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Test report

PRJ0080067-REP099915

Date of issue: June 9, 2025

Applicant:
The Genie Company a Division of Overhead Door Corporation

Product:
Universal Keypad

Model:	Variant(s):
GK2	OKP2

FCC ID:	IC ID:
B8QKP2	2133A-KP2

Specifications:

- FCC 47 CFR Part 15, Subpart C – §15.231
- Industry Canada RSS-210 Issue 11 – Annex A

Lab and test locations

Company name	Nemko USA Inc.
Address	1601 N A W Grimes Blvd.
City	Round Rock
State	Texas
Postal code	78626
Country	USA
Telephone	+1 512 244 3371
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 905409 Designation Number: US3166
ISED Test Site	3036B-1

Tested by	Juan Medina, EMC Engineer
Reviewed by	Larry Finn, Lab Manager
Review date	June 9, 2025
Reviewer signature	

Limits of responsibility

(1) This Report must not be used to claim product endorsement, by ANAB, ilac-MRA, NIST, the FCC or any other Agency. This report also does not warrant certification by ANAB or NIST.
(2) The significance of this report is dependent on the representative character of the test sample submitted for evaluation and the results apply only in reference to the sample tested. The manufacturer must continuously implement the changes shown herein to attain and maintain the required degree of compliance.

Copyright notification

Table of Contents

[redacted] Report summary

1.1 Applicant

Company name	The Genie Company a Division of Overhead Door Corporation
Address	1 Door Drive
City	Mt. Hope
Province/State	OH
Postal/Zip code	44660
Country	United States of America

1.2 Manufacturer

Company name	The Genie Company a Division of Overhead Door Corporation
Address	1 Door Drive
City	Mt. Hope
Province/State	OH
Postal/Zip code	44660
Country	United States of America

1.3 Test specifications

FCC 47 CFR Part 15, Subpart C – §15.231 IC RSS-210, Issue 11; Annex A	Periodic operation in the band 40.66-40.70 MHz and above 70 MHz Licence-Exempt Radio Apparatus: Category I Equipment: Momentarily operated and remote-control devices

1.4 Test methods

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

1.5 Exclusions

None.

1.6 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.7 Test report revision history

Table 1.7-1: *Test report revision history*

Revision #	Details of changes made to test report
REP099915	Original report issued

Notes:

[redacted] Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.207(a)	Conducted limits	Not applicable [1]
§15.31(e)	Variation of power source	Pass
§15.203	Antenna requirement	Pass [2]

Notes: [1] The EUT is battery operated. Charging via AC adaptor is not possible.
[2] The EUT uses a trace antenna on PCB.

2.2 FCC Part 15 Subpart C, intentional radiators test results

Part	Test description	Verdict
§15.231(a)(1)	Manually operated transmitter	Pass
§15.231(a)(2)	Cessation of transmission	Not applicable [1]
§15.231(a)(3)	Periodic transmissions	Not applicable [2]
§15.231(a)(4)	Setup information for security systems	Not applicable [3]
§15.231(b)	Field strength of emissions	Pass
§15.231(c)	Bandwidth of emissions	Pass
§15.231(d)	Band edge and frequency tolerance	Not applicable [4]
§15.231(e)	Periodic operation	Not applicable [5]

Notes: [1] The EUT does not support automatic activation.
[2] The EUT does not support periodic, polling or supervision transmissions.
[3] The EUT is not a security system and does not transmit set-up information.
[4] The EUT does not operate in the 40.66 – 40.70 MHz band to which these requirements apply.
[5] The EUT complies with the requirements of section 15.231(a) therefore these requirements do not apply.

2.4 ISED RSS-GEN, Issue 5 test results

Part	Test description	Verdict
6.7	Occupied bandwidth	Pass
7.3	Receiver radiated emission limits	Not applicable [1]
7.4	Receiver conducted emission limits	Not applicable
8.8	Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus	Not applicable

Notes: [1] The EUT is neither a scanning receiver nor a stand-alone receiver.
[2] The EUT is battery operated. Charging via AC adaptor is not possible.

2.4 ISED RSS-210, Issue 11, Annex A test results

Part	Test description	Verdict
A.1.2(a)	Manually operated transmitter	Pass
A.1.2(b)	Cessation of transmission	Not applicable [1]
A.1.2(c)	Periodic transmissions	Not applicable [2]
A.1.2(d)	Setup information for security systems	Not applicable [3]
A.1.3	Field strength of emissions	Pass
A.1.4	Bandwidth of momentary signals	Pass
A.1.5	Reduced field strengths	Not applicable [4]

Notes: [1] The EUT does not support automatic activation.
[2] The EUT does not support periodic, polling or supervision transmissions.
[3] The EUT is not a security system and does not transmit set-up information.
[4] The EUT complies with the requirements of section A.1.1 therefore these requirements do not apply.

Equipment under test (EUT) details

3.1 Sample information

Receipt date	May 27, 2025
Nemko sample ID number	PRJ0080067

3.2 EUT information

Product name	Universal Keypad
Model	GK2
Variant(s)	OKP2 (Variant is identical to GK2 with respect to PCB and electronic components)
Serial number	None
Part number	N/A

3.3 EUT technical information

Operating frequency(-ies)	Frequency (MHz)	Modulation
	303	303 MHz, Fixed Learn Code
	315	315 MHz, Intellicode® I, 1995-current
	315	Purple Learn Button, Security +®, 2006-2014, 315 MHz
	315	Yellow Learn Button, Security +2.0®, 2011-current, 390 MHz
	315	315 MHz, Intellicode® II, 2010
	315	315 MHz, Fixed Learn Code
	318	318 MHz, Mega Code®
	360	9 Switch/3 Position Dip Switch, 1993-1995
	380	9 Switch/3 Position Dip Switch, 1993-1995
	390	390 MHz, Intellicode® I, 1995-current
	390	Orange/Red Learn Button, Security +®, 1996-2005, 390 MHz
	390	Green Learn Button, Billion Code®, 1993-1995, 390 MHz
	390	390 MHz, Intellicode® II, 2010-2011
	412	9 Switch/3 Position Dip Switch, 1993-1995
Power requirements	$3V_{DC}$ battery	
Antenna information	The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.	

3.4 Product description and theory of operation

The EUT is a programmable wall-mounted door opener (fixed mounted) activated via manual push-button. The EUT is battery powered only and does not derive any power from AC mains.

3.5 EUT exercise and monitoring details

For radiated emissions, the EUT was programmed to operate in a given mode (Coding, and operating frequency) with continuous transmission. For bench testing, samples were programmed to operate in a given mode in the normal operating state. That is, the transmitter is manually activated by pushing the appropriate button on the sample. Battery power used for all testing.

Table 3.5-1: *EUT sub-assemblies*

Description	Brand name	Model/Part number	Serial number	Rev.
The EUT has no sub-assemblies	--	--	--	--

Table 3.5-2: *EUT interface ports*

Description	Qty.
None	--

Table 3.5-3: *Support equipment*

Description	Brand name	Model/Part number	Serial number	Rev.
None				

Table 3.5-4: *Inter-connection cables*

Cable description	From	To	Length (ft)
None	--	--	--

3.6 EUT setup diagram

Figure 3.6-1: *Test setup*

Note: A coaxial connection was used to measure Duty Cycle, Transmission Time, and Bandwidth using a conducted setup.

[redacted] Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures

[redacted] Test conditions

5.1 Atmospheric conditions

Temperature	15-30 °C
Relative humidity	20-75 %
Air pressure	86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

[redacted] Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
Radiated spurious emissions	3.62
Powerline conducted emissions	2.74
All antenna port measurements	0.41
Conducted spurious emissions	2.88

Test equipment

Table 6.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Next cal.
Radiated Setup:				
Antenna, Loop, Active, .01-30MHz	EMCO	6502	1293	2/14/2027
Receiver, Test, EMI, 1 Hz to 44 GHz	Rohde & Schwarz	ESW44	2541	8/5/2025
Switch Driver	Agilent	11713A	1939	N/A
Antenna, Hybrid, Bilogical, 25 MHz - 4 GHz	A.H. Systems	SAS-521-4	2613	4/22/2027
Preamp, 0.1-1300MHz, 26dB	HP	8447D	586	3/13/2026
Amplifier, 40dB, 100MHz-18GHz	Miteq	AFS44-00101800-2S-10P-44	2004	1/27/2026
Antenna, Double Ridged Guide Horn, 1 - 18 GHz	ETS-Lindgren	3117	1780	11/8/2025
Cable, RF, N-N, 36', DC-18GHz	evissaP	eP7123R-432	C395	2/15/2026
Cable, RF, N-N, 32', DC-18GHz	evissaP	eP7123R-384	C394	2/14/2026
Cable, RF, N-N, 22', DC-18GHz	evissaP	eP7031R-22FT	C404	3/1/2026
Cable, RF, N-N, 30', DC-18GHz	evissaP	eP7031R-30FT	C405	3/1/2026
Cable, RF, SMA-SMA, 12", 2.92mm, DC-40GHz	evissaP	eP7101R-12	C398	3/1/2026
Enclosure, Shielded, RFI/EMI, NSA, 3m & 10m, 30MHz - 1 GHz	TDK	254	2555	2/3/2026
Cable, RF, SMA-N, 6', DC-18GHz	evissaP	eP7033R-6FT	C406	3/1/2026
Cable, RF, SMA-SMA, 12", 2.92mm, DC-40GHz	evissaP	eP7101R-12	C399	3/1/2026
Cable, RF, SMA-N, 6', DC-18GHz	evissaP	eP7033R-6FT	C407	3/1/2026
Cable, RF, N-N, 30", DC-18GHz	evissaP	eP3010R-30	C400	3/1/2026
Conducted Setup:				
Analyzer, Signal, 44 GHz	Rohde & Schwarz	FSV3044	2551	6/5/2026
Cable, RF, SMA-SMA, 11', 2.92mm, DC-40GHz	evissaP	eP7101R-132	C397	3/1/2026

Notes: NCR – no calibration required

Testing data

8.1 Duty cycle

8.1.1 Definitions and limits

To correctly report average values of the fundamental and spurious harmonic emissions, it is necessary to measure the duty cycle of the transmitter.

8.1.2 Test summary

Test date	May 27, 2025	Temperature	23 °C
Test engineer	Juan Medina, EMC Engineer	Air pressure	991 mbar
Test location	Wireless bench	Relative humidity	49 %

8.1.3 Observations, settings, and special notes

Measurements were performed in accordance with Section 7.5 of ANSI C63.10 using a spectrum analyzer tuned to the transmitter fundamental frequency in a zero-span mode.

Duty cycle was measured for each of the supported frequencies by the EUT.

Duty cycle correction factor calculated using the following equation (from ANSI C63.10 Section 7.5):

$$\delta(dB) = 20\log_{10}\left[\sum(nt_1 + mt_2 + \cdots + \varepsilon t_x)/T\right]$$

Data transmission from the device consisted of bursts of varying pulse width transmissions, repeating over a set packet interval. Each transmission contained 2 or 3 different pulse widths depending on the protocol used. Duty cycle was calculated by measuring the width of each type of pulse and summing them together to determine the total 'on' time. This was done as follows:

TX on time = t1 pulse width (µs) X number of t1 pulses + t2 pulse width (µs) X number of t2 pulses + t3 pulse width (µs) X number of t3 pulses

Duty cycle was then calculated based on the following equation:

Duty cycle (Δ) *= Transmitter on time / Transmission interval*

The spectrum analyzer trace was exported to a spreadsheet and the duty cycle was calculated from the raw data. The duty cycle correction factor was calculated using the following equation (from ANSI C63.10 Section 7.5):

$$\delta(\mathrm{dB}) = 20\log_{10}\langle\Delta\rangle$$

8.1.4 Test data

Table 8.1-1: *Duty cycle test data*

Brand / Coding	Carrier Frequency (MHz)	Number of pulses t1 in TX period	t1 pulse width (µs)	Number of pulses t2 in TX period	t2 pulse width (µs)	Number of pulses t3 in TX period	t3 pulse width (µs)	Total TX time (ms)	TX Period (ms)	Duty Cycle Correction (dB) (See 8.1.3)	% Duty cycle
Guardian	303	17	493.8	12	990.9	0	0.0	20.3	53.4	-8.4	38
Genie IC1	315	44	179.4	34	389.9	0	0.0	21.2	100	-13.5	21
Marantec	315	12	752.9	12	1515.0	0	0.0	27.2	100	-11.3	27
Chamberlain Purple	315	5	473.7	8	992.8	8	1496.7	22.3	100	-13.0	22
Chamberlain Yellow	315	42	240.0	10	490.0	0	0.0	15.0	34.5	-7.2	43
Genie IC2	315	56	214.6	28	395.2	0	0.0	23.1	100	-12.7	23
Linear	318	15	989.0	0	0.0	0	0.0	14.8	100	-16.6	15
Genie 9 Position Trinary	360	1	940.9	9	1890.0	0	0.0	18.0	72.2	-12.1	25
Genie 9 Position Trinary	380	1	942.3	9	1848.7	0	0.0	17.6	72.2	-12.3	24
Genie IC1	390	41	192.3	37	390.9	0	0.0	22.3	100	-13.0	22
Chamberlain Green	390	5	979.1	1	1995.9	5	2978.6	21.8	78.0	-11.1	28
Chamberlain Red	390	10	469.1	5	1014.6	6	1497.0	18.7	100	-14.5	19
Genie IC2	390	50	184.5	34	380.0	0	0.0	22.1	100	-13.1	22
Genie 9 Position Trinary	412	1	937.5	9	1891.2	0	0.0	18.0	72.2	-12.1	25

