38.7	-6.73	31.97	39.68	|
1575.00	V / 1.00	Z / 324.4	35.6	-6.73	28.87	27.77	|
1575.00	H / 1.79	X / 161.5	38.0	-6.73	31.27	36.61	|
1575.00	H / 1.46	Y / 192.2	43.7	-6.73	36.97	70.56	|
1575.00	H / 1.45	Z / 192.3	42.1	-6.73	35.37	58.69	500

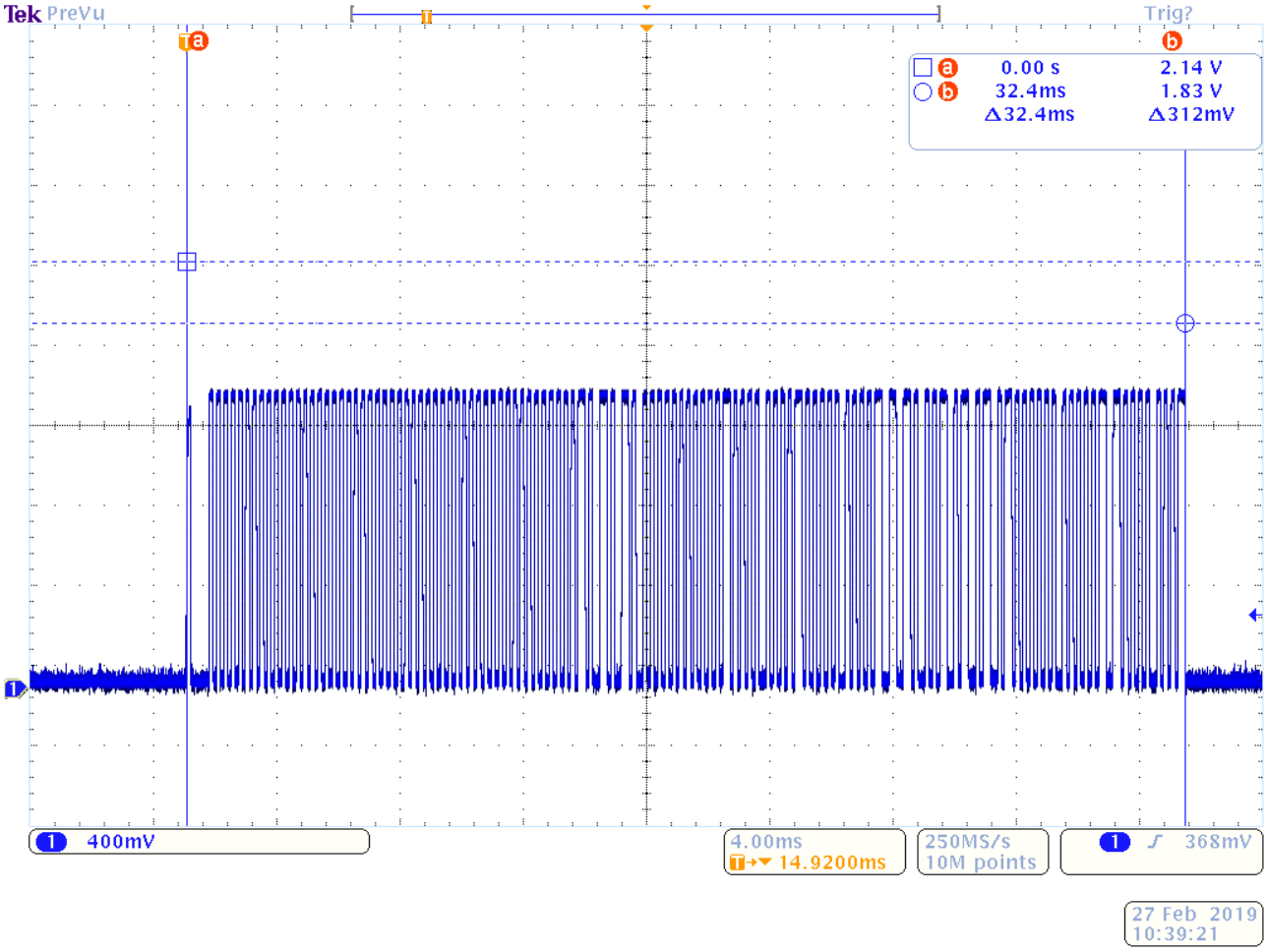
Test Method:	FCC Part 15 Subpart C, Field Strength of Emissions, Paragraph 15.231(b)		
	IC RSS-210, A1.1.2 (1) Field Strengths and Frequency Bands		
Customer:	Dorman Products, Inc	**Job No.:**	R-3017P
Test Sample:	315.00 MHz Remote Keyless Transmitter		
Model No.:	PQTDORM46		
Operating Mode:	Continuously Transmitting a RF Signal at 315 MHz		
Technician:	M. Nowak	**Date:**	03/08/2019 – 03/11/2019

