Engineering Test Report No. 2402626-02 Rev. A		
Report Date	April 21, 2025	
Manufacturer Name	The Chamberlain Group LLC	
Manufacturer Address	300 Windsor Dr Oak Brook, IL 60523	
Test Item Name Model No.	Universal Keypad 900-15649-1/014D15649 Rev C	
Date Received	March 17, 2025	
Test Dates	March 17 – 28, 2025	
Specifications	FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231(b) Innovation, Science, and Economic Development Canada, RSS-210 Innovation, Science, and Economic Development Canada, RSS-GEN	
Test Facility	Elite Electronic Engineering, Inc. 1516 Centre Circle, Downers Grove, IL 60515	FCC Reg. Number: 269750 IC Reg. Number: 2987A CAB Identifier: US0107
Signature		
Tested by	Edwin Casas	Tylar Jozefczyk
Signature		
Approved by	Raymond J. Klouda, Registered Professional Engineer of Illinois – 44894	
PO Number	4900099180	

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

This report shall not be reproduced, except in full, without the written approval of Elite Electronic Engineering Inc.

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231 and Innovation, Science, and Economic Development Canada, RSS-210 and RSS-Gen test specifications. The data presented in this test report pertains to the EUT on the test dates specified. Any electrical or mechanical modifications made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification. This report must not be used to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

Table of Contents

1. Report Revision History 3
2. Introduction 4
2.1. Scope of Tests 4
2.2. Purpose 4
2.3. Identification of the EUT 4
3. Power Input 5
4. Grounding 5
5. Support Equipment 5
6. Interconnect Leads 5
7. Modifications Made to the EUT 5
8. Modes of Operation 5
9. Test Specifications 5
10. Test Plan 5
11. Deviations, Additions, or Exclusions from Test Specifications 6
12. Laboratory Conditions 6
13. Summary 6
14. Sample Calculations 6
15. Statement of Conformity 6
16. Certification 6
17. Photographs of EUT 7
18. Equipment List 8
19. Block Diagram of Test Setup 9
20. Periodic Operation 10
21. Duty Cycle Factor 25
22. Occupied Bandwidth – 20dB 65
23. Occupied Bandwidth – 99% 79
24. Spurious Radiated Emissions 93
25. Scope of Accreditation 110

**This report shall not be reproduced, except in full,
without the written approval of Elite Electronic Engineering Inc.**

1. Report Revision History

Revision	Date	Description
–	22 APR 2025	Initial Release of Engineering Test Report No. 2402626-02
A	24 APR 2025 by TMJ	- Throughout report: Updated Engineering Test Report No. from “2402626-01” to “2402626-02 Rev. A”. - Section 2.3: Updated FCC ID from “HBW16328X1” to “HBW15649X1”.Updated ISED Certification Number from “2666A-16328X1” to “2666A-15649X1”.

2. Introduction

2.1. Scope of Tests

This document presents the results of a series of RF emissions tests that were performed on The Chamberlain Group LLC Universal Keypads (hereinafter referred to as the Equipment Under Test (EUT)). The EUTs were manufactured and submitted for testing by The Chamberlain Group LLC located in Oak Brook, IL.

2.2. Purpose

The test series was performed to determine if the EUTs meet the RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Chapter I, Subchapter A, §15.231(b).

The test series was also performed to determine if the EUTs meet the RF emission requirements of the Industry Canada Radio Standards Specification RSS-Gen and RSS-210 for Transmitters.

Testing was performed in accordance with ANSI C63.10-2013.

2.3. Identification of the EUT

The EUTs were identified as follows and were used throughout the test series:

EUT Identification	
Product Description	Universal Keypad
Model/Part No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1, OOK 2, OOK 3, OOK 4, OOK 5, OOK 6, OOK 7, OOK 8, OOK 9 (Conducted Samples) OOK1, OOK2 (Radiated Samples)
Software/Firmware Version	126A0632 (FW,DELOREAN,KEYPAD,UNI,USCAN,BG22,PIC16) Rev A.10 security3-keypad_uscan_uni_debug_test_cont_ook_v6.0.7
Band of Operation	260 – 470MHz
Modulation Type	OOK
Antenna Type	Chip (Pigtail used for antenna conducted testing)
20dB Bandwidth	Billion A Code: 57.9kHz D Code: 57.9kHz E Code: 57.9kHz Linear Mega Code: 50kHz Genie Code: 53.9kHz Stanley Code: 53.9kHz Wayne-Dalton Code: 51.9kHz Guardian Code: 53.9kHz Sommer Code: 53.9kHz Ryobi Code: 53.9kHz
Occupied Bandwidth (99% CBW)	Billion A Code: 93.19kHz D Code: 98.47kHz E Code: 103.48kHz Linear Mega Code: 99.98kHz Genie Code: 106.76kHz Stanley Code: 101.5kHz Wayne-Dalton Code: 107.31kHz Guardian Code: 103.48kHz Sommer Code: 105.95kHz Ryobi Code: 106.82kHz
FCC ID Number ISED Certification Number	FCC ID: HBW15649X1 IC: 2666A-15649X1

3. Power Input

The EUTs were powered by a 9VDC battery.

4. Grounding

The EUTs were not connected to ground.

5. Support Equipment

No support equipment was used during the tests.

6. Interconnect Leads

No interconnect leads were used during the tests.

7. Modifications Made to the EUT

No modifications were made to the EUTs during the testing.

8. Modes of Operation

The EUTs were programmed to transmit in one of the following modes:

Mode	Description
D Code	- 315MHz - 390MHz (Note: all 3 modes use the same 2 frequencies)
E Code	
Genie Code	
Billion A Code	390MHz
Linear Mega Code	318MHz
Stanley Code	310MHz
Wayne-Dalton Code	372.5MHz
Guardian Code	303MHz
Sommer Code	310MHz
Ryobi Code	372.5MHz

9. Test Specifications

The tests were performed to selected portions of, and in accordance with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231 and Innovation, Science, and Economic Development Canada, RSS-210 test specifications.

- Federal Communications Commission "Code of Federal Regulations", Title 47, Chapter I, Subchapter A, Part 15, Subpart C, Section 231 – “Periodic operation in the band 40.66–40.70 MHz and above 70 MHz”

- ANSI C63.10-2013 – "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices”

- Radio Standard Specification RSS-Gen Issue 5, Amendment 2 (February 2021) – “General Requirements for Compliance of Radio Apparatus”

- Radio Standard Specification RSS-210 Issue 11 (June 25, 2024) – “License-Exempt Radio Apparatus: Category I Equipment”

10. Test Plan

No test plan was provided. Instructions were provided by personnel from The Chamberlain Group LLC and used in conjunction with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231, Innovation, Science, and Economic Development Canada, RSS-210, and ANSI C63.10-2013 specifications.

11. Deviations, Additions, or Exclusions from Test Specifications

There were no deviations, additions to, or exclusions from the test specifications during this test series.

12. Laboratory Conditions

The ambient parameters of the laboratory during testing were as follows:

Ambient Parameters	Value
Temperature	22.6°C
Relative Humidity	21.2%
Atmospheric Pressure	993.28mb

13. Summary

The following EMC tests were performed and the results are shown below:

Test Description	Requirements	Test Method	S/N	Result
Periodic Operation	FCC 15.231 ISED RSS-210	ANSI C63.10:2013	OOK 1, OOK 2, OOK 3, OOK 4, OOK 5, OOK 6, OOK 7, OOK 8, OOK 9	Conforms
Duty Cycle Factor	---	ANSI C63.10:2013		-----
Occupied Bandwidth – 20dB	FCC 15.231	ANSI C63.10:2013		Conforms
Occupied Bandwidth – 99%	ISED RSS-210	ANSI C63.10:2013		Conforms
Spurious Radiated Emissions	FCC 15.231 ISED RSS-210	ANSI C63.10:2013	OOK2	Conforms

14. Sample Calculations

For Radiated Emissions:

The resultant field strength (FS) is a summation in decibels (dB) of the receiver meter reading (MTR), the antenna correction factor (AF), and the cable loss factor (CF). If an external preamplifier is used, the total is reduced by its gain (-PA). If a distance correction (DC) is required, it is added to the total.

Formula 1: FS (dBµV/m) = MTR (dBµV) + AF (dB/m) + CF (dB) + (- PA (dB)) + DC (dB)

To convert the Field Strength dBµV/m term to µV/m, the dBµV/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in µV/m terms.

Formula 2: FS (µV/m) = AntiLog [(FS (dBµV/m))/20]

15. Statement of Conformity

The Chamberlain Group LLC Universal Keypad (Model No. 900-15649-1/014D15649 Rev C) did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231 and Innovation, Science, and Economic Development Canada, RSS-210.

16. Certification

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.231 and Innovation, Science, and Economic Development Canada, RSS-210 test specifications. The data presented in this test report pertains to the EUTs on the test date specified. Any electrical or mechanical modifications made to the EUTs subsequent to the specified test date will serve to invalidate the data and void this certification.

17. Photographs of EUT

Removed for short term confidentiality
Removed for short term confidentiality

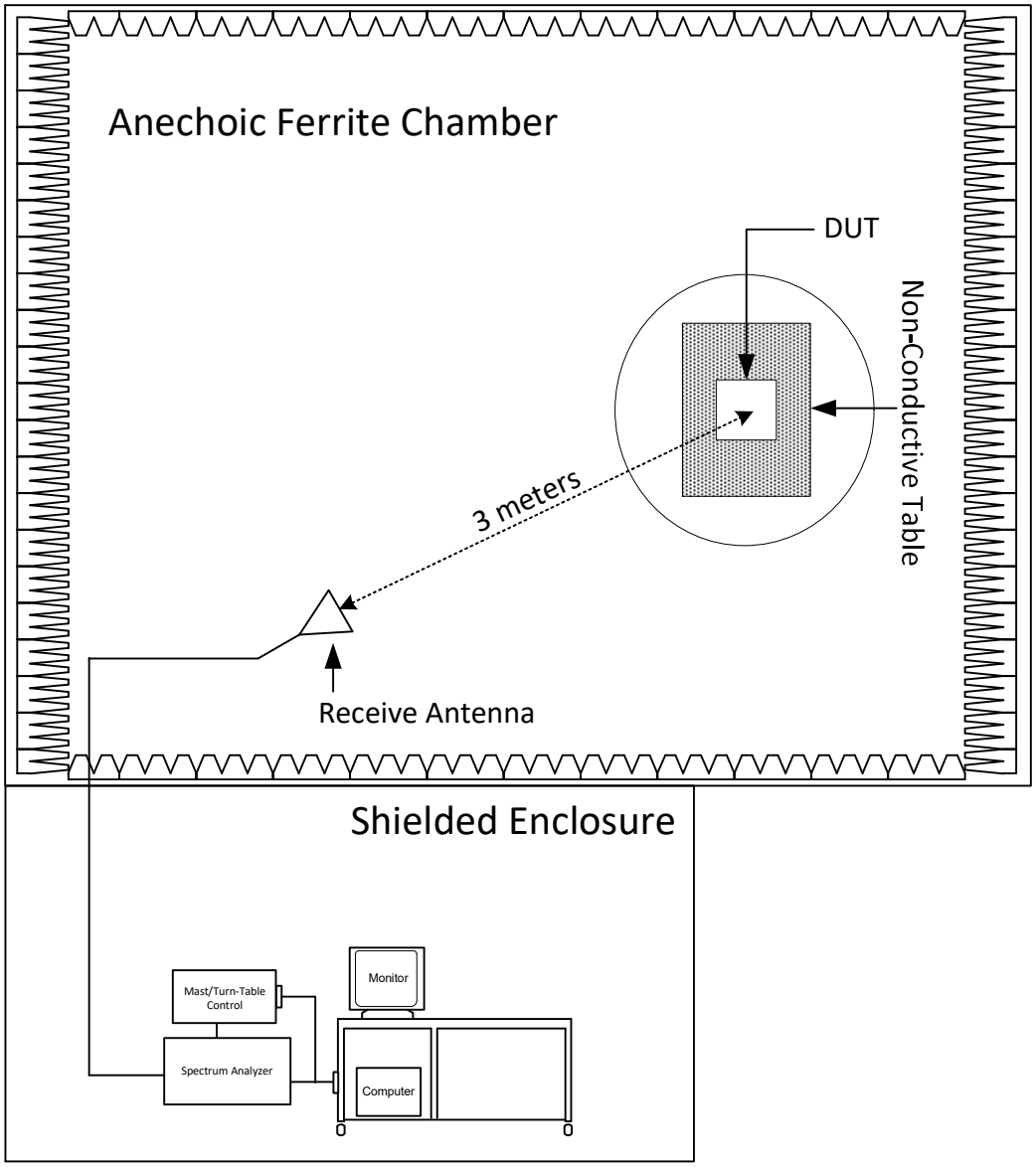
18. Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW10	Preamplifier	Planar	PE2-35-120-5R0-10-12-SFF	PL11685/1241	1-18GHz	3/18/2025	3/18/2026
APW3	Preamplifier	Planar	PE2-35-120-5R0-10-12	PL2924	1-18GHz	3/24/2025	3/24/2026
CDZ3	LAB WORKSTATION	ELITE	LWS-10		WINDOWS 10	N/A	
CDZ4	LAB WORKSTATION	ELITE	LWS-10		WINDOWS 10	N/A	
GSE2	SIGNAL GENERATOR (40GHZ)	ROHDE & SCHWARZ	SMB100A	183293	100KHZ-40GHZ	3/7/2025	3/7/2027
NTA2	BILOG ANTENNA	TESEQ	6112D	28040	25-2000MHz	6/21/2024	6/21/2026
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	6/24/2024	6/24/2026
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	7/26/2024	7/26/2026
R21F	3M ANECHOIC CHAMBER NSA	EMC TEST SYSTEMS	3M ANECHOIC		30MHZ-18GHZ	3/1/2025	3/1/2026
R29F	3M ANECHOIC CHAMBER NSA	EMC TEST SYSTEMS	3M ANECHOIC		30MHZ-18GHZ	6/12/2023	6/12/2025
RBG2	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101591	2HZ-44GHZ	6/16/2024	6/16/2025
RBG4	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	103007	2HZ-44GHZ	4/5/2025	4/5/2026
RBH6	EMI ANALYZER	ROHDE & SCHWARZ	ESW26	103067	2HZ-26GHZ	3/9/2025	3/9/2026
SES0	24VDC POWER SUPPLY	P-TRANS	FS-32024-1M	001	18-27VDC	NOTE 1	
SHC2	Power Supplies	HENGFU	HF60W-SL-24	A11372702	24V	NOTE 1	
T1E33	10DB 20W ATTENUATOR	MINI-CIRCUITS	BW-N10W20+	---	DC-18GHZ	12/19/2023	12/19/2025
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	
XPQ3	HIGH PASS FILTER	K&L MICROWAVE	4IH30-1804/T10000-0	4	1.8GHZ-10GHZ	9/14/2023	9/14/2025
XPQ7	HIGH PASS FILTER	K&L MICROWAVE	4IH30-1804/T10000-0	5	1.8-10GHZ	2/4/2025	2/4/2027

N/A: Not Applicable I/O: Initial Only CNR: Calibration Not Required

NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

19. Block Diagram of Test Setup



Radiated Measurements Test Setup

20. Periodic Operation

EUT Information	
Manufacturer	The Chamberlain Group LLC
Product	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1, OOK 2, OOK 3, OOK 4, OOK 5, OOK 6, OOK 7, OOK 8, OOK 9
Mode	Billion A Code, D Code, E Code, Linear Mega Code, Genie Code, Stanley Code, Wayne-Dalton Code, Ryobi Code, Guardian Code, Sommer Code