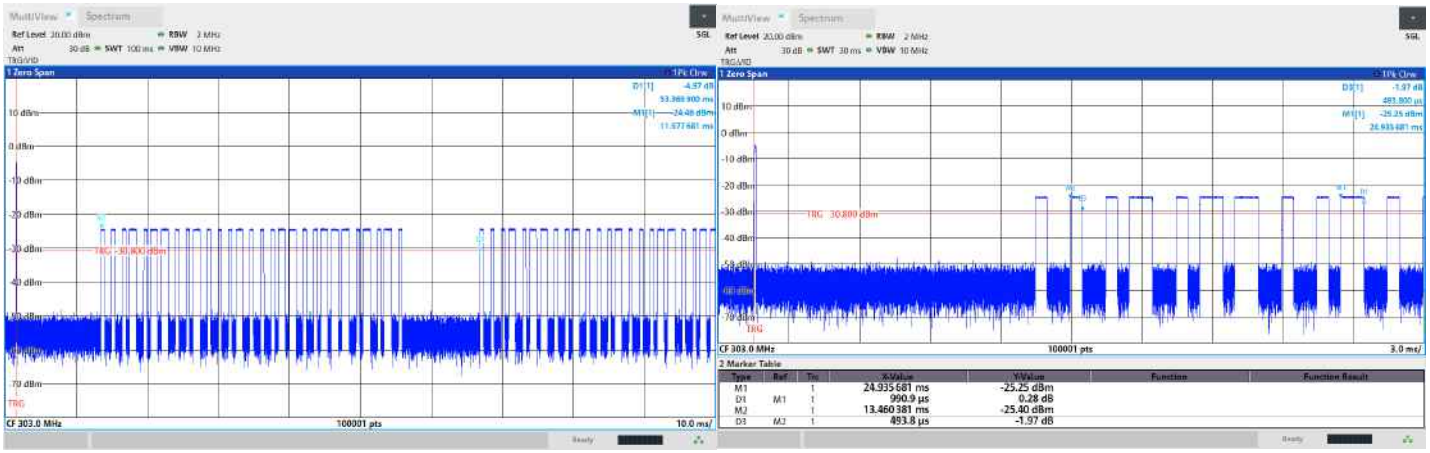

Figure 8.1-1: *Duty cycle, Guardian 303 MHz*

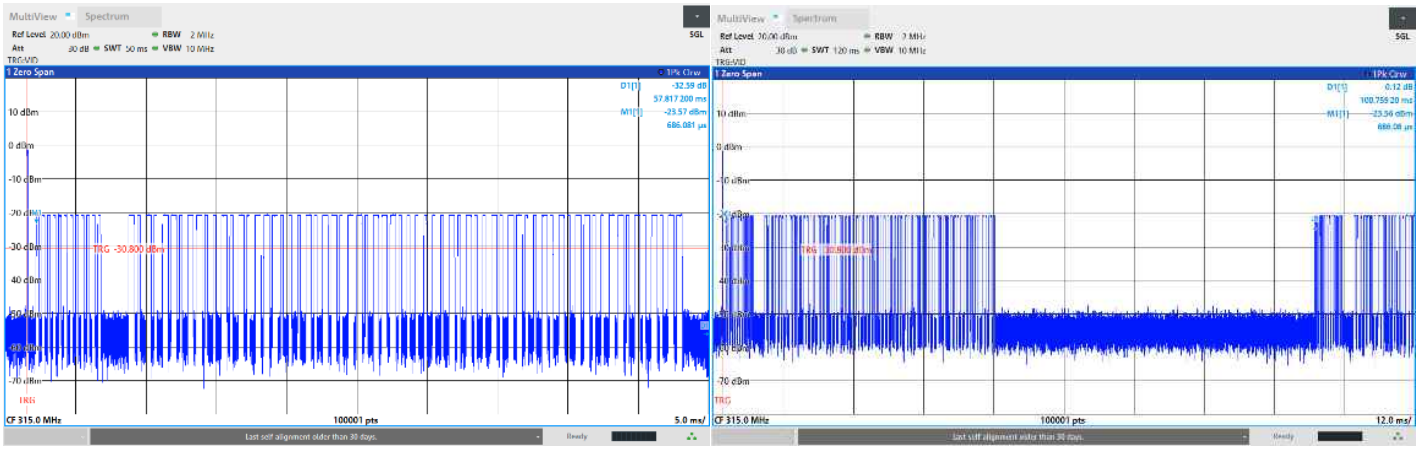

Figure 8.1-2: *Duty cycle, Genie IC1 315 MHz*

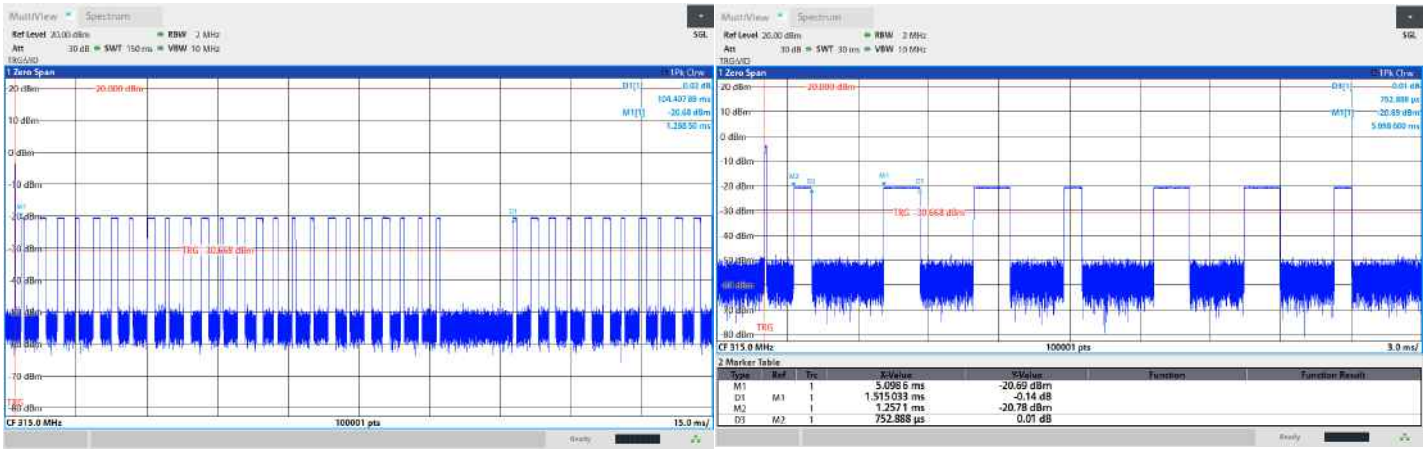

Figure 8.1-3: *Duty cycle, Marantec 315 MHz*

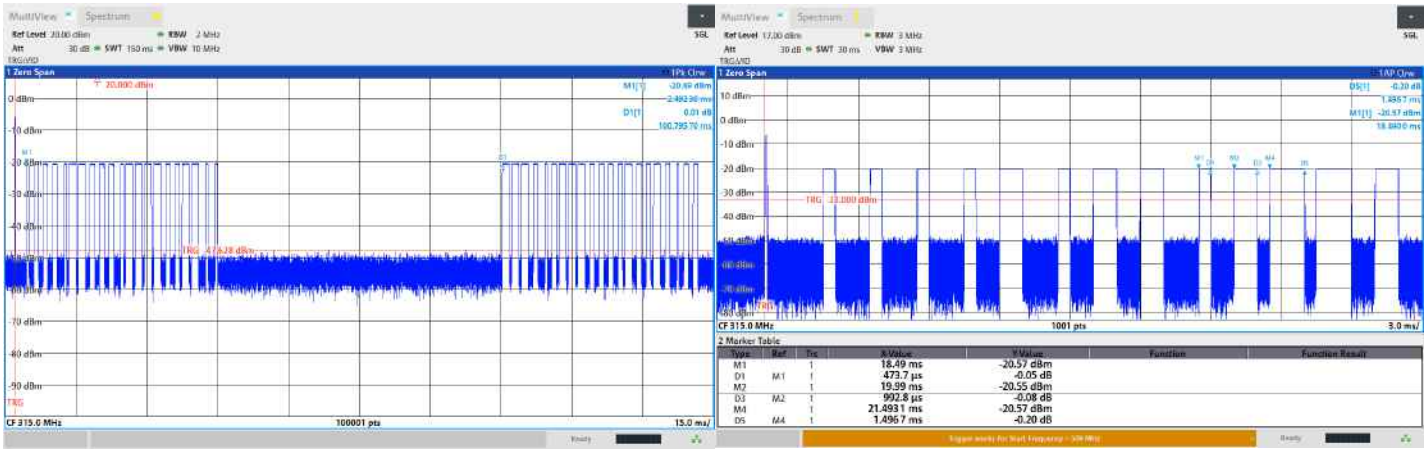

Figure 8.1-4: *Duty cycle, Chamberlain Purple 315 MHz*

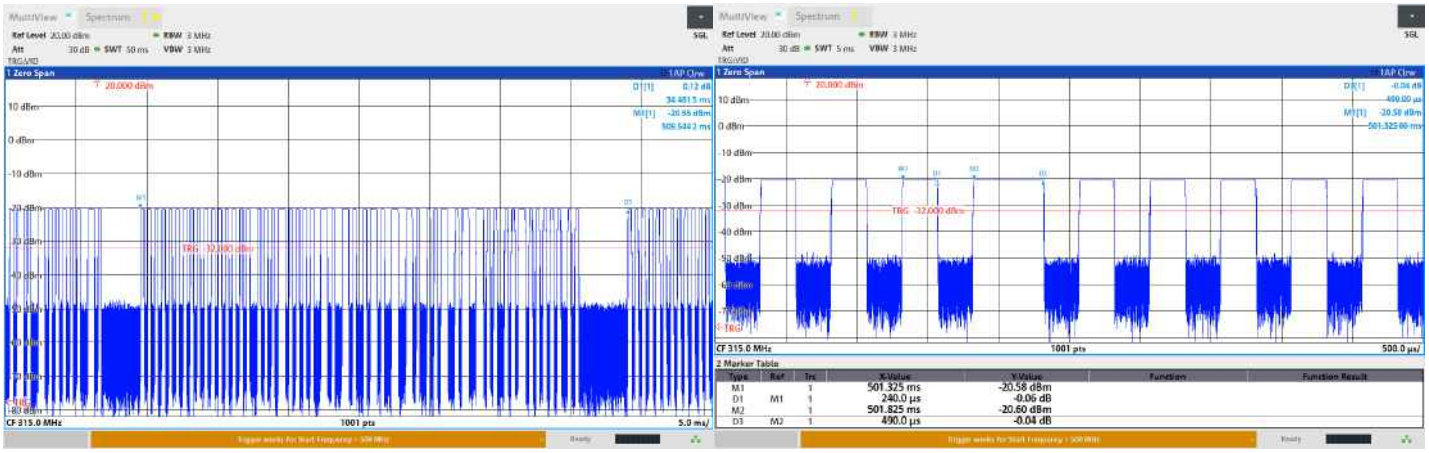

Figure 8.1-5: *Duty cycle, Chamberlain Yellow 315 MHz*

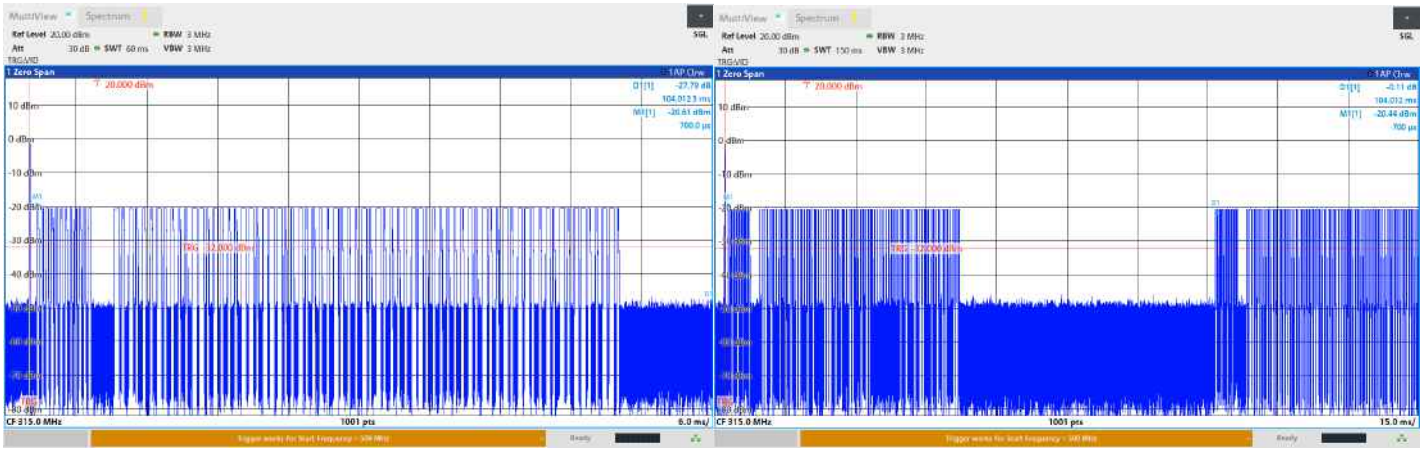

Figure 8.1-6: *Duty cycle, Genie IC2 315 MHz*

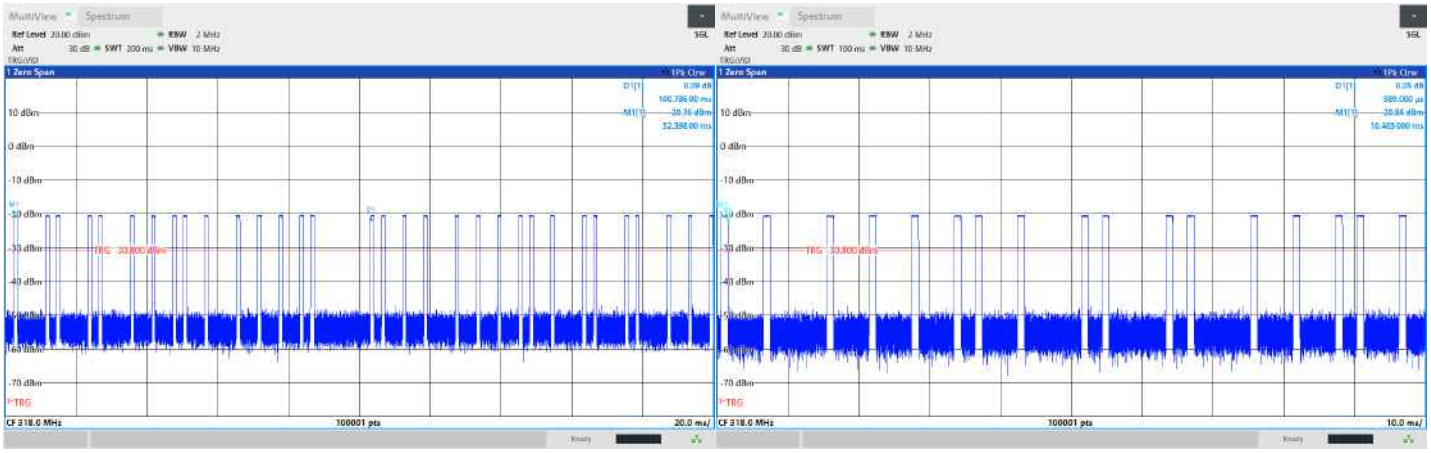

Figure 8.1-7: *Duty cycle, Linear 318 MHz*

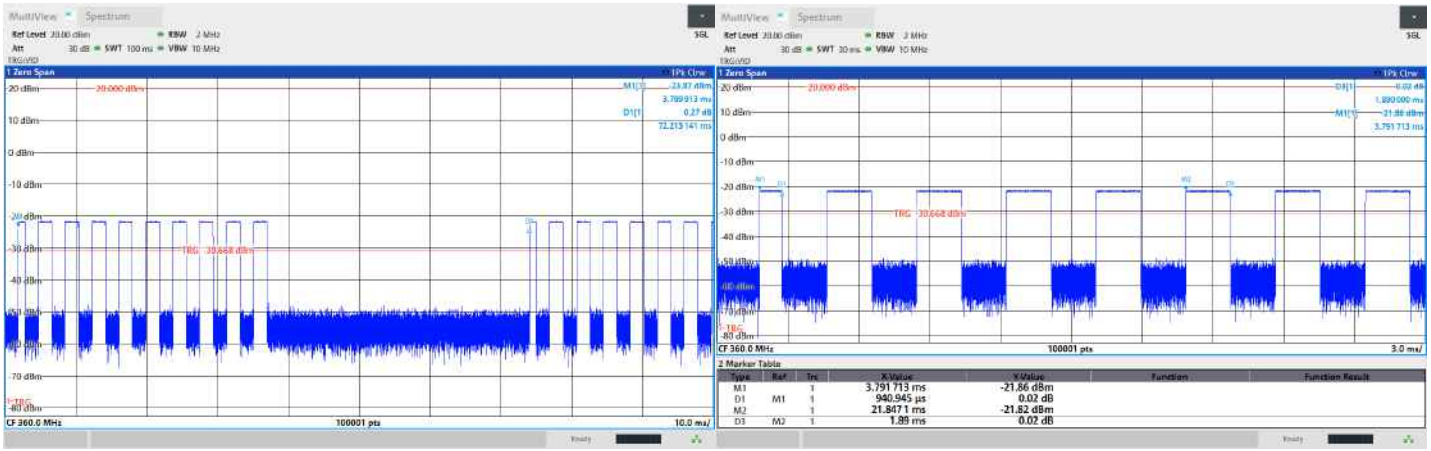

Figure 8.1-8: *Duty cycle, Genie 9 Position Trinary 360 MHz*

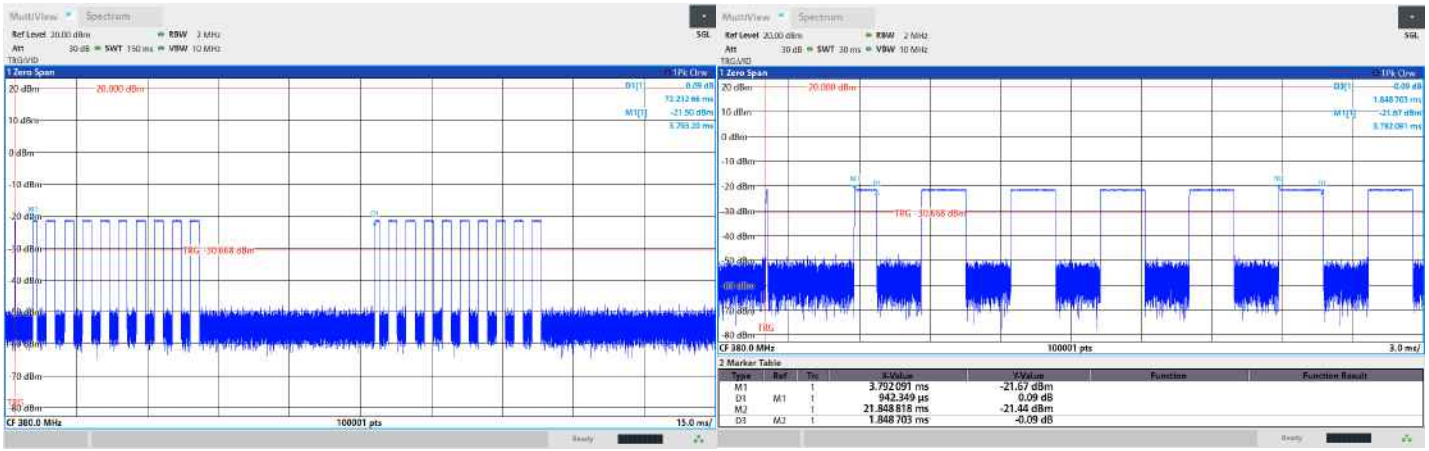

Figure 8.1-9: *Duty cycle, Genie 9 Position Trinary 380 MHz*

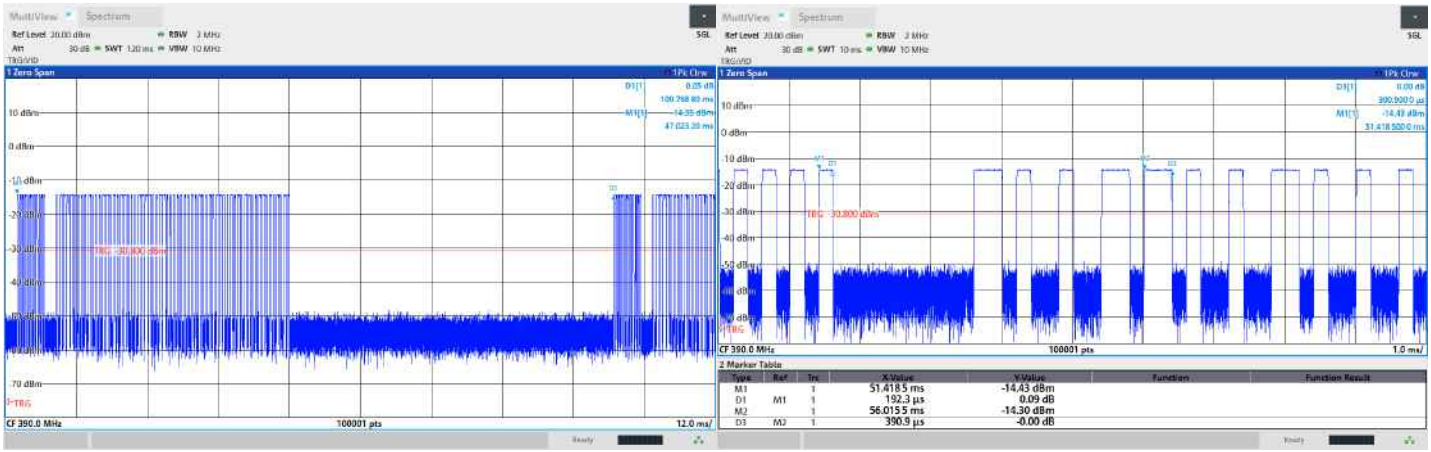

Figure 8.1-10: *Duty cycle, Genie IC1 390 MHz*

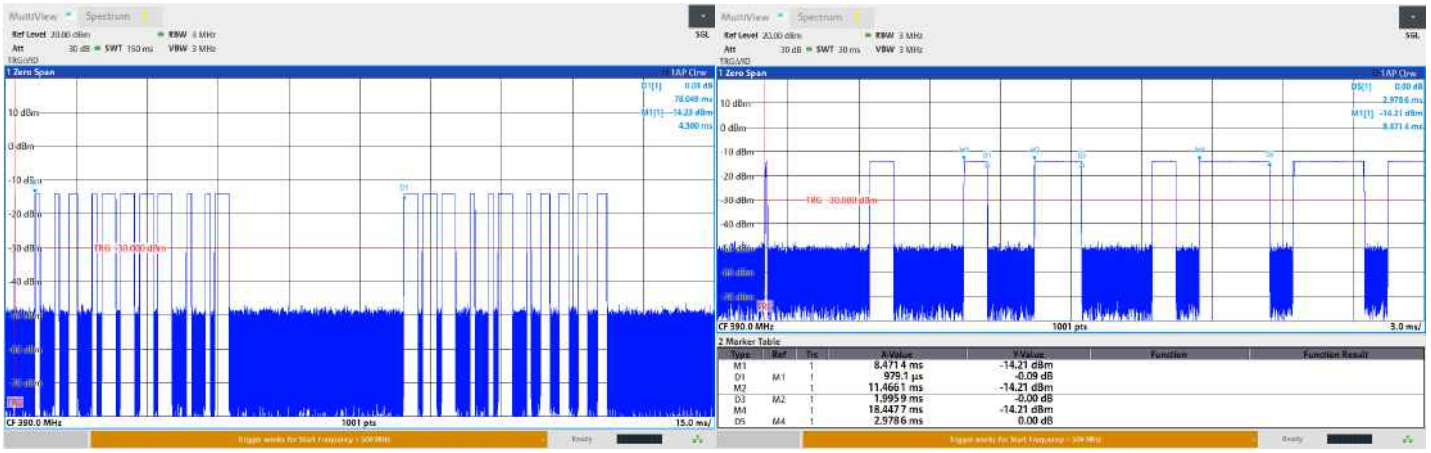

Figure 8.1-11: *Duty cycle, Chamberlain Green 390 MHz*

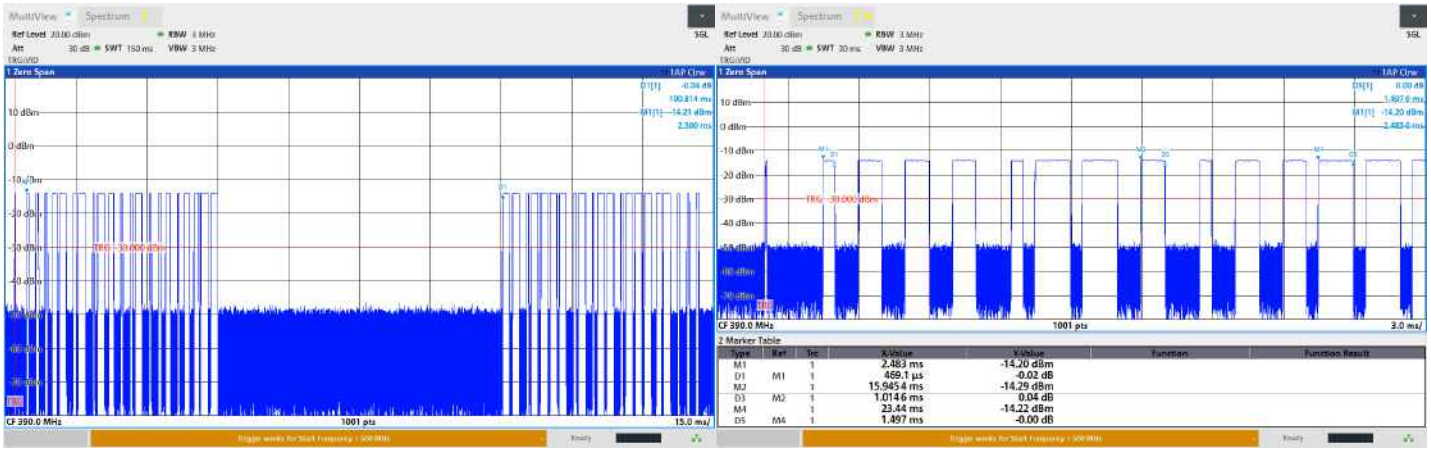

Figure 8.1-12: *Duty cycle, Chamberlain Red 390 MHz*

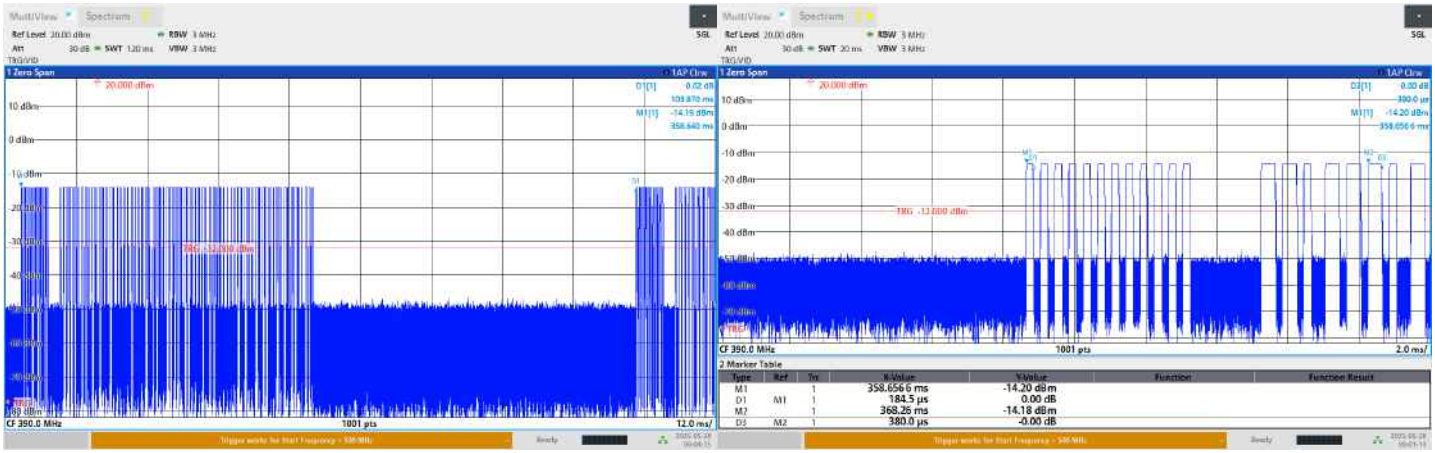

Figure 8.1-13: *Duty cycle, Genie IC2 390 MHz*

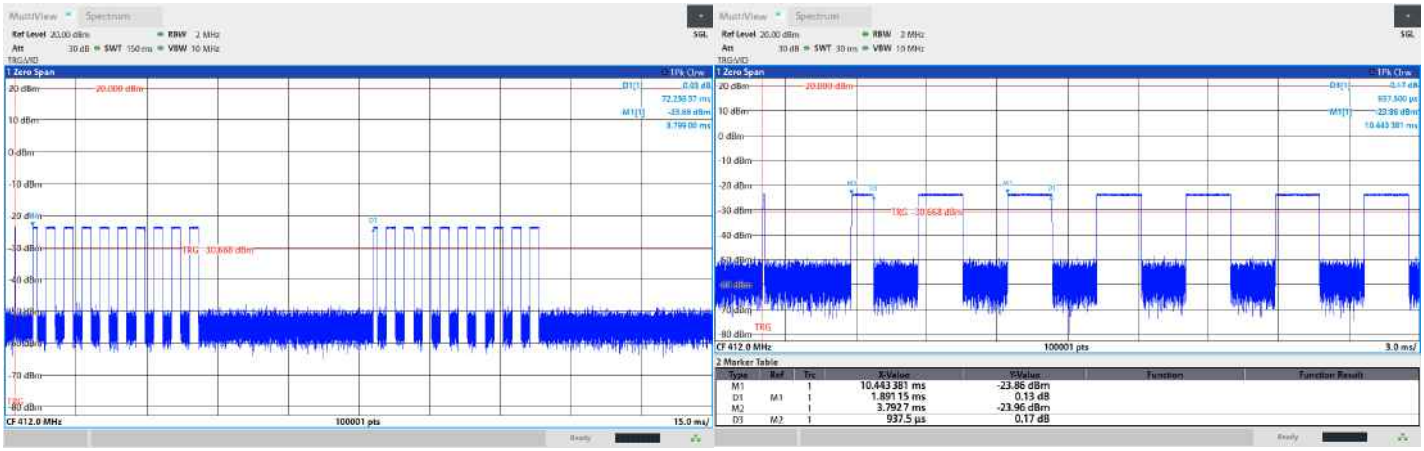

Figure 8.1-14: *Duty cycle, Genie 9 Position Trinary 412 MHz*

8.2 FCC 15.231(a)(1) / RSS-210 A.1.2(a) Manually operated transmitter

8.2.1 Definitions and limits

FCC 15.231(a)(1) and RSS-210 A.1.2(a):
A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

8.2.2 Test summary

Verdict	Pass		
Test date	May 27, 2025	Temperature	23 °C
Test engineer	Juan Medina, EMC Engineer	Air pressure	991 mbar
Test location	Wireless bench	Relative humidity	49 %

8.2.3 Observations, settings, and special notes

Tests were performed based on the methodology of Section 7.4 of ANSI C63.10.

The spectrum analyzer was tuned to the operating frequency of the EUT in zero span mode. A 5 second sweep time was used with video triggering to capture the transmission from the EUT when the transmitter activation button was pressed. Markers were used to measure the transmission deactivation time. The EUT met the requirements in all configurations.

8.2.4 Test data

Table 8.2-1: *Test data – deactivation time*

Brand / Coding	Operating Frequency (MHz)	Deactivation Time (s)	Limit (s)	Margin (s)
Guardian	303	1.1497172	5	3.8502828
Genie IC1	315	1.3351172	5	3.6648828
Marantec	315	1.1479264	5	3.8520736
Chamberlain Purple	315	1.1558816	5	3.8441184
Chamberlain Yellow	315	3.8048700	5	1.19513
Genie IC2	315	1.3604800	5	3.63952
Linear	318	1.1253000	5	3.8747
Genie 9 Position Trinary	360	1.0953727	5	3.9046273
Genie 9 Position Trinary	380	1.1031127	5	3.8968873
Genie IC1	390	0.4269572	5	4.5730428
Chamberlain Green	390	1.1520000	5	3.848
Chamberlain Red	390	1.1640000	5	3.836
Genie IC2	390	0.4591600	5	4.54084
Genie 9 Position Trinary	412	1.0925947	5	3.9074053