Notes: Average values calculated from Peak readings Duty Cycle: 46.1% Correction -6.73 dB

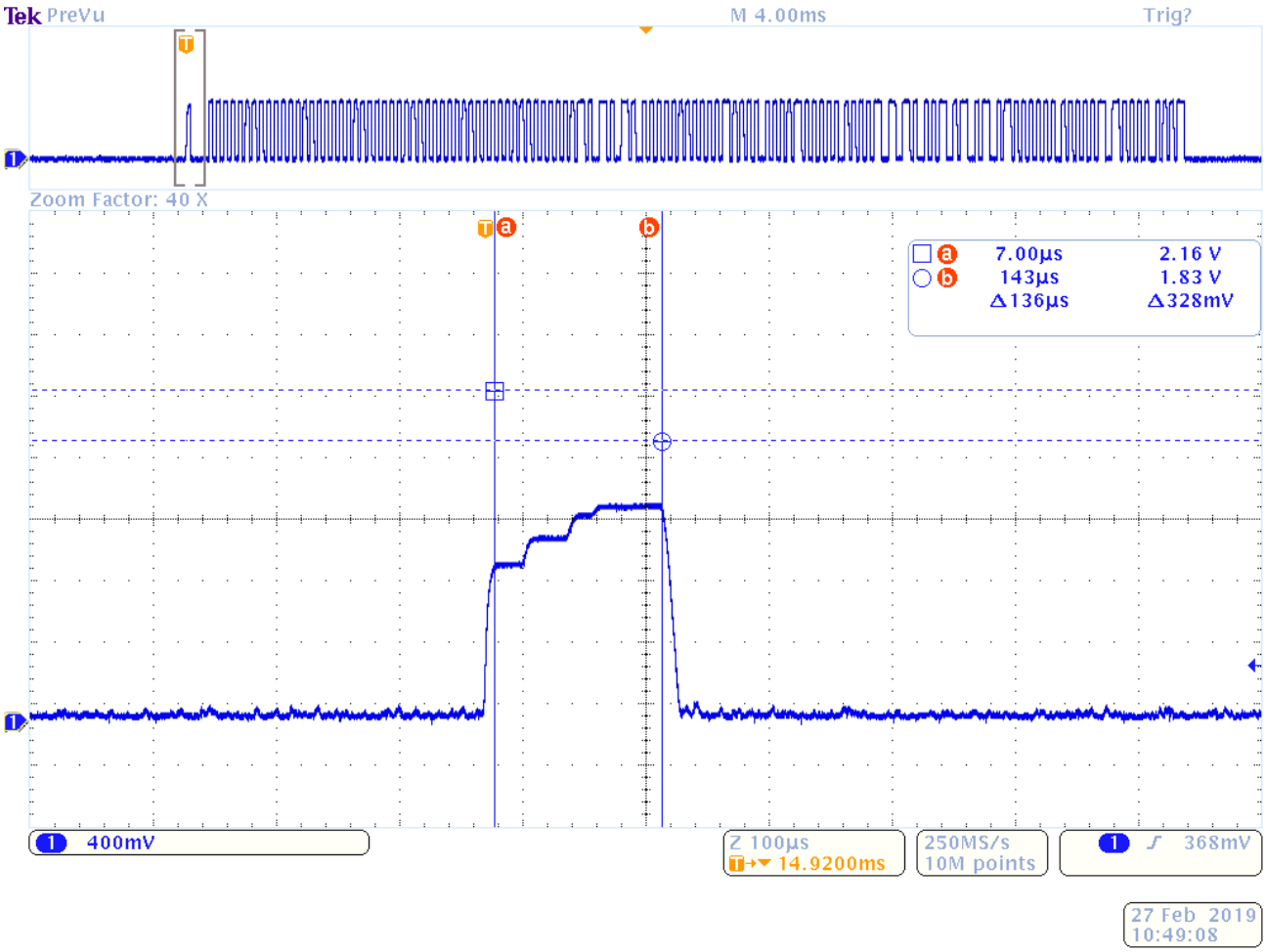
Test Freq.	Antenna Pol./Height	EUT Orientation	Peak Reading	Duty Cycle Correction	Corrected Reading	Converted Reading	Avg. Limit
MHz	(V/H)-Meters	X / Y / Z	dBµV/m	dB	dBµV/m	uV/m	uV/m
1890.00	V / 1.72	X / 330.0	42.2	-6.73	35.47	59.37	604.1
1890.00	V / 1.60	Y / 33.4	43.6	-6.73	36.87	69.75	|
*1890.00	V / 1.00	Z / 180.0	37.7	-	37.70	76.74	|
1890.00	H / 1.77	X / 351.6	45.7	-6.73	38.97	88.82	|
1890.00	H / 1.68	Y / 342.0	42.0	-6.73	35.27	58.01	|
1890.00	H / 1.69	Z / 125.1	43.1	-6.73	36.37	65.85	604.1
*2205.00	V / 1.00	X / 180.0	38.9	-	38.9	88.11	500
*2205.00	V / 1.00	Y / 180.0	38.9	-	38.9	88.11	|
*2205.00	V / 1.00	Z / 180.0	38.9	-	38.9	88.11	|
*2205.00	H / 1.00	X / 180.0	38.9	-	38.9	88.11	|
*2205.00	H / 1.00	Y / 180.0	38.9	-	38.9	88.11	|
*2205.00	H / 1.00	Z / 180.0	38.9	-	38.9	88.11	500
*2520.00	V / 1.00	X / 180.0	37.9	-	37.9	78.53	604.1
*2520.00	V / 1.00	Y / 180.0	37.9	-	37.9	78.53	|
*2520.00	V / 1.00	Z / 180.0	37.9	-	37.9	78.53	|
*2520.00	H / 1.00	X / 180.0	37.9	-	37.9	78.53	|
*2520.00	H / 1.00	Y / 180.0	37.9	-	37.9	78.53	|
*2520.00	H / 1.00	Z / 180.0	37.9	-	37.9	78.53	604.1
*2835.00	V / 1.00	X / 180.0	39.5	-	39.5	94.41	500
*2835.00	V / 1.00	Y / 180.0	39.5	-	39.5	94.41	|
*2835.00	V / 1.00	Z / 180.0	39.5	-	39.5	94.41	|
*2835.00	H / 1.00	X / 180.0	39.5	-	39.5	94.41	|
*2835.00	H / 1.00	V / 180.0	39.5	-	39.5	94.41	|
*2835.00	H / 1.00	Z / 180.0	39.5	-	39.5	94.41	500
*3150.00	V / 1.00	X / 180.0	42.4	-	42.4	131.83	604.1
*3150.00	V / 1.00	Y / 180.0	42.4	-	42.4	131.83	|
*3150.00	V / 1.00	Z / 180.0	42.4	-	42.4	131.83	|
*3150.00	H / 1.00	X / 180.0	42.4	-	42.4	131.83	|
*3150.00	H / 1.00	Y / 180.0	42.4	-	42.4	131.83	|
*3150.00	H / 1.58	Z / 131.5	42.4	-	42.4	131.83	604.1