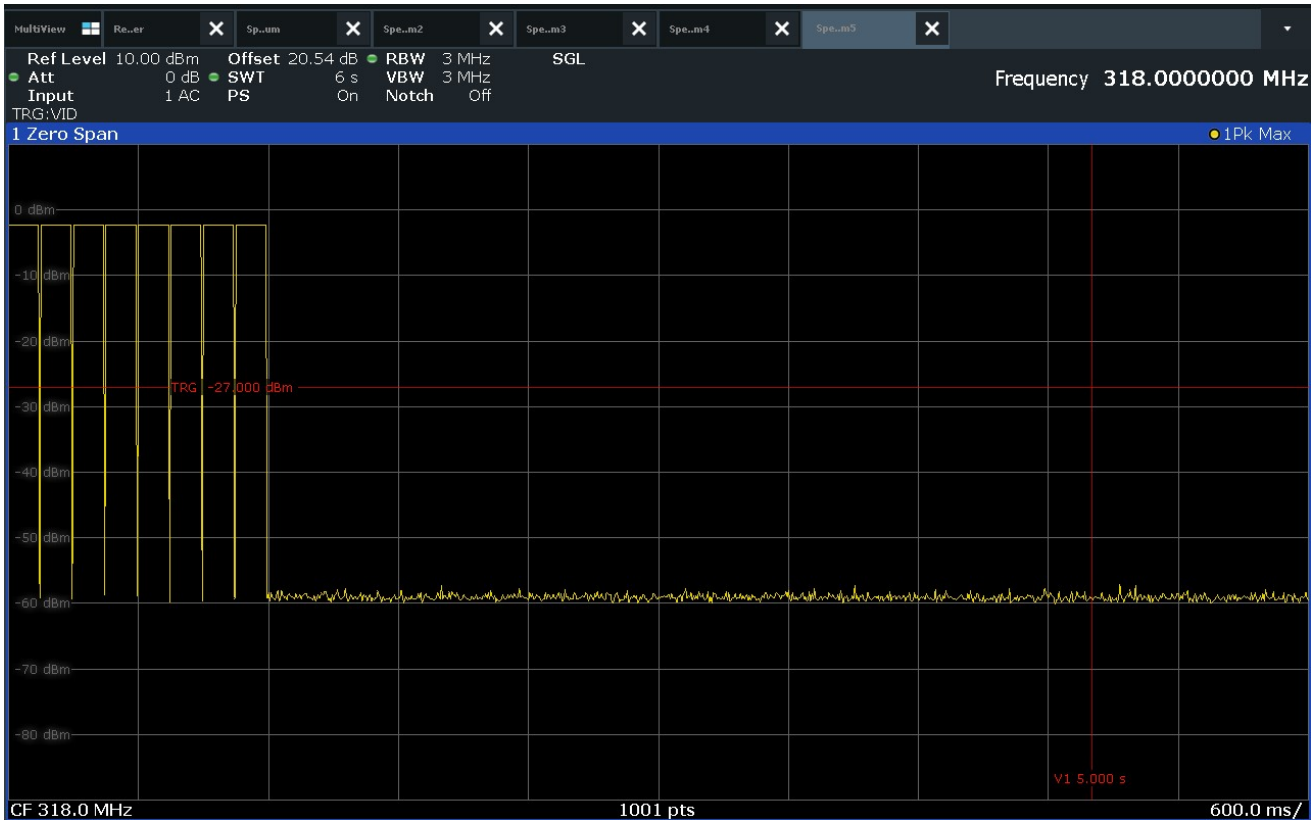
Test Setup Details	
Setup Format	Tabletop
Measurement Method	Antenna Conducted
Type of Test Site	Elite Test Bench
Notes	None

Requirements – FCC §15.231
Per §15.231(a), a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. A transmitter activated automatically shall cease transmission within 5 seconds after activation. 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 2 seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed 2 seconds per hour. Transmission of set-up information for security systems may exceed said transmission duration limits, provided such transmissions are under the control of a professional installer and do not exceed 10 seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data. 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.

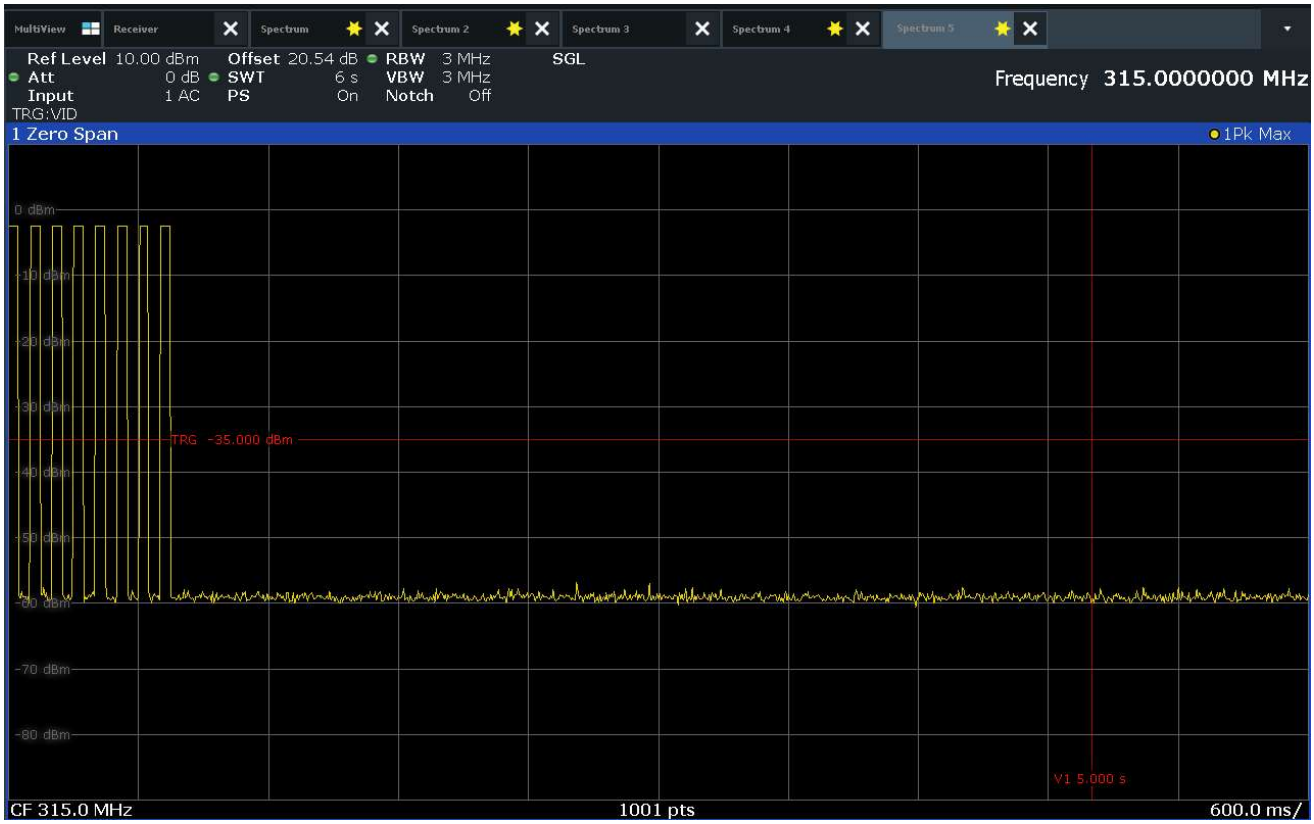
Requirements – RSS-210
Per RSS-210 Annex A.1.1, a manually operated transmitter shall be equipped with a push-to-operate switch and be under manual control at all times during transmission. When released, the transmitter shall cease transmission within no more than 5 seconds of being released. A transmitter that has been activated automatically shall cease transmission within 5 seconds of activation. Periodic transmissions at regular, predetermined intervals are not permitted, except as specified below. However, polling or supervision transmissions that determine system integrity of transmitters used in security or safety applications are permitted, provided the total duration of transmission does not exceed 2 seconds per hour for each transmitter. Intentional radiators used for radio control 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. Per RSS-210 Annex A.1.4, devices operating under the provisions of this section shall be capable of automatically limiting their operation so that the duration of each transmission is not greater than 1 second and the silent period between transmissions is at least 30 times the duration of the transmission, but not less than 10 seconds under any circumstances. However, devices that are designed for limited use for the purpose of initial programming, reprogramming, or installing, and not for regular operations, may operate for up to 5 seconds, provided such devices are used only occasionally in connection with each unit being programmed or installed.

Procedure
The spectrum analyzer was set up to display the time domain trace. The EUT was set to transmit normally. The spectrum analyzer was then used to record the amount of time that the EUT remained active following activation.

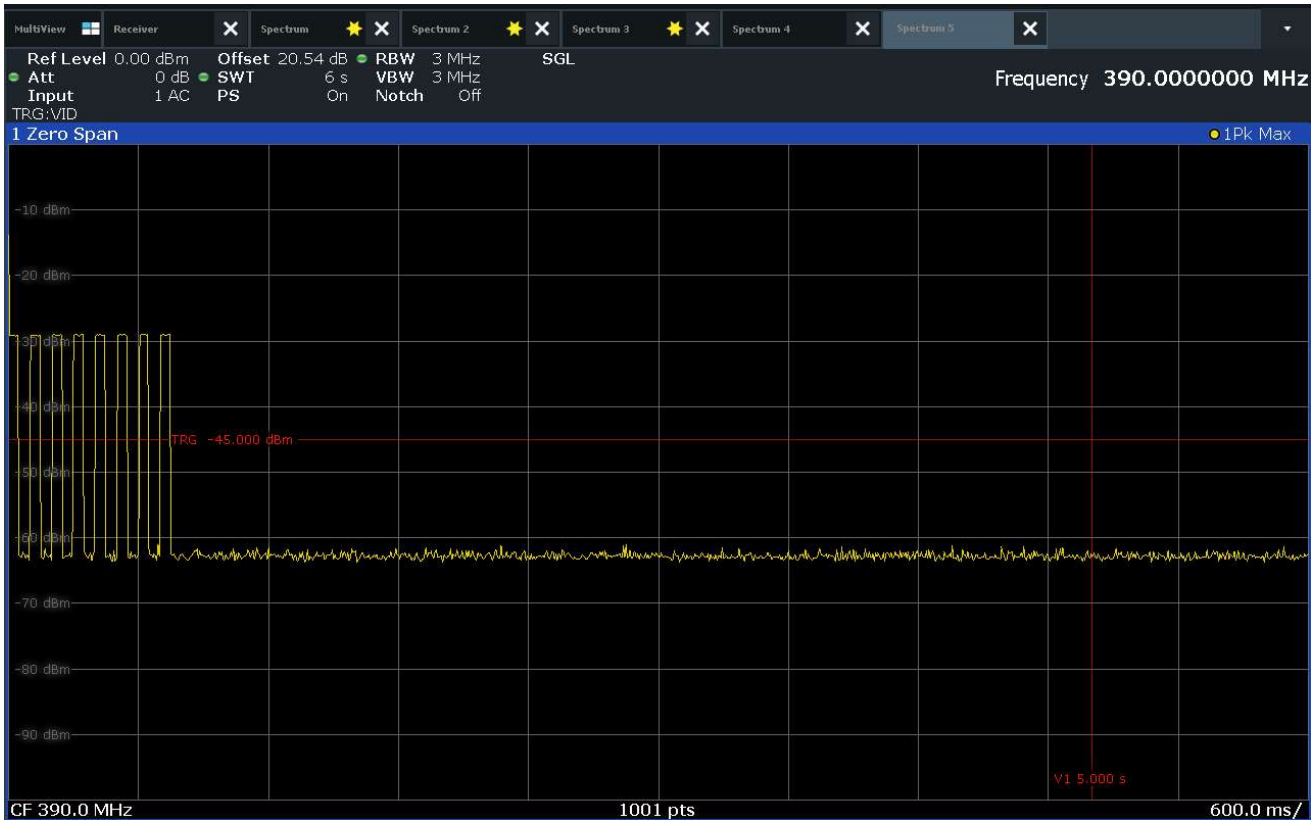
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 3
Mode	Linear Mega Code
Frequency Tested	318MHz
Notes	



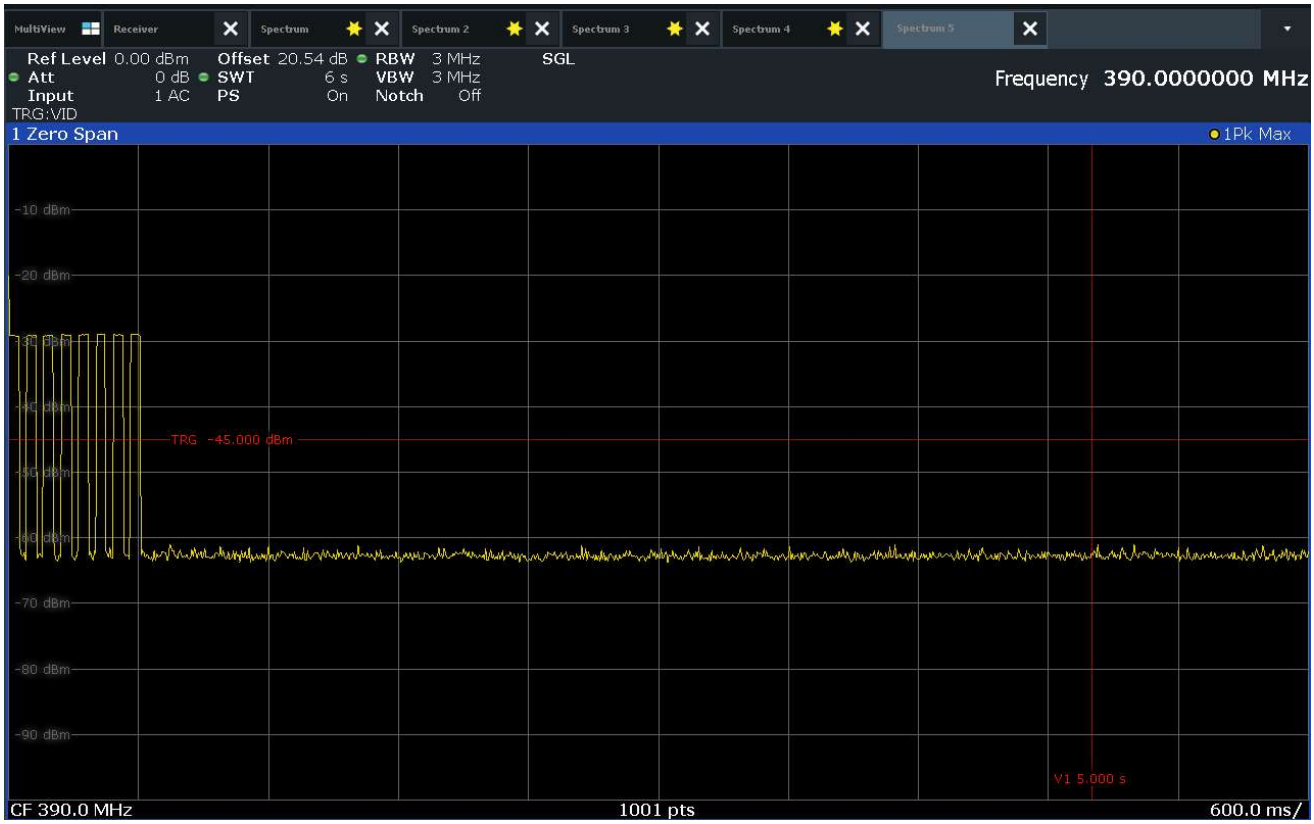
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	315MHz
Notes	