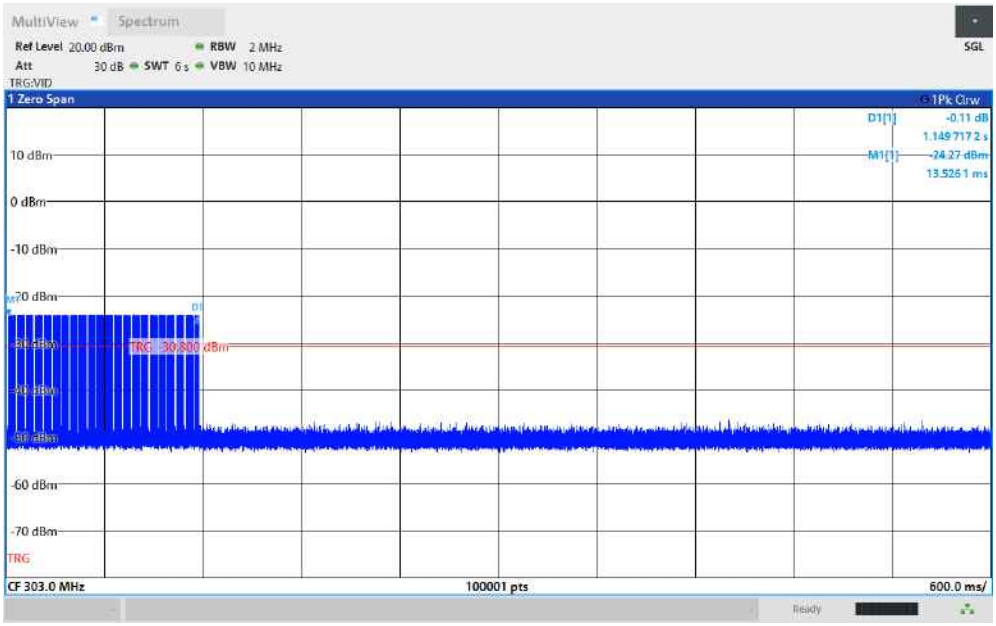

Figure 8.2-1: *Deactivation time, Guardian 303 MHz*

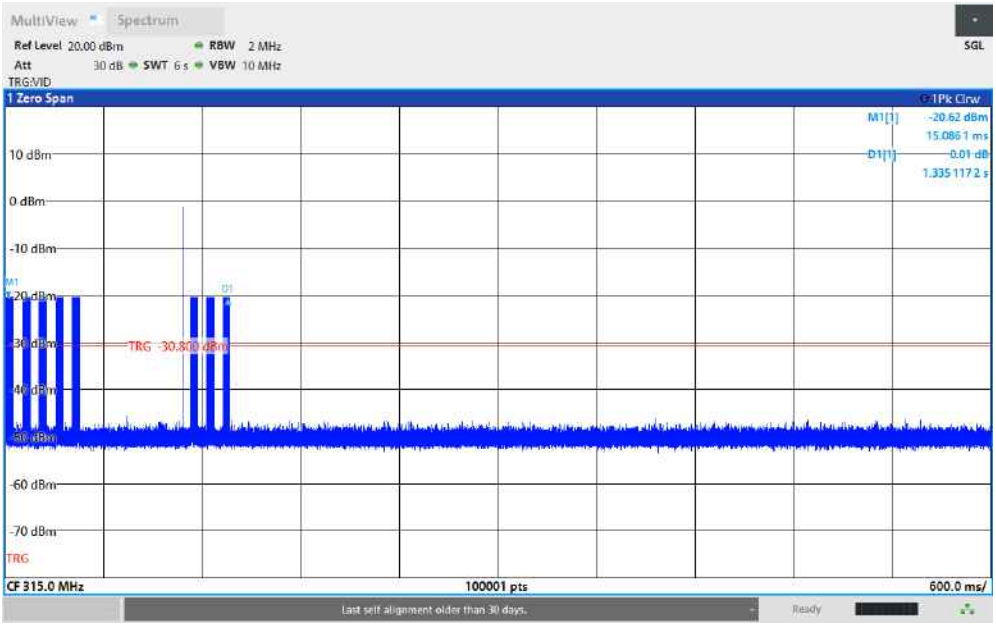

Figure 8.2-2: *Deactivation time, Genie IC1 315 MHz*

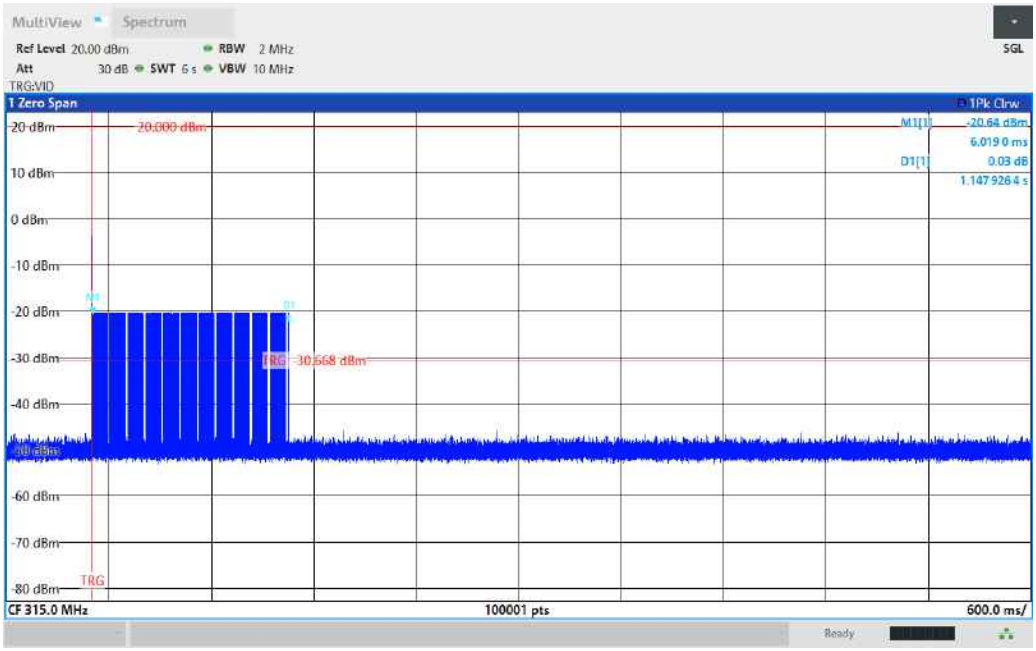

Figure 8.2-3: *Deactivation time, Marantec 315 MHz*

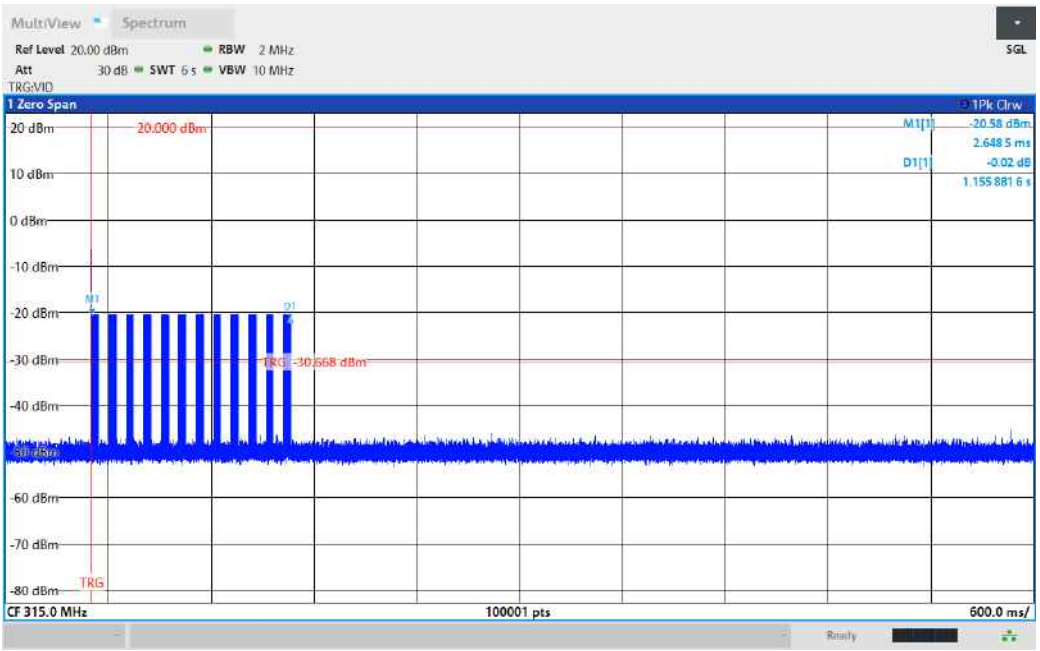

Figure 8.2-4: *Deactivation time, Chamberlain Purple 315 MHz*

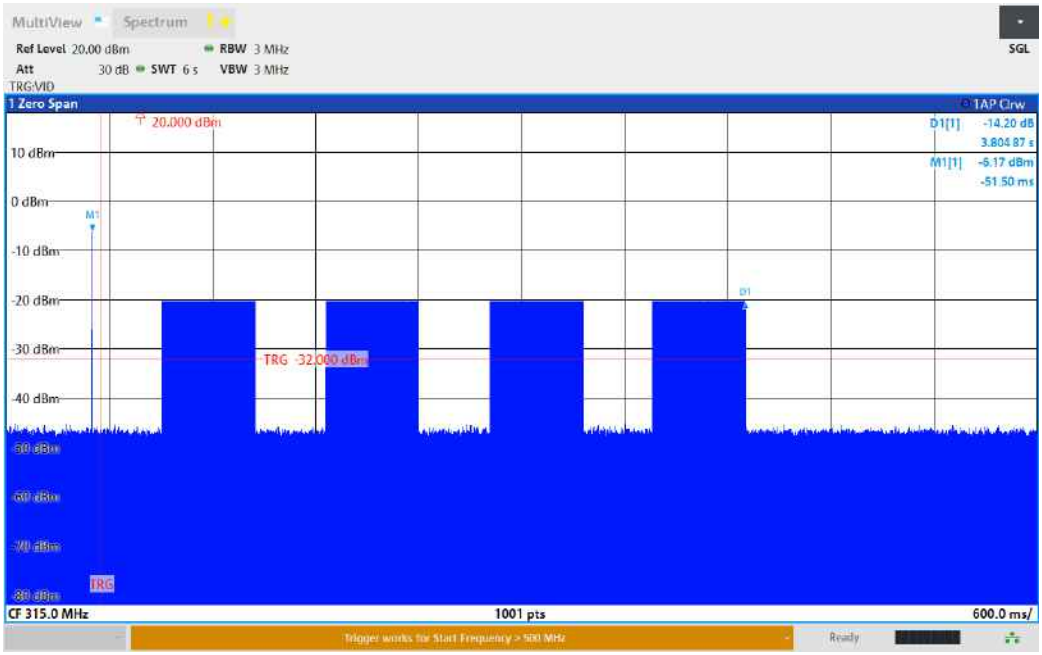

Figure 8.2-5: *Deactivation time, Chamberlain Yellow 315 MHz*

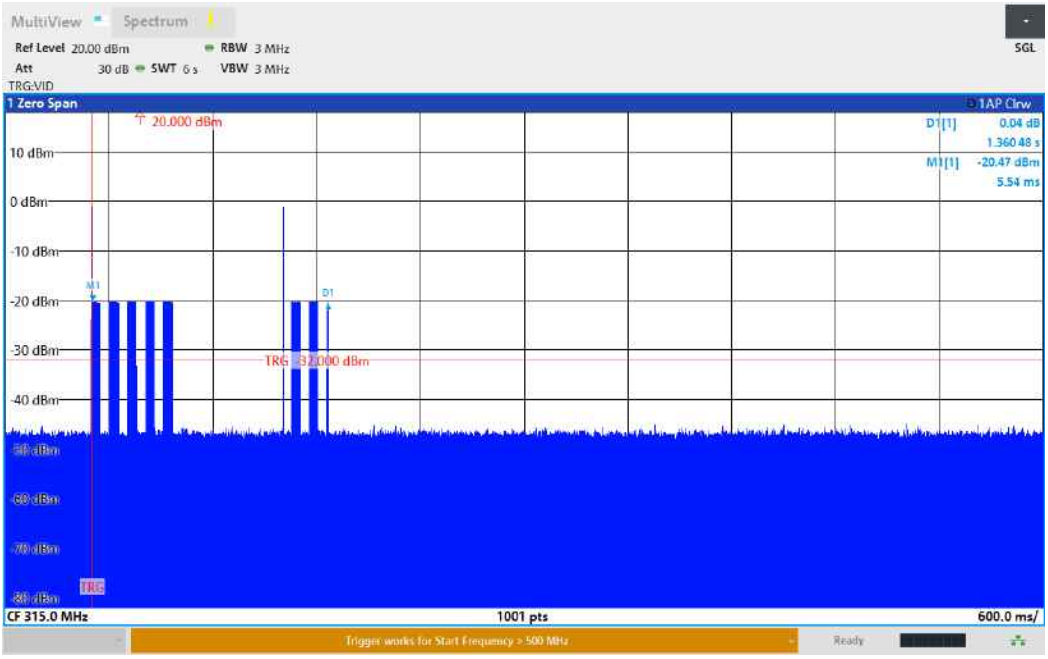

Figure 8.2-6: *Deactivation time, Genie IC2 315 MHz*

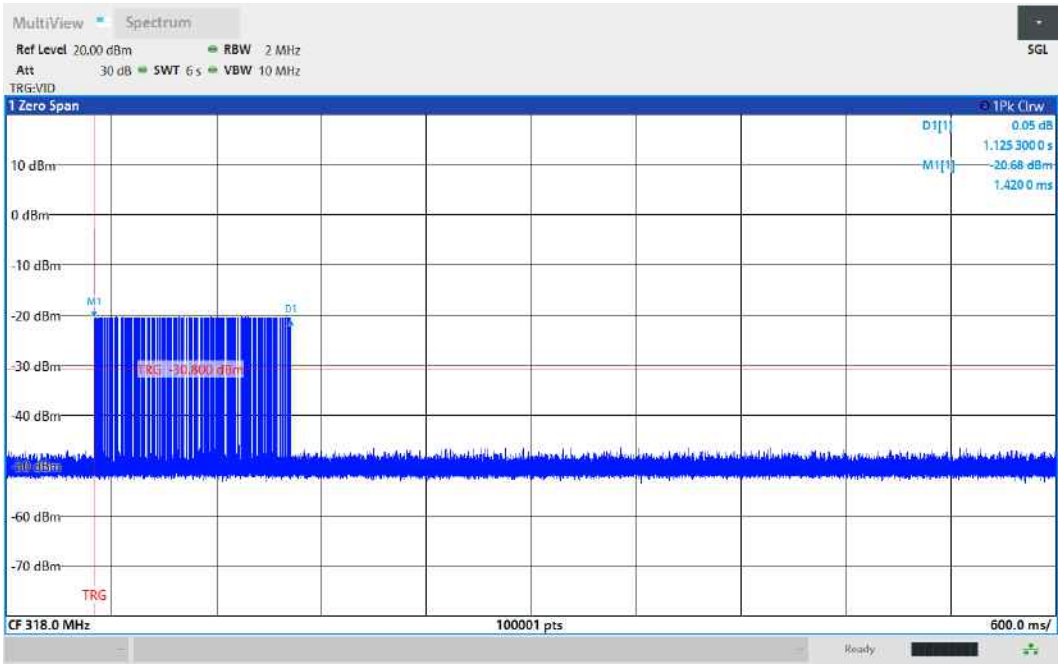

Figure 8.2-7: *Deactivation time, Linear 318 MHz*

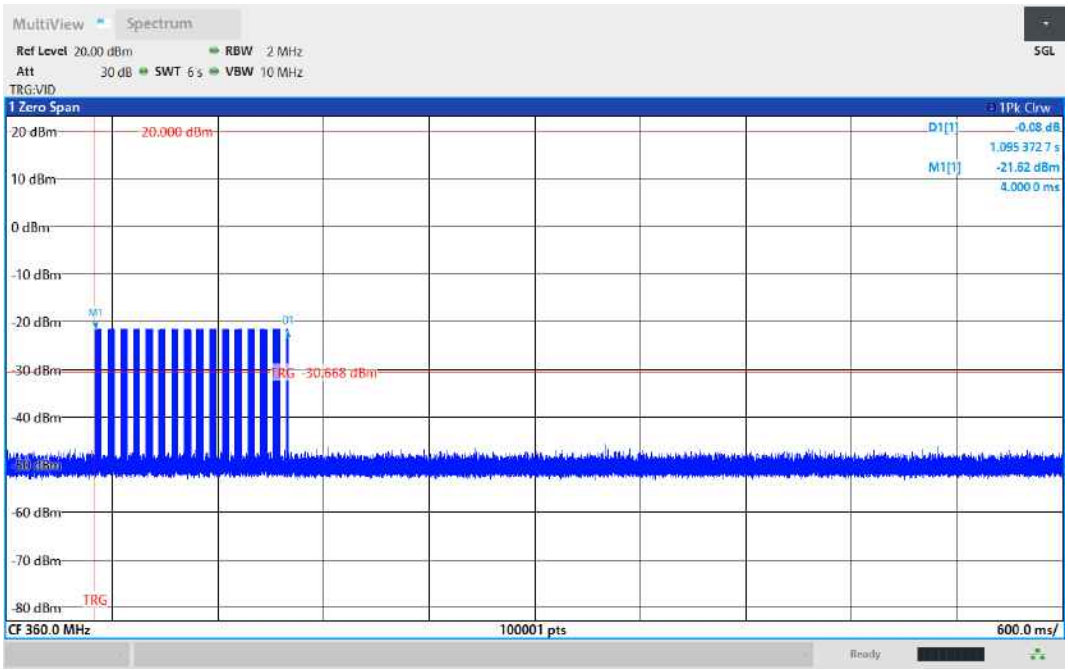

Figure 8.2-8: *Deactivation time, Genie 9 Position Trinary 360 MHz*

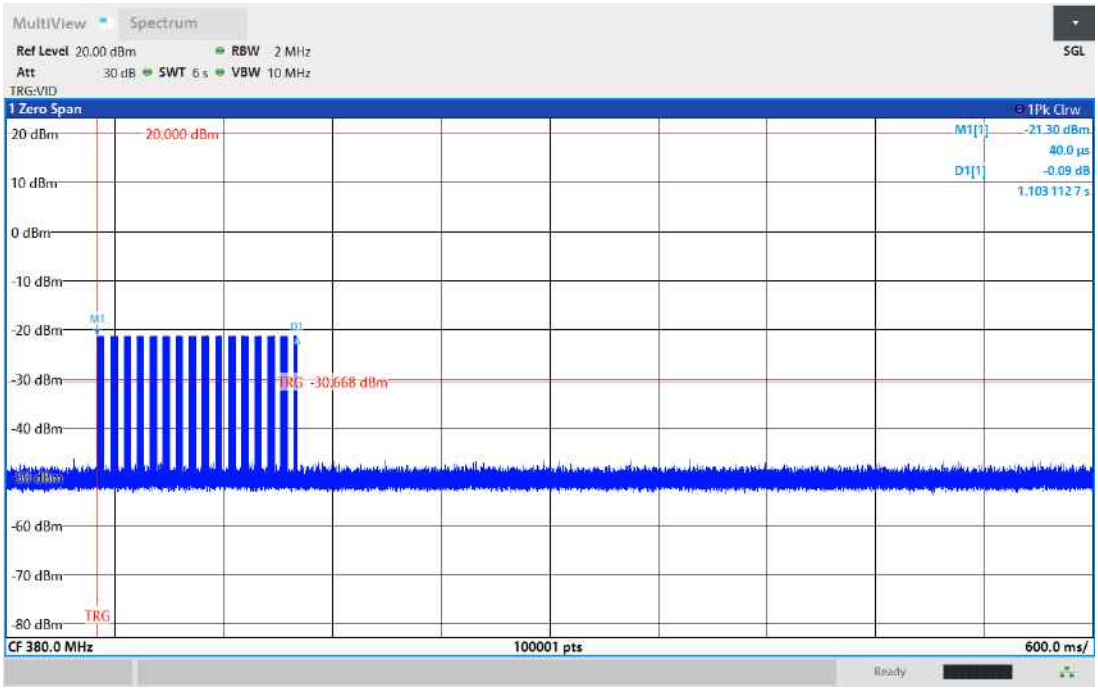

Figure 8.2-9: *Deactivation time, Genie 9 Position Trinary 380 MHz*

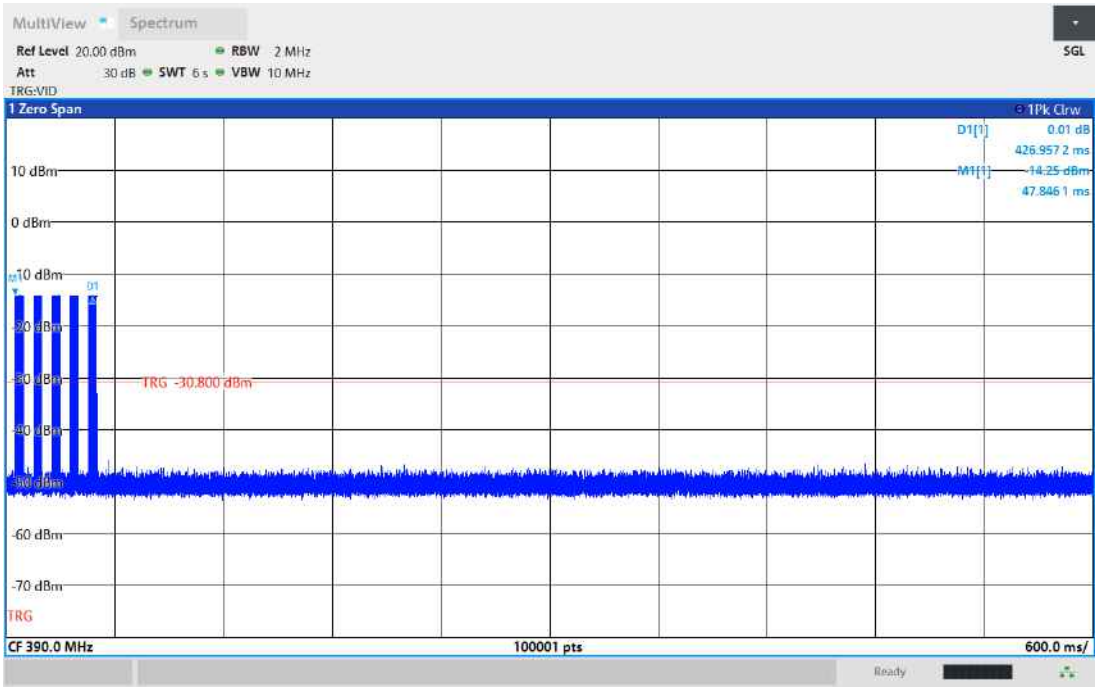

Figure 8.2-10: *Deactivation time, Genie IC1 390 MHz*

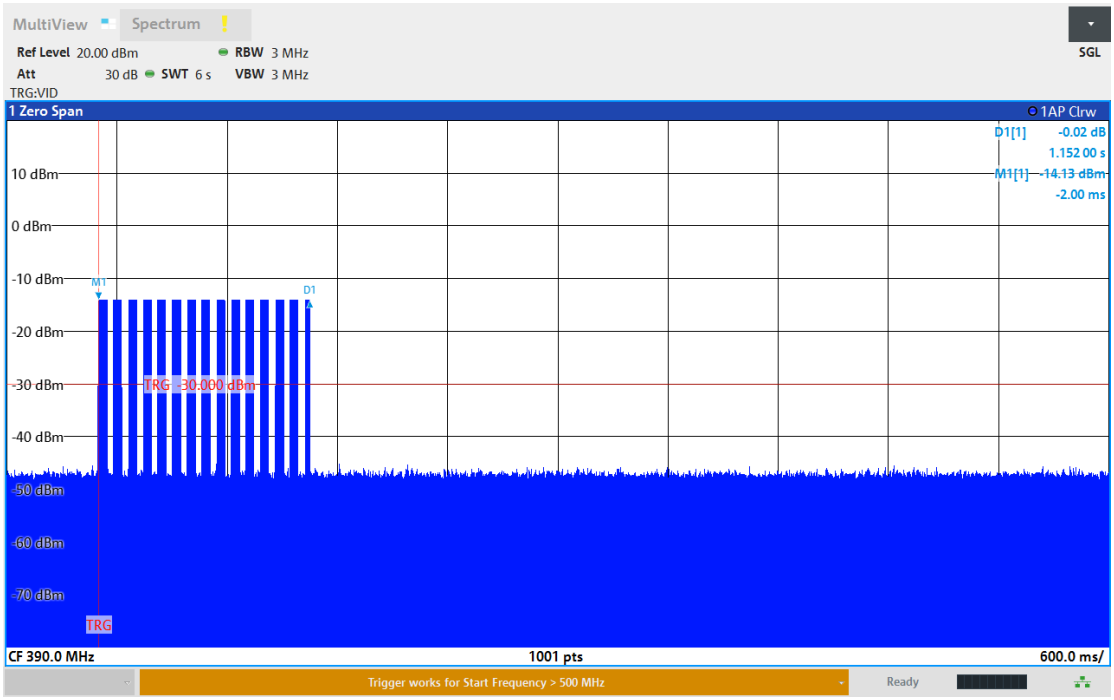

Figure 8.2-11: *Deactivation time, Chamberlain Green 390 MHz*

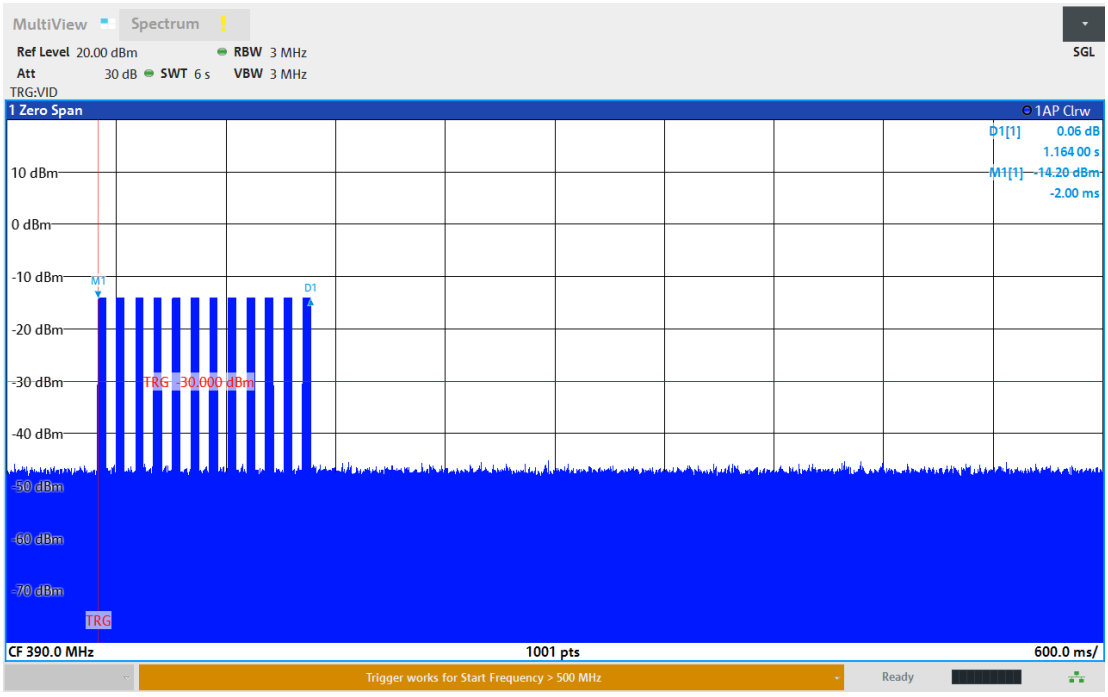

Figure 8.2-12: *Deactivation time, Chamberlain Red 390 MHz*

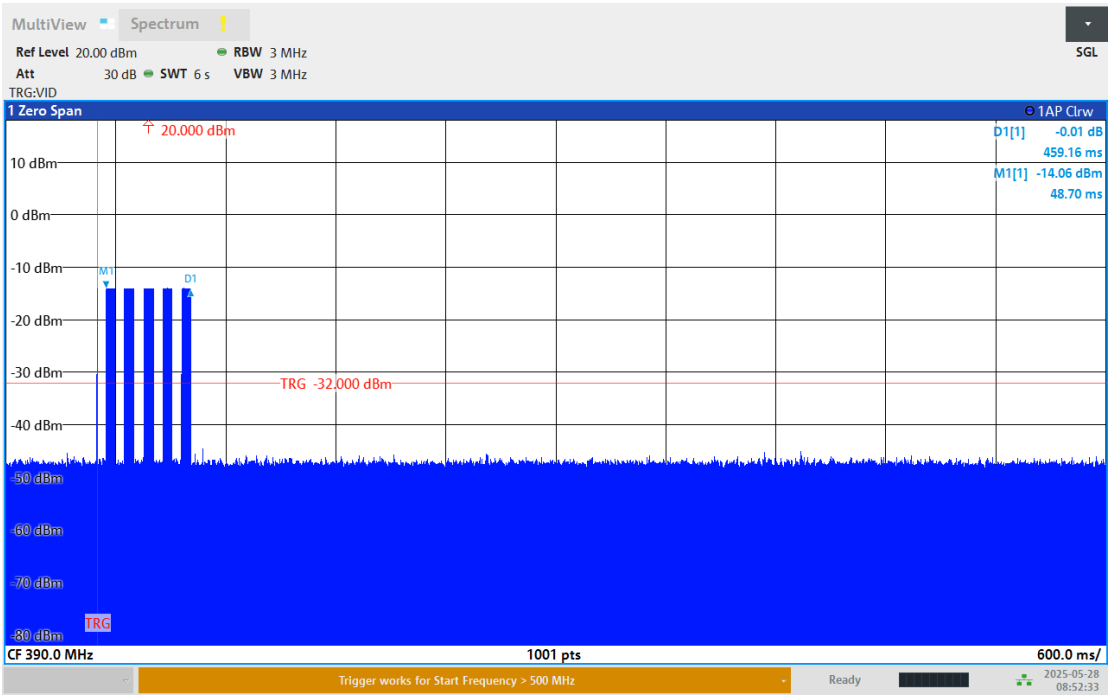

Figure 8.2-13: *Deactivation time, Genie IC2 390 MHz*

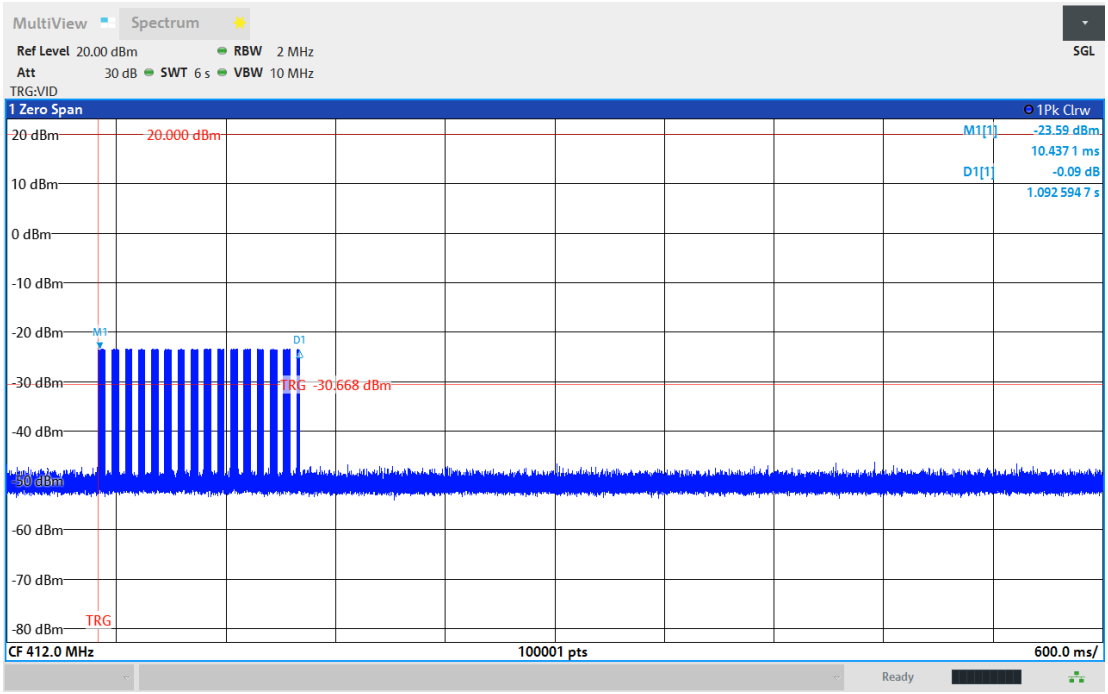

Figure 8.2-14: *Deactivation time, Genie 9 Position Trinary 412 MHz*

8.3 FCC 15.231(b) / RSS-210 A.1.3 Field strength of emissions

8.3.1 Definitions and limits

FCC 15.231(b)):

In addition to provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66 – 40.70	2250	225
70 – 130	1250	125
130 – 174	1250 to 3750 [1]	125 – 375 [1]
174 – 260	3750	375
260 – 470	3750 – 12500 [1]	375 – 1250 [1]
Above 470	12500	1250

Notes: [1] Linear interpolation.

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at band edges.

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

(3) The limits on the field strength of the spurious emissions in the above table 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 this table or to the general limits shown in § 15.209, whichever limit permits a higher field strength.

RSS-210 A.1.3:

Following are the requirements for field strength of emissions:

a. The field strength of emissions from momentarily operated intentional radiators shall not exceed the limits in the table below, based on the average value of the measured emissions. The requirements of the "Pulsed operation" section of RSS-Gen apply for averaging pulsed emissions and limiting peak emissions. Alternatively, compliance with the limits in the table below may be demonstrated using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.

b. Unwanted emissions shall be 10 times below the fundamental emissions field strength limits in table below or comply with the limits specified in RSS-GEN, whichever is less stringent.

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)
40.66 – 40.70	2250
70 – 130	1250
130 – 174	1250 to 3750 *
174 – 260	3750
260 – 470	3750 – 12500 *
Above 470	12500

*Linear interpolation with frequency, f, in MHz:
For 130-174 MHz: Field Strength (μV/m) = (56.82 x f)-6136
For 260-470 MHz: Field Strength (μV/m) = (41.67 x f)-7083
** Frequency bands 225-328.6 MHz and 335.4-399.9 MHz are designated for the exclusive use of the Government of Canada. Manufacturers should be aware of possible harmful interference and degradation of their licence-exempt radio equipment in these frequency bands.

8.3.2 Test summary

Verdict	Pass		
Test date	May 29, 2025 , May 30, 2025	Temperature	23 °C
Test engineer	Juan Medina, EMC Engineer	Air pressure	995 mbar
Test location	10m semi anechoic chamber	Relative humidity	54 %

8.3.3 Observations, settings, and special notes

Tests were performed using the methodology of Sections 6.3, 7.5 and 7.6 of ANSI C63.10.
The frequency range from 30 MHz to > 10 x the fundamental frequency was examined. The EUT was configured to continuously transmit at the desired mode (coding, and operating frequency). Measurements were made with a peak detector. Fundamental and harmonic emissions were adjusted using the appropriate duty cycle correction factor for comparison against the average emission limits. Measurements below 1GHz were performed at a 10 m measurement distance, while measurements above 1GHz were performed at a 3m distance.

The EUT was verified in its normal mounting condition (EUT is a wall-mounted device) to determine the maximum emissions.

The table below outlines the operating modes tested:

Brand / Coding	Operating Frequency (MHz)	Comments
Guardian	303	Calculated
Genie IC1	315	Calculated
Marantec	315	Calculated
Chamberlain Purple	315	Calculated
Chamberlain Yellow	315	Calculated
Genie IC2	315	Calculated
Linear	318	Calculated
Genie 9 Position Trinary	360	Calculated
Genie 9 Position Trinary	380	Calculated
Genie IC1	390	Calculated
Chamberlain Green	390	Calculated
Chamberlain Red	390	Calculated
Genie IC2	390	Calculated
Genie 9 Position Trinary	412	Calculated

8.3.4 Test data

Field strength of fundamental:

Table 8.3-1: *Test data – field strength of fundamental*

Brand / Coding	Operating Frequency (MHz)	Peak Emission (dBµV/m)	Duty Cycle Correction Factor (dB)	Average Emission (dBµV/m)	Limit (dBµV/m)[1]	Margin (dB)
Guardian	303	64.96	-8.4	56.55	64.42	7.87
Genie IC1, Chamberlain Purple, Genie IC2	315	76.77	-13.5	63.27	65.17	1.9
Marantec	315	75.79	-11.3	64.49	65.17	0.68
Chamberlain Yellow	315	70.82	-7.2	63.62	65.17	1.55
Linear	318	76.95	-16.6	60.35	65.34	4.99
Genie 9 Position Trinary	360	70.33	-12.1	58.23	67.51	9.28
Genie 9 Position Trinary	380	69.52	-12.3	57.22	68.38	11.16
Genie IC1, Chamberlain Red, Genie IC2	390	69.04	-13.1	55.94	68.79	12.85
Chamberlain Green	390	66.98	-11.1	55.88	68.79	12.91
Genie 9 Position Trinary	412	65.61	-12.1	53.51	69.61	16.1

Average Emission = Peak Emission + Duty Cycle Correction Factor. Example: 81.89 dBµV/m + (-7.01) dB = 74.88 dBµV/m average emission.

[1]Emissions limits below 1GHz converted to 10m distance by adding the factor: 20 x $Log_{10}(3/10)$

The EUT satisfies the requirements for fundamental and spurious emissions limits. Fundamental, harmonic and spurious emissions data shown in the following plots and tables.

Fundamental, harmonic, and spurious emissions, Guardian 303 MHz:

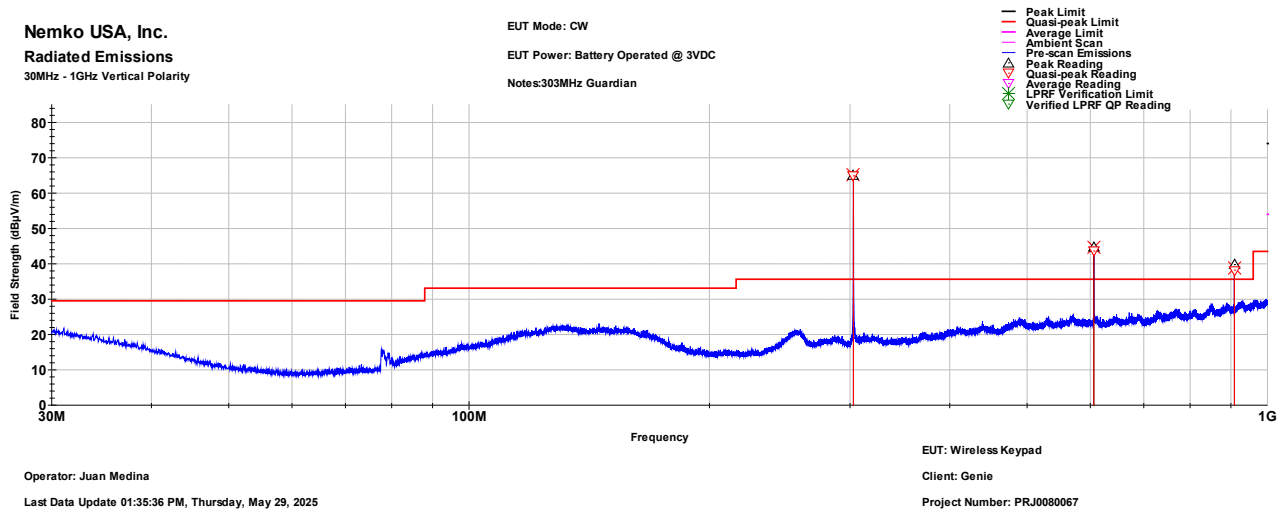

Figure 8.3-1: *Radiated Emissions, Guardian 303 MHz, Vertical Polarity, 30MHz – 1GHz*

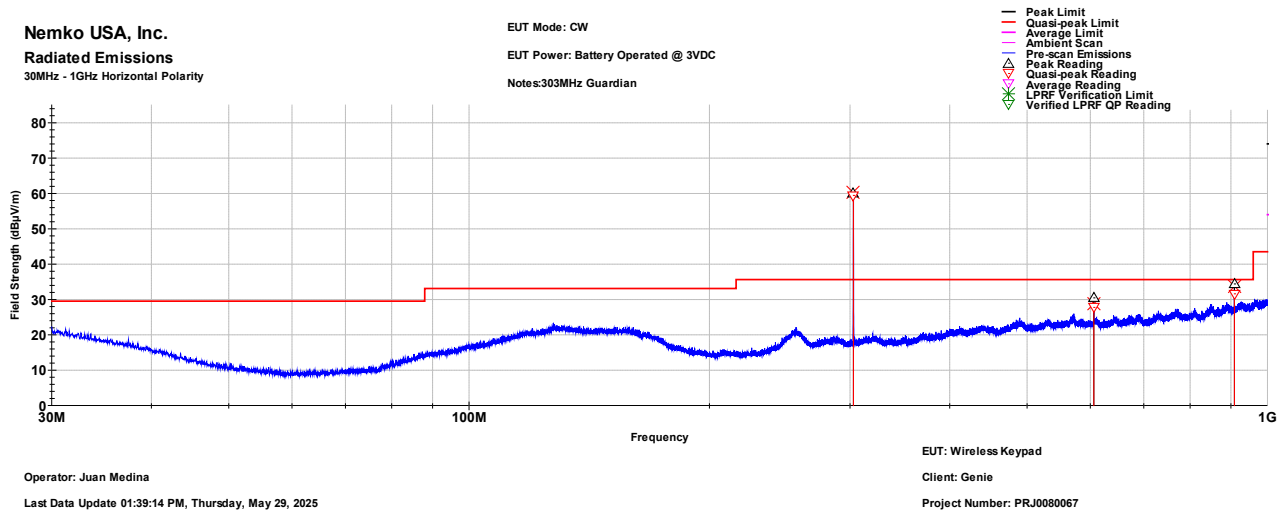

Figure 8.3-2: *Radiated Emissions, Guardian 303 MHz, Horizontal Polarity, 30MHz – 1GHz*

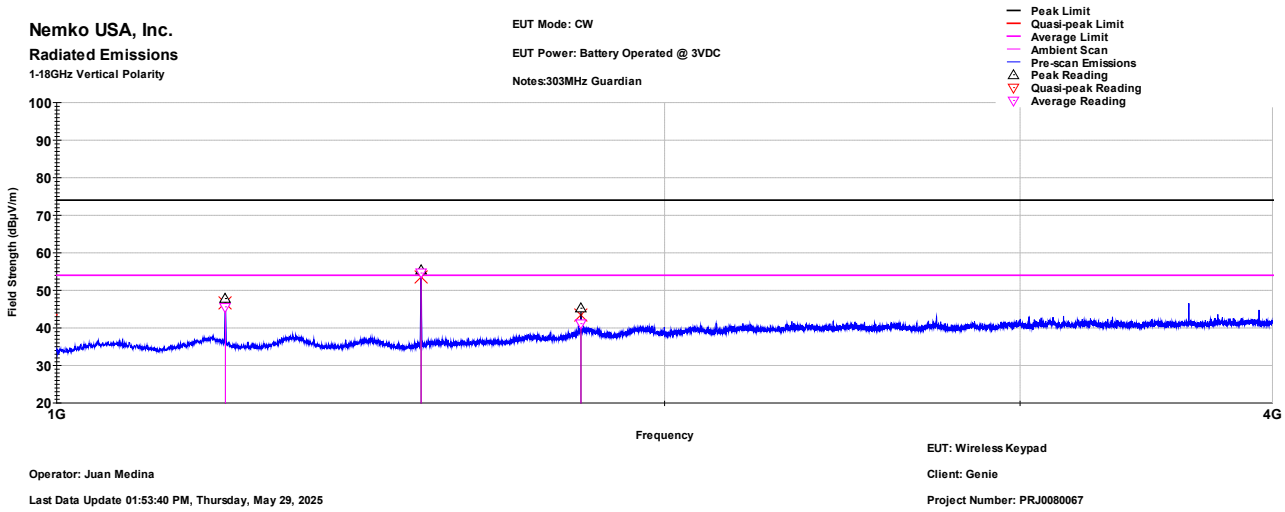

Figure 8.3-3: *Radiated Emissions, Guardian 303 MHz, Vertical Polarity, 1GHz –4GHz*

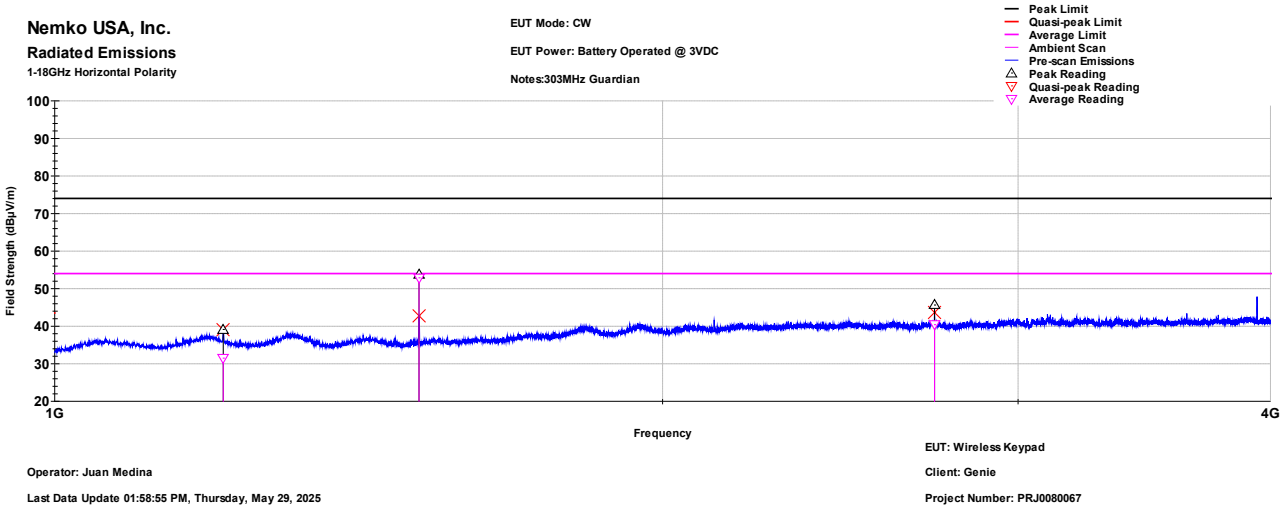

Figure 8.3-4: *Radiated Emissions, Guardian 303 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-2**: Harmonic and spurious emissions test data, Guardian 303 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimeth (deg)	Result
303.03	V	64.955	-8.40	56.55	64.4152	7.86	100.00	274.00	Pass
303.03	H	60.138	-8.40	51.74	64.4152	12.68	400.00	192.00	Pass
606.083	V	44.62	-8.40	36.22	44.4152	8.20	291.00	157.00	Pass
606.083	H	30.437	-8.40	22.03	44.4152	22.38	178.00	102.00	Pass
909.107	V	39.776	-8.40	31.37	44.4152	13.04	163.00	282.00	Pass
909.107	H	34.371	-8.40	25.97	44.4152	18.45	382.00	192.00	Pass
1212	H	39.117	-8.40	30.71	53.9794	23.26	100.00	11.00	Pass
1212.25	V	47.806	-8.40	39.40	53.9794	14.58	116.00	150.00	Pass
1515	H	53.836	-8.40	45.43	53.9794	8.55	386.00	231.00	Pass
1515.25	V	55.414	-8.40	47.01	53.9794	6.97	374.00	281.00	Pass
1818.25	V	45.242	-8.40	36.84	54.8728	18.03	299.00	221.00	Pass
2727.25	H	45.615	-8.40	37.21	53.9794	16.77	311.00	229.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Genie IC1 315 MHz (Including Chamberlain Purple and Genie IC2):

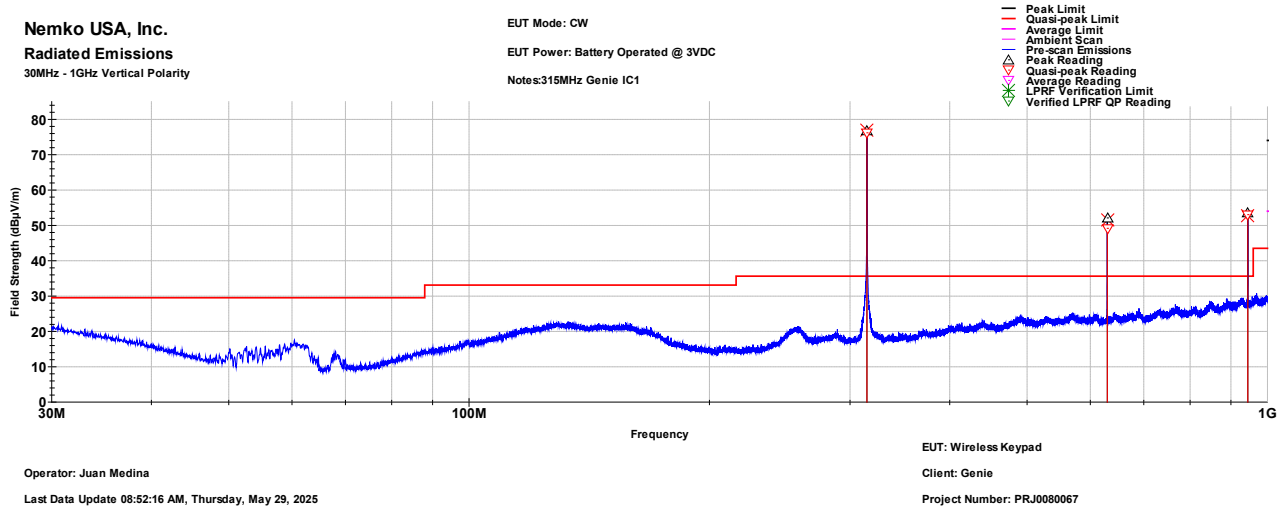

Figure 8.3-5: *Radiated Emissions, Genie IC1 315 MHz, Vertical Polarity, 30MHz – 1GHz*