The frequency range was scanned from 30 MHz to 3.2 GHz.
Emissions from the EUT do not exceed the specified limits.
*Noise floor measurement, minimum sensitivity of measurement system.

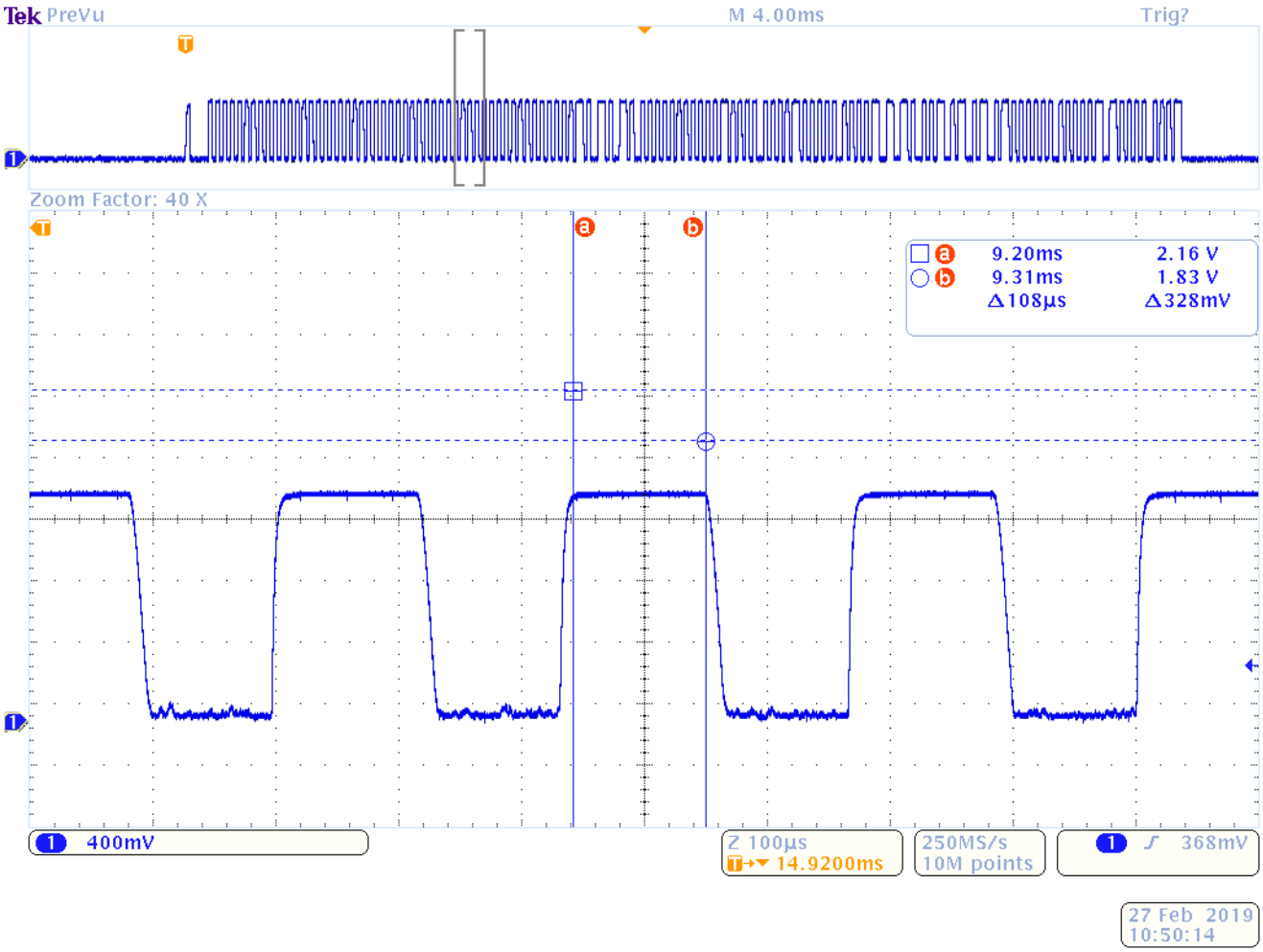
FCC Part 15, Subpart C, Section 15.231(b), Duty Cycle Determination
IC RSS-210 A1.1.2(2), Pulsed Operation
Test Data, Duty Cycle Determination