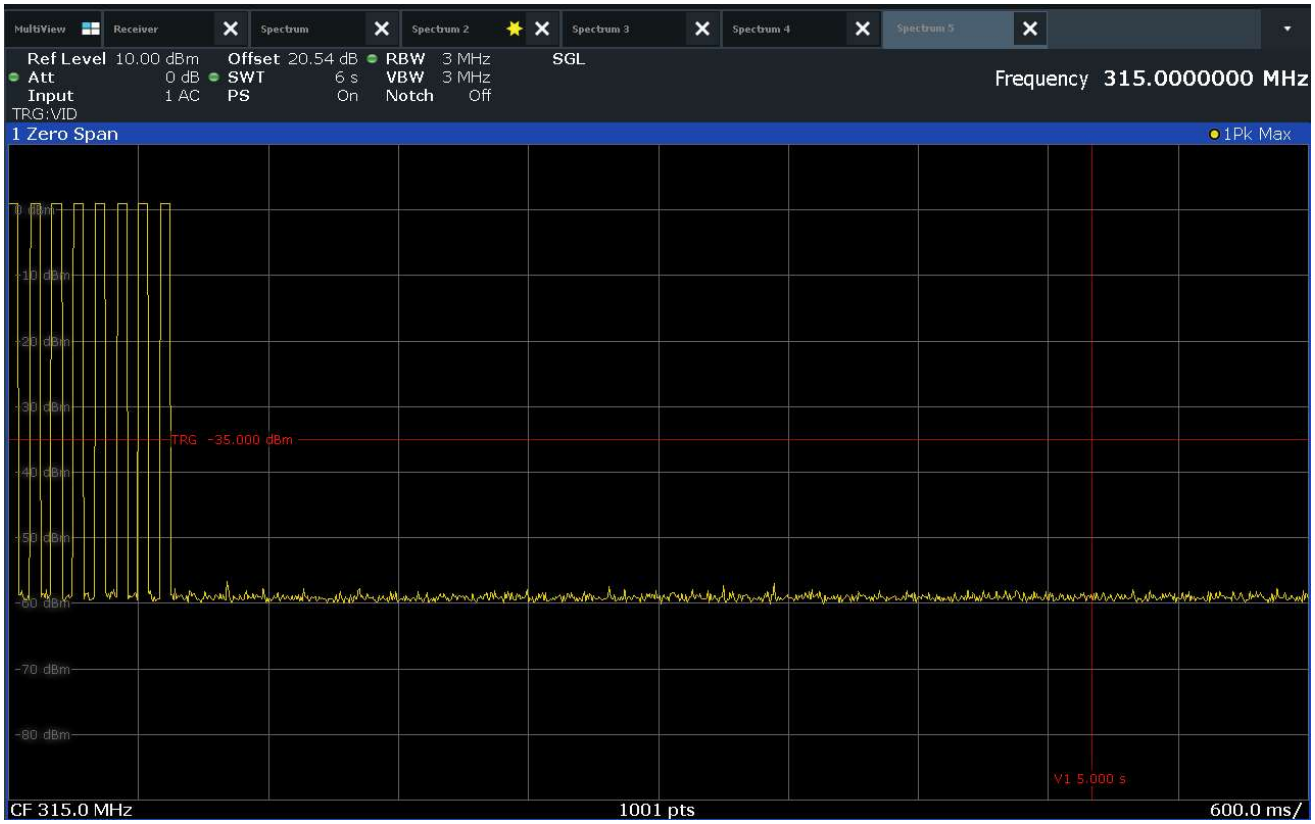
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	390MHz
Notes	



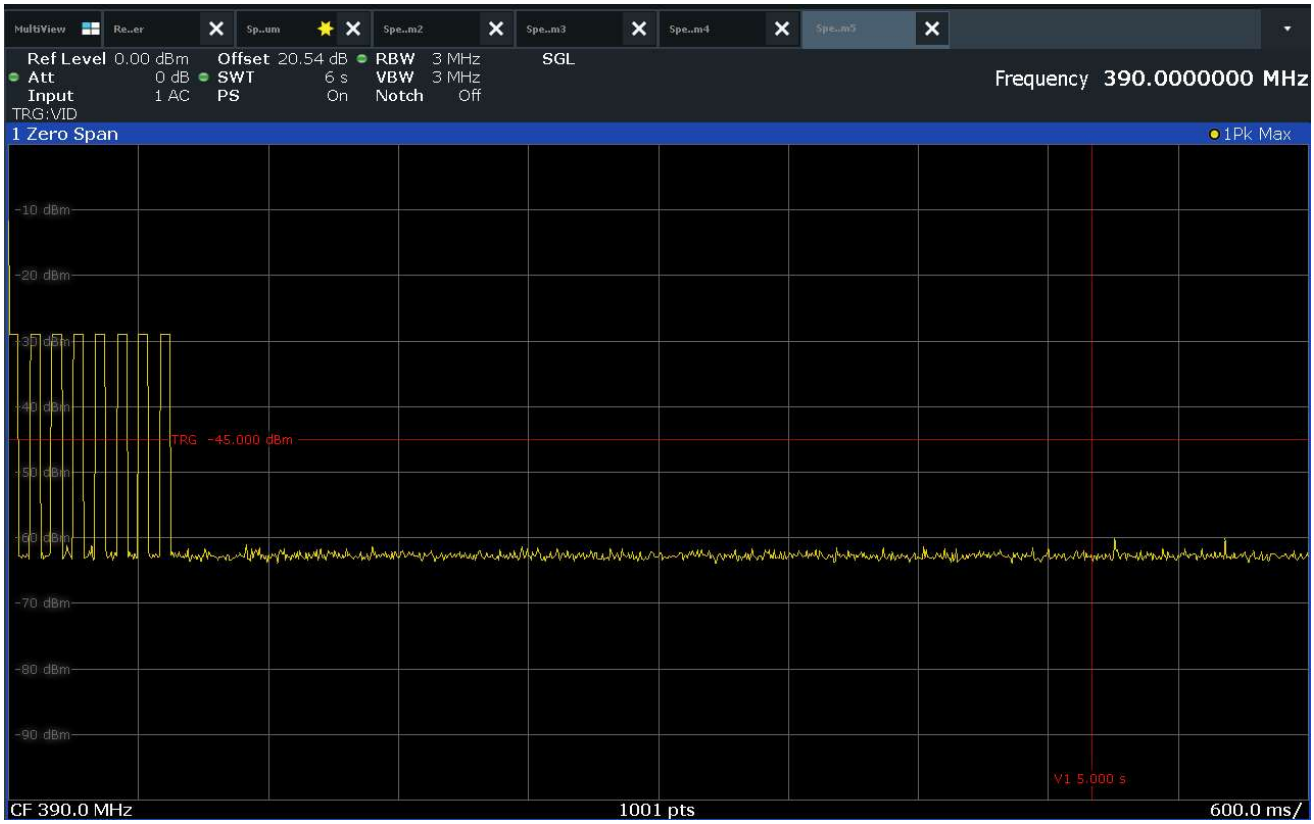
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	Billion A Code
Frequency Tested	390MHz
Notes	



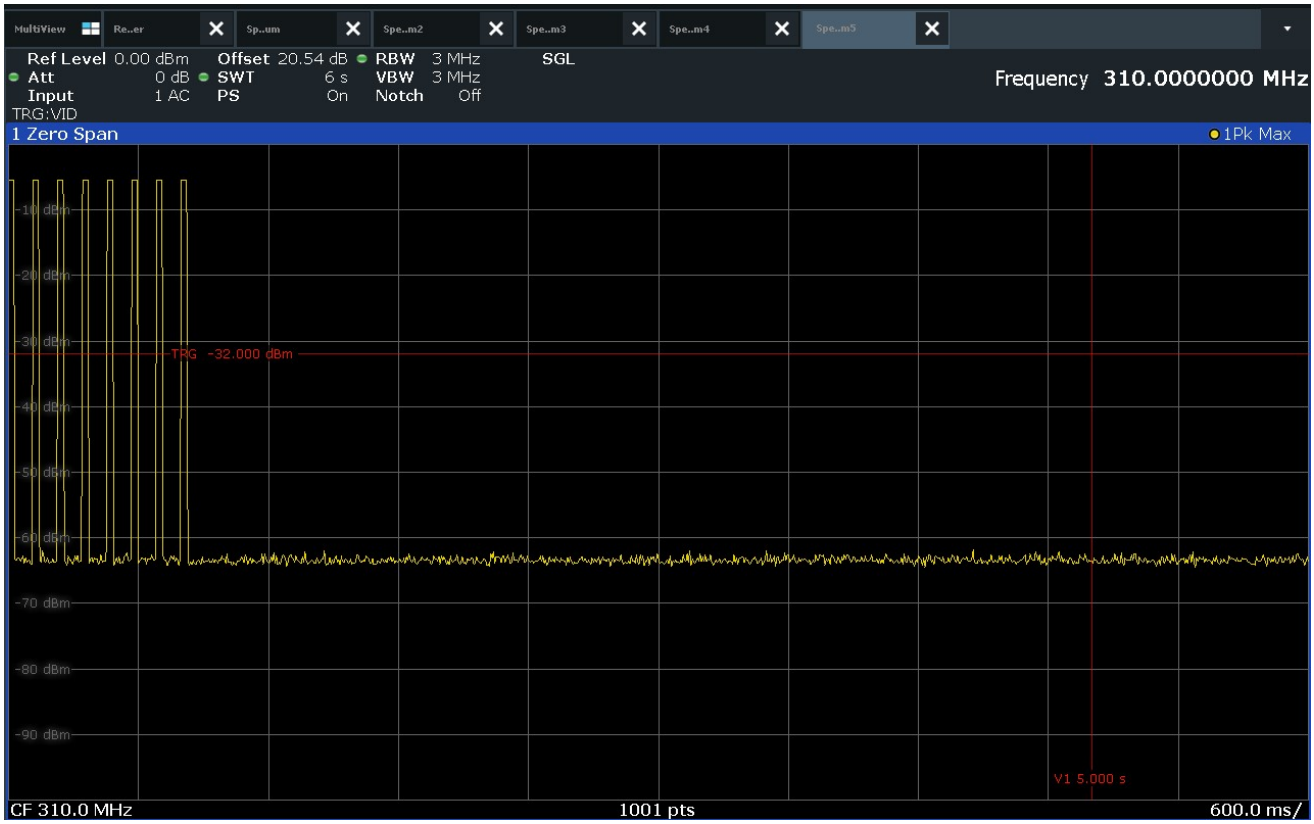
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	315MHz
Notes	



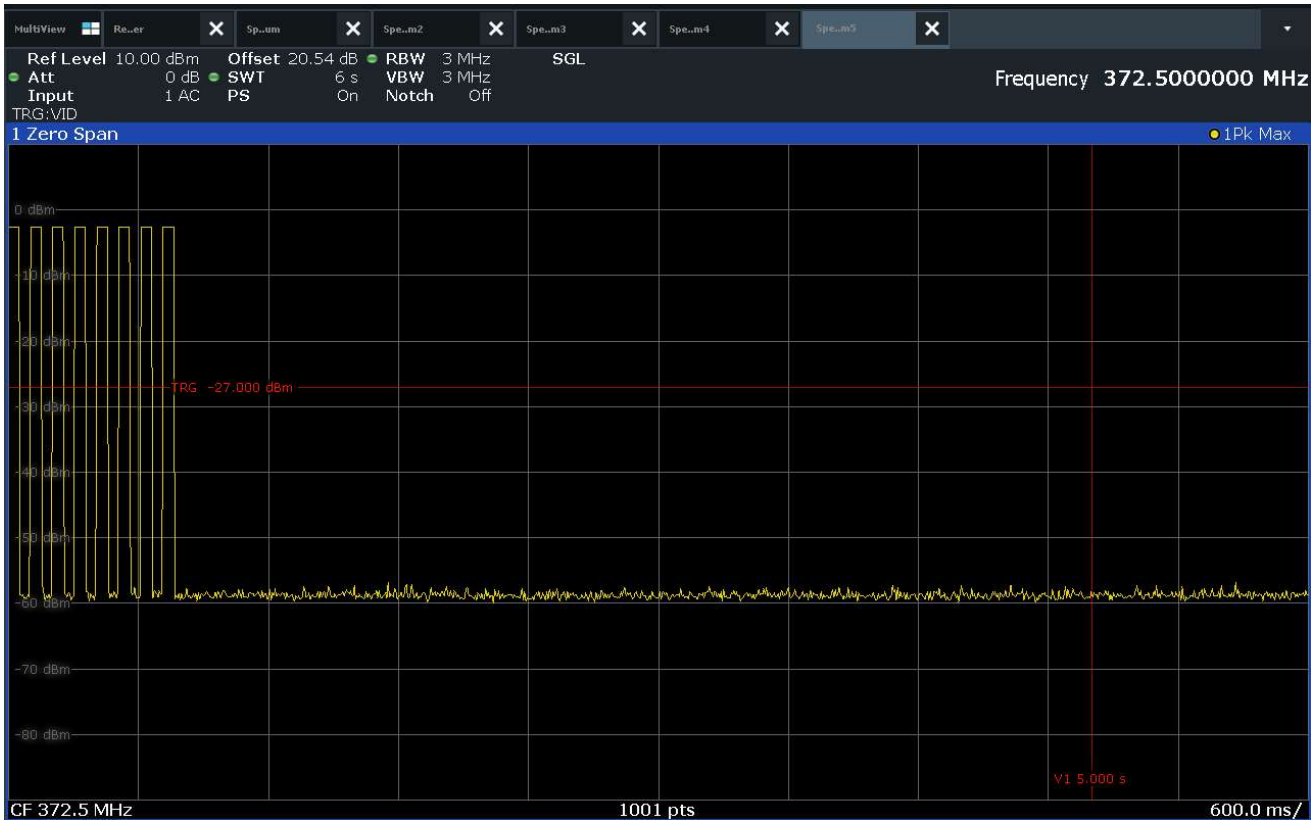
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	390MHz
Notes	



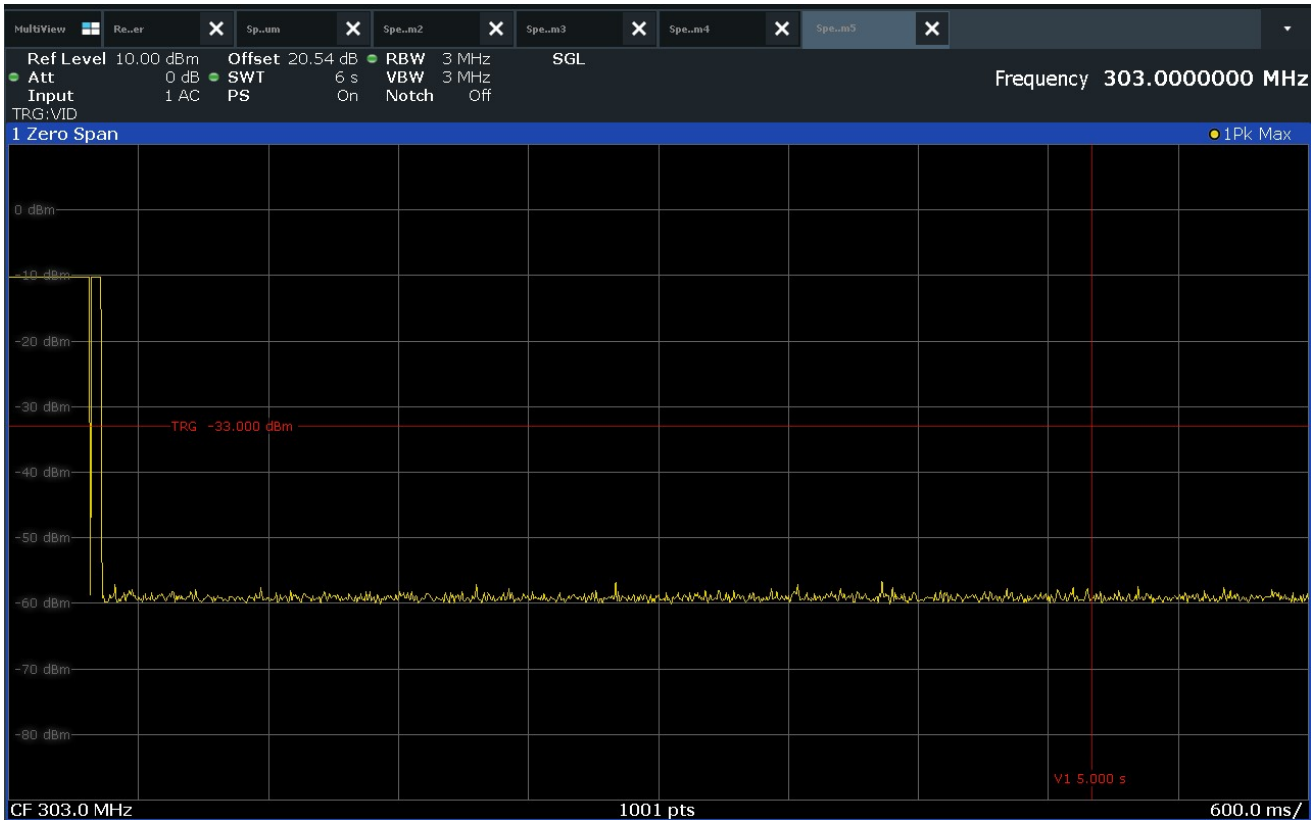
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 2
Mode	Sommer Code
Frequency Tested	310MHz
Notes	