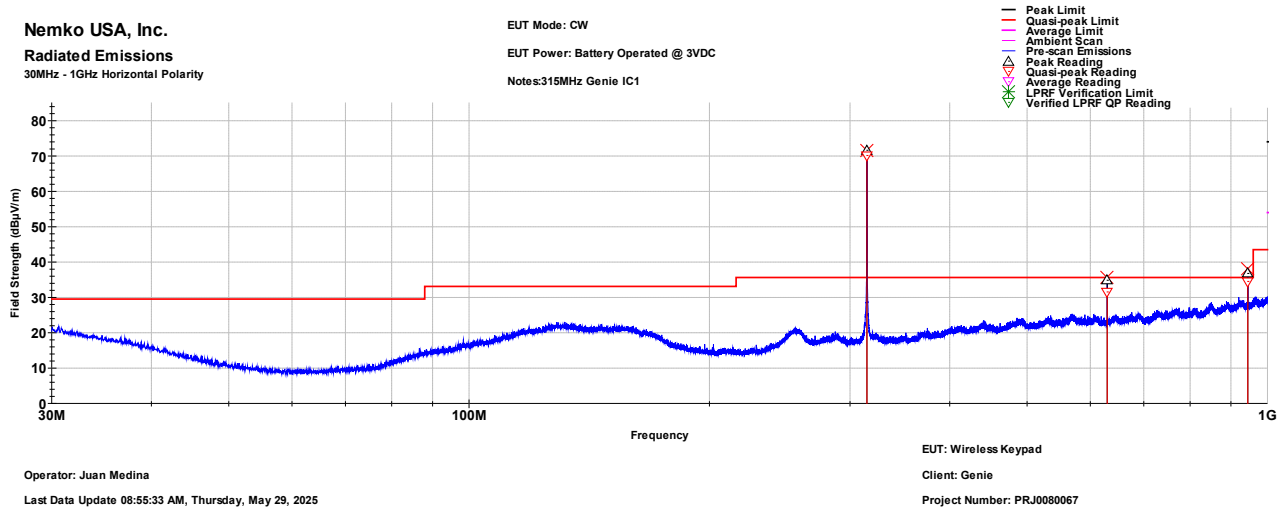

Figure 8.3-6: *Radiated Emissions, Genie IC1 315 MHz, Horizontal Polarity, 30MHz – 1GHz*

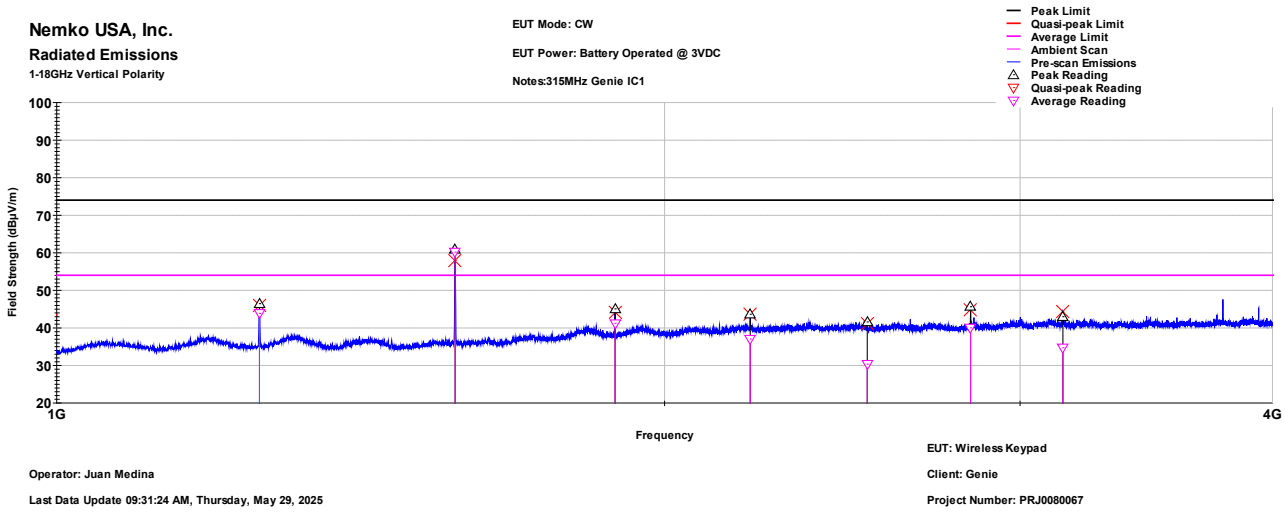

Figure 8.3-7: *Radiated Emissions, Genie IC1 315 MHz, Vertical Polarity, 1GHz –4GHz*

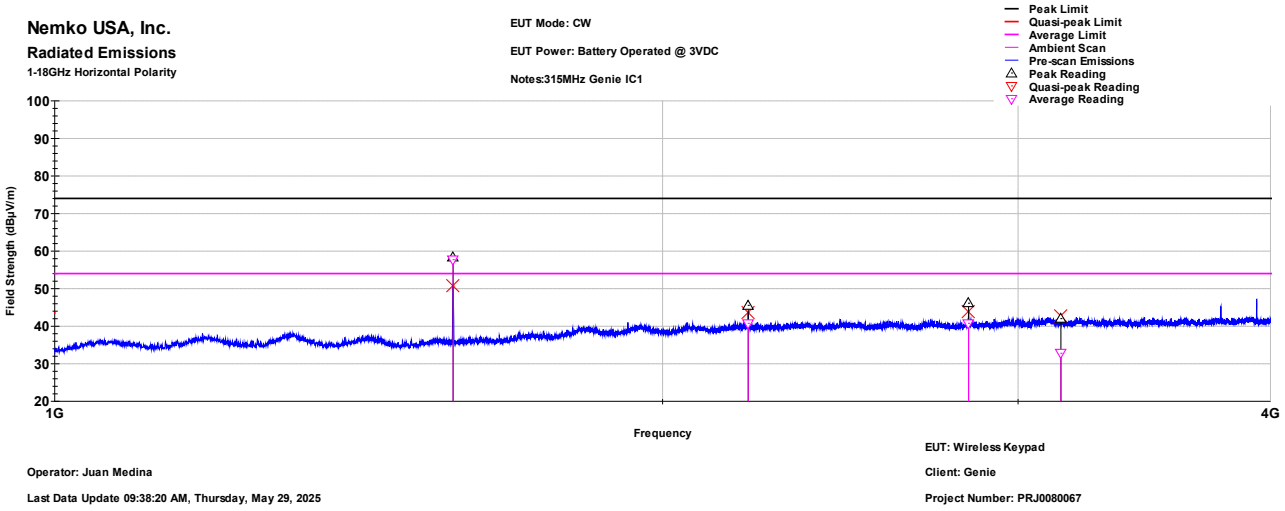

Figure 8.3-8: *Radiated Emissions, Genie IC1 315 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-3**: Harmonic and spurious emissions test data, Genie IC1 315 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
315.03	V	76.771	-13.50	63.27	65.165	1.89	100.00	282.00	Pass
315.03	H	71.607	-13.50	58.11	65.165	7.06	400.00	203.00	Pass
630.053	H	34.836	-13.50	21.34	45.165	23.83	216.00	184.00	Pass
630.083	V	52.088	-13.50	38.59	45.165	6.58	250.00	102.00	Pass
945.107	V	53.561	-13.50	40.06	45.165	5.10	191.00	237.00	Pass
945.107	H	36.769	-13.50	23.27	45.165	21.90	318.00	157.00	Pass
1260.25	V	46.447	-13.50	32.95	55.6231	22.68	115.00	201.00	Pass
1575.25	V	60.781	-13.50	47.28	53.9794	6.70	274.00	320.00	Pass
1575.25	H	58.466	-13.50	44.97	53.9794	9.01	349.00	249.00	Pass
1890.25	V	45.048	-13.50	31.55	55.6231	24.08	188.00	229.00	Pass
2205.2	H	45.536	-13.50	32.04	53.9794	21.94	386.00	47.00	Pass
2205.25	V	43.607	-13.50	30.11	53.9794	23.87	100.00	140.00	Pass
2520.2	V	41.577	-13.50	28.08	55.6231	27.55	374.00	190.00	Pass
2835.2	V	45.611	-13.50	32.11	53.9794	21.87	188.00	148.00	Pass
2835.2	H	46.094	-13.50	32.59	53.9794	21.39	349.00	211.00	Pass
3150	V	42.951	-13.50	29.45	55.6231	26.17	139.00	211.00	Pass
3150	H	41.993	-13.50	28.49	55.6231	27.13	324.00	11.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, Harmonic, and spurious emissions, Marantec 315 MHz:

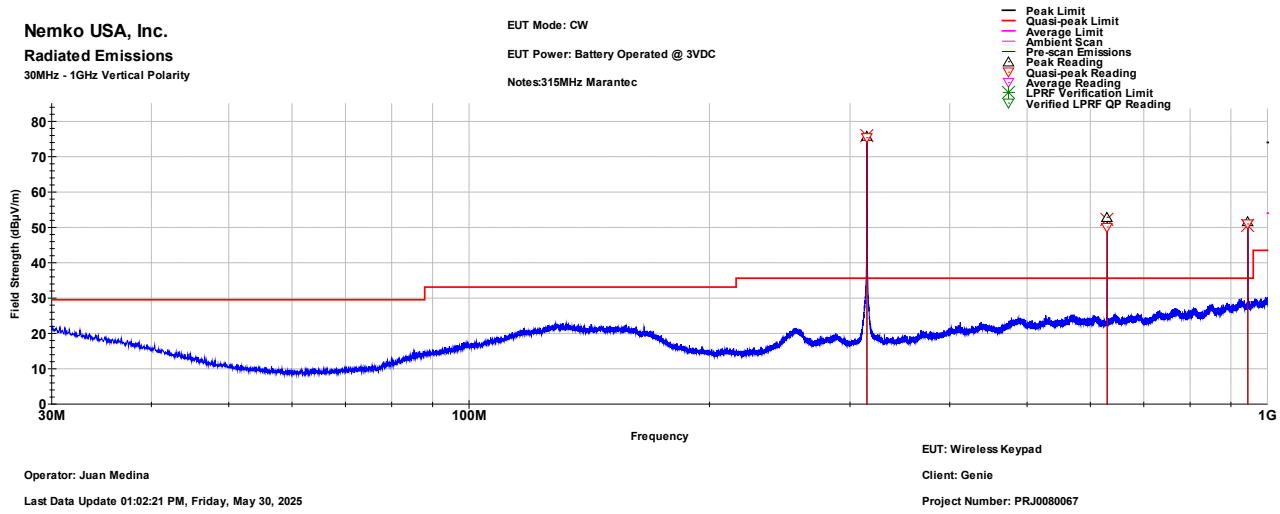

Figure 8.3-9: *Radiated Emissions, Marantec 315 MHz, Vertical Polarity, 30MHz – 1GHz*

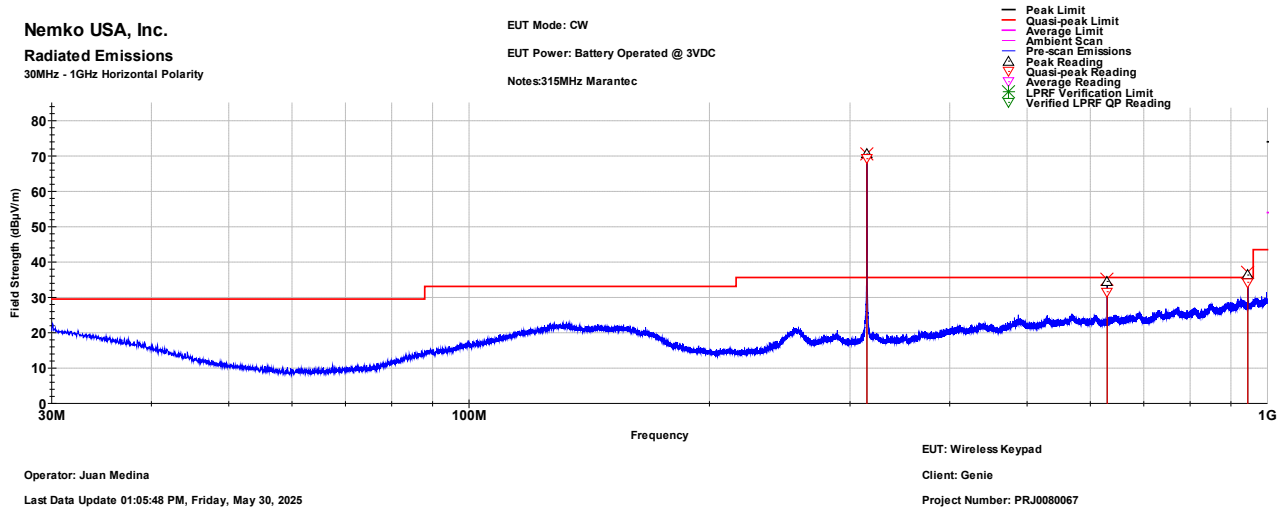

Figure 8.3-10: *Radiated Emissions, Marantec 315 MHz, Horizontal Polarity, 30MHz – 1GHz*

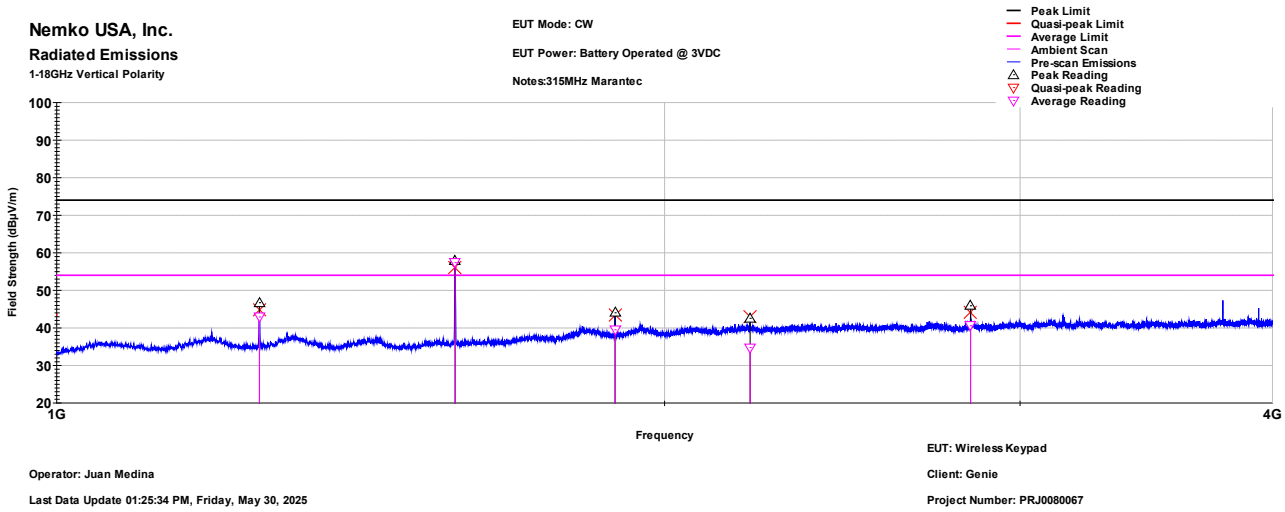

Figure 8.3-11: *Radiated Emissions, Marantec 315 MHz, Vertical Polarity, 1GHz –4GHz*

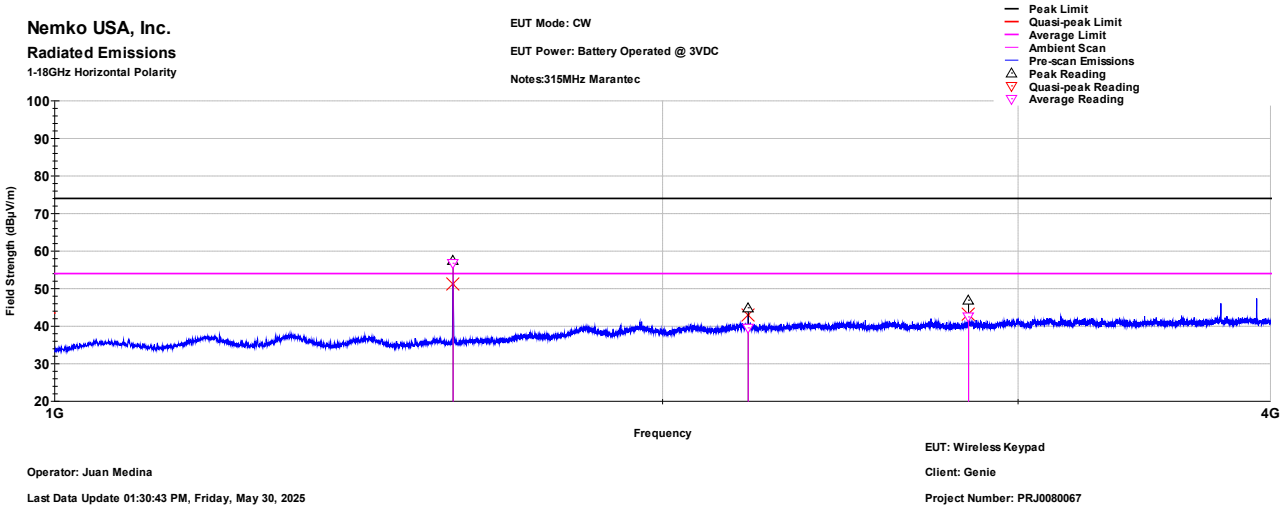

Figure 8.3-12: *Radiated Emissions, Marantec 315 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-4**: Harmonic and spurious emissions test data, Marantec 315 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
315.03	V	75.789	-11.30	64.49	65.165	0.68	100.00	282.00	Pass
315.03	H	70.543	-11.30	59.24	65.165	5.92	400.00	203.00	Pass
630.053	V	52.848	-11.30	41.55	45.165	3.62	250.00	113.00	Pass
630.053	H	34.488	-11.30	23.19	45.165	21.98	216.00	192.00	Pass
945.077	V	51.442	-11.30	40.14	45.165	5.02	191.00	237.00	Pass
945.077	H	36.297	-11.30	25.00	45.165	20.17	318.00	184.00	Pass
1260.25	V	46.696	-11.30	35.40	55.6231	20.23	114.00	120.00	Pass
1575.25	V	57.957	-11.30	46.66	53.9794	7.32	188.00	292.00	Pass
1575.25	H	57.415	-11.30	46.12	53.9794	7.86	349.00	231.00	Pass
1890.25	V	44.024	-11.30	32.72	55.6231	22.90	188.00	221.00	Pass
2205.25	H	44.89	-11.30	33.59	53.9794	20.39	374.00	27.00	Pass
2205	V	42.535	-11.30	31.24	53.9794	22.74	374.00	118.00	Pass
2835.25	V	45.892	-11.30	34.59	53.9794	19.39	200.00	130.00	Pass
2835.25	H	46.916	-11.30	35.62	53.9794	18.36	286.00	231.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Chamberlain Yellow 315 MHz:

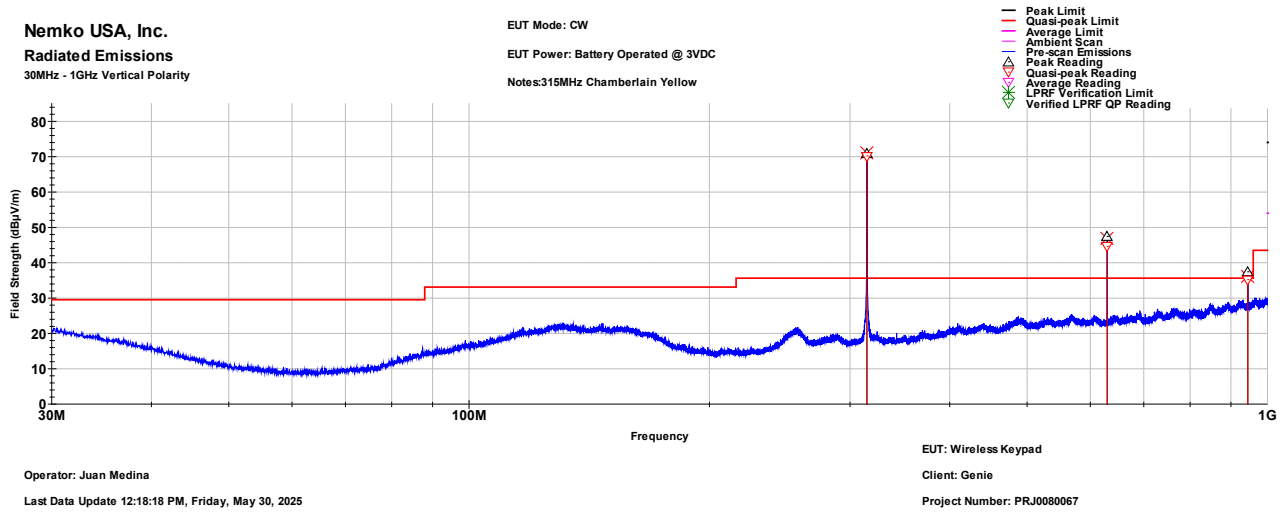

Figure 8.3-13: *Radiated Emissions, Chamberlain Yellow 315 MHz, Vertical Polarity, 30MHz – 1GHz*

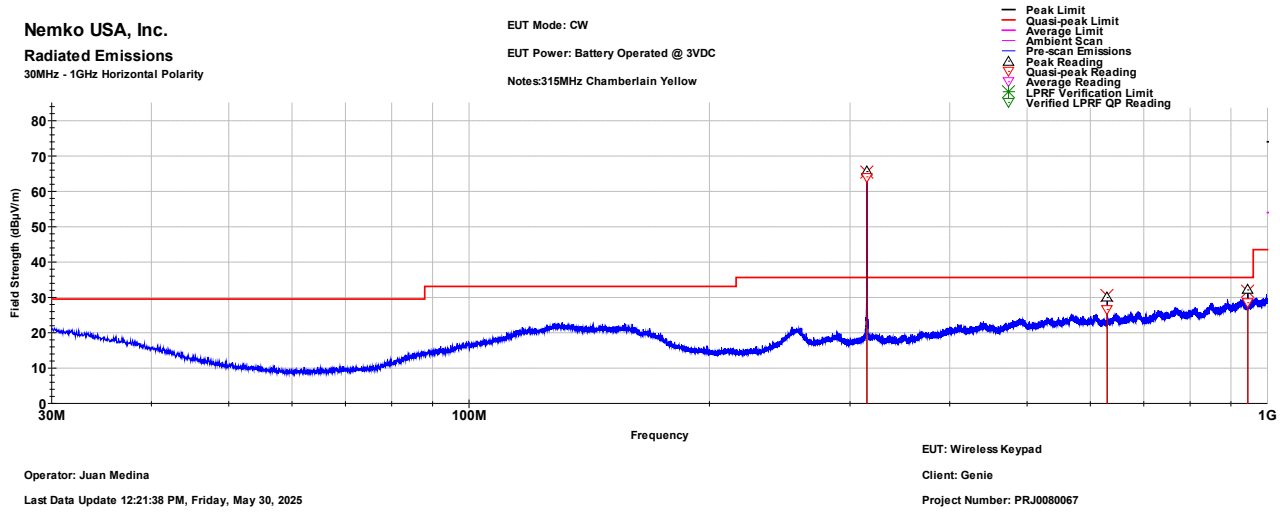

Figure 8.3-14: *Radiated Emissions, Chamberlain Yellow 315 MHz, Horizontal Polarity, 30MHz – 1GHz*

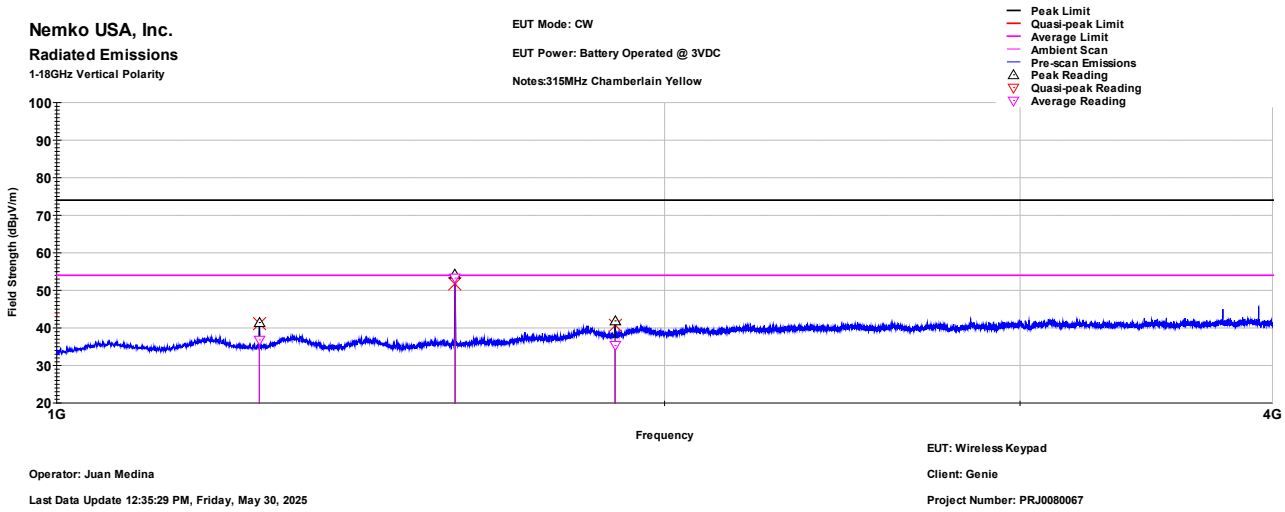

Figure 8.3-15: *Radiated Emissions, Chamberlain Yellow 315 MHz, Vertical Polarity, 1GHz –4GHz*

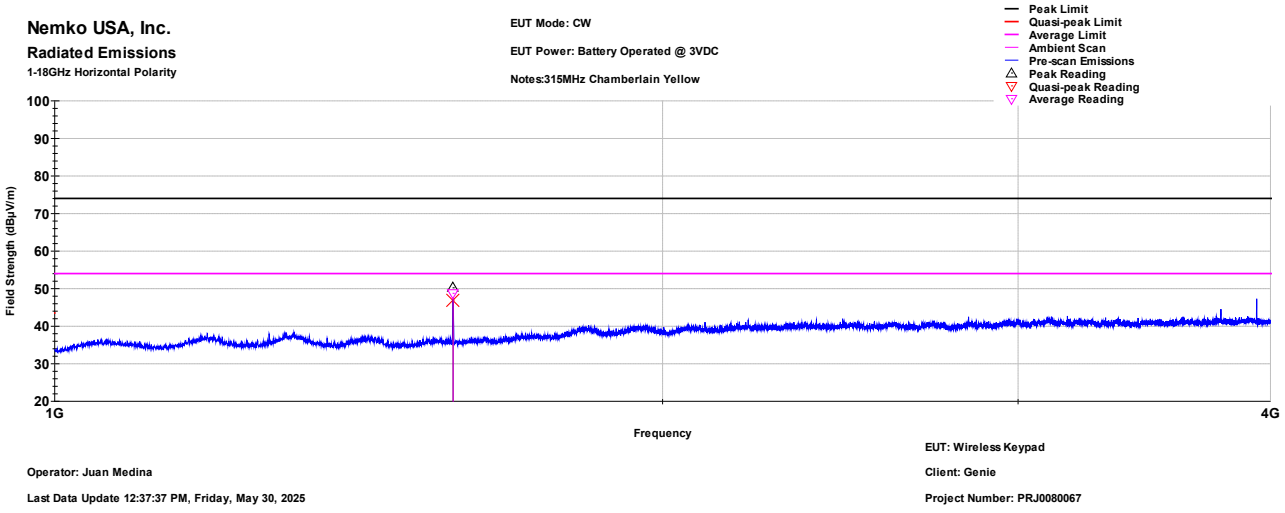

Figure 8.3-16: *Radiated Emissions, Chamberlain Yellow 315 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-5**: Harmonic and spurious emissions test data, Chamberlain Yellow 315 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
315.03	V	70.819	-7.20	63.62	65.165	1.55	100.00	282.00	Pass
315.03	H	65.604	-7.20	58.40	65.165	6.76	400.00	203.00	Pass
630.053	V	47.412	-7.20	40.21	45.165	4.95	250.00	67.00	Pass
630.053	H	29.918	-7.20	22.72	45.165	22.45	191.00	157.00	Pass
945.107	V	37.418	-7.20	30.22	45.165	14.95	150.00	274.00	Pass
945.107	H	32.094	-7.20	24.89	45.165	20.27	368.00	167.00	Pass
1260	V	41.413	-7.20	34.21	55.6231	21.41	100.00	191.00	Pass
1575.25	V	54.165	-7.20	46.97	53.9794	7.01	274.00	322.00	Pass
1575.25	H	50.221	-7.20	43.02	53.9794	10.96	286.00	359.00	Pass
1890.25	V	41.849	-7.20	34.65	55.6231	20.97	237.00	219.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Linear 318 MHz:

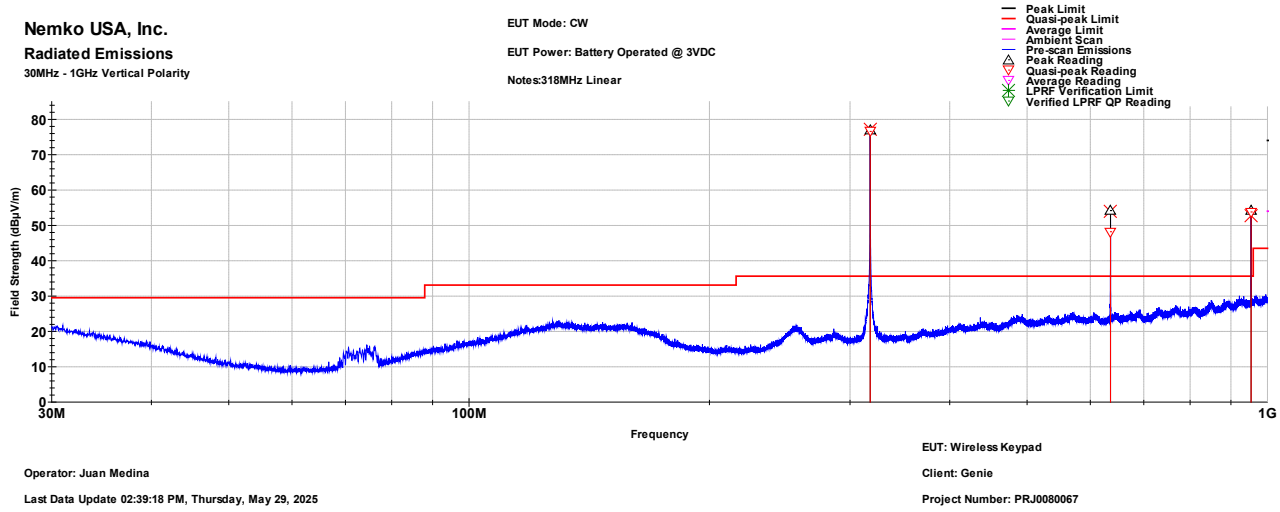

Figure 8.3-17: *Radiated Emissions, Linear 318 MHz, Vertical Polarity, 30MHz – 1GHz*