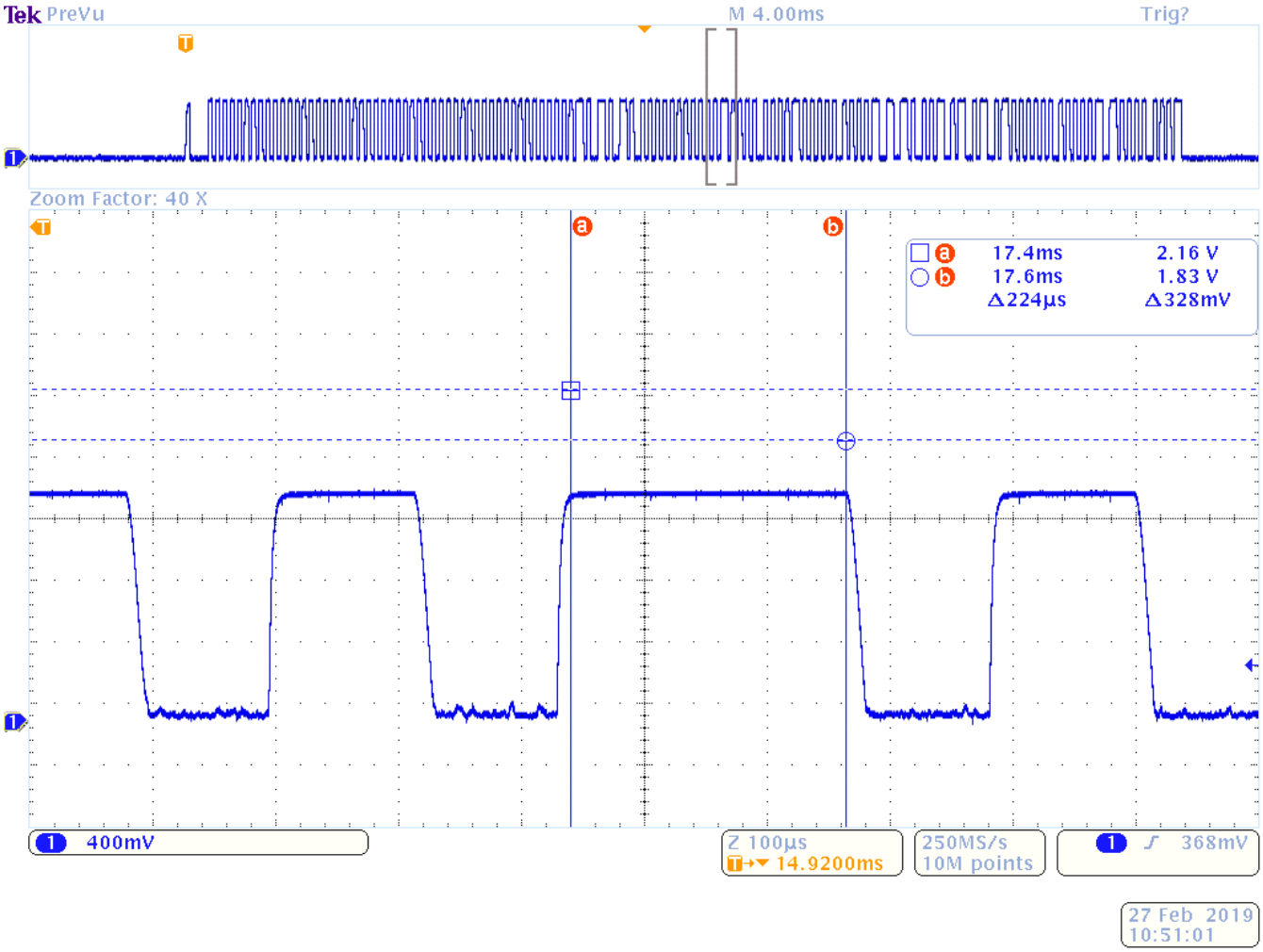
Test Method: **FCC Part 15.231(b)(2), Duty Cycle Determination**
Notes: Measurement of cycle time = 32.4 ms