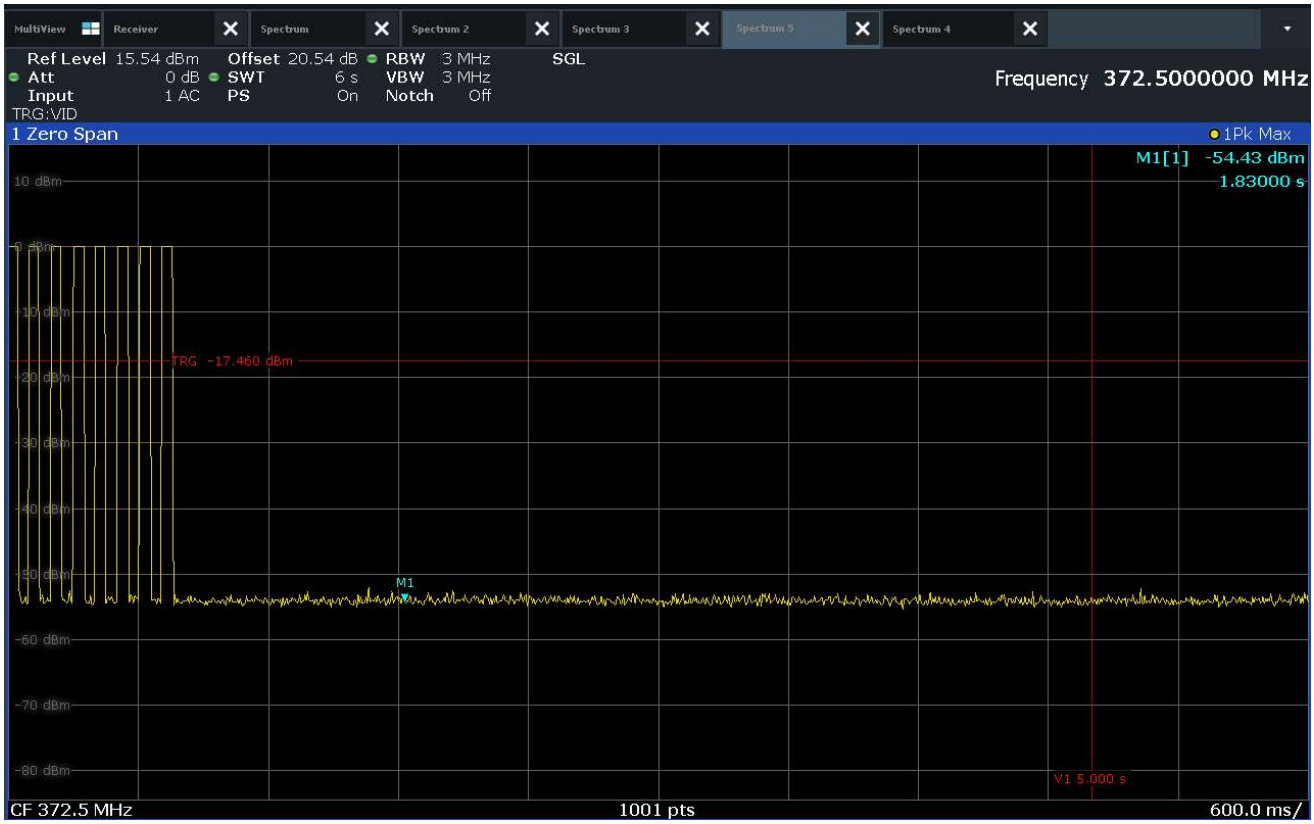
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 4
Mode	Wayne-Dalton Code
Frequency Tested	372.5MHz
Notes	



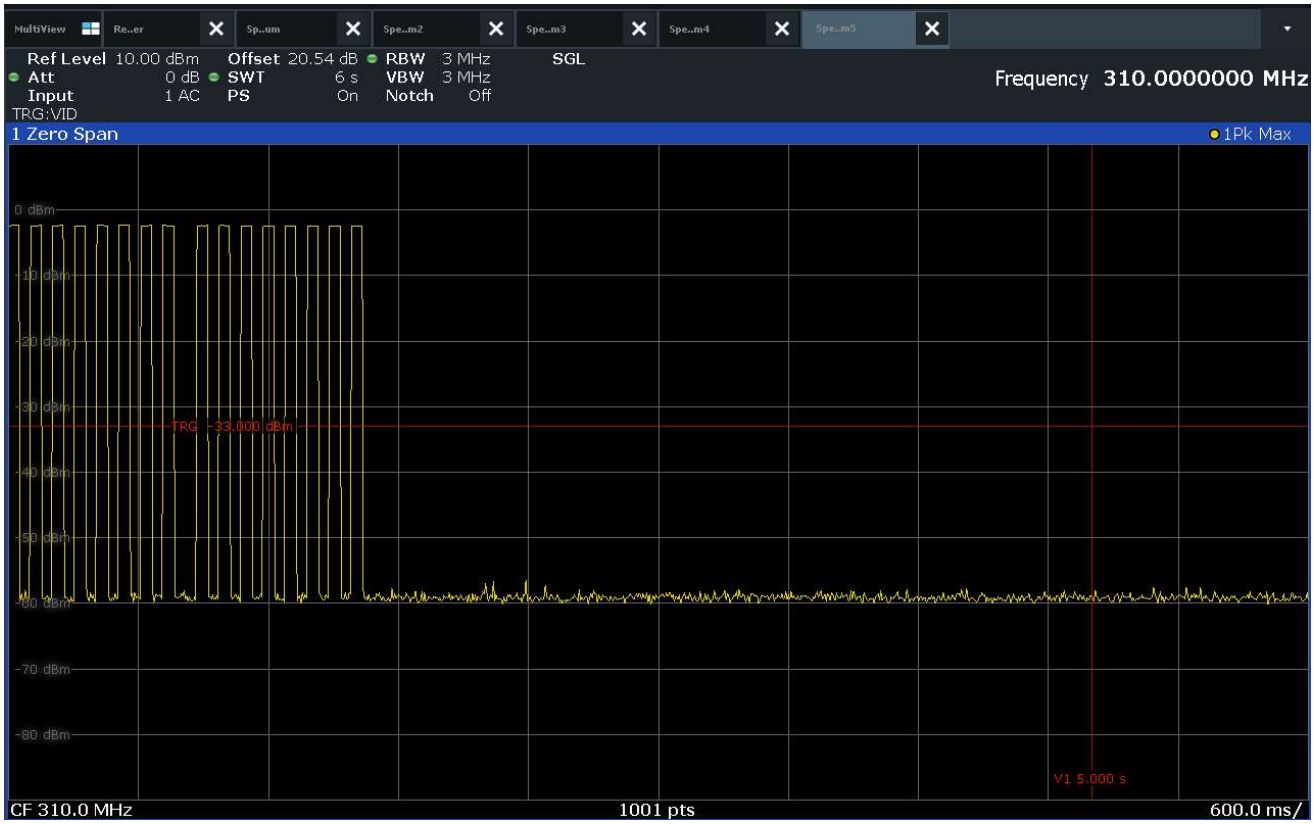
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 5
Mode	Guardian Code
Frequency Tested	303MHz
Notes	



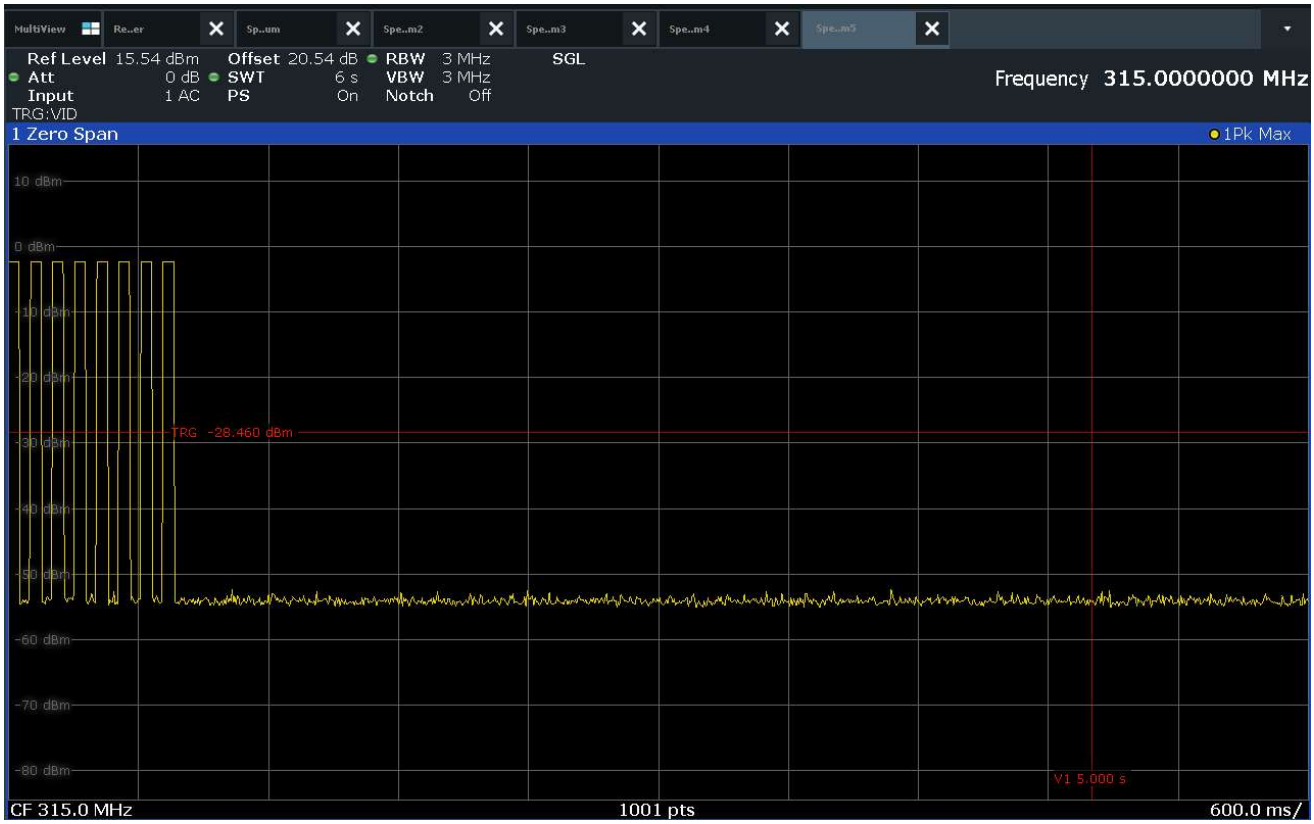
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 6
Mode	Ryobi Code
Frequency Tested	372.5MHz
Notes	



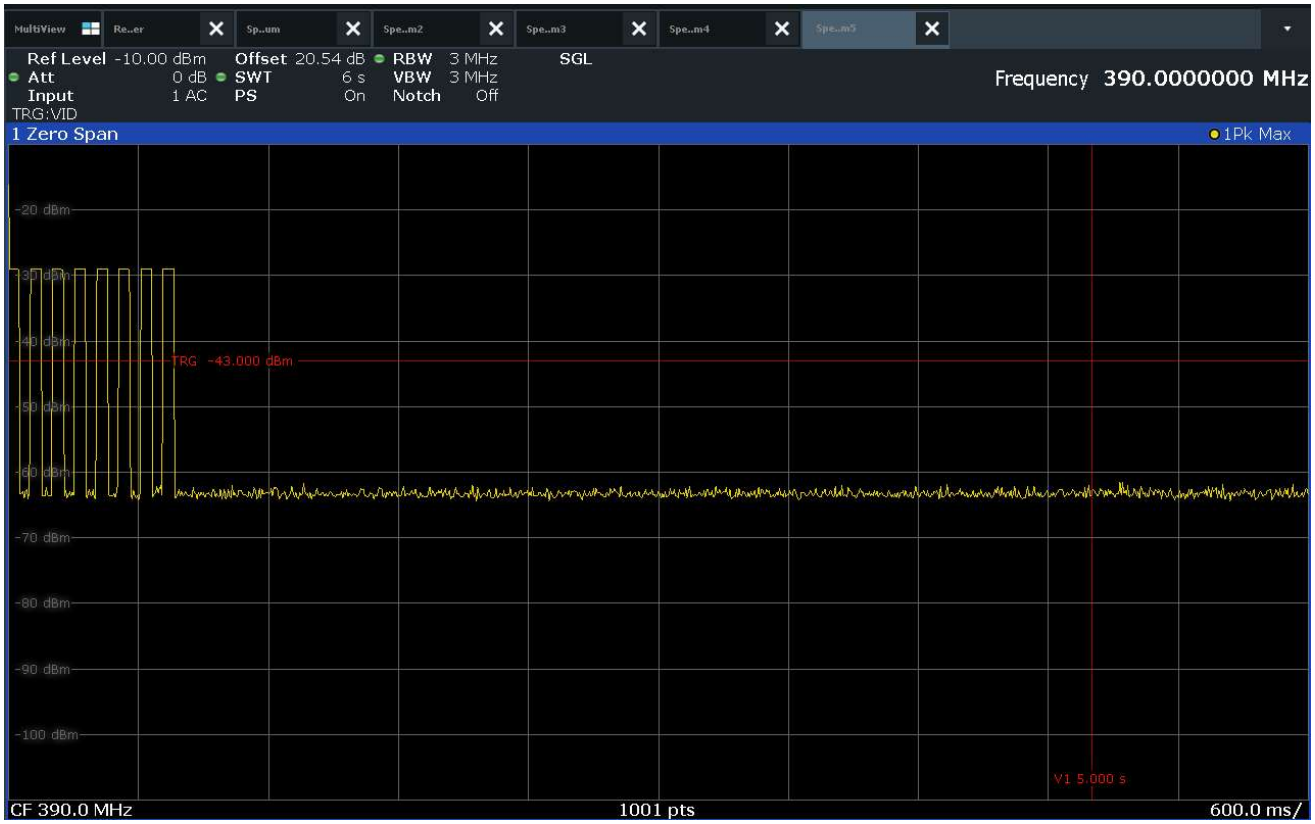
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 7
Mode	Stanley Code
Frequency Tested	310MHz
Notes	



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 8
Mode	Genie Code
Frequency Tested	315MHz
Notes	



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 9
Mode	Genie Code
Frequency Tested	390MHz
Notes	



21. Duty Cycle Factor

EUT Information	
Manufacturer	The Chamberlain Group LLC
Product	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1, OOK 2, OOK 3, OOK 4, OOK 5, OOK 6, OOK 7, OOK 8, OOK 9
Mode	Billion A Code, D Code, E Code, Linear Mega Code, Genie Code, Stanley Code, Wayne-Dalton Code, Ryobi Code, Guardian Code, Sommer Code