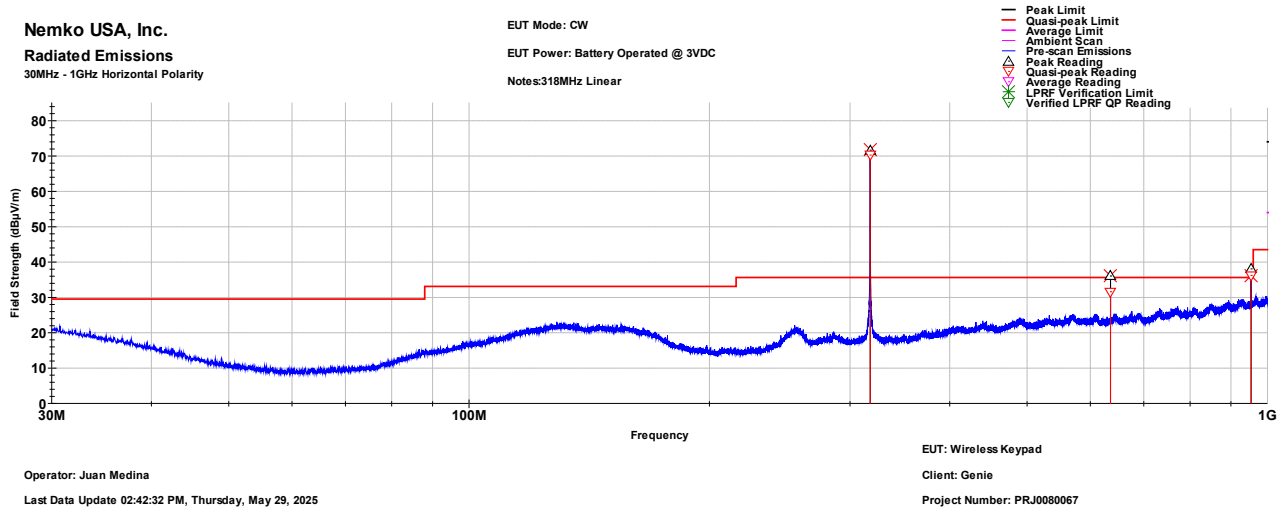

Figure 8.3-18: *Radiated Emissions, Linear 318 MHz, Horizontal Polarity, 30MHz – 1GHz*

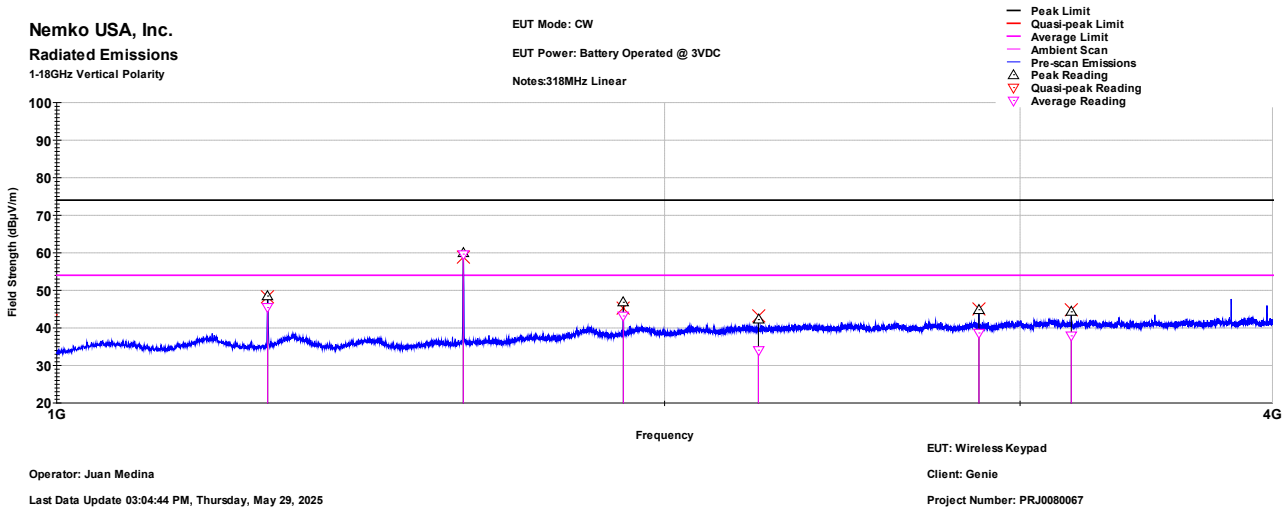

Figure 8.3-19: *Radiated Emissions, Linear 318 MHz, Vertical Polarity, 1GHz –4GHz*

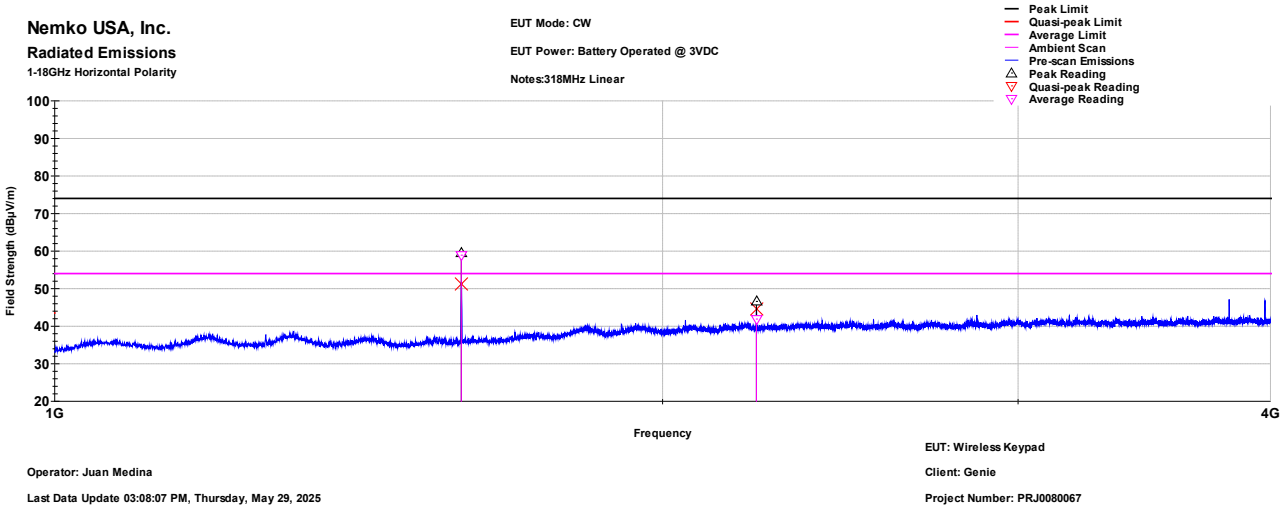

Figure 8.3-20: *Radiated Emissions, Linear 318 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-6**: Harmonic and spurious emissions test data, Linear 318 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
318.03	V	76.954	-16.60	60.35	65.3434	4.99	100.00	282.00	Pass
318.03	H	71.644	-16.60	55.04	65.3434	10.30	400.00	192.00	Pass
636.053	V	54.176	-16.60	37.58	45.3434	7.77	265.00	292.00	Pass
636.053	H	36.03	-16.60	19.43	45.3434	25.91	400.00	23.00	Pass
954.047	V	54.207	-16.60	37.61	45.3434	7.74	178.00	237.00	Pass
954.047	H	38.059	-16.60	21.46	45.3434	23.88	350.00	157.00	Pass
1272	V	48.471	-16.60	31.87	55.801	23.93	100.00	231.00	Pass
1590	V	60.089	-16.60	43.49	53.9794	10.49	324.00	311.00	Pass
1590	H	59.423	-16.60	42.82	53.9794	11.16	349.00	27.00	Pass
1908.25	V	46.811	-16.60	30.21	55.801	25.59	188.00	221.00	Pass
2226	V	42.208	-16.60	25.61	53.9794	28.37	311.00	168.00	Pass
2226	H	46.598	-16.60	30.00	53.9794	23.98	386.00	39.00	Pass
2862.25	V	44.822	-16.60	28.22	53.9794	25.76	212.00	322.00	Pass
3180.25	V	44.28	-16.60	27.68	55.801	28.12	100.00	229.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Genie 9 Position Trinary 360 MHz:

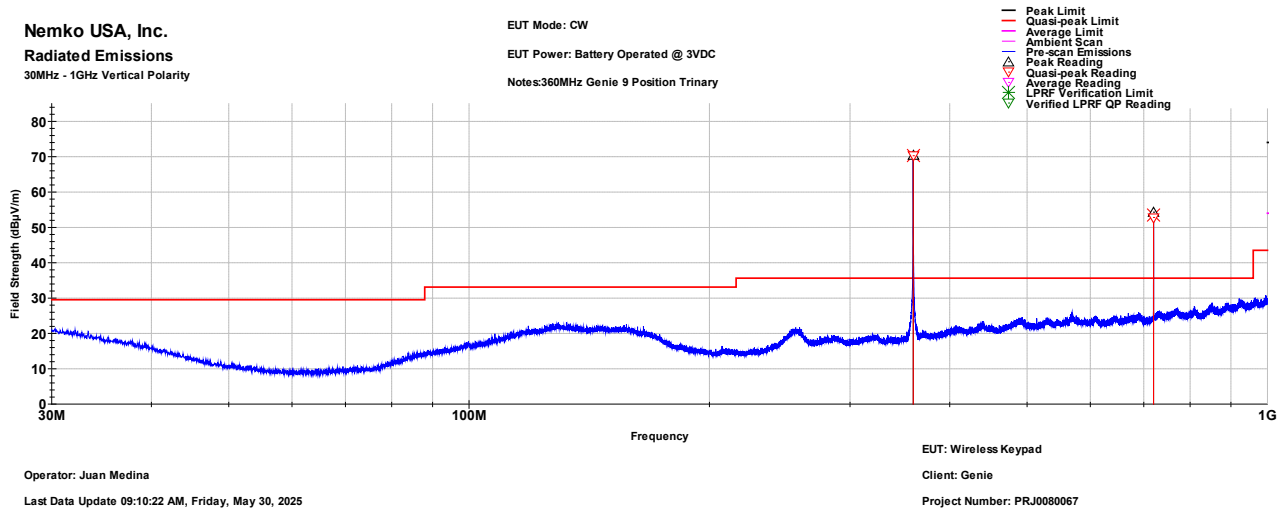

Figure 8.3-21: *Radiated Emissions, Genie 9 Position Trinary 360 MHz, Vertical Polarity, 30MHz – 1GHz*

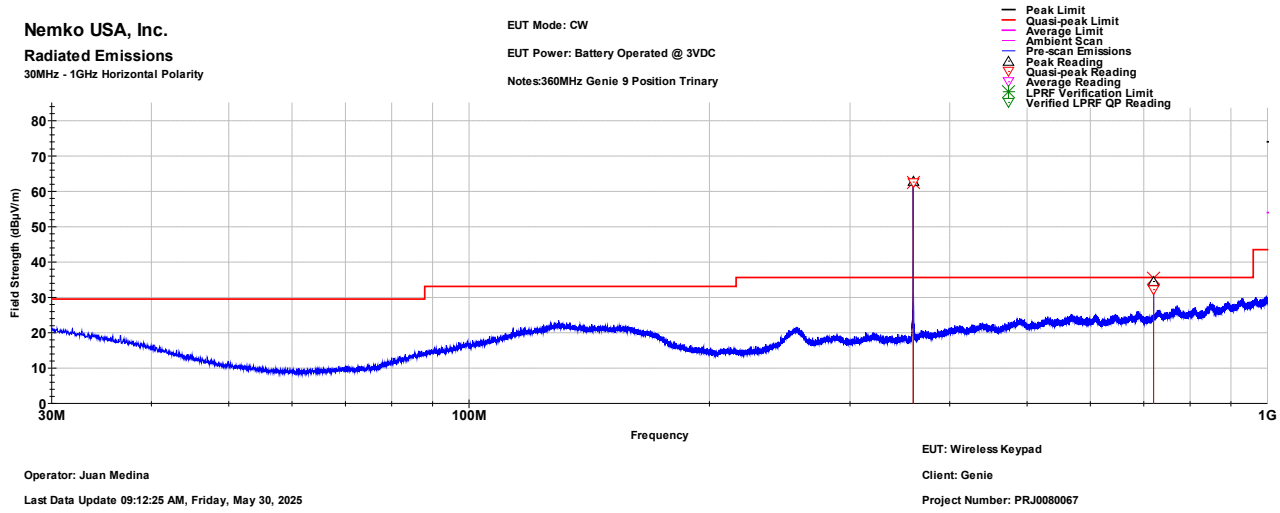

Figure 8.3-22: *Radiated Emissions, Genie 9 Position Trinary 360 MHz, Horizontal Polarity, 30MHz – 1GHz*

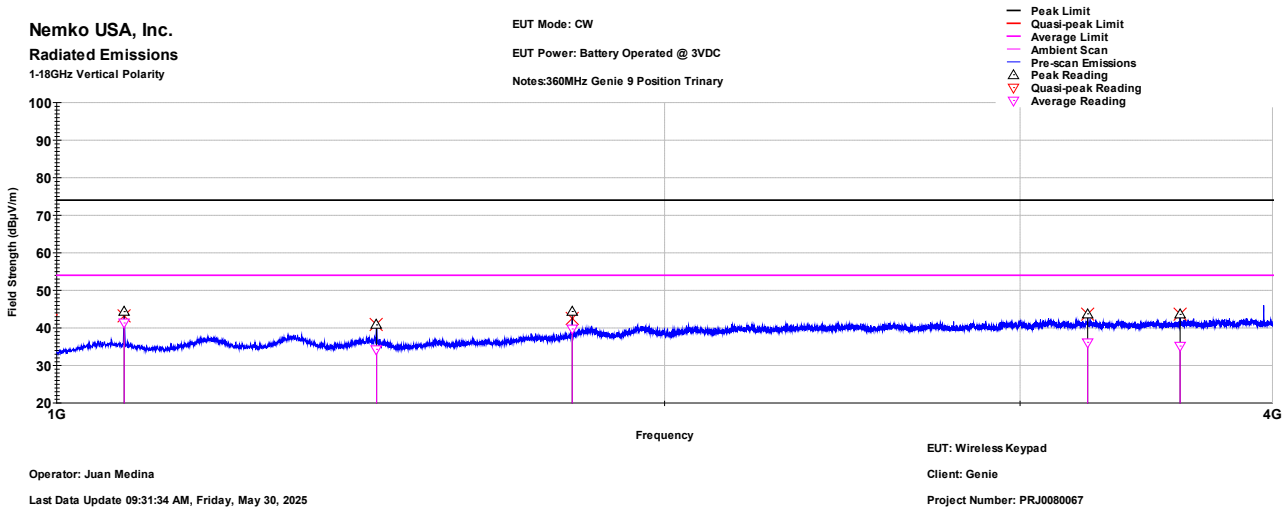

Figure 8.3-23: *Radiated Emissions, Genie 9 Position Trinary 360 MHz, Vertical Polarity, 1GHz –4GHz*

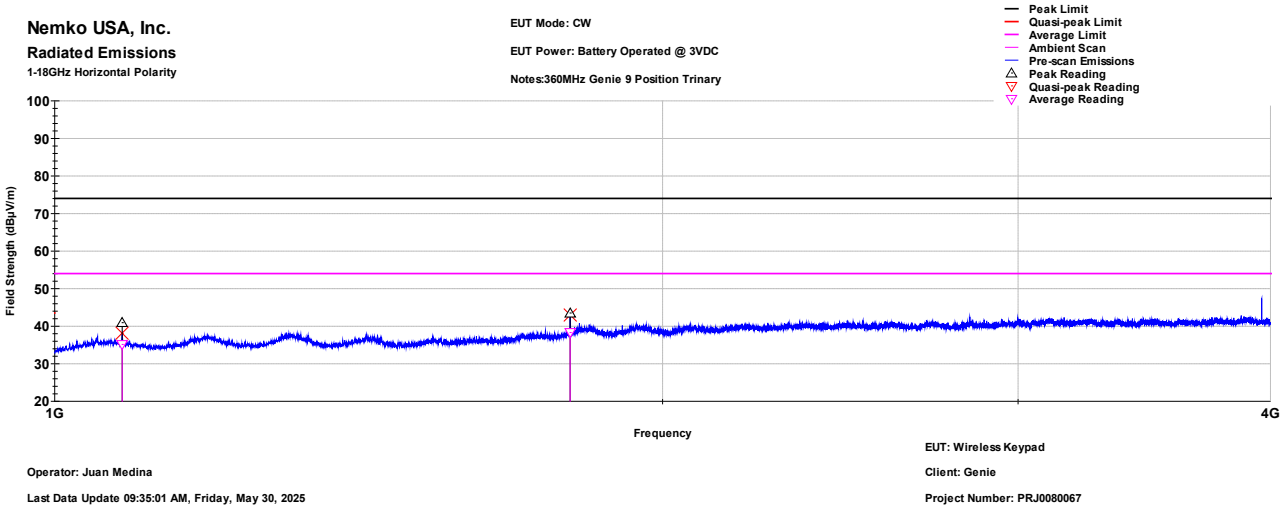

Figure 8.3-24: *Radiated Emissions, Genie 9 Position Trinary 360 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-7**: Harmonic and spurious emissions test data, Genie 9 Position Trinary 360 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
360.023	V	70.329	-12.10	58.23	67.5132	9.28	100.00	264.00	Pass
360.023	H	62.729	-12.10	50.63	67.5132	16.88	382.00	192.00	Pass
720.077	V	54.298	-12.10	42.20	47.5132	5.32	229.00	112.00	Pass
720.077	H	34.465	-12.10	22.37	47.5132	25.15	350.00	147.00	Pass
1080	V	44.317	-12.10	32.22	53.9794	21.76	127.00	291.00	Pass
1080	H	40.936	-12.10	28.84	53.9794	25.14	314.00	10.00	Pass
1440.25	V	40.783	-12.10	28.68	53.9794	25.30	100.00	148.00	Pass
1800	H	43.492	-12.10	31.39	57.9708	26.58	364.00	18.00	Pass
1800.25	V	44.35	-12.10	32.25	57.9708	25.72	351.00	332.00	Pass
3240.25	V	43.732	-12.10	31.63	57.9708	26.34	212.00	148.00	Pass
3600.25	V	43.586	-12.10	31.49	53.9794	22.49	151.00	231.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Genie 9 Position Trinary 380 MHz:

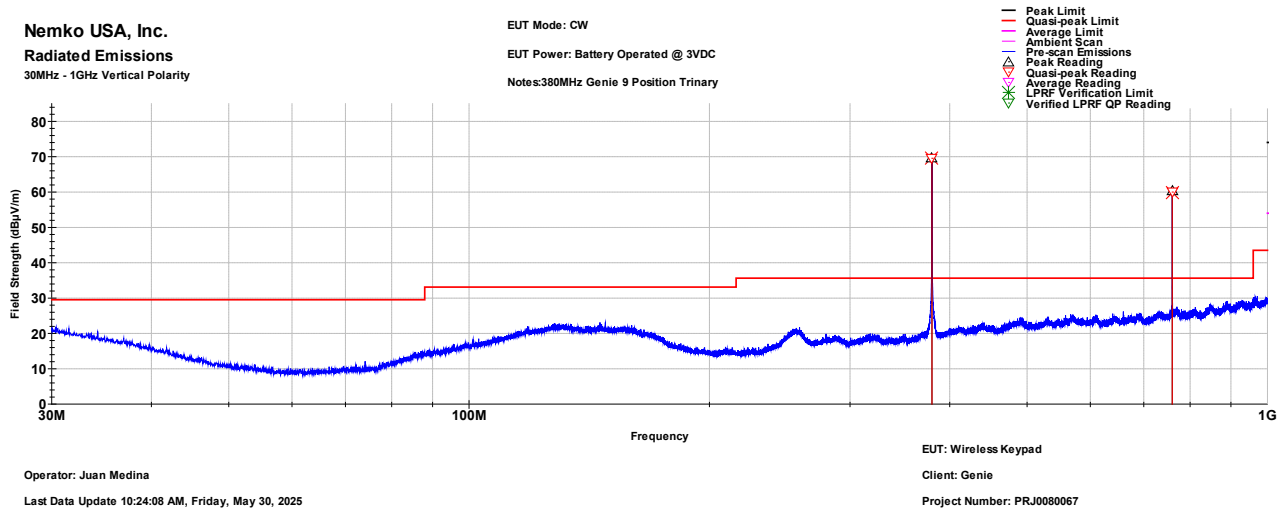

Figure 8.3-25: *Radiated Emissions, Genie 9 Position Trinary 380 MHz, Vertical Polarity, 30MHz – 1GHz*

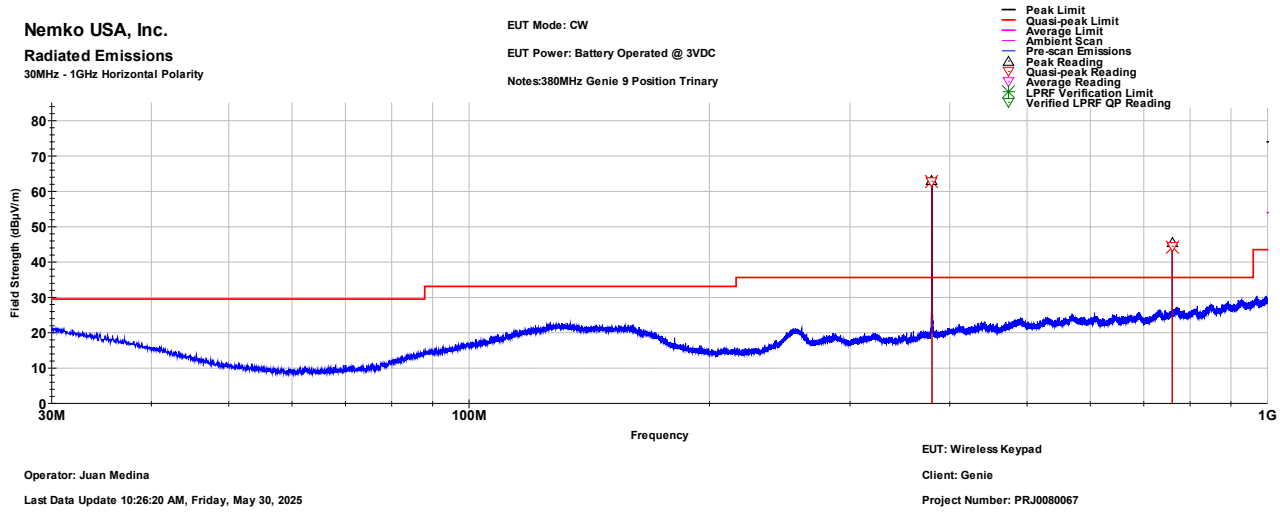

Figure 8.3-26: *Radiated Emissions, Genie 9 Position Trinary 380 MHz, Horizontal Polarity, 30MHz – 1GHz*

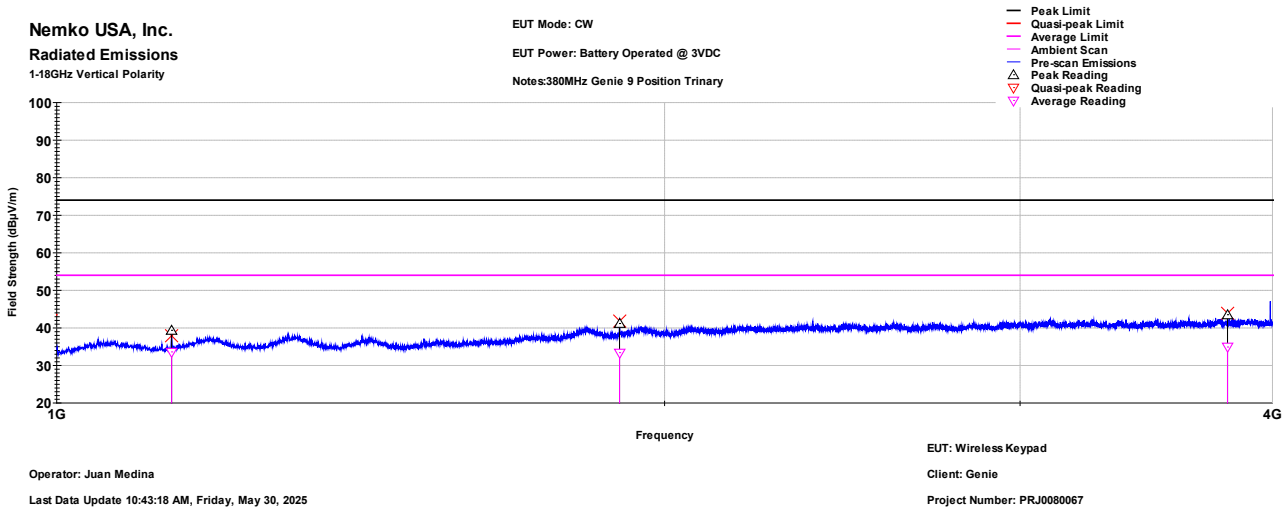

Figure 8.3-27: *Radiated Emissions, Genie 9 Position Trinary 380 MHz, Vertical Polarity, 1GHz –4GHz*

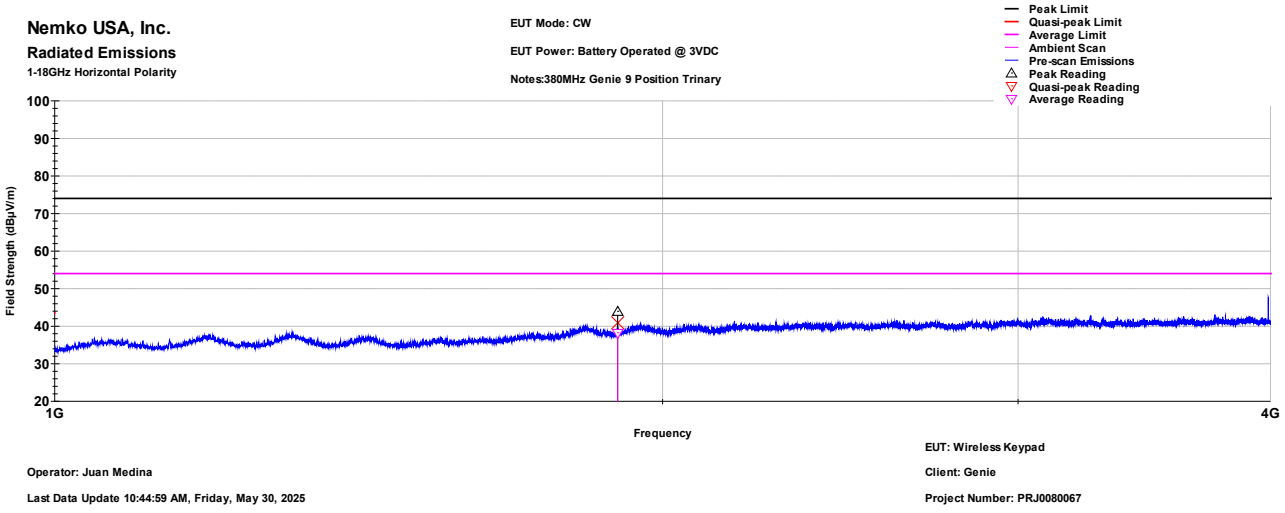

Figure 8.3-28: *Radiated Emissions, Genie 9 Position Trinary 380 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-8**: Harmonic and spurious emissions test data, Genie 9 Position Trinary 380 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
380.033	V	69.522	-12.30	57.22	68.3825	11.16	400.00	282.00	Pass
380.033	H	62.815	-12.30	50.52	68.3825	17.87	400.00	203.00	Pass
760.067	V	59.962	-12.30	47.66	48.3825	0.72	218.00	319.00	Pass
760.067	H	44.449	-12.30	32.15	48.3825	16.23	350.00	41.00	Pass
1140	V	39.346	-12.30	27.05	53.9794	26.93	117.00	359.00	Pass
1900	V	41.164	-12.30	28.86	58.8401	29.98	386.00	138.00	Pass
1900.25	H	43.957	-12.30	31.66	58.8401	27.18	400.00	227.00	Pass
3800.25	V	43.508	-12.30	31.21	53.9794	22.77	100.00	219.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Genie IC1 390 MHz (Including Genie IC2 and Chamberlain Red):

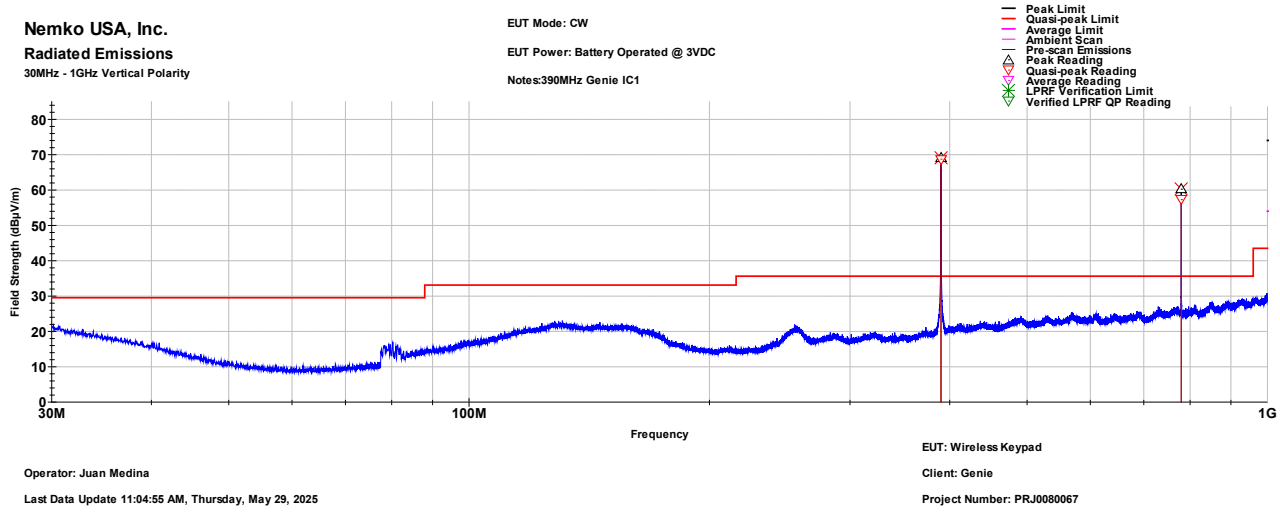

Figure 8.3-29: *Radiated Emissions, Genie IC1 390 MHz, Vertical Polarity, 30MHz – 1GHz*

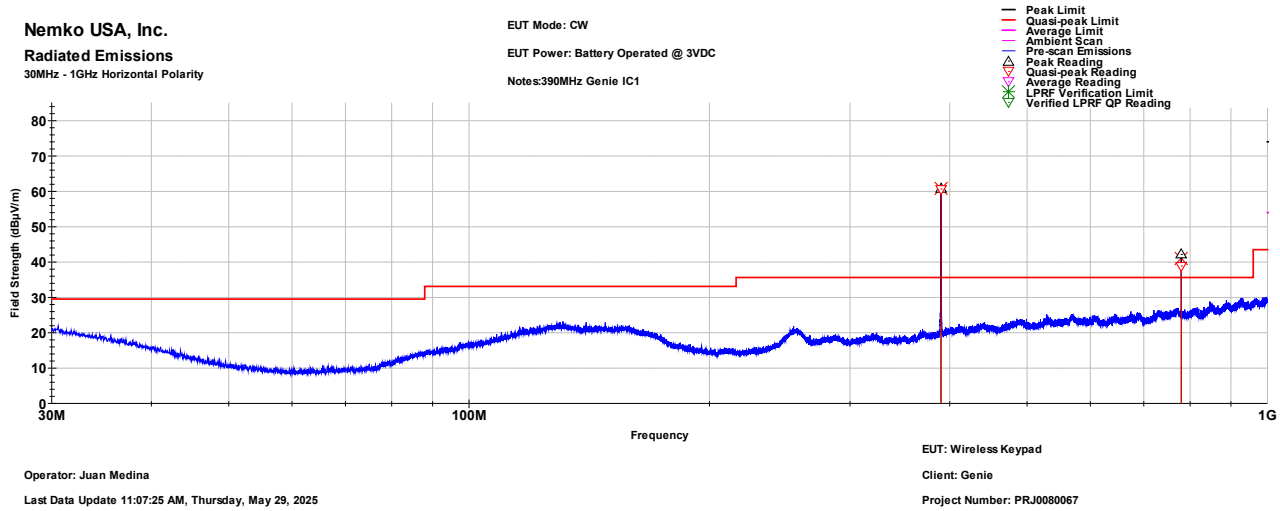

Figure 8.3-30: *Radiated Emissions, Genie IC1 390 MHz, Horizontal Polarity, 30MHz – 1GHz*