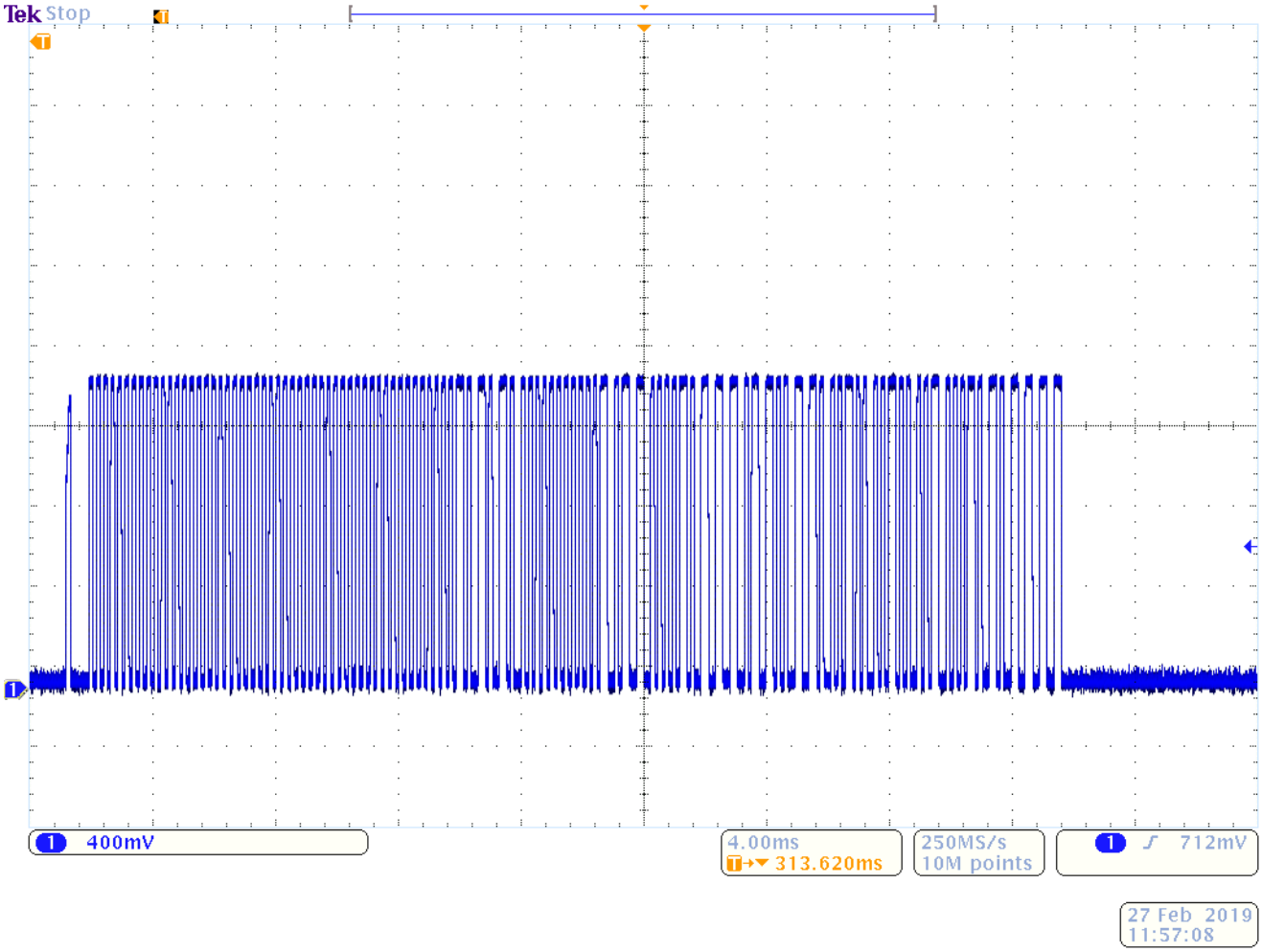
Test Method: **FCC Part 15.231(b)(2), Duty Cycle Determination IC RSS-210 A1.1.2(2) Pulsed Operation**
Notes: Pulse width 1 = 0.136 ms



Test Method: **FCC Part 15.231(b)(2), Duty Cycle Determination IC RSS-210 A1.1.2(2) Pulsed Operation**
Notes: Pulse width 2 = 0.108 ms