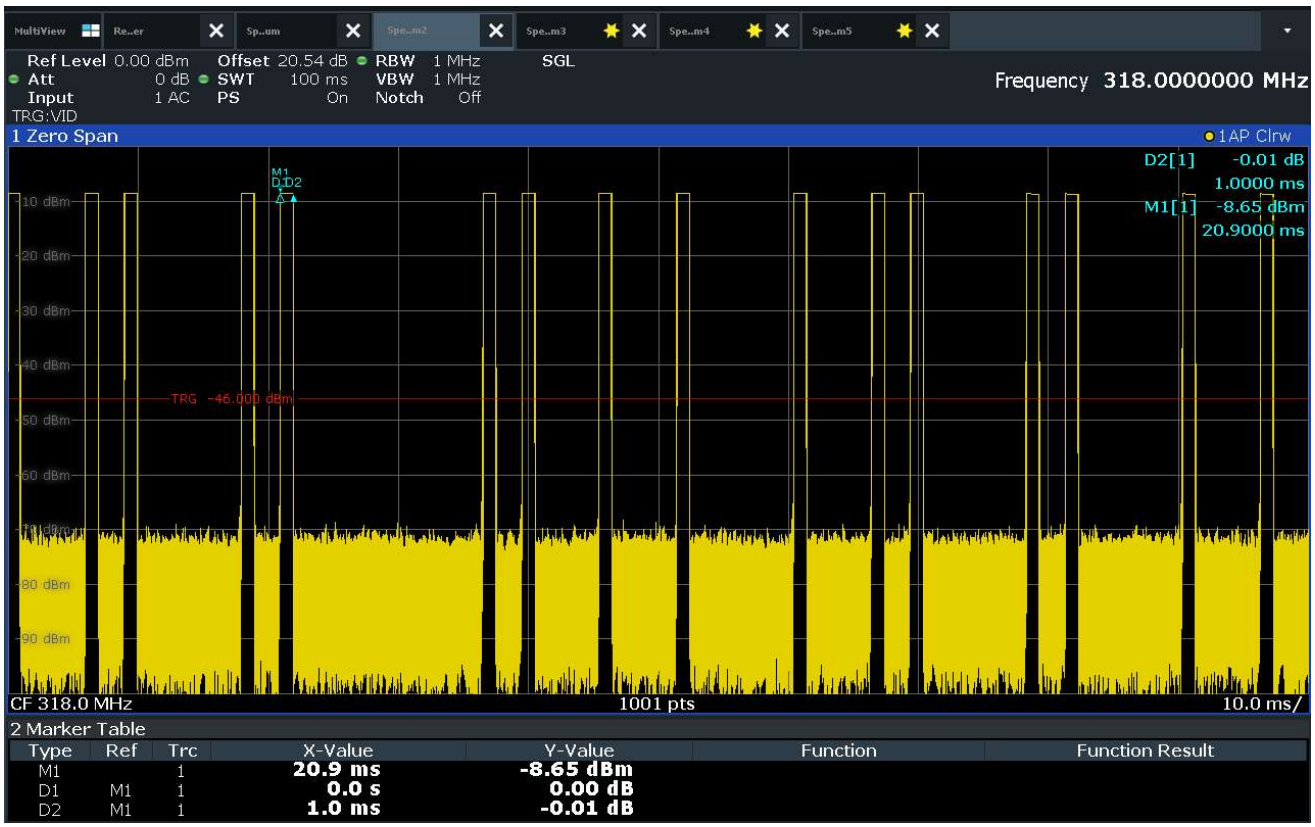
Test Setup Details	
Setup Format	Tabletop
Measurement Method	Antenna Conducted
Type of Test Site	Elite Test Bench
Notes	None

Procedure

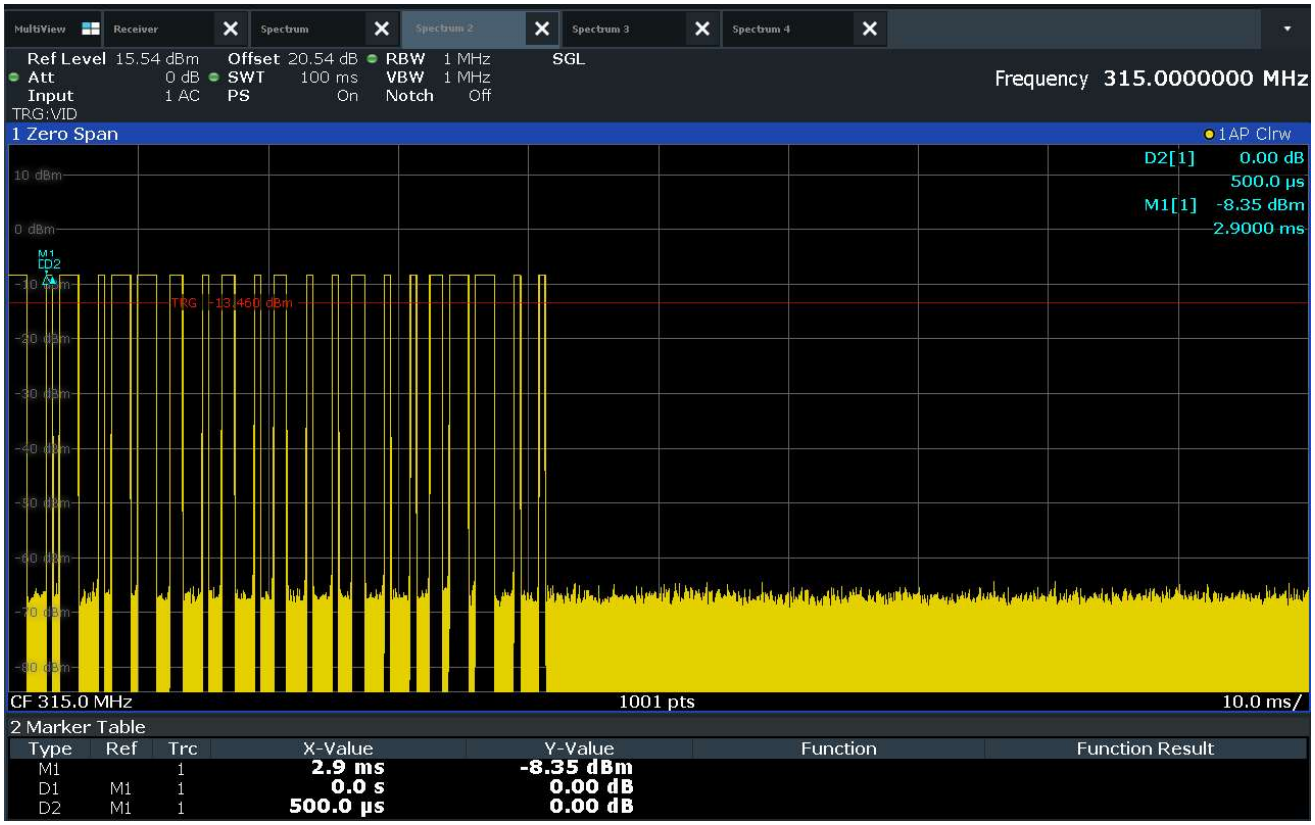
The duty cycle factor is used to convert peak detected readings to average readings. This factor is computed from the time domain trace of the pulse modulation signal.

1) The EUT was set up to transmit for maximum pulse density, with the time domain trace displayed on the spectrum analyzer.
2) The pulse width was measured and a plot of this measurement was recorded.
3) Next, the number of pulses in the word period was measured and a plot was recorded.
4) Finally, the length of the word period was measured and a third plot was recorded. If the word period exceeded 100msec, the word period was limited to 100msec.
5) The duty cycle is then computed as $\left(\frac{On\ Time}{Word\ Period}\right)$, where $Word\ Period\ =\ (On\ Time + Off\ Time)$.

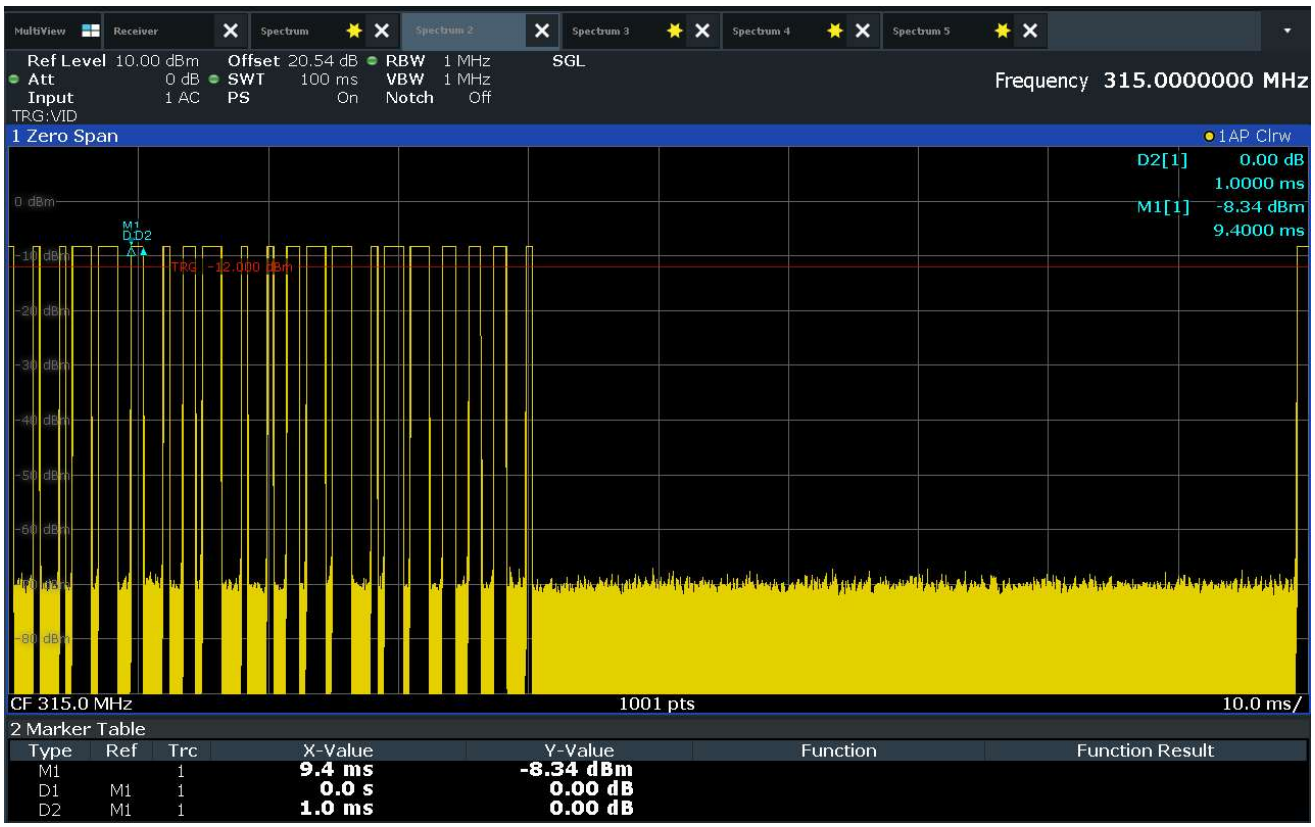
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 3
Mode	Linear Mega Code
Frequency Tested	318MHz
Result	Duty Cycle = -15.39dB
Notes	Duty Cycle Factor Calculation: 17 × 1.0ms = 17.0ms $\text{Duty Cycle Factor} = 20\log\left(\frac{17.0\text{ms}}{100\text{ms}}\right) = -15.39dB$



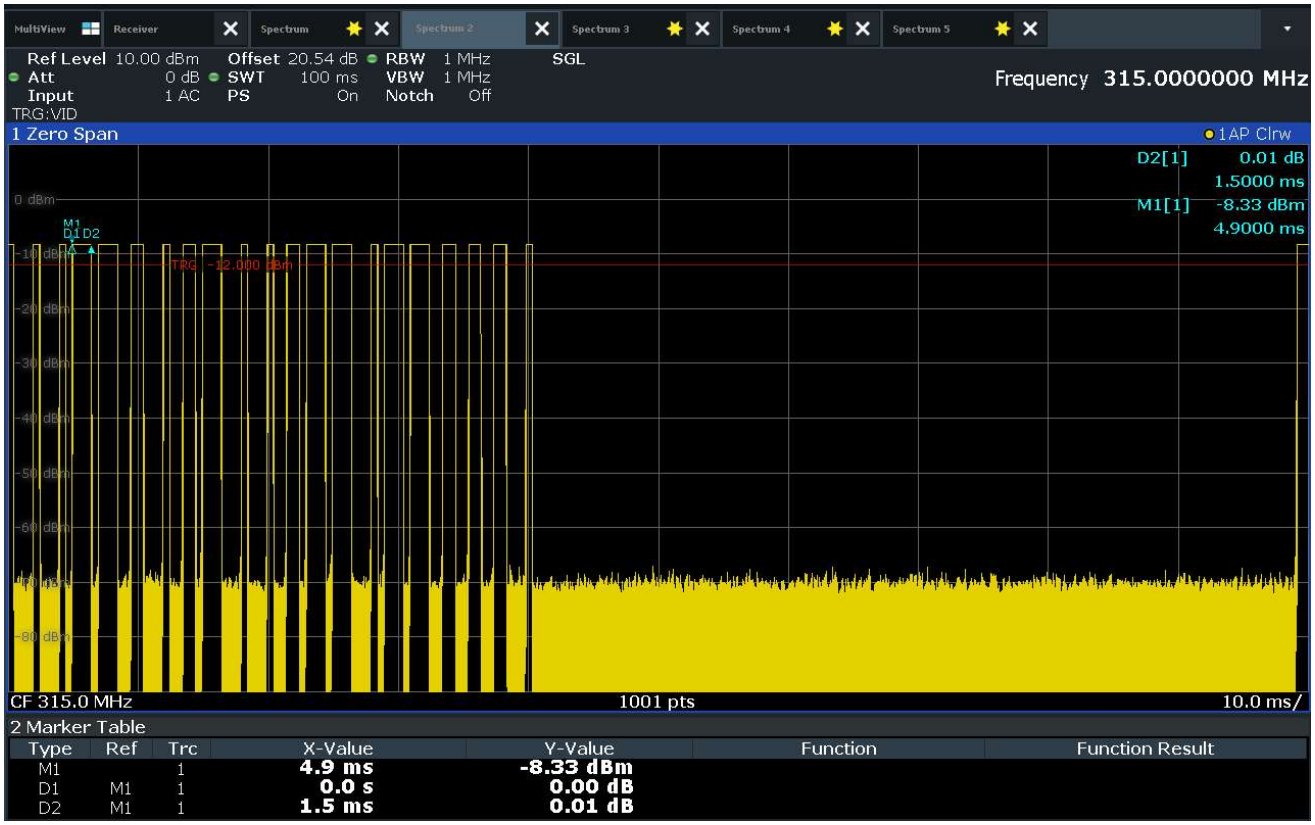
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	315MHz
Result	Pulse 1 = 0.5ms
Notes	



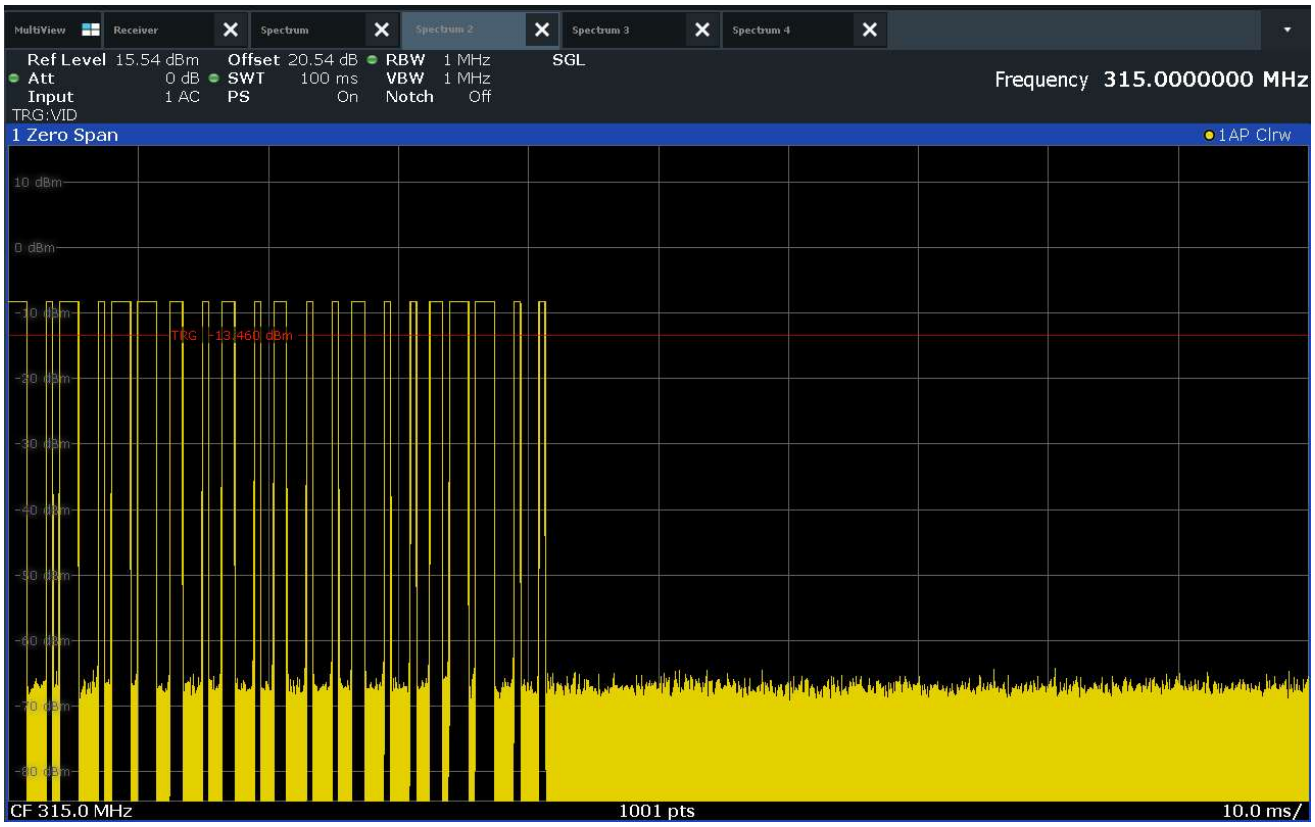
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	315MHz
Result	Pulse 2 = 1.0ms
Notes	