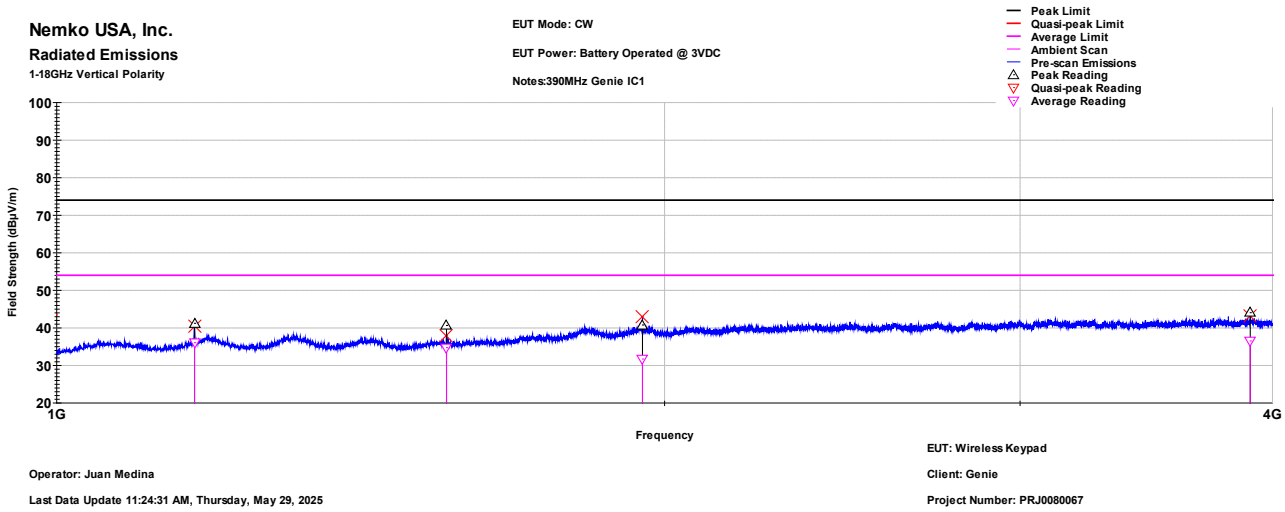

Figure 8.3-31: *Radiated Emissions, Genie IC1 390 MHz, Vertical Polarity, 1GHz –4GHz*

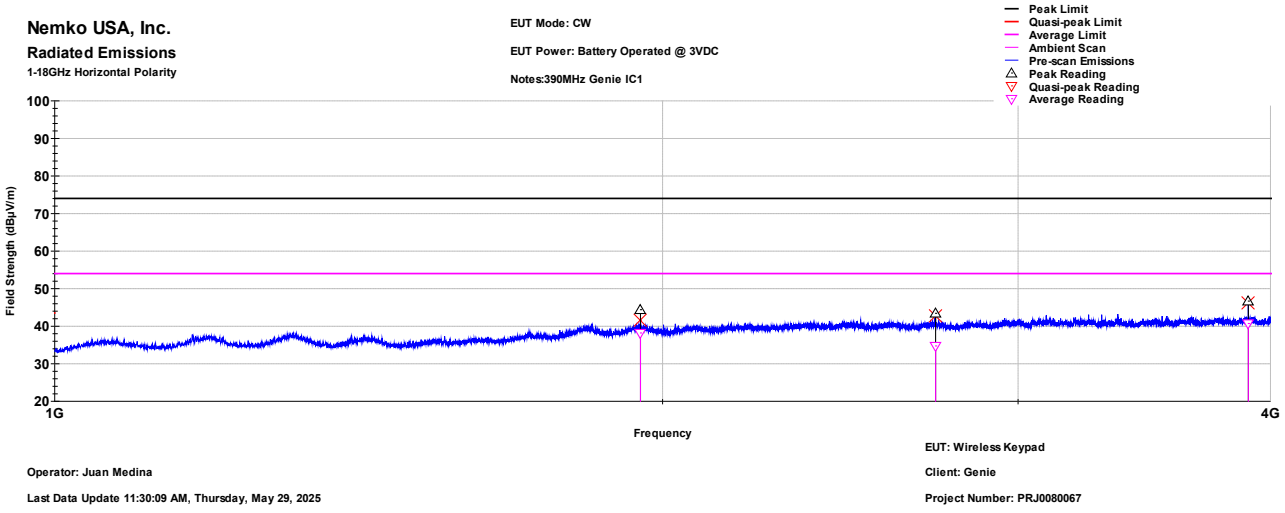

Figure 8.3-32: *Radiated Emissions, Genie IC1 390 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-9**: Harmonic and spurious emissions test data, Genie IC1 390 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
390.023	V	69.04	-13.10	55.94	68.7866	12.85	400.00	275.00	Pass
390.053	H	60.814	-13.10	47.71	68.7866	21.07	318.00	192.00	Pass
780.077	V	60.199	-13.10	47.10	48.7866	1.69	229.00	57.00	Pass
780.077	H	42.129	-13.10	29.03	48.7866	19.76	156.00	57.00	Pass
1170.25	V	41.219	-13.10	28.12	53.9794	25.86	116.00	269.00	Pass
1559.75	V	40.638	-13.10	27.54	53.9794	26.44	400.00	229.00	Pass
1950.25	V	40.759	-13.10	27.66	59.2442	31.59	386.00	281.00	Pass
1950.25	H	44.376	-13.10	31.28	59.2442	27.97	361.00	229.00	Pass
2730.5	H	43.421	-13.10	30.32	53.9794	23.66	249.00	239.00	Pass
3900.25	V	44.045	-13.10	30.95	53.9794	23.03	175.00	138.00	Pass
3900.5	H	46.667	-13.10	33.57	53.9794	20.41	100.00	90.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Chamberlain Green 390 MHz:

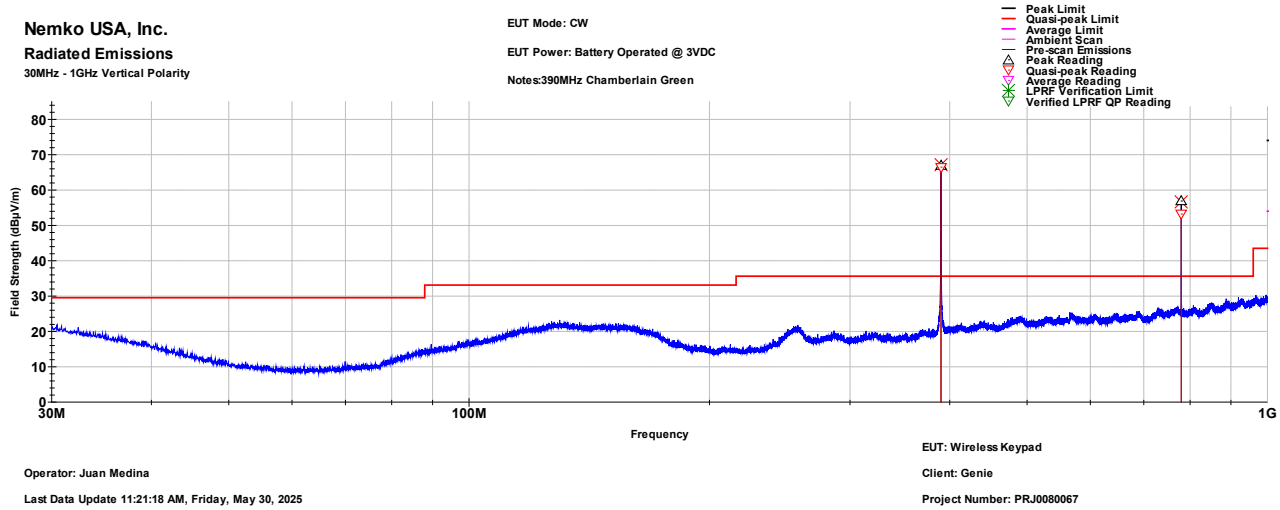

Figure 8.3-33: *Radiated Emissions, Chamberlain Green 390 MHz, Vertical Polarity, 30MHz – 1GHz*

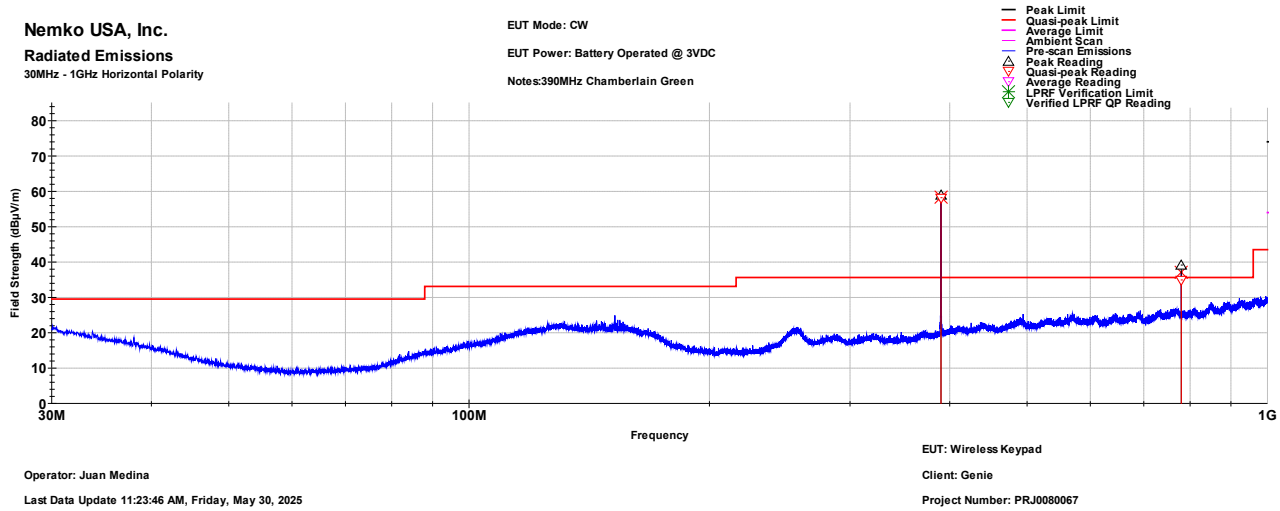

Figure 8.3-34: *Radiated Emissions, Chamberlain Green 390 MHz, Horizontal Polarity, 30MHz – 1GHz*

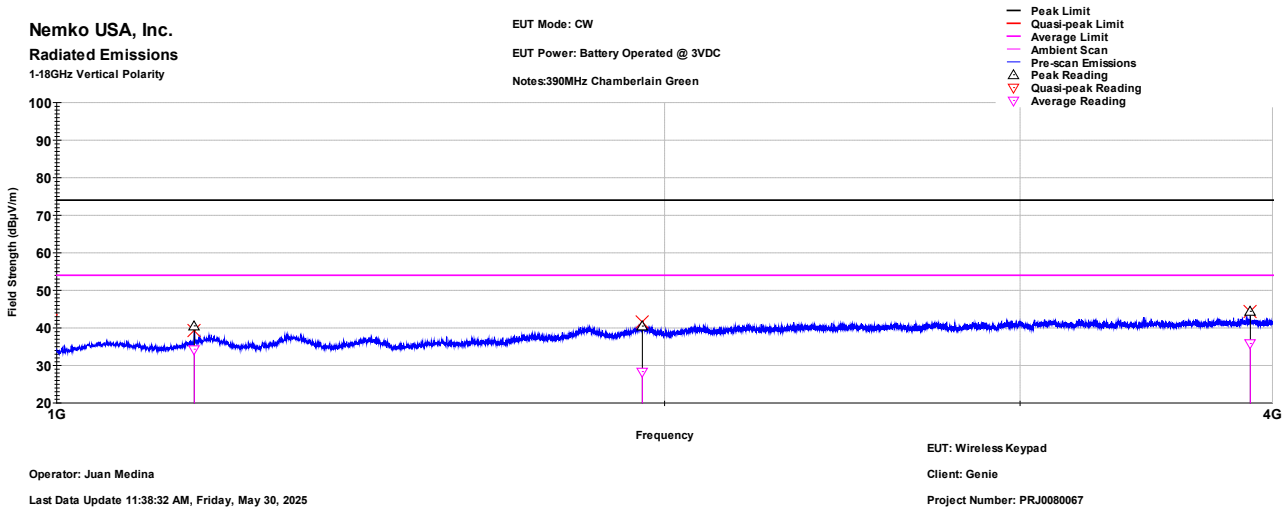

Figure 8.3-35: *Radiated Emissions, Chamberlain Green 390 MHz, Vertical Polarity, 1GHz –4GHz*

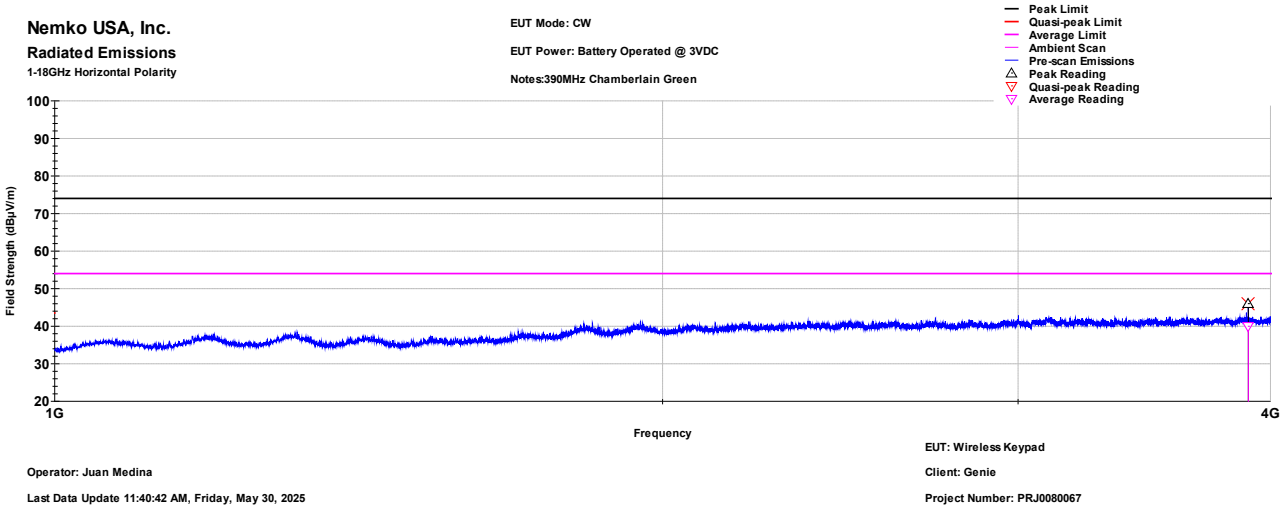

Figure 8.3-36: *Radiated Emissions, Chamberlain Green 390 MHz, Horizontal Polarity, 1GHz –4GHz*

***Table 8.3-10**: Harmonic and spurious emissions test data, Chamberlain Green 390 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
390.023	V	66.978	-11.10	55.88	68.7866	12.91	400.00	282.00	Pass
390.023	H	58.727	-11.10	47.63	68.7866	21.16	318.00	192.00	Pass
780.077	V	56.885	-11.10	45.79	48.7866	3.00	229.00	57.00	Pass
780.077	H	39.139	-11.10	28.04	48.7866	20.75	150.00	57.00	Pass
1170	V	40.522	-11.10	29.42	53.9794	24.56	116.00	269.00	Pass
1950	V	40.486	-11.10	29.39	59.2442	29.86	175.00	178.00	Pass
3900.5	V	44.4	-11.10	33.30	53.9794	20.68	188.00	118.00	Pass
3900.5	H	45.993	-11.10	34.89	53.9794	19.09	100.00	70.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

Fundamental, harmonic, and spurious emissions, Genie 9 Position Trinary 412 MHz:

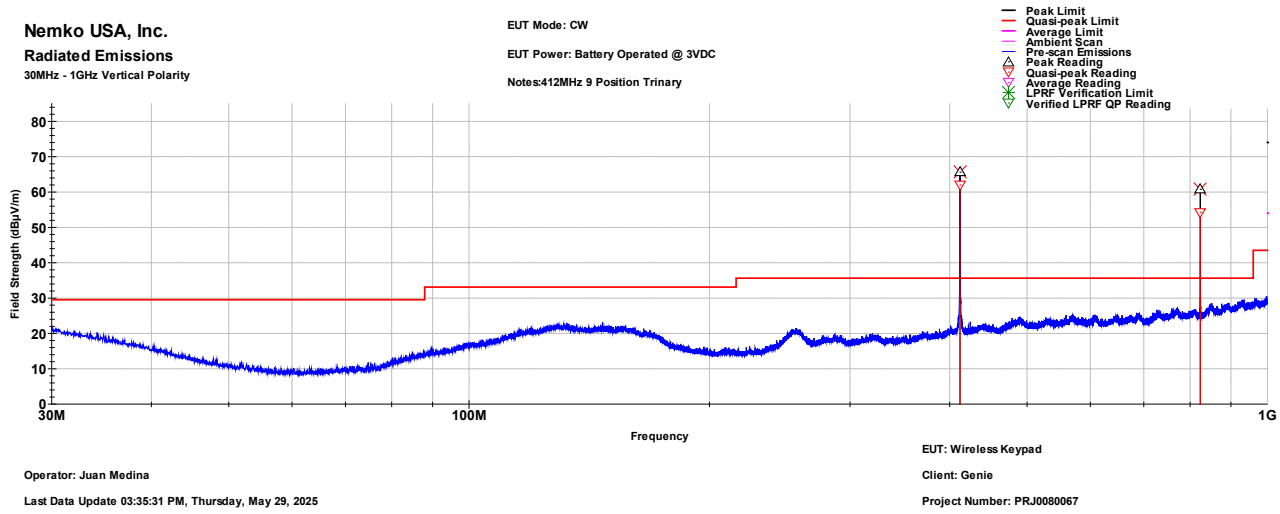

Figure 8.3-37: *Radiated Emissions, Genie 9 Position Trinary 412 MHz, Vertical Polarity, 30MHz – 1GHz*

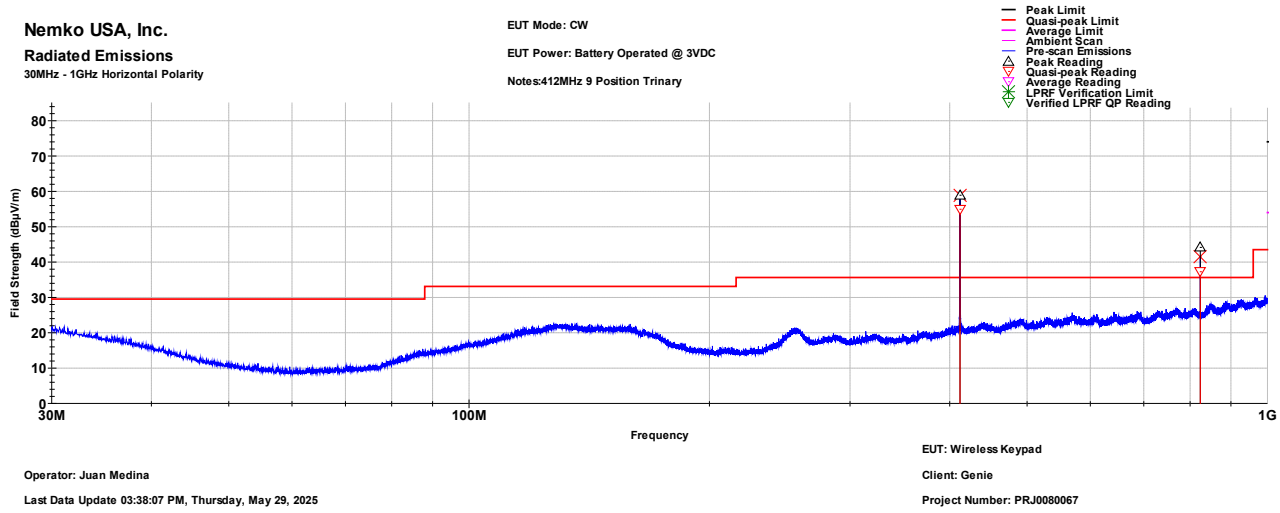

Figure 8.3-38: *Radiated Emissions, Genie 9 Position Trinary 412 MHz, Horizontal Polarity, 30MHz – 1GHz*

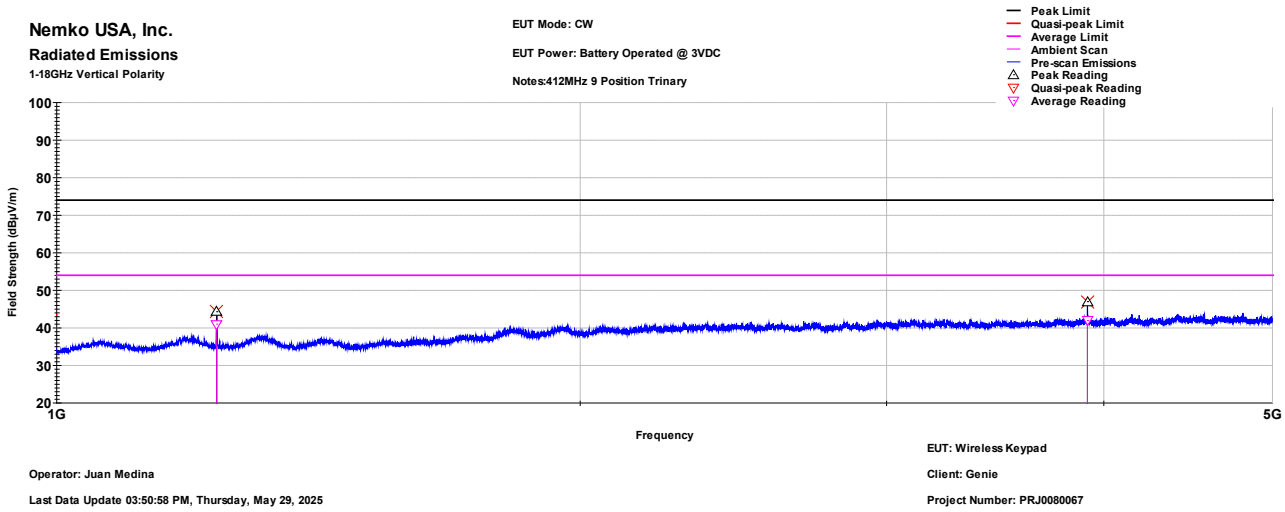

Figure 8.3-39: *Radiated Emissions, Genie 9 Position Trinary 412 MHz, Vertical Polarity, 1GHz –5GHz*

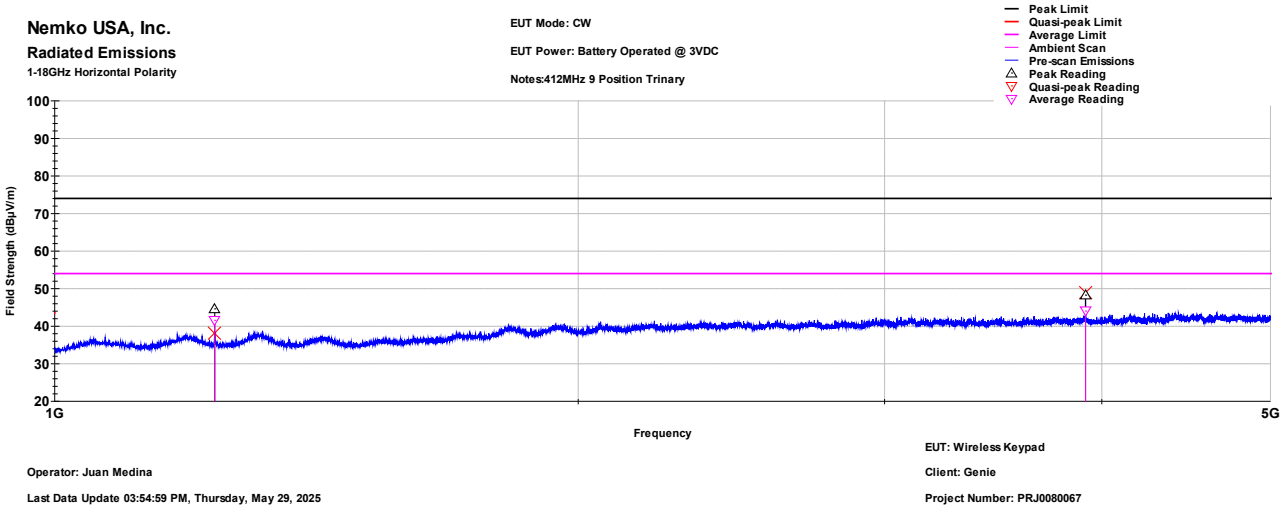

Figure 8.3-40: *Radiated Emissions, Genie 9 Position Trinary 412 MHz, Horizontal Polarity, 1GHz –5GHz*

***Table 8.3-11**: Harmonic and spurious emissions test data, Genie 9 Position Trinary 412 MHz*

Frequency (MHz)	Polarity	Max Peak (dBµV/m)	Duty Cycle Correction (dB)	Average (dBµV/m)	Limit(dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Result
412.043	V	65.609	-12.10	53.51	69.6145	16.11	400.00	282.00	Pass
412.043	H	58.875	-12.10	46.78	69.6145	22.84	400.00	0.00	Pass
824.057	V	60.738	-12.10	48.64	49.6145	0.98	191.00	302.00	Pass
824.057	H	44.127	-12.10	32.03	49.6145	17.59	150.00	219.00	Pass
1236	V	44.288	-12.10	32.19	53.9794	21.79	374.00	271.00	Pass
1236	H	44.596	-12.10	32.50	53.9794	21.48	400.00	39.00	Pass
3914.25	V	46.985	0	46.99	53.9794	6.99	163.00	158.00	Pass
3914.5	H	48.256	0	48.26	53.9794	5.72	100.00	70.00	Pass

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) − amplifier gain (dB)
[3] Peak emissions at harmonic frequencies are adjusted by the duty cycle correction factor and compared against the average limit. For non-harmonic emissions, the peak is compared directly against the average limit.
[4] The limit is calculated based on the nominal carrier frequency.

8.4 FCC 15.231(c) / RSS-210 A.1.4 Bandwidth of emissions

8.4.1 Definitions and limits

FCC 15.231(c) and RSS-210 A.1.4:
The bandwidth of the emission 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 center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

8.4.2 Test summary

Verdict	Pass		
Test date	May 28, 2025	Temperature	23 °C
Test engineer	Juan Medina, EMC Engineer	Air pressure	991 mbar
Test location	Wireless bench	Relative humidity	49 %

8.4.3 Observations, settings, and special notes

Tests were performed based on the methodology of Section 6.9.2 of ANSI C63.10.

8.4.4 Test data

Table 8.4-1: *Test data – 20 dB bandwidth*

Brand / Coding	Operating Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
Guardian	303	9.71	757.5	747.79
Genie IC1	315	19.3	787.5	768.2
Marantec	315	8.77	787.5	778.73
Chamberlain Purple	315	12.75	787.5	774.75
Chamberlain Yellow	315	16.78	787.5	770.72
Genie IC2	315	15.04	787.5	772.46
Linear	318	12.17	795	782.83
Genie 9 Position Trinary	360	10.52	900	889.48
Genie 9 Position Trinary	380	9.32	950	940.68
Genie IC1	390	18.82	975	956.18
Chamberlain Green	390	8.19	975	966.81
Chamberlain Red	390	7.51	975	967.49
Genie IC2	390	12.39	975	962.61
Genie 9 Position Trinary	412	11.9	1030	1018.1