Test Method: **FCC Part 15.231(b)(2), Duty Cycle Determination IC RSS-210 A1.1.2(2) Pulsed Operation**
Notes: Pulse width 3 = 0.224 ms



Test Method: **FCC Part 15.231(b)(2), Duty Cycle Determination IC RSS-210 A1.1.2(2) Pulsed Operation**
Notes: Number of Pulses = 1 @ 0.136 ms; 106 @ 0.108 ms; 15 @ 0.224 ms
Averaging Interval = 32.4 ms; Duty Cycle = 46.1%

FCC Part 15, Subpart C, Section 15.231(b), Field Strength of Spurious Emissions
IC RSS-210 A1.1.2 (3), Field Strength of Unwanted Emissions
Test Data, Field Strength of Spurious Emissions

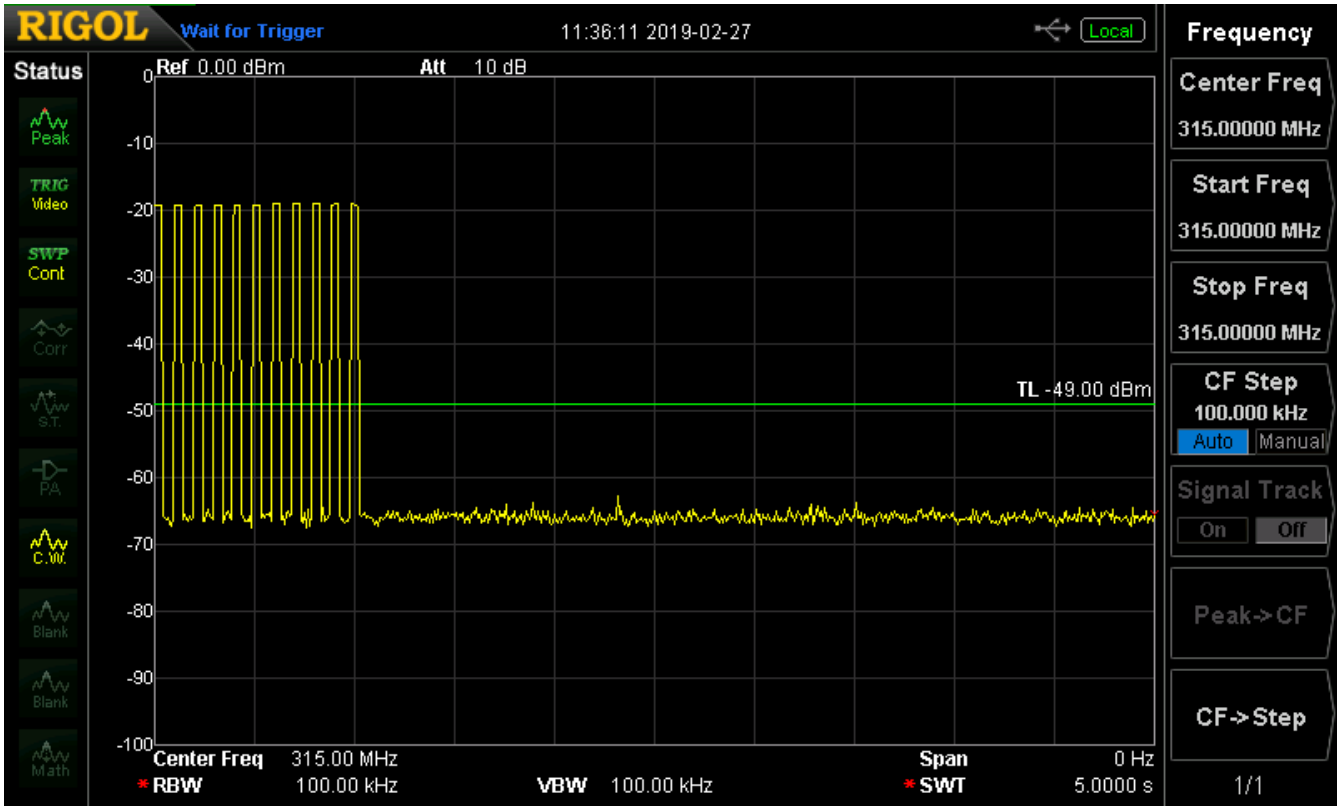
Test Method:	**FCC Part 15 Subpart C, Field Strength of Spurious Emissions, Section 15.231(b).**		
	IC RSS-210, A1.1.2 (3) Field Strength of Unwanted Emissions		
Customer:	Dorman Products, Inc	**Job No.:**	R-3017P
Test Sample:	315.00 MHz Remote Keyless Transmitter		
Model No.:	PQTDORM46		
Operating Mode:	Continuously Transmitting an RF Signal at 315.00 MHz		
Technician:	M. Nowak	**Date:**	03/08/19