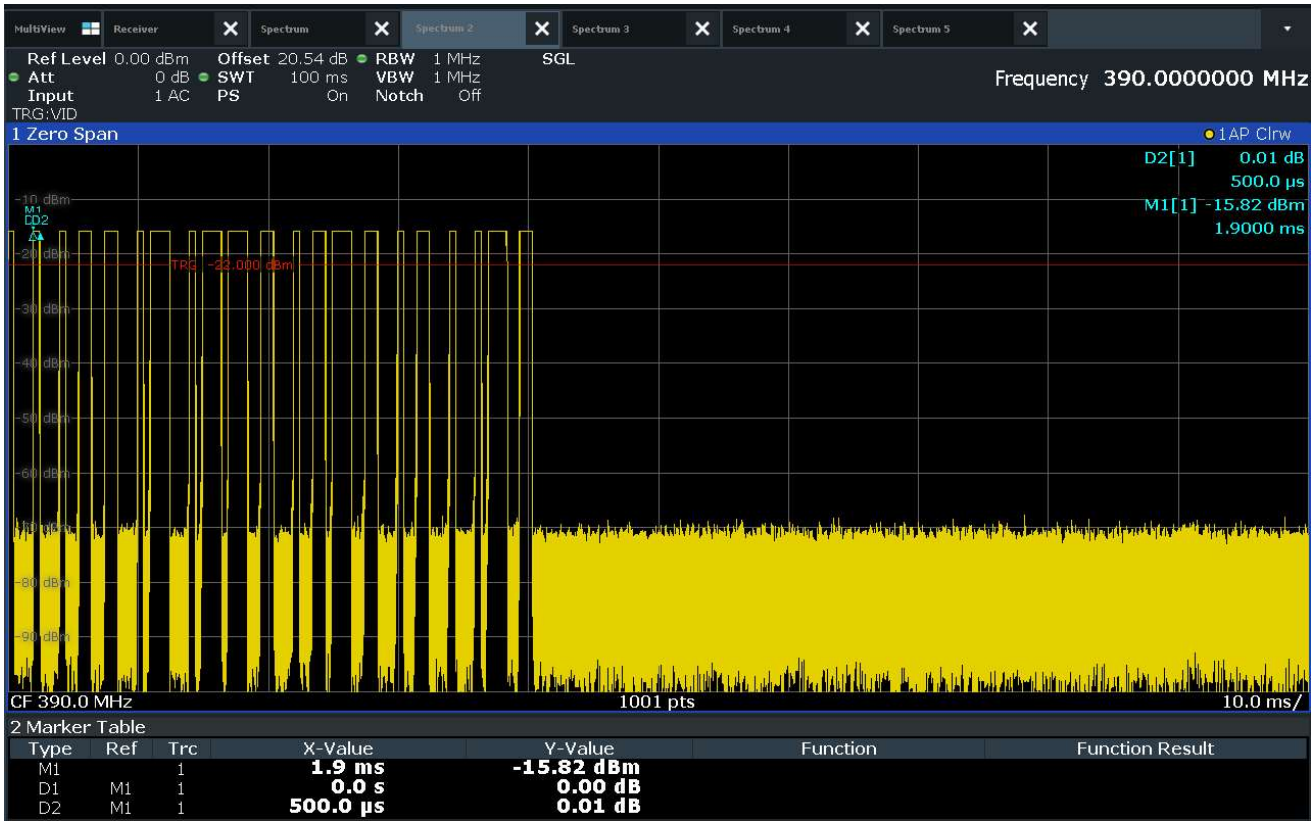
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	315MHz
Result	Pulse 3 = 1.5ms
Notes	



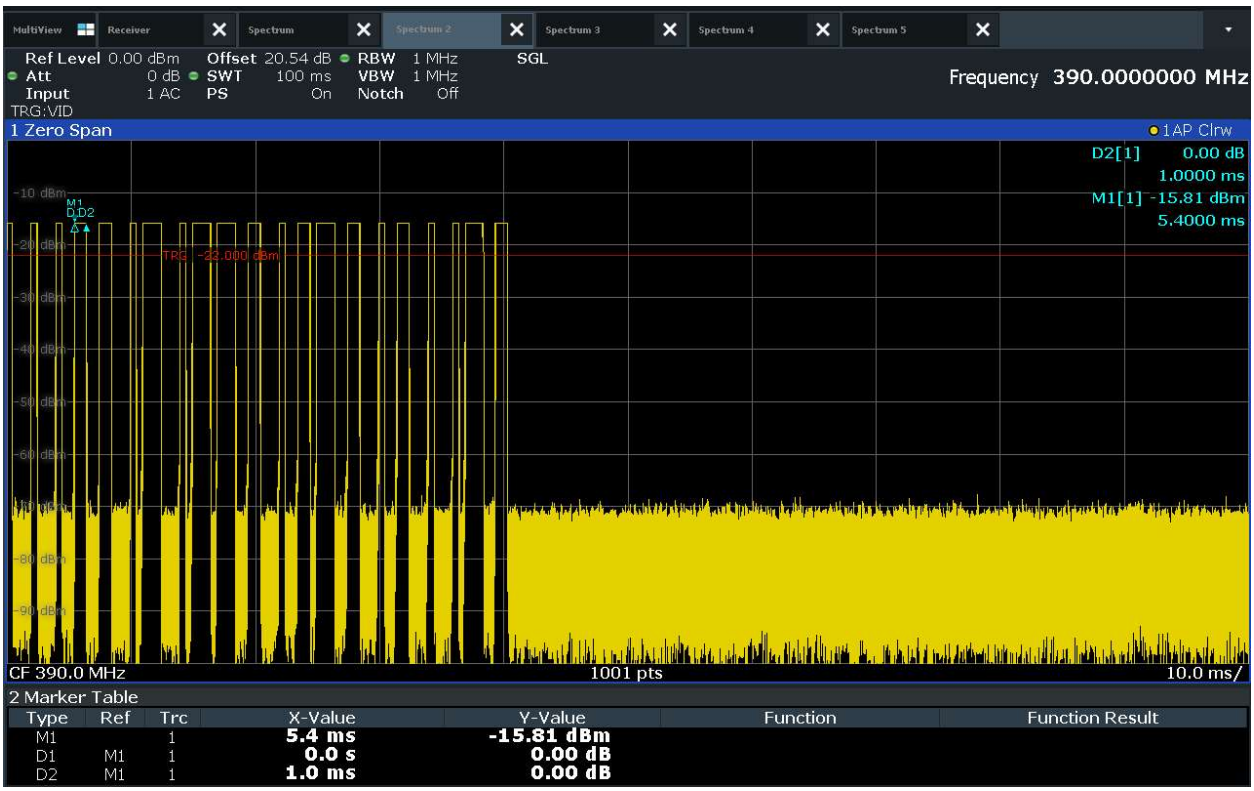
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	315MHz
Result	Duty Cycle = -13.19dB
Notes	Duty Cycle Factor Calculation: 5 × 0.5ms = 2.5ms 9 × 1.0ms = 9.0ms 6 × 1.5ms = 9.0ms 1 × 1.4ms = 1.4ms 2.5ms + 9.0ms + 9.0ms + 1.4ms = 21.9ms $\text{Duty Cycle Factor} = 20\log\left(\frac{21.9\text{ms}}{100\text{ms}}\right) = -13.19dB$



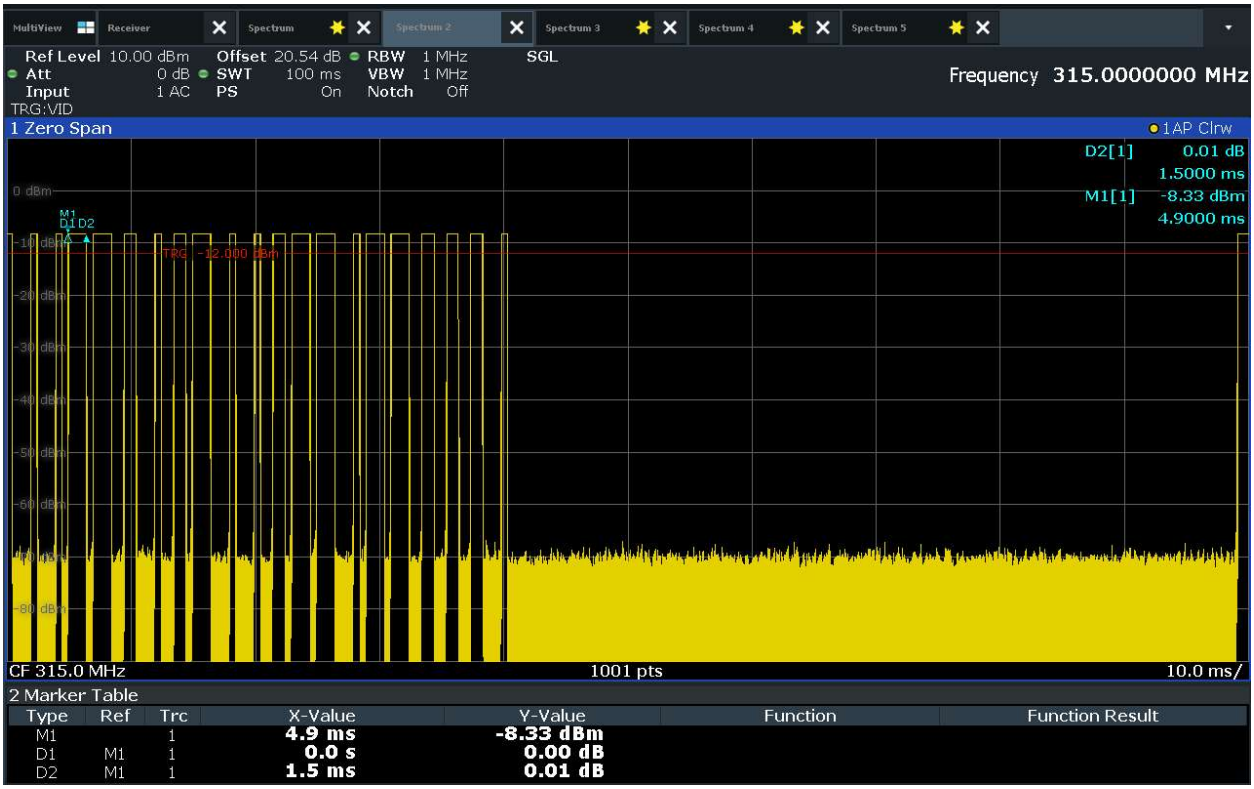
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	390MHz
Result	Pulse 1 = 0.5ms
Notes	



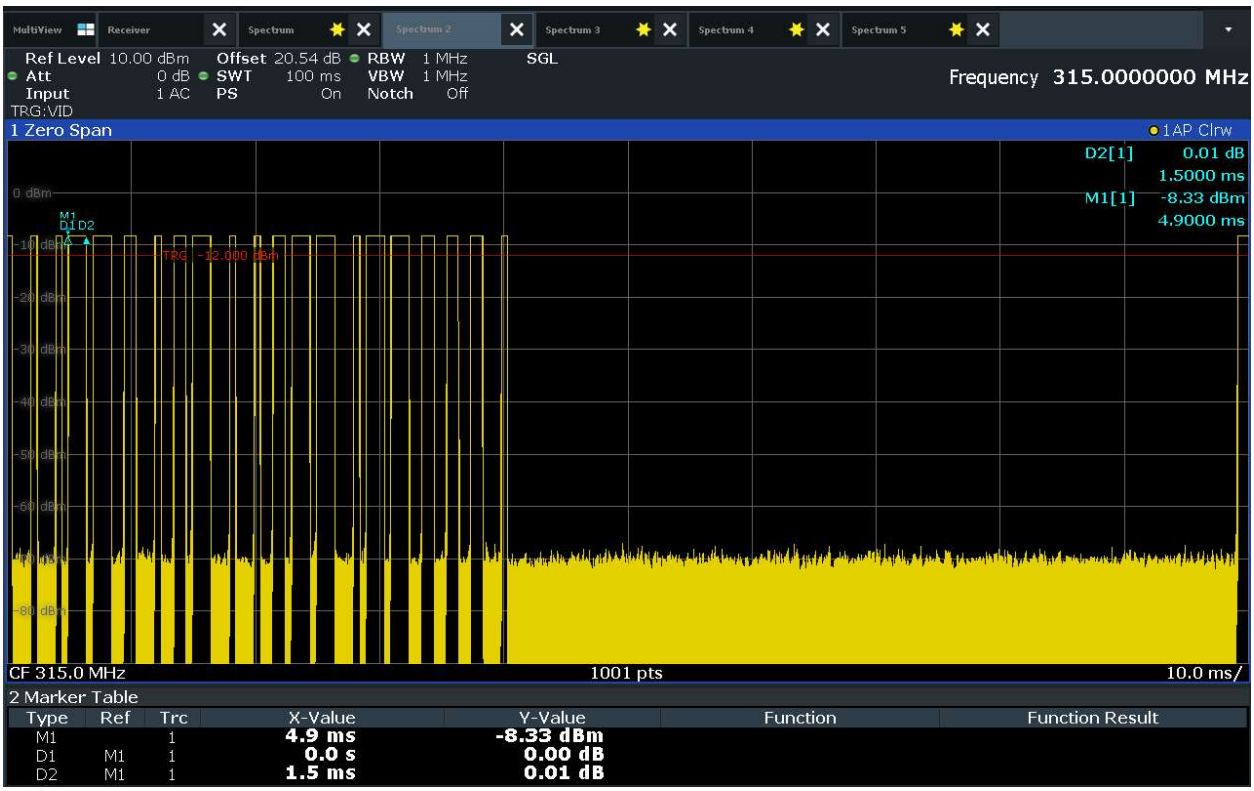
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	390MHz
Result	Pulse 2 = 1.0ms
Notes	