Figure 8.4-1: *20 dB bandwidth, Guardian 303 MHz*

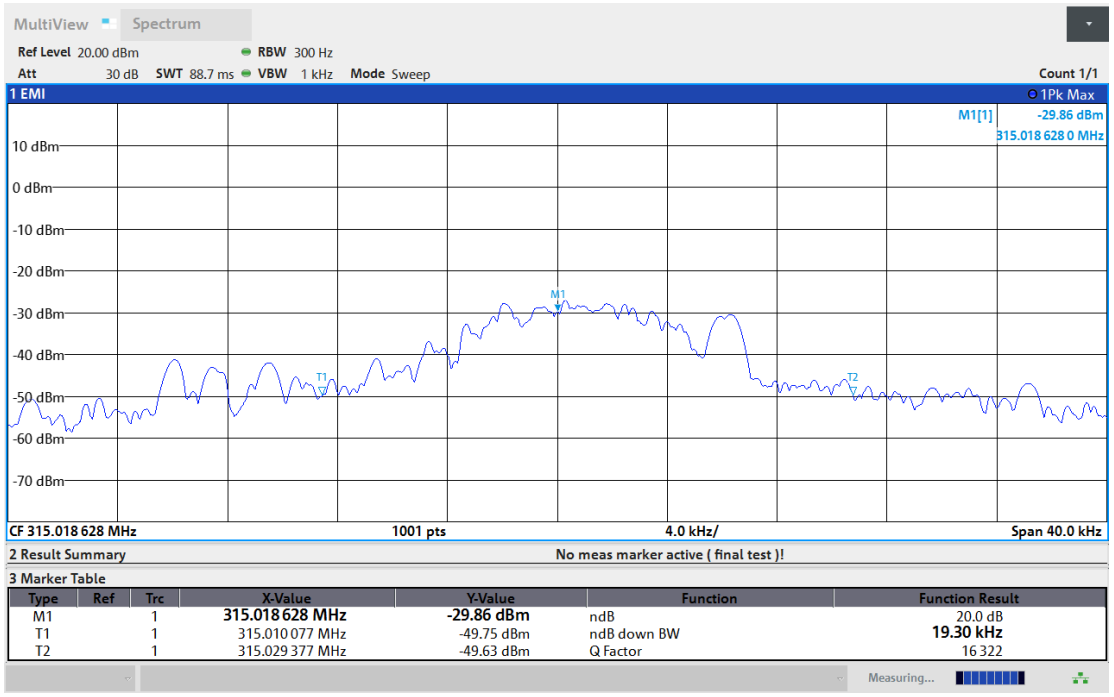

Figure 8.4-2: *20 dB bandwidth, Genie IC1 315 MHz*

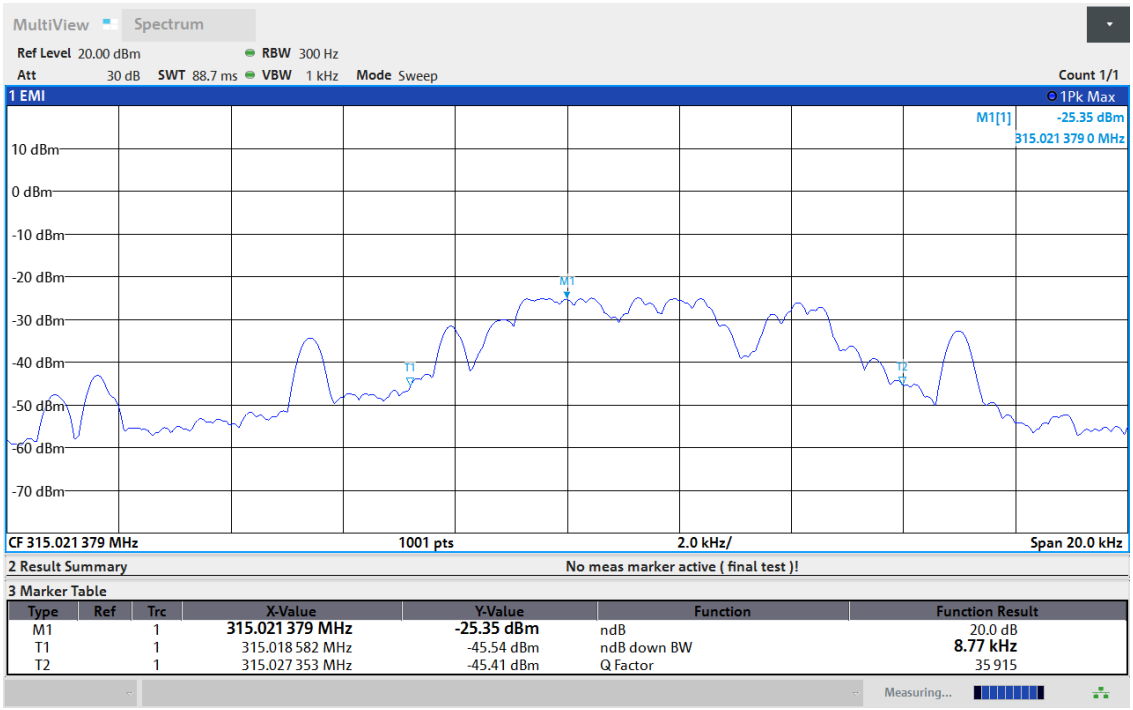

Figure 8.4-3: *20 dB bandwidth, Marantec 315 MHz*

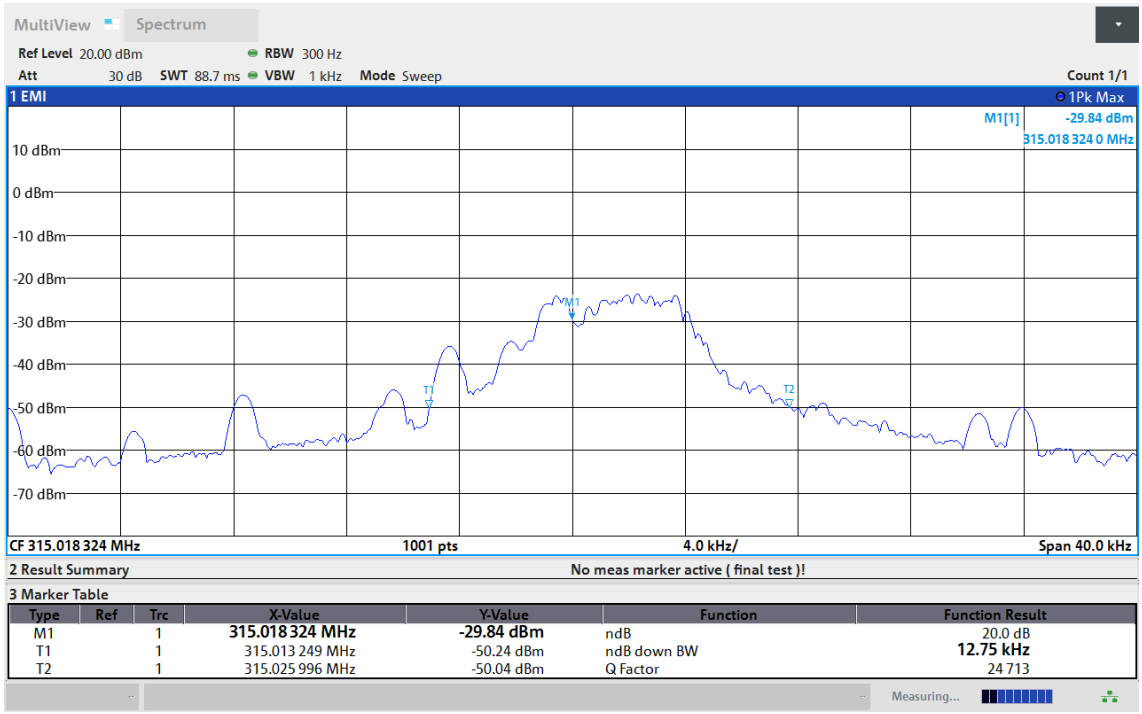

Figure 8.4-4: *20 dB bandwidth, Chamberlain Purple 315 MHz*

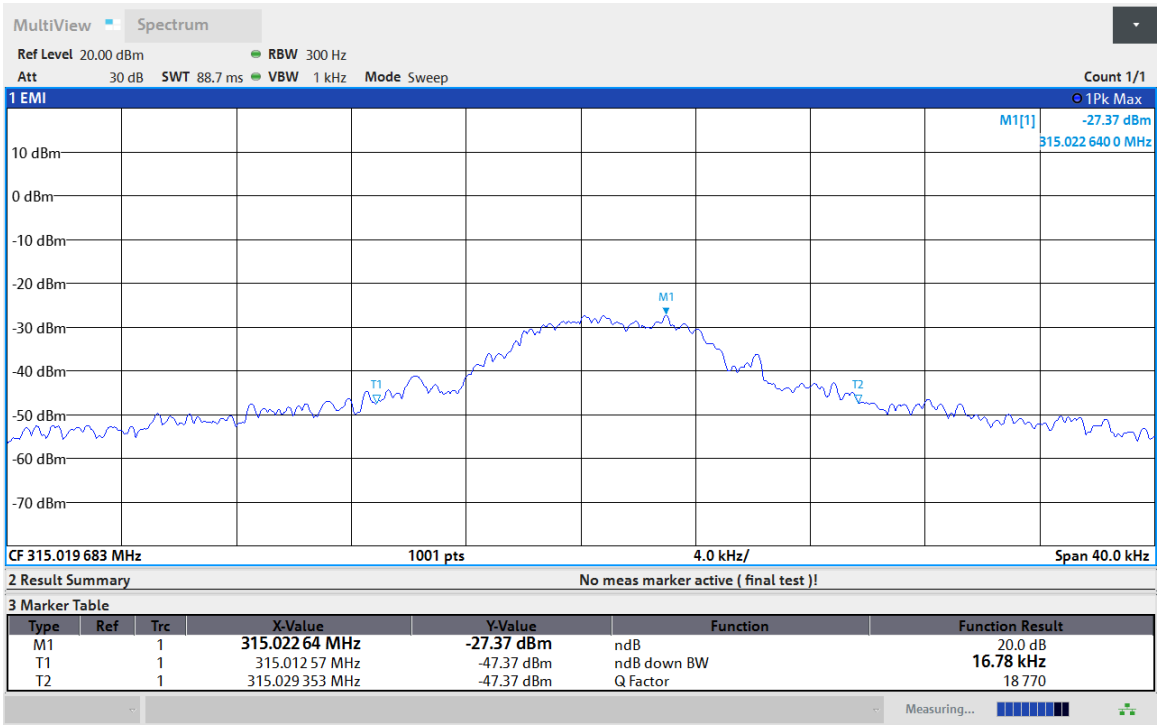

Figure 8.4-5: *20 dB bandwidth, Chamberlain Yellow 315 MHz*

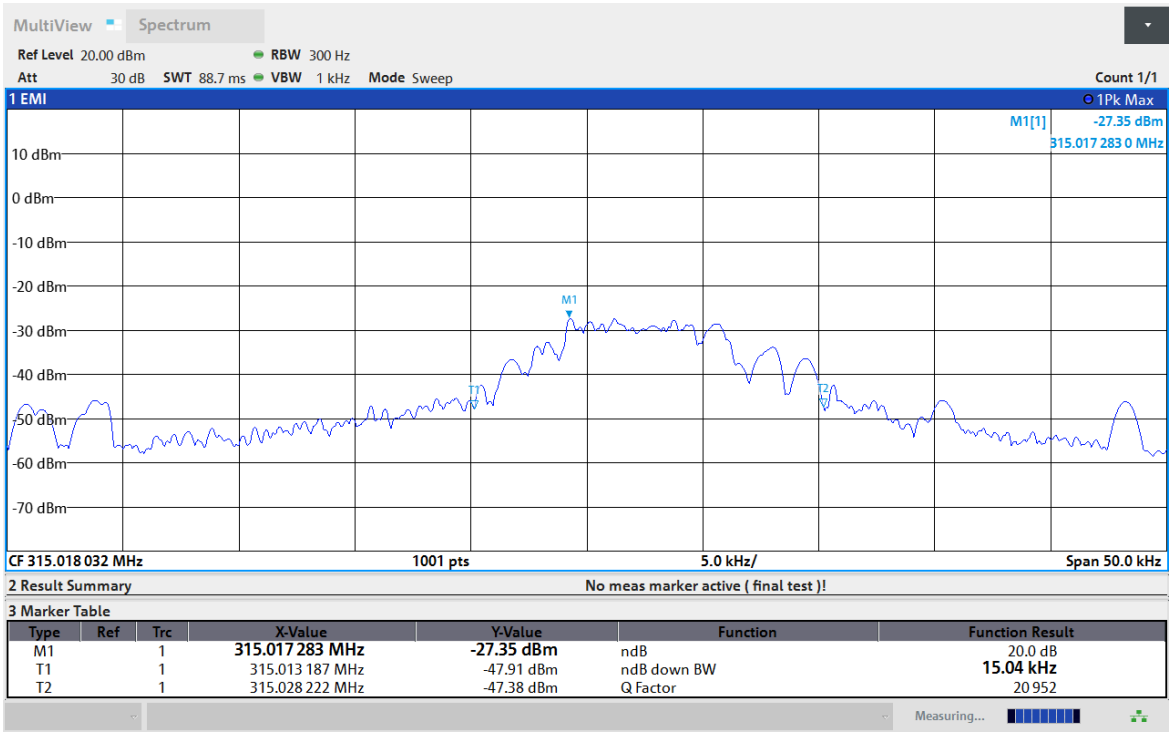

Figure 8.4-6: *20 dB bandwidth, Genie IC2 315 MHz*

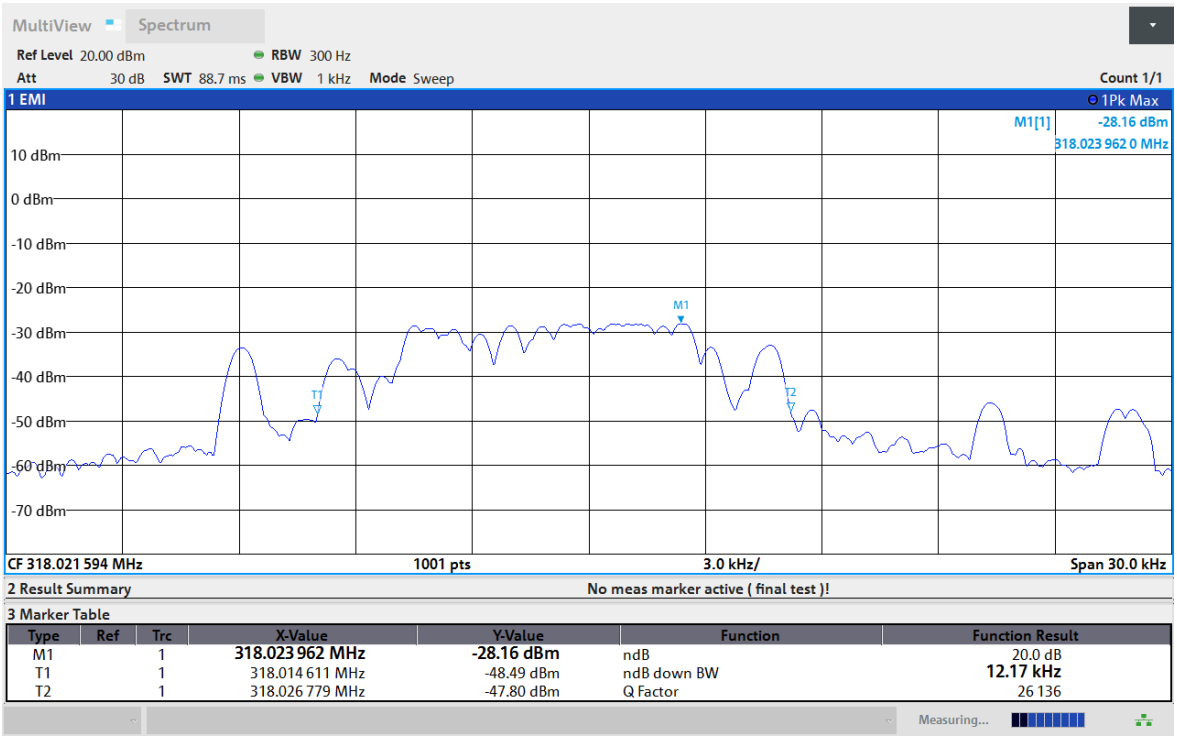

Figure 8.4-7: *20 dB bandwidth, Linear 318 MHz*

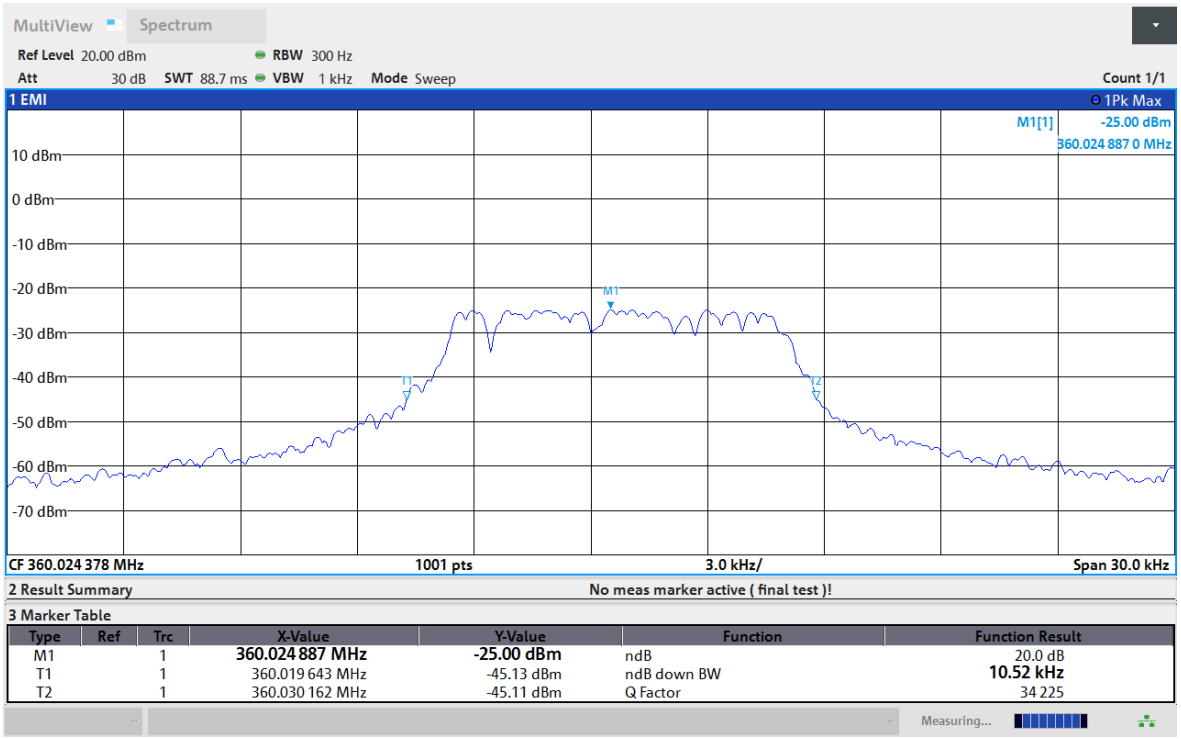

Figure 8.4-8: *20 dB bandwidth, Genie 9 Position Trinary 360 MHz*

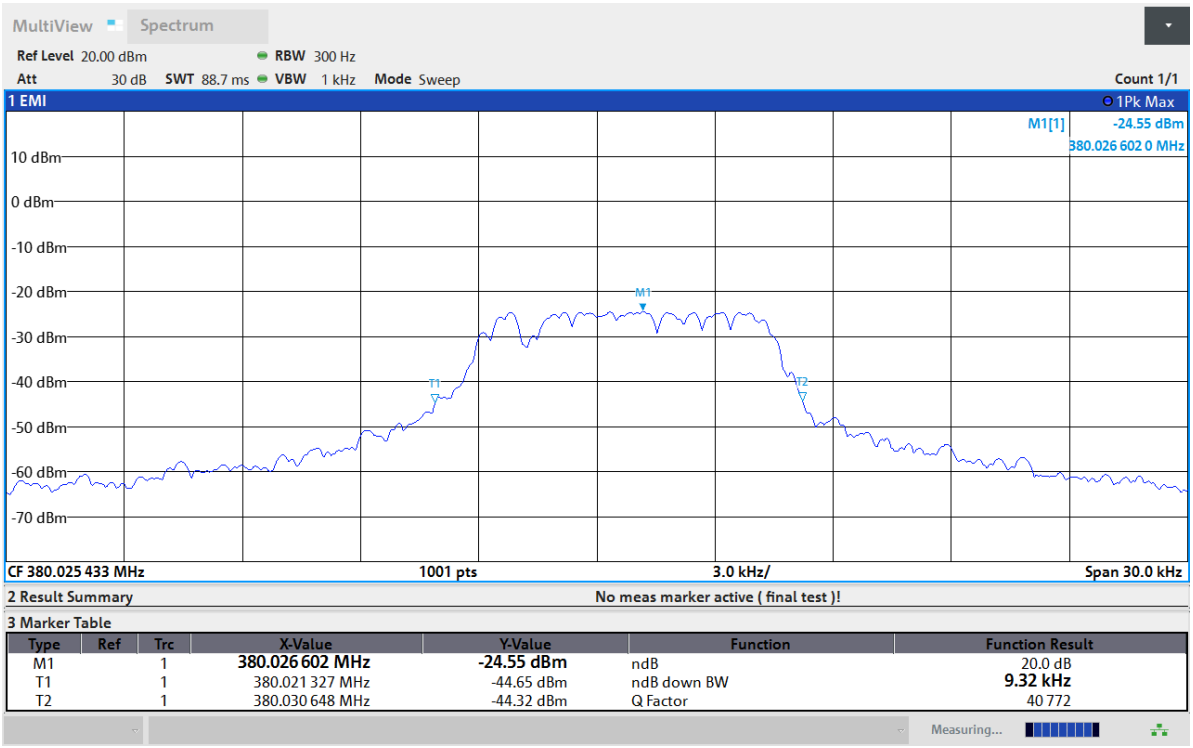

Figure 8.4-9: *20 dB bandwidth, Genie 9 Position Trinary 380 MHz*

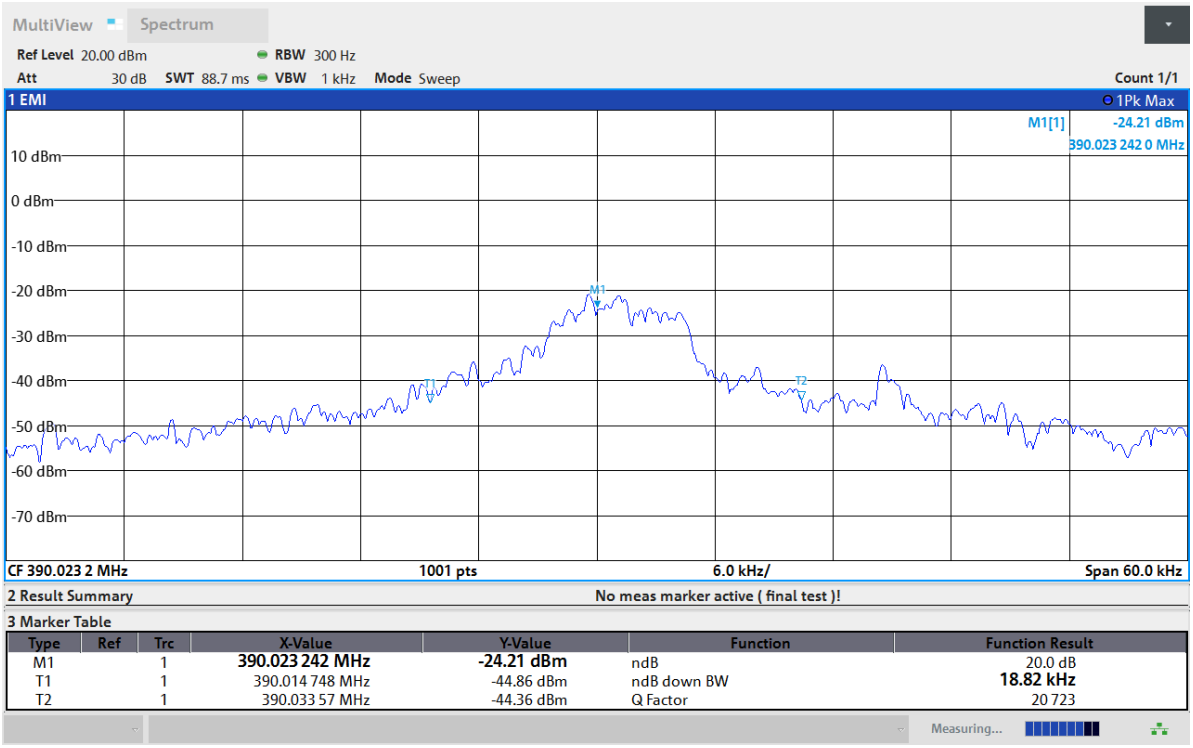

Figure 8.4-10: *20 dB bandwidth, Genie IC1 390 MHz*

Figure 8.4-11: *20 dB bandwidth, Chamberlain Green 390 MHz*

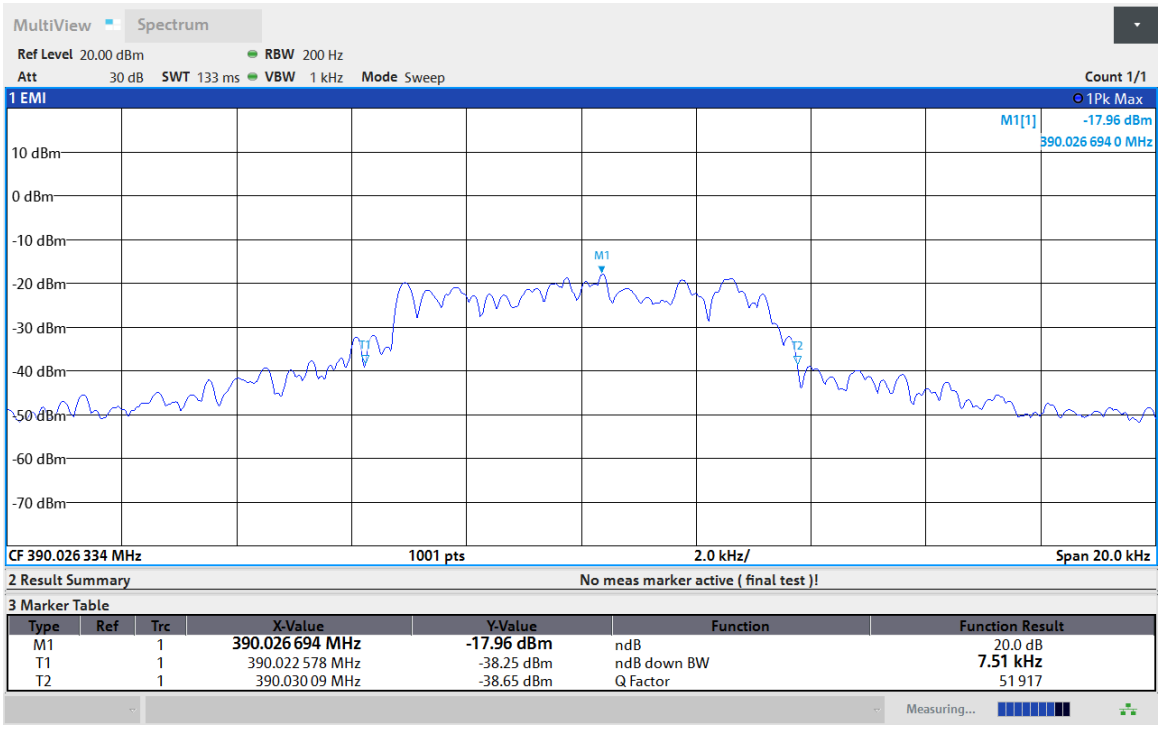

Figure 8.4-12: *20 dB bandwidth, Chamberlain Red 390 MHz*

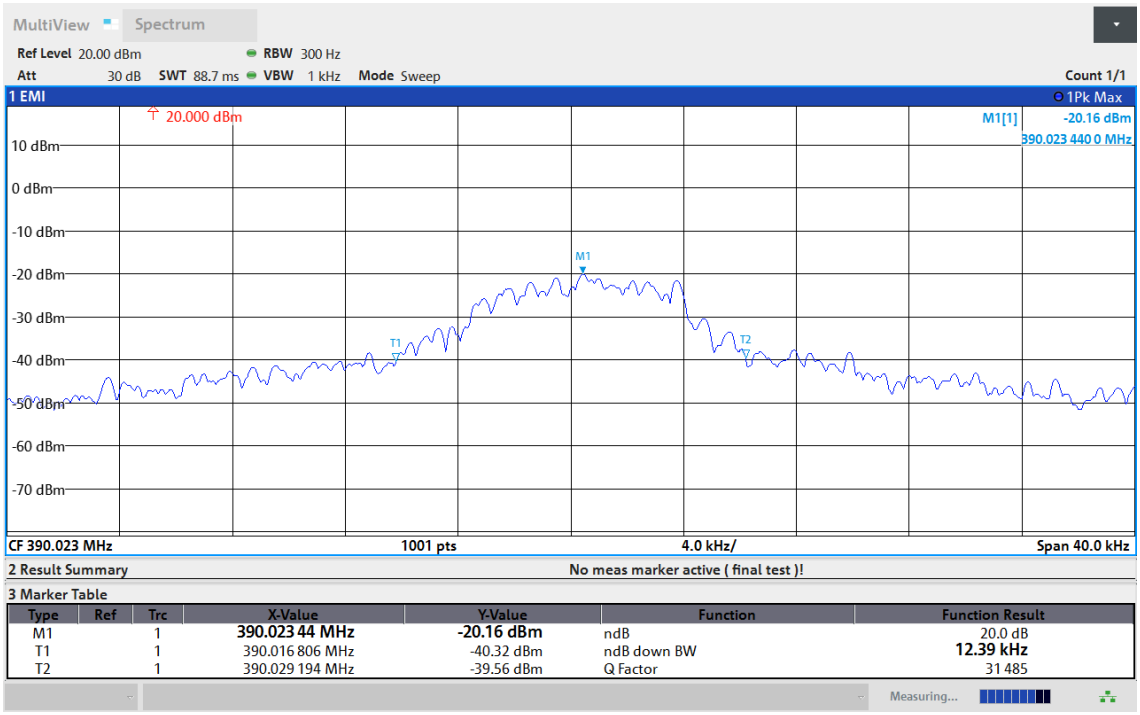

Figure 8.4-13: *20 dB bandwidth, Genie IC2 390 MHz*

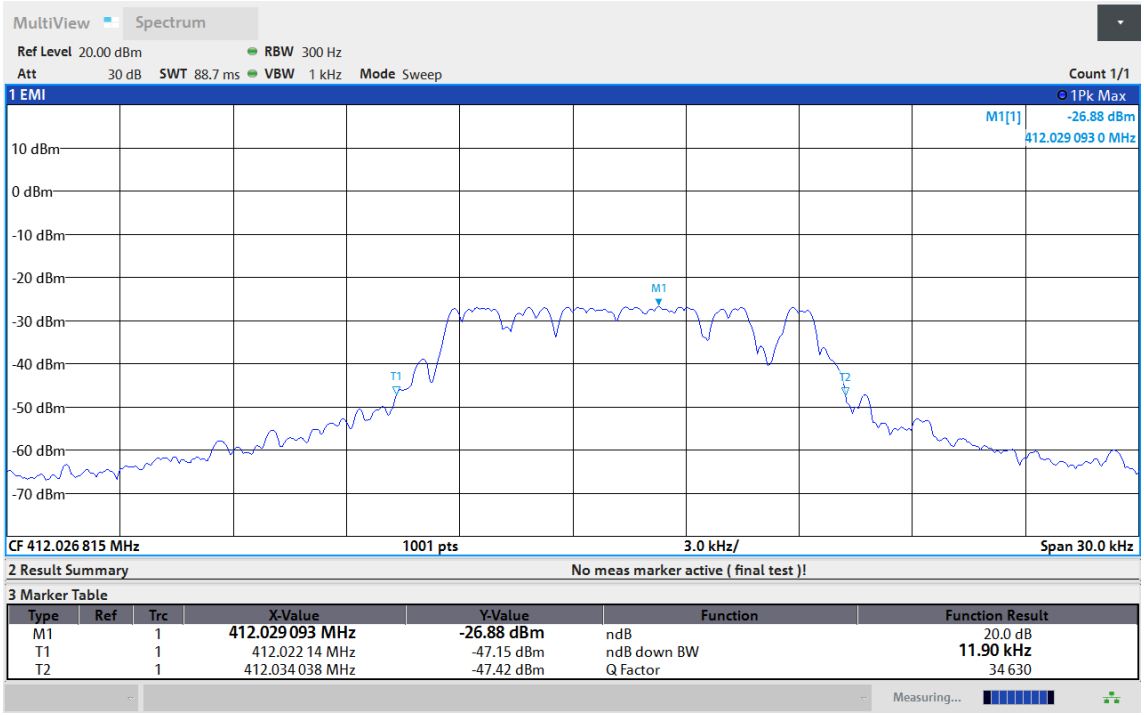

Figure 8.4-14: *20 dB bandwidth, Genie 9 Position Trinary 412 MHz*

8.5 RSS-GEN 6.7 – Occupied bandwidth

8.5.1 Definitions and limits

RSS-GEN 6.7:
The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.5.2 Test summary

Verdict	Pass		
Test date	May 28, 2025	Temperature	23 °C
Test engineer	Juan Medina, EMC Engineer	Air pressure	991 mbar
Test location	Wireless bench	Relative humidity	49 %

8.5.3 Observations, settings, and special notes

Tests were performed based on the methodology of Section 6.9.3 of ANSI C63.10.