Notes: Test Distance: 3 Meters, Detector: Quasi-Peak from 30 MHz to 1 GHz

Transmit Frequency	Test Frequency	Antenna Pol /Height	EUT Orientation	Meter Reading	Correction Factor	Corrected Reading	Converted Reading	Limit At 3 Meters
MHz	MHz	(V/H) / (m)	Degrees	dBuV	dB	dBuV/m	uV/m	uV/m
315.00	30.00	-	-	-	-	-	-	100.00
|	|	-	-	-	-	-	-	|
|	*36.00	H / 1.00	180.0	8.2	12.0	20.2	10.24	|
|	|	-	-	-	-	-	-	|
|	88.00	-	-	-	-	-	-	100.00
|	88.00	-	-	-	-	-	-	150.00
|	|	-	-	-	-	-	-	|
|	*110.00	H / 1.00	180.0	6.9	13.9	20.8	10.97	|
|	|	-	-	-	-	-	-	|
|	*195.00	H / 1.00	180.0	3.5	19.9	23.4	14.8	|
|	|	-	-	-	-	-	-	|
|	*215.00	H / 1.00	180.0	3.1	13.1	16.2	6.46	|
|	|	-	-	-	-	-	-	|
|	216.00	-	-	-	-	-	-	150.00
|	216.00	-	-	-	-	-	-	200.00
|	|	-	-	-	-	-	-	|
|	*605.00	H / 1.00	180.0	3.3	22.6	25.9	19.73	|
|	|	-	-	-	-	-	-	|
|	960.00	-	-	-	-	-	-	200.00
|	960.00	-	-	-	-	-	-	500.00
|	|	-	-	-	-	-	-	|
|	*995.00	H / 1.00	180.0	-2.2	29.6	27.4	23.45	|
|	|	-	-	-	-	-	-	|
315.00	1000.00	-	-	-	-	-	-	500.00

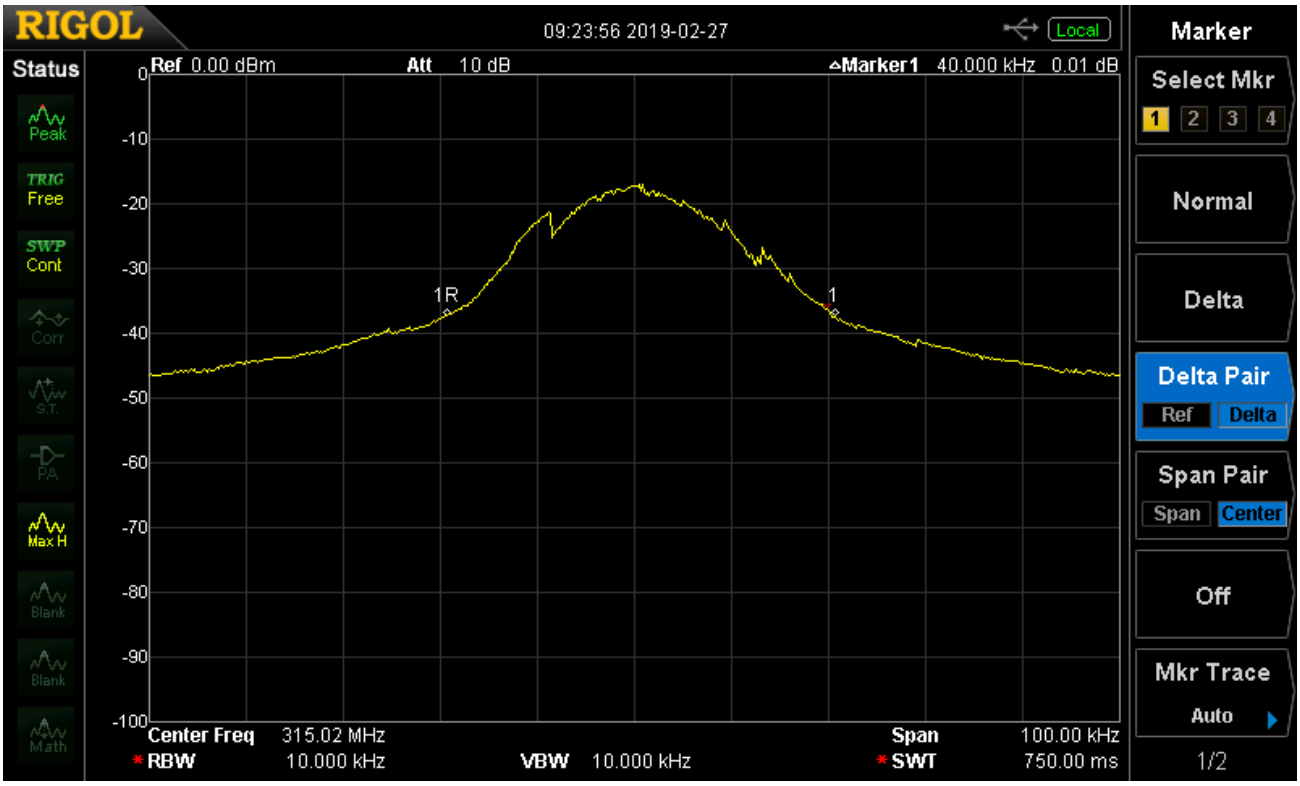
The frequency range was scanned from 9 kHz to 1.0 GHz.
The emissions observed from the EUT do not exceed the specified limits.
The six highest readings relative to the limit are presented.
*Noise Floor Measurements, minimum sensitivity of the measurement system.