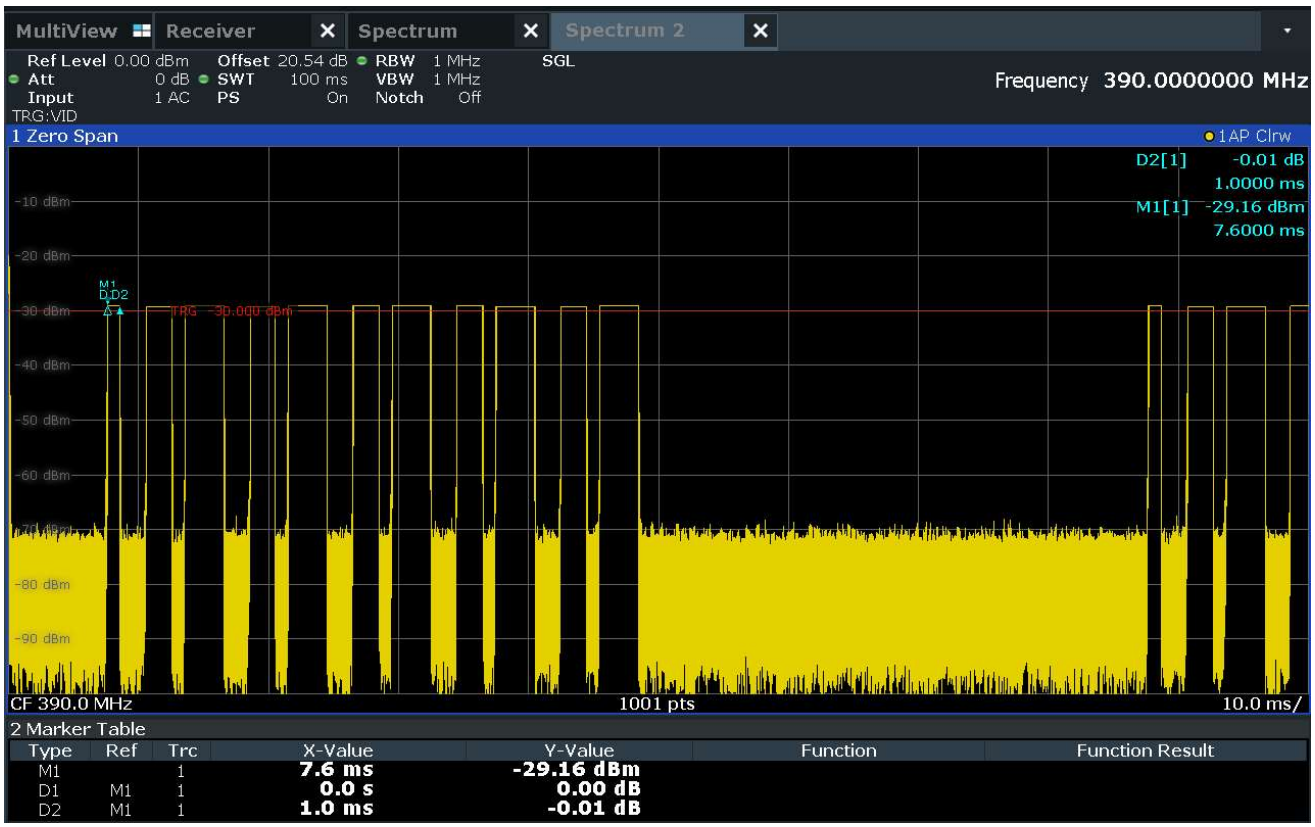
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	390MHz
Result	Pulse 3 = 1.5ms
Notes	



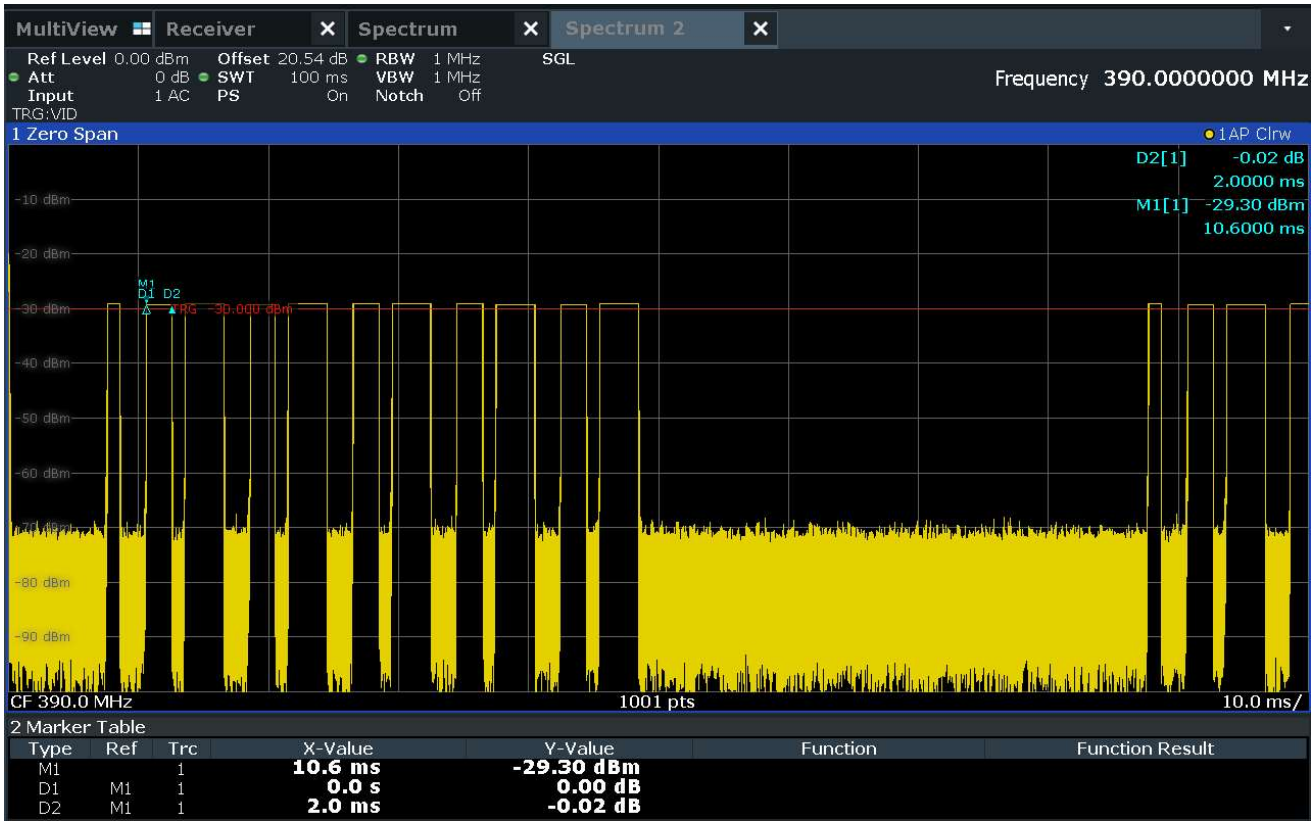
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	D Code
Frequency Tested	390MHz
Result	Duty Cycle = -14.89dB
Notes	Duty Cycle Factor Calculation: 9 × 0.5ms = 4.5ms 6 × 1.0ms = 6.0ms 5 × 1.5ms = 7.5ms 4.5ms + 6.0ms + 7.5ms = 18.0ms $\text{Duty Cycle Factor} = 20\log\left(\frac{18.0\text{ms}}{100\text{ms}}\right) = -14.89dB$



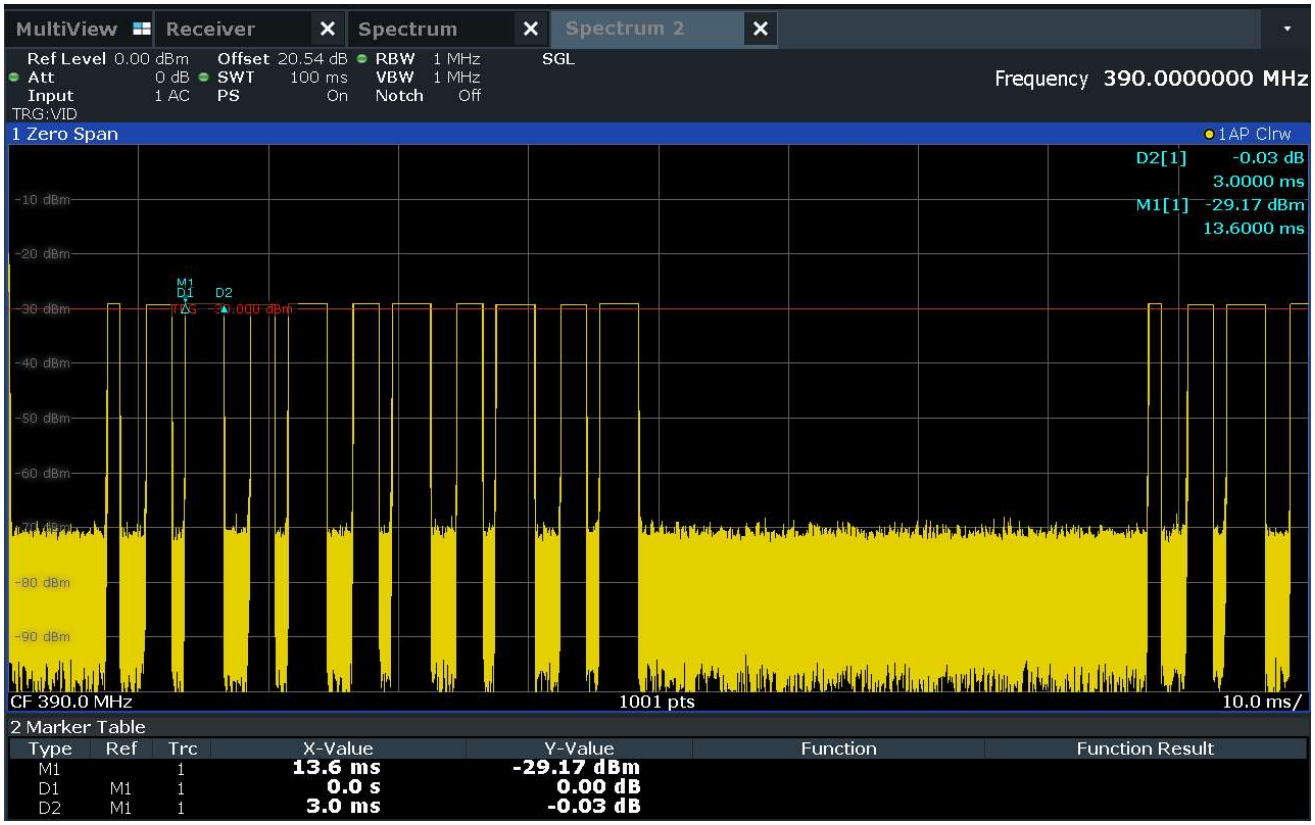
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	Billion A Code
Frequency Tested	390MHz
Result	Pulse 1 = 1.0ms
Notes	



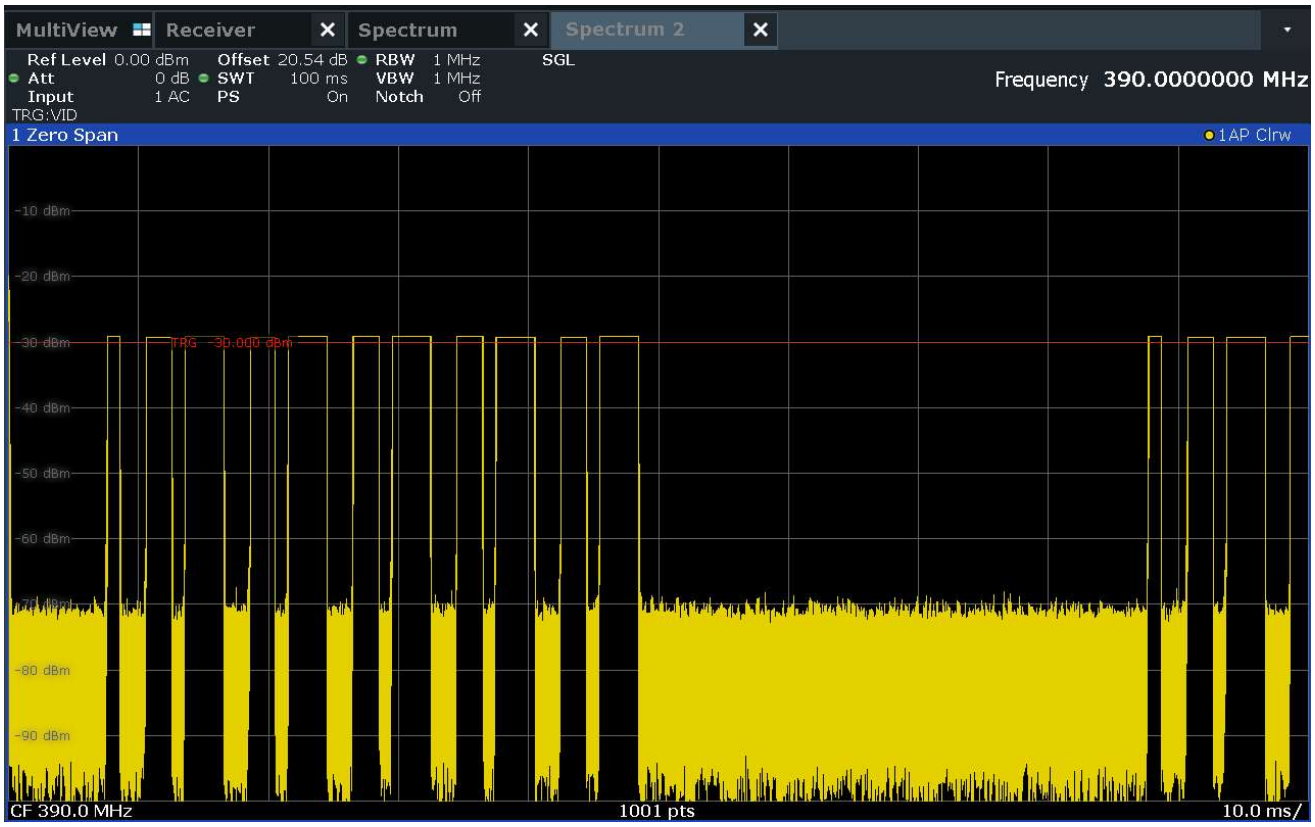
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	Billion A Code
Frequency Tested	390MHz
Result	Pulse 2 = 2.0ms
Notes	



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	Billion A Code
Frequency Tested	390MHz
Result	Pulse 3 = 3.0ms
Notes	

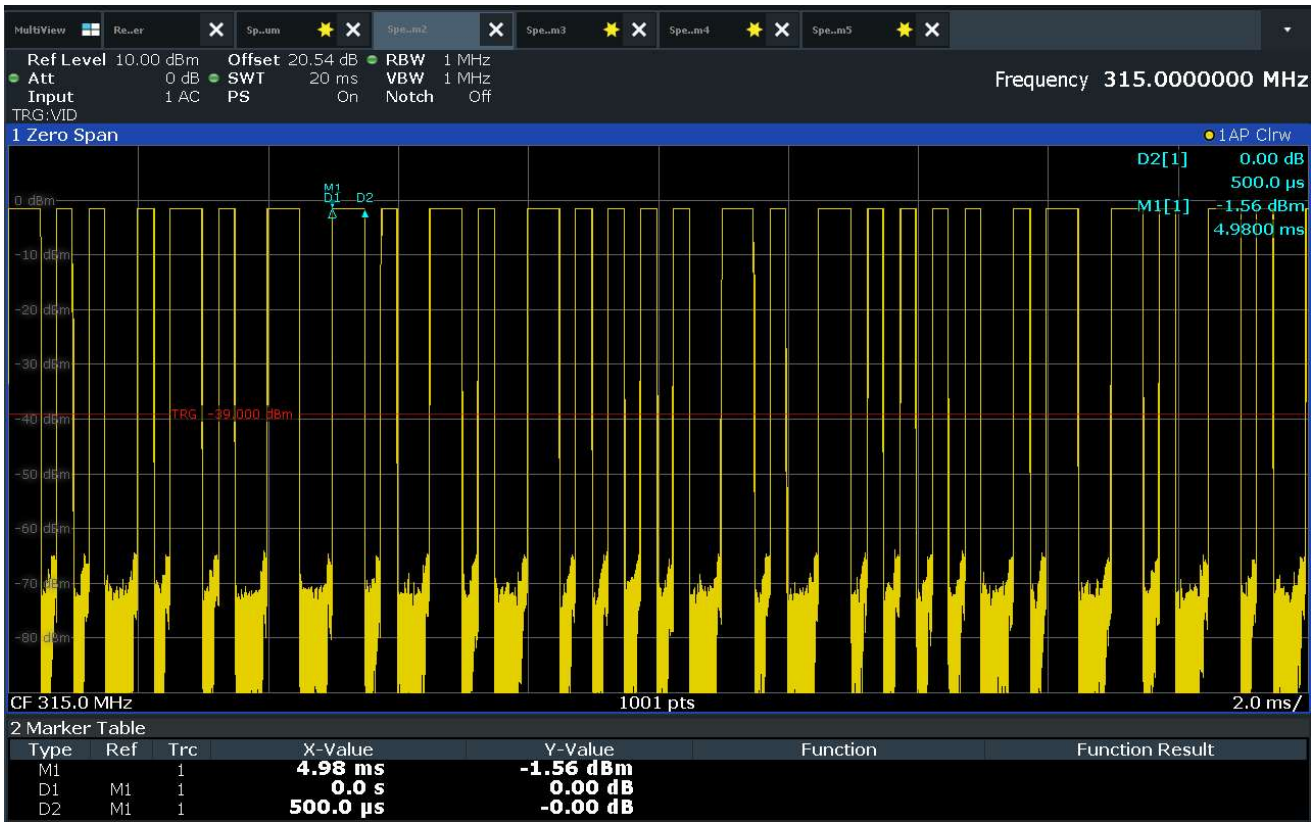


Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	Billion A Code
Frequency Tested	390MHz
Result	Duty Cycle = -9.55dB
Notes	Duty Cycle Factor Calculation: 2 × 1.0ms = 2.0ms 6 × 2.0ms = 12.0ms 6 × 3.0ms = 18.0ms 1 × 1.3ms = 1.3ms 1.3ms + 2.0ms + 12.0ms + 18.0ms = 33.3ms $\text{Duty Cycle Factor} = 20\log\left(\frac{33.3\text{ms}}{100\text{ms}}\right) = -9.55dB$