FCC Part 15, Subpart C, Section 15.231(a)(1), Timing Requirements
IC RSS-210 A1.1.1(a), Types Of Momentary Signals
Test Data, Timing Requirements

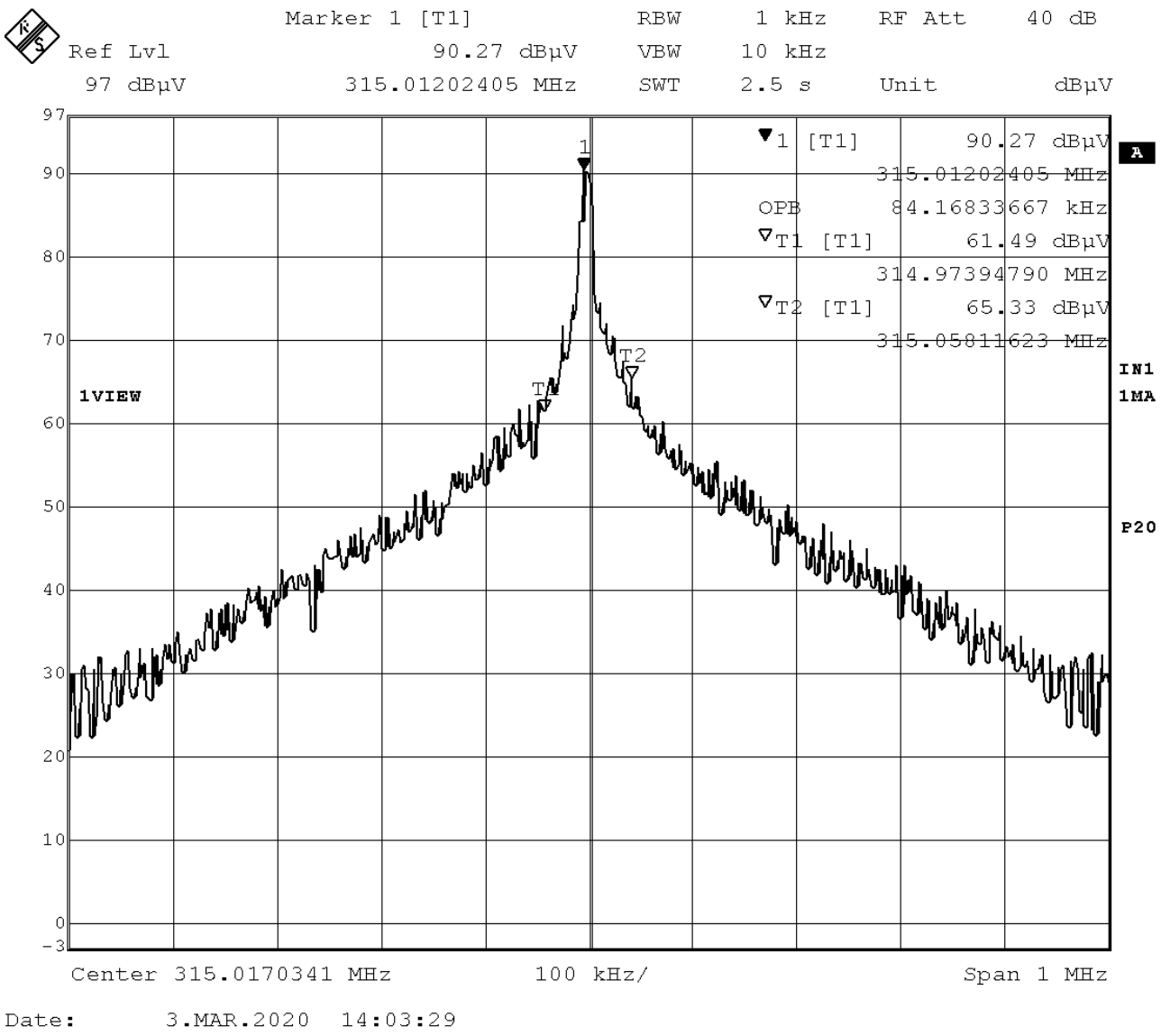


Test Method: **FCC Part 15.231(a)(1), Transmitter Deactivation Time**
Notes: The transmitter was verified to cease transmitting within 5 seconds of manual deactivation.

FCC Part 15, Subpart C, Section 15.231 (c), Bandwidth of Emission
IC RSS-210, A1.1.3, Bandwidth of Momentary Signals
Test Data, Bandwidth of Emission



20 dB Bandwidth, 40.00 kHz



99 % Bandwidth, 84.17 kHz