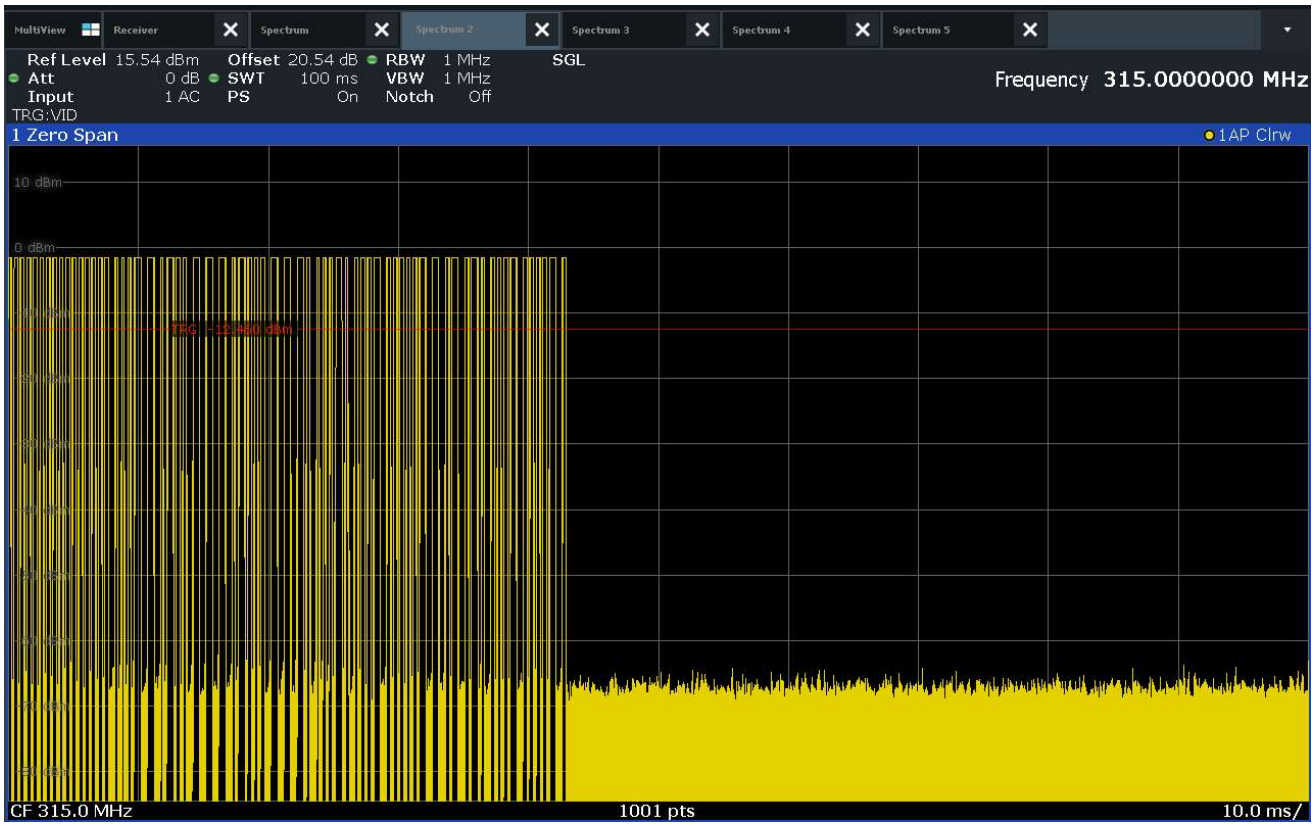


Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	315MHz
Result	Pulse 1 = 0.25ms
Notes	

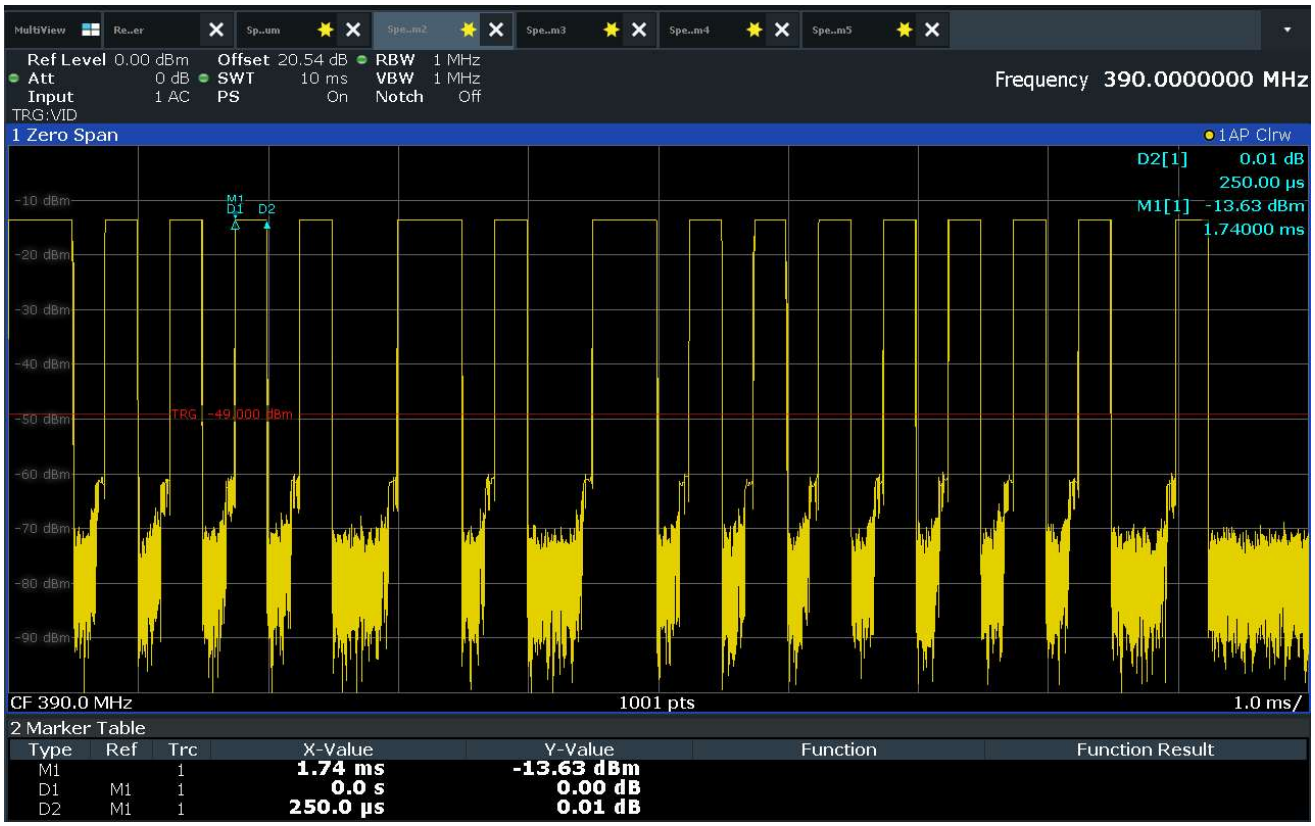
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	315MHz
Result	Pulse 2 = 0.5ms
Notes	



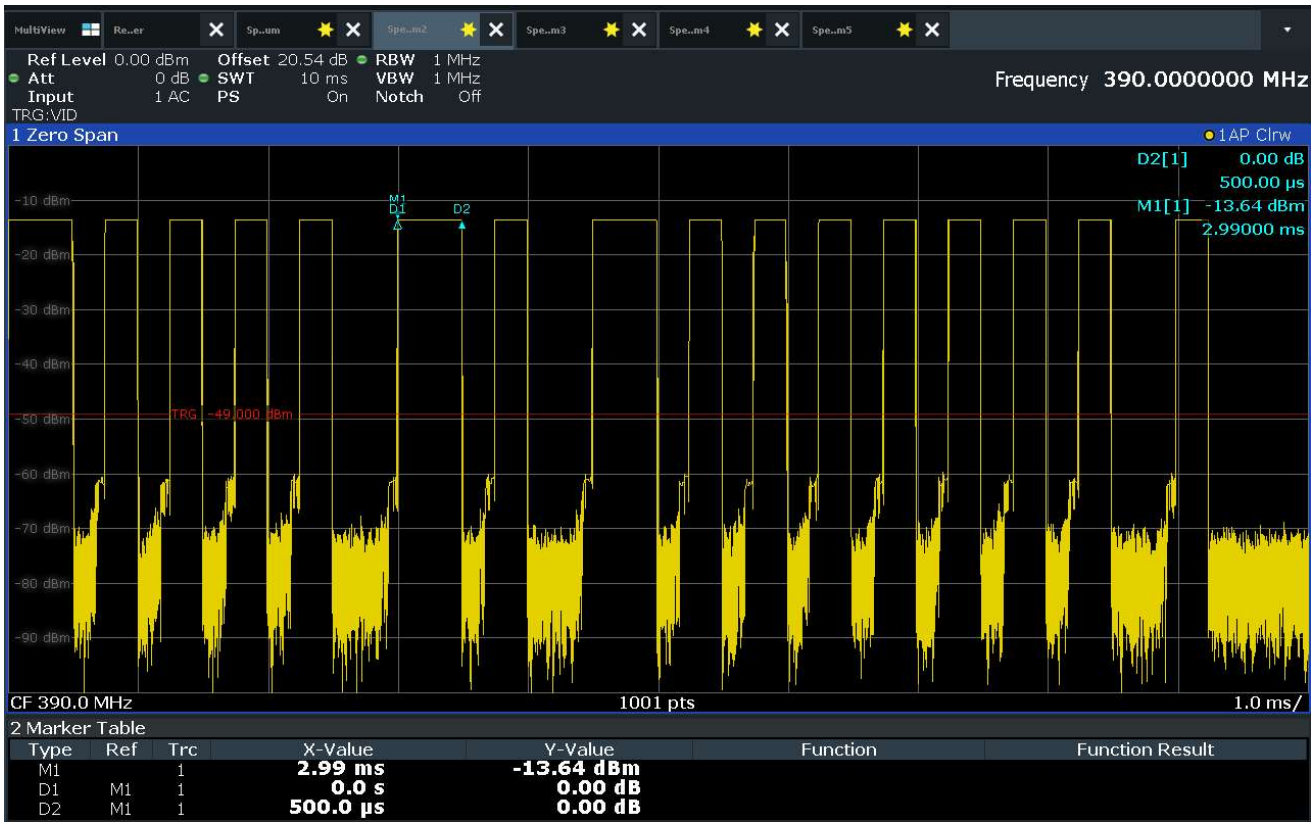
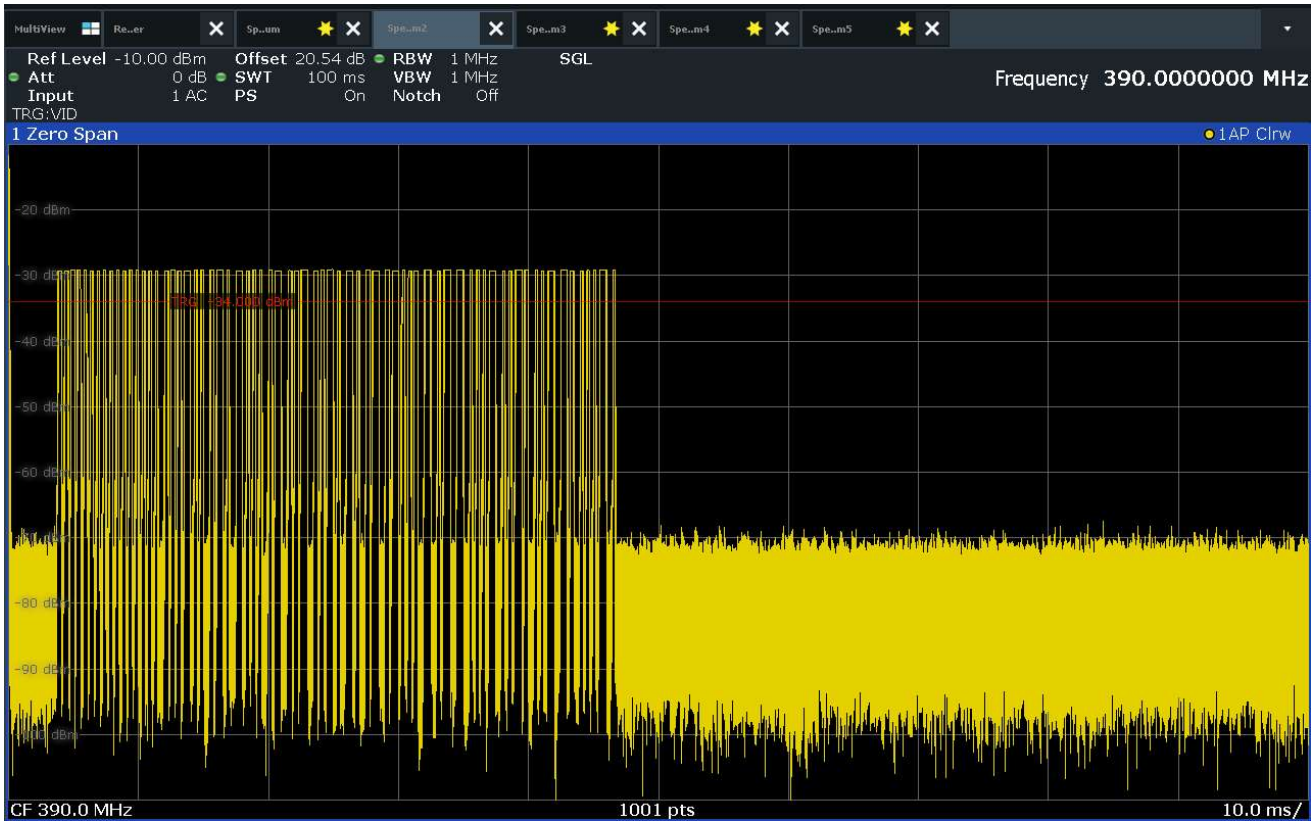
Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	315MHz
Result	Duty Cycle = -13.55dB
Notes	Duty Cycle Factor Calculation: 46 × 0.25ms = 11.5ms 19 × 0.5ms = 9.5ms 11.5ms + 9.5ms = 21.0ms $\text{Duty Cycle Factor} = 20\log\left(\frac{21.0\text{ms}}{100\text{ms}}\right) = -13.55dB$



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	390MHz
Result	Pulse 1 = 0.25ms
Notes	



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	390MHz
Result	Pulse 2 = 0.5ms
Notes	



Test Details	
Manufacturer	The Chamberlain Group LLC
EUT	Universal Keypad
Model No.	900-15649-1/014D15649 Rev C
Serial No.	OOK 1
Mode	E Code
Frequency Tested	390MHz
Result	Duty Cycle = -13.65dB
Notes	Duty Cycle Factor Calculation: 51 × 0.25ms = 12.75ms 16 × 0.5ms = 8.0ms 12.75ms + 8.0ms = 20.75ms $\text{Duty Cycle Factor} = 20\log\left(\frac{20.75\text{ms}}{100\text{ms}}\right) = -13.65dB$