8.5.4 Test data

Table 8.5-1: *Test data – 99% occupied bandwidth*

Brand / Coding	Operating Frequency (MHz)	99% Bandwidth (kHz)
Guardian	303	18.3
Genie IC1	315	28.121
Marantec	315	11.798
Chamberlain Purple	315	10.765
Chamberlain Yellow	315	25.24
Genie IC2	315	36.575
Linear	318	15.1164
Genie 9 Position Trinary	360	9.1237
Genie 9 Position Trinary	380	7.9367
Genie IC1	390	30.763
Chamberlain Green	390	7.749
Chamberlain Red	390	8.089
Genie IC2	390	23.293
Genie 9 Position Trinary	412	10.519

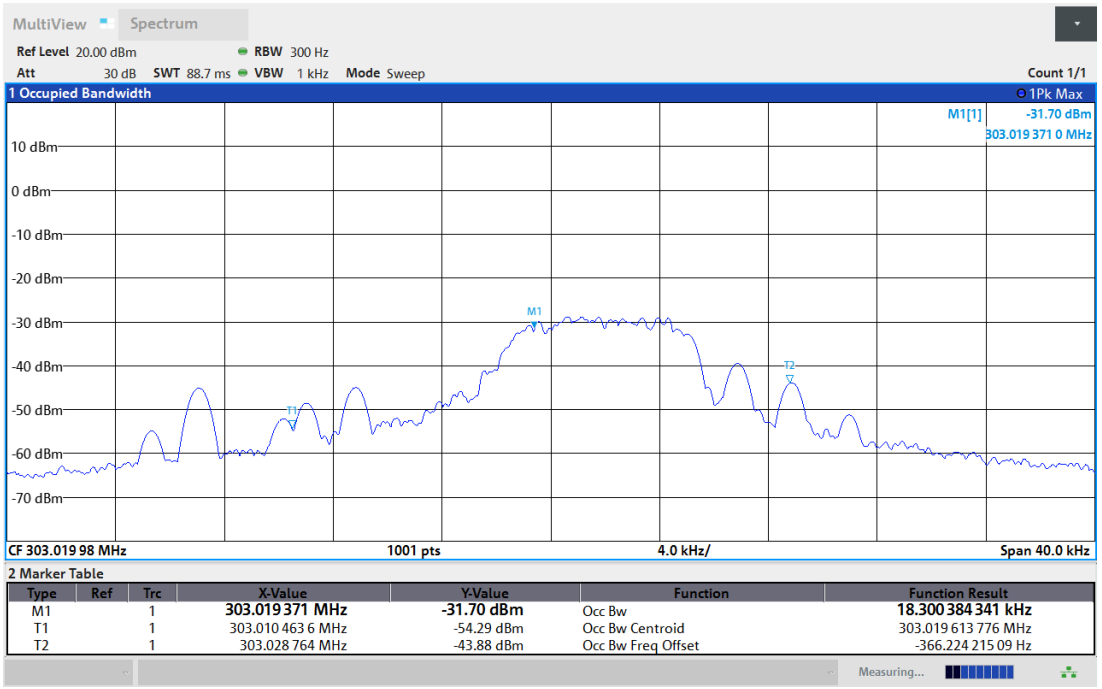

Figure 8.5-1: *99% bandwidth, Guardian 303 MHz*

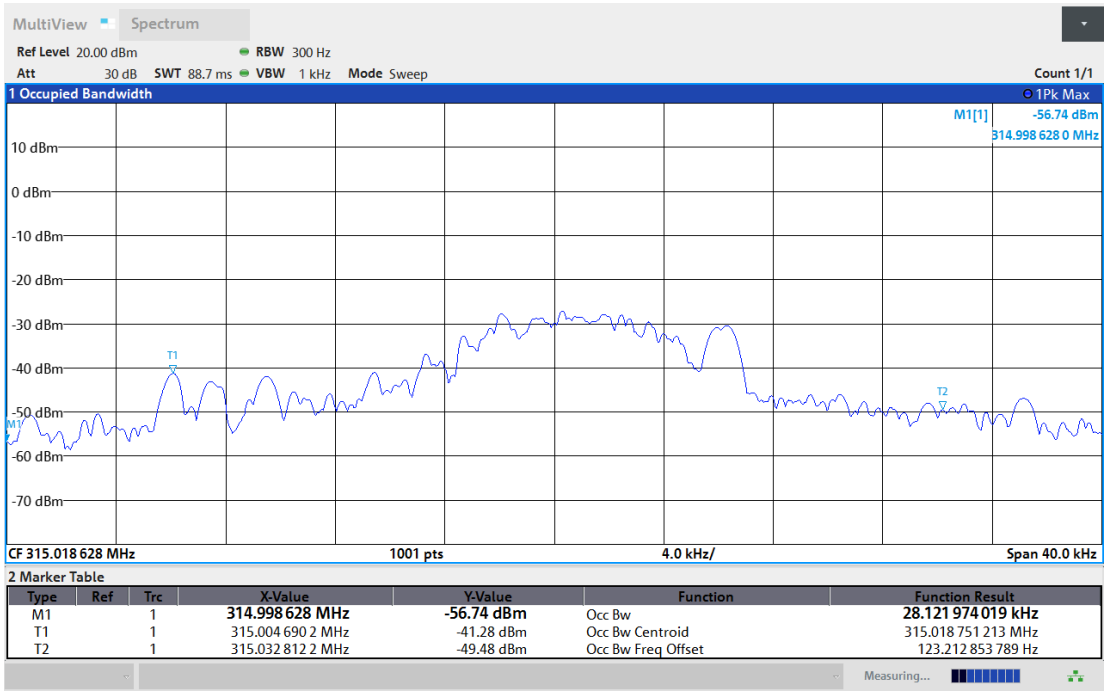

Figure 8.5-2: *99% bandwidth, Genie IC1 315 MHz*

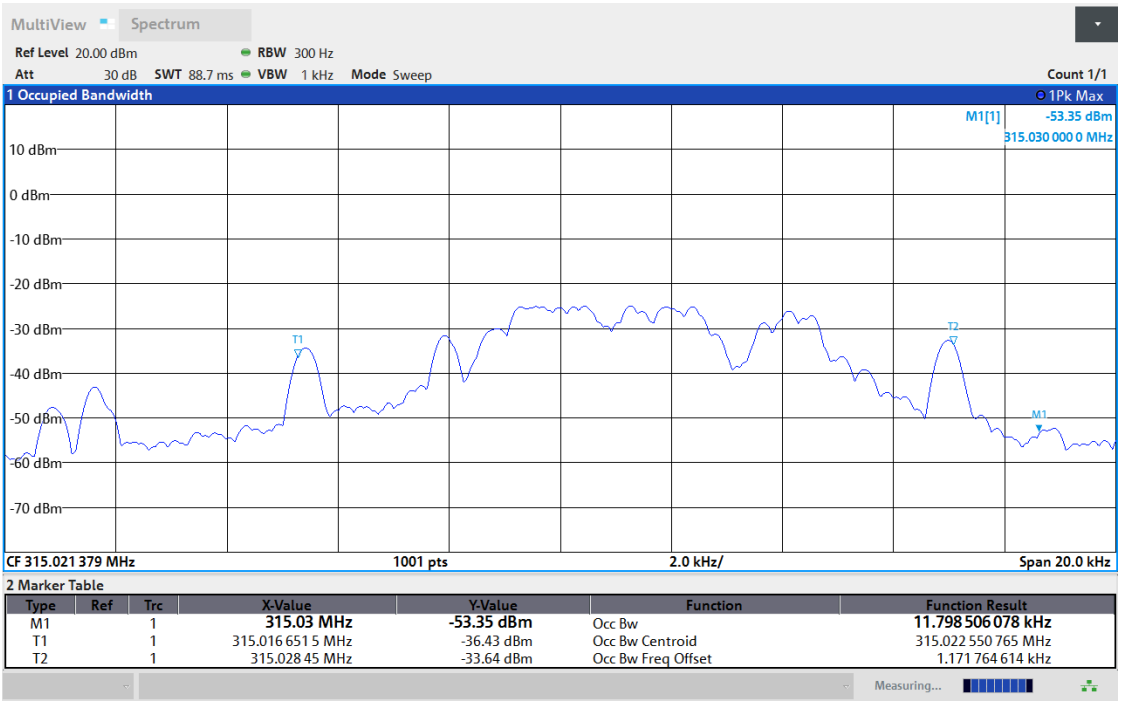

Figure 8.5-3: *99% bandwidth, Marantec 315 MHz*

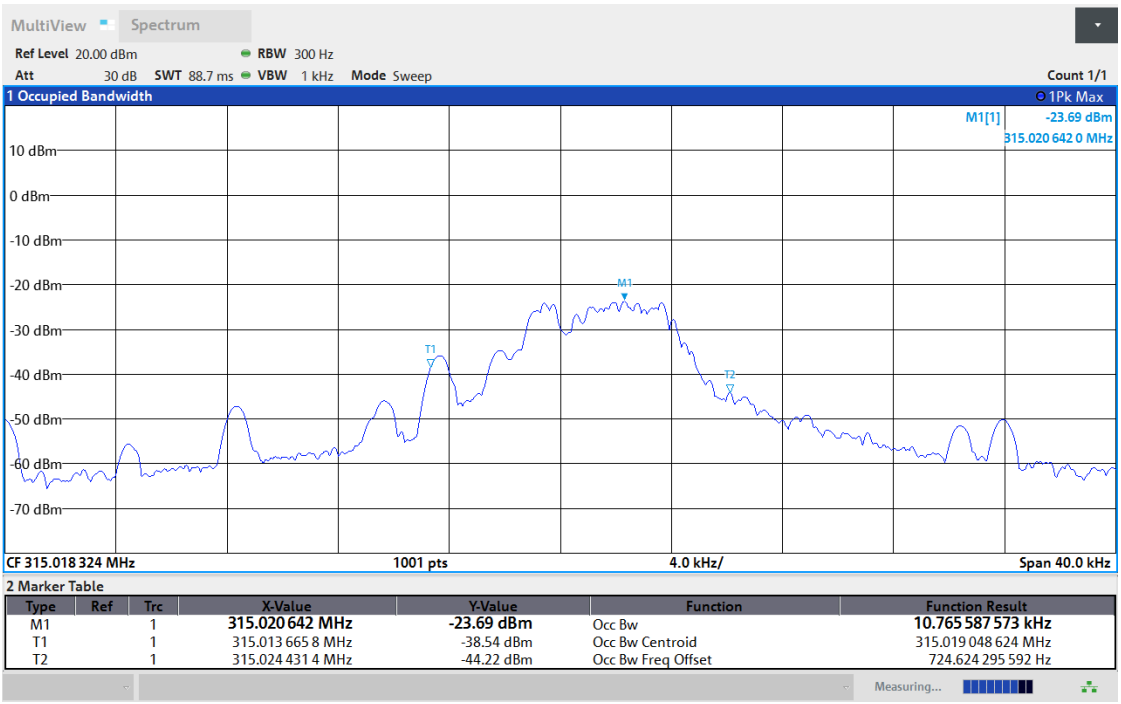

Figure 8.5-4: *99% bandwidth, Chamberlain Purple 315 MHz*

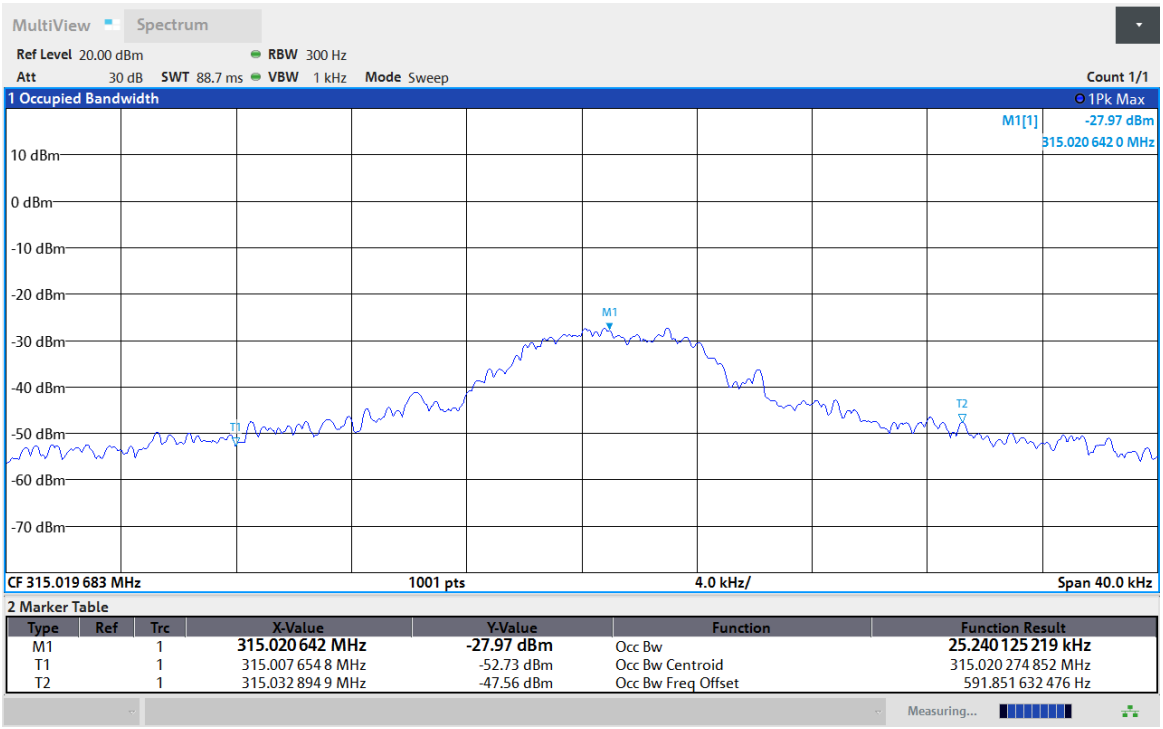

Figure 8.5-5: *99% bandwidth, Chamberlain Yellow 315 MHz*

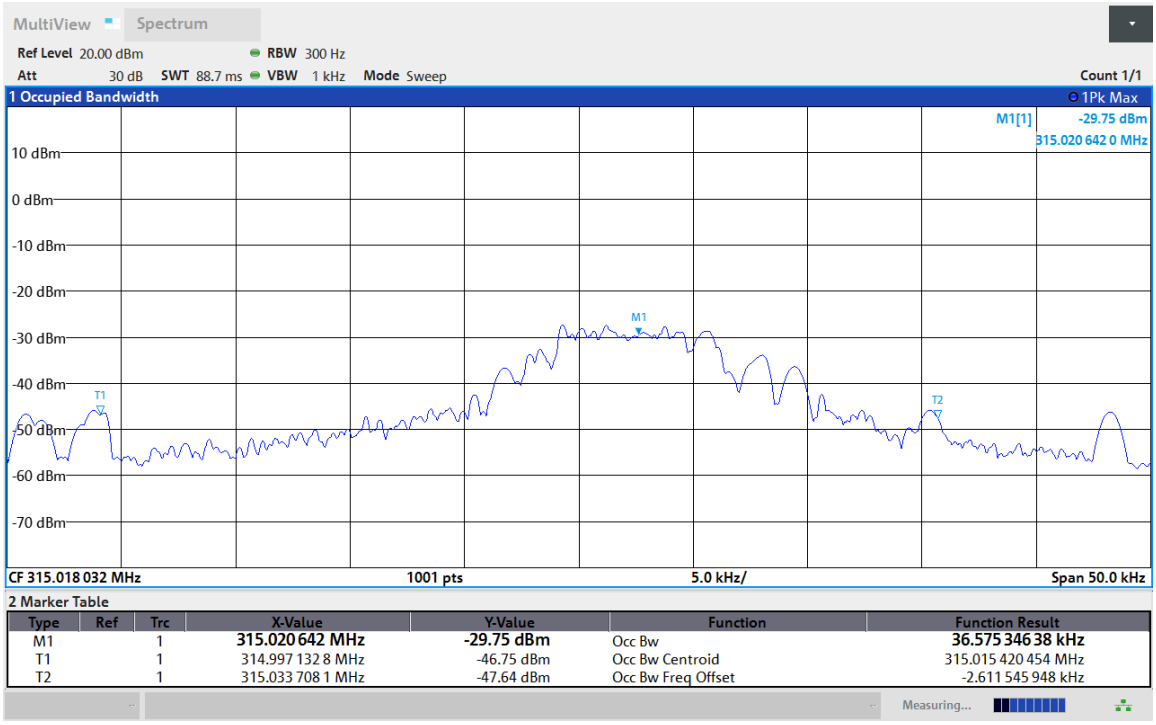

Figure 8.5-6: *99% bandwidth, Genie IC2 315 MHz*

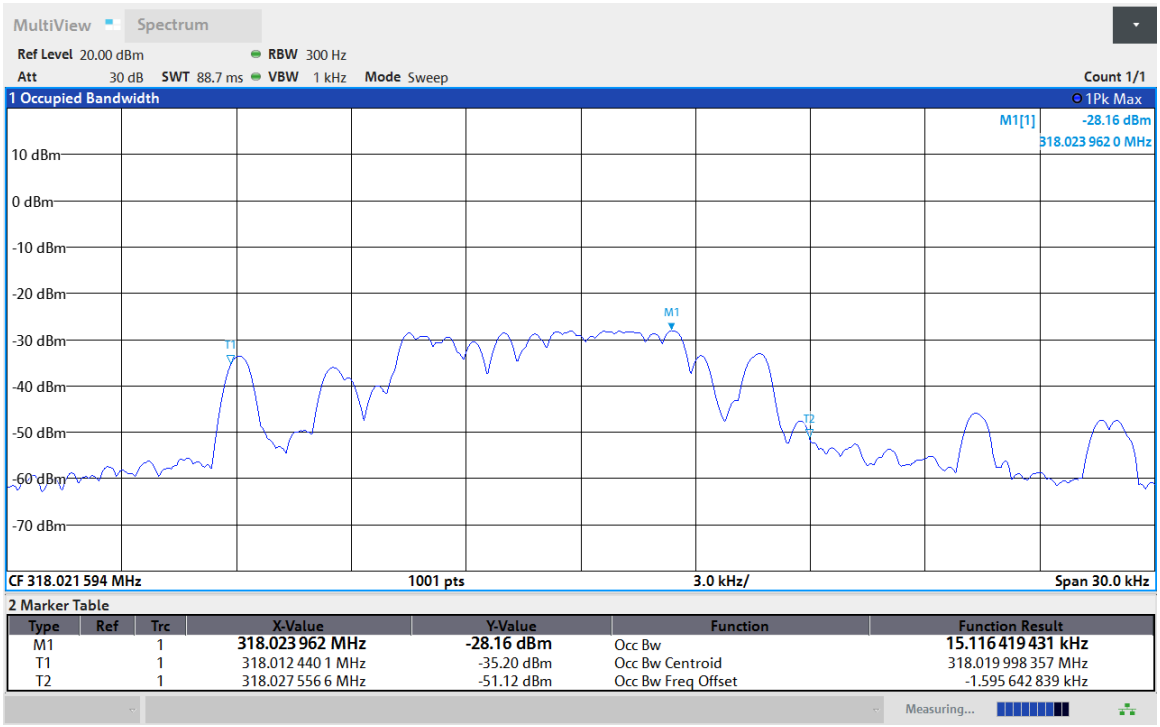

Figure 8.5-7: *99% bandwidth, Linear 318 MHz*

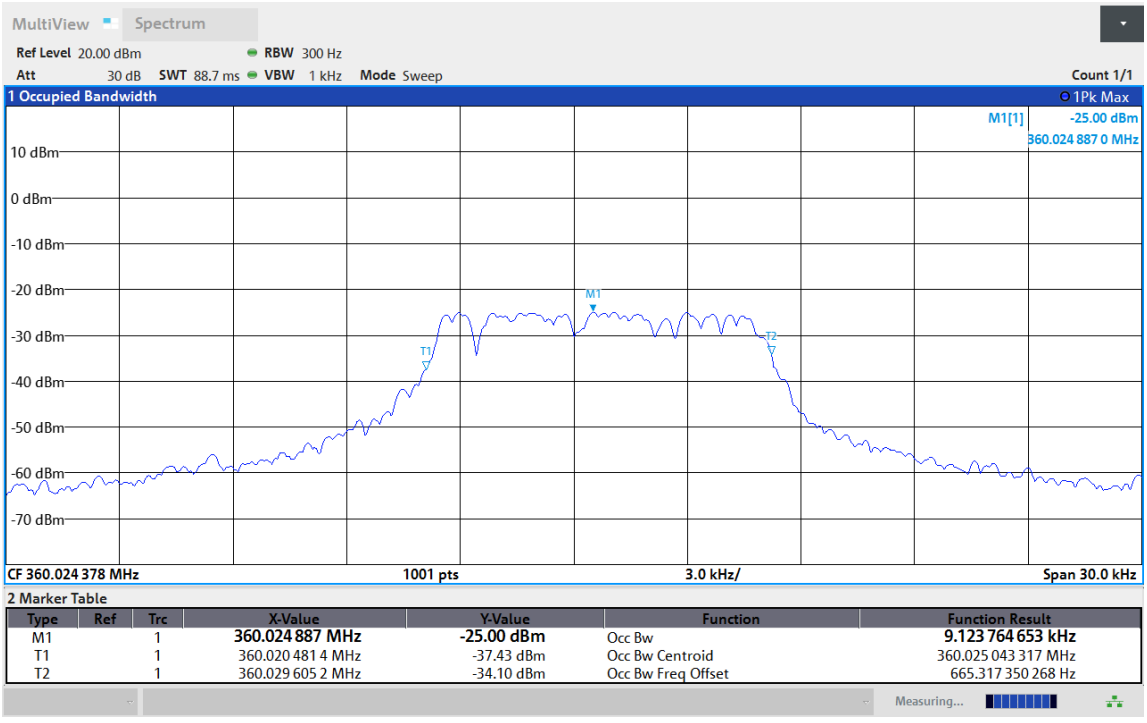

Figure 8.5-8: *99% bandwidth, Genie 9 Position Trinary 360 MHz*

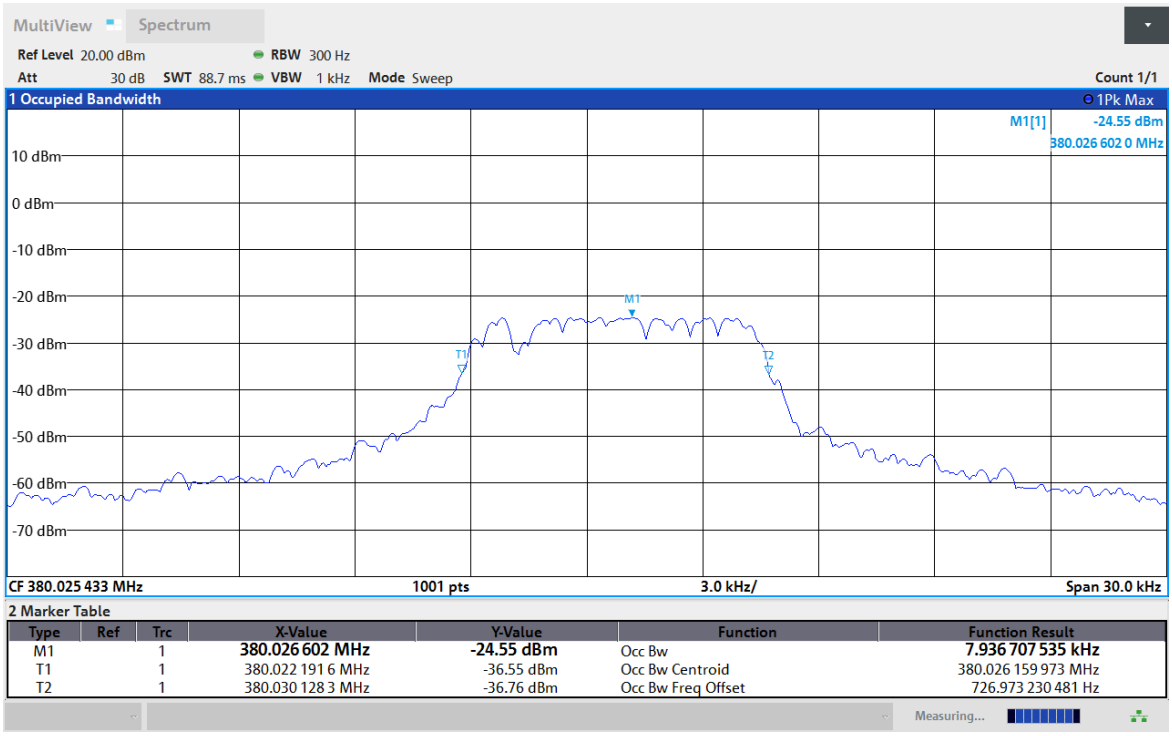

Figure 8.5-9: *99% bandwidth, Genie 9 Position Trinary 380 MHz*

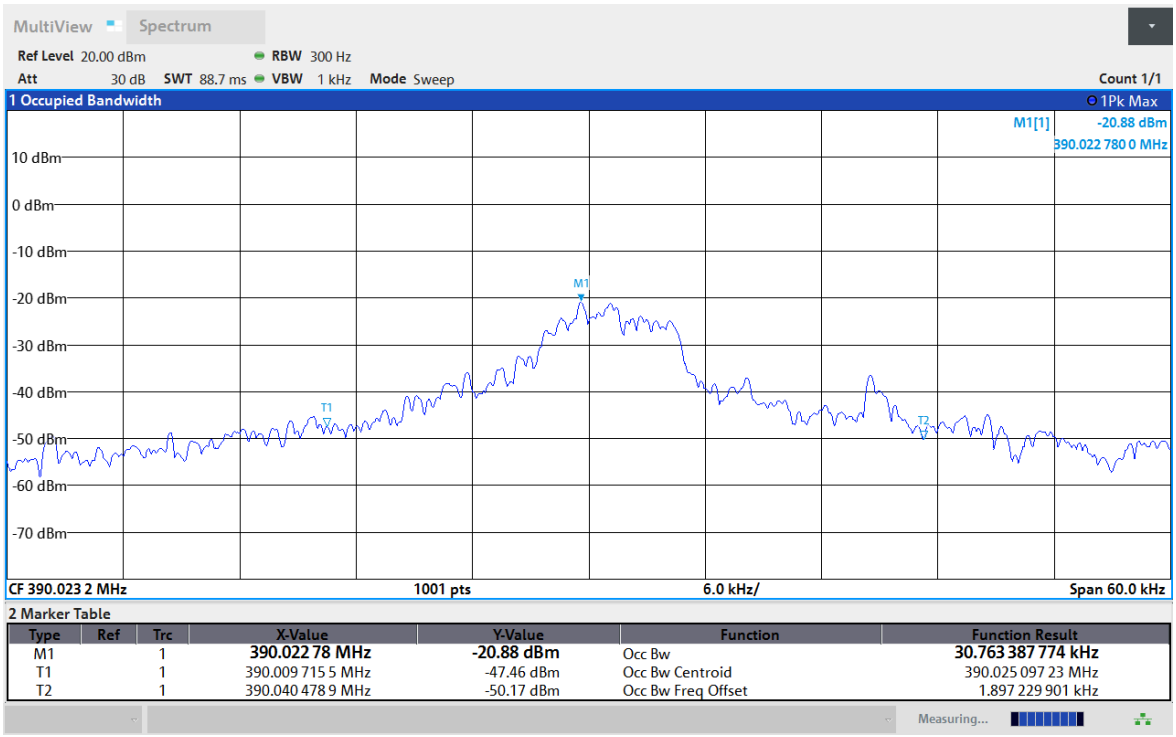

Figure 8.5-10: *99% bandwidth, Genie IC1 390 MHz*

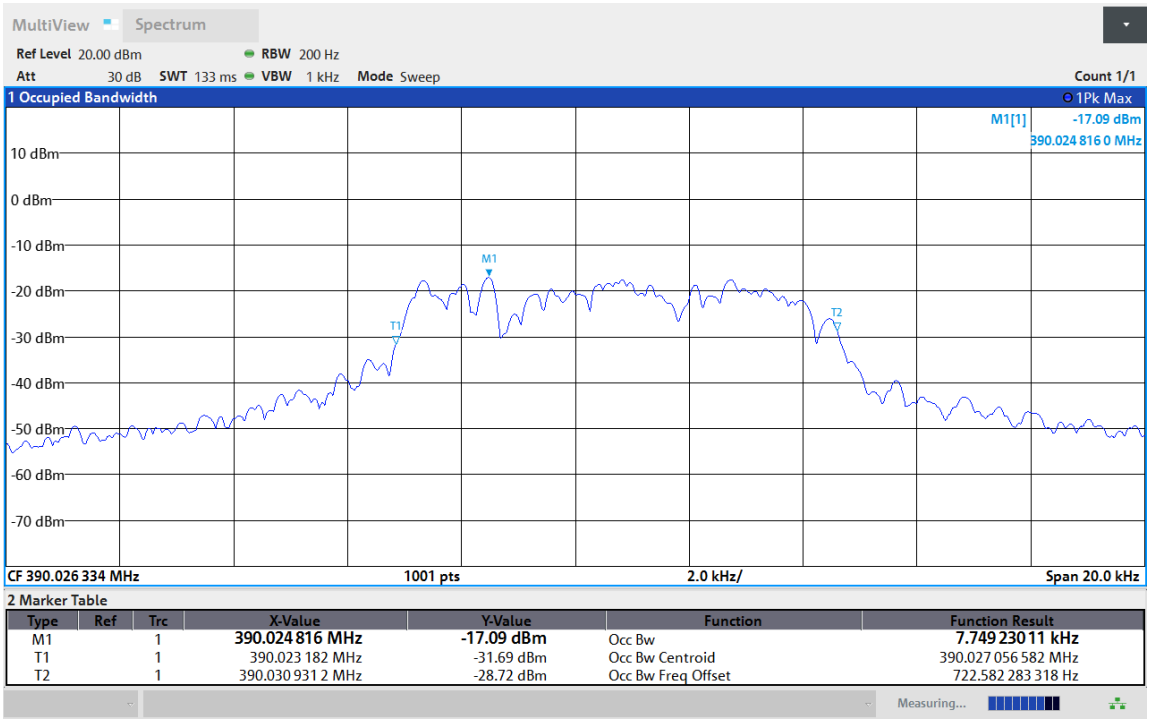

Figure 8.4-11: *99% bandwidth, Chamberlain Green 390 MHz*

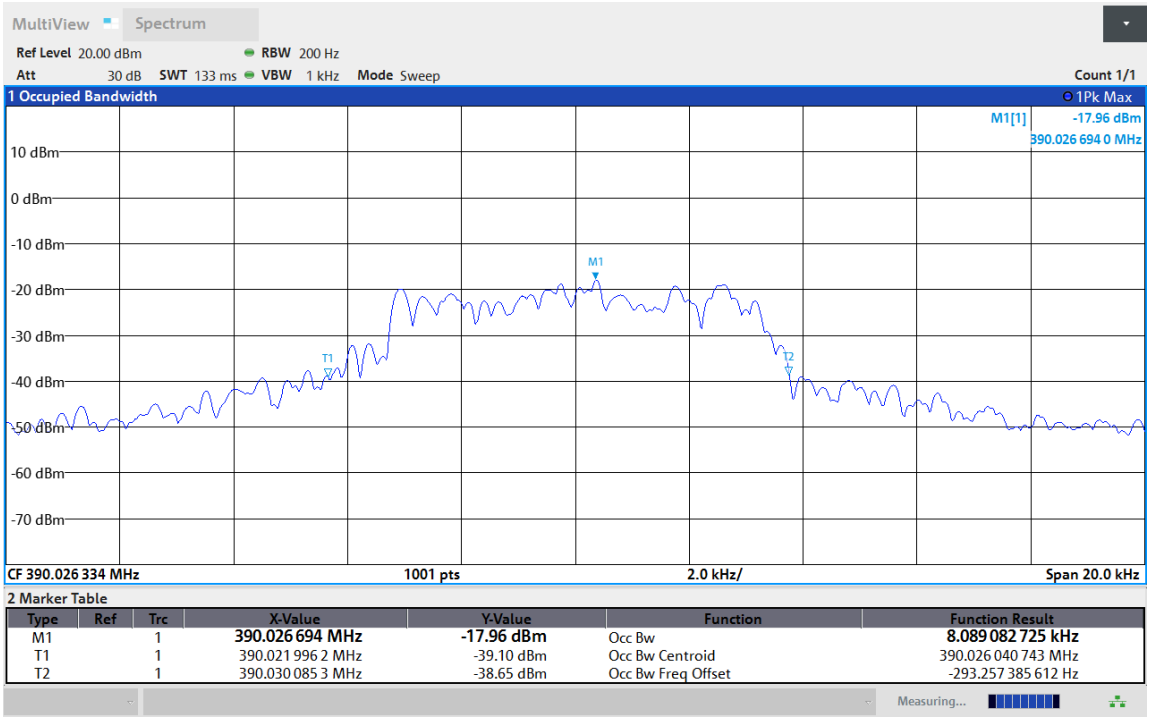

Figure 8.4-12: *99% bandwidth, Chamberlain Red 390 MHz*

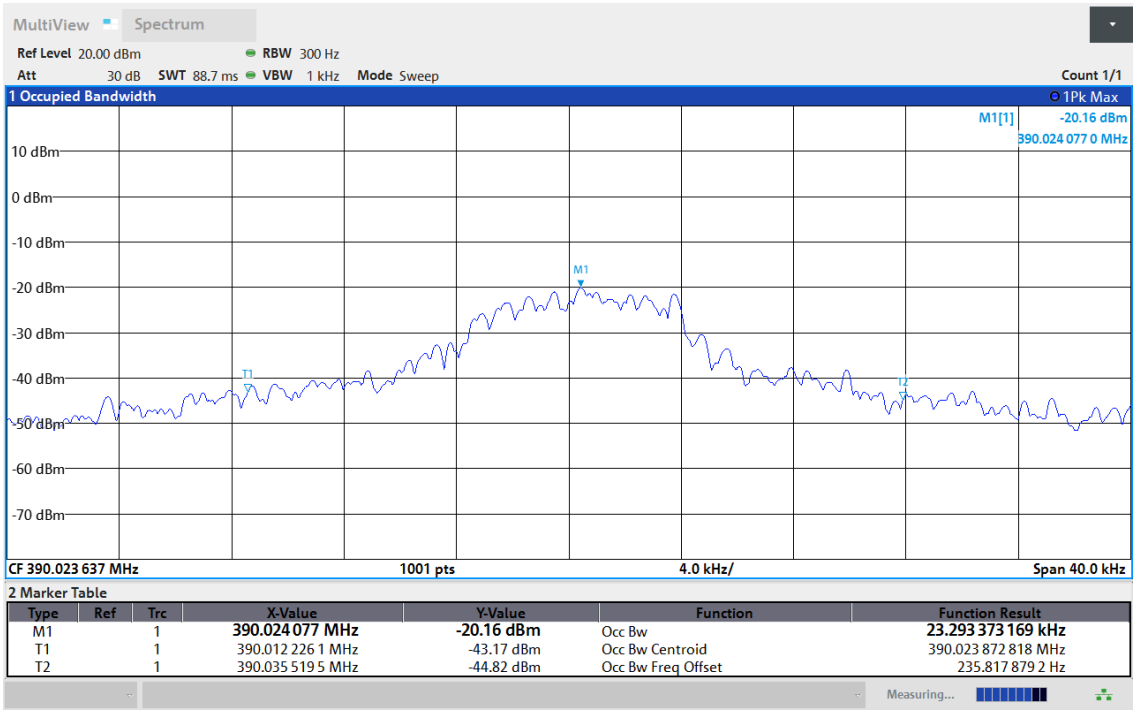

Figure 8.5-13: *99% bandwidth, Genie IC2 390 MHz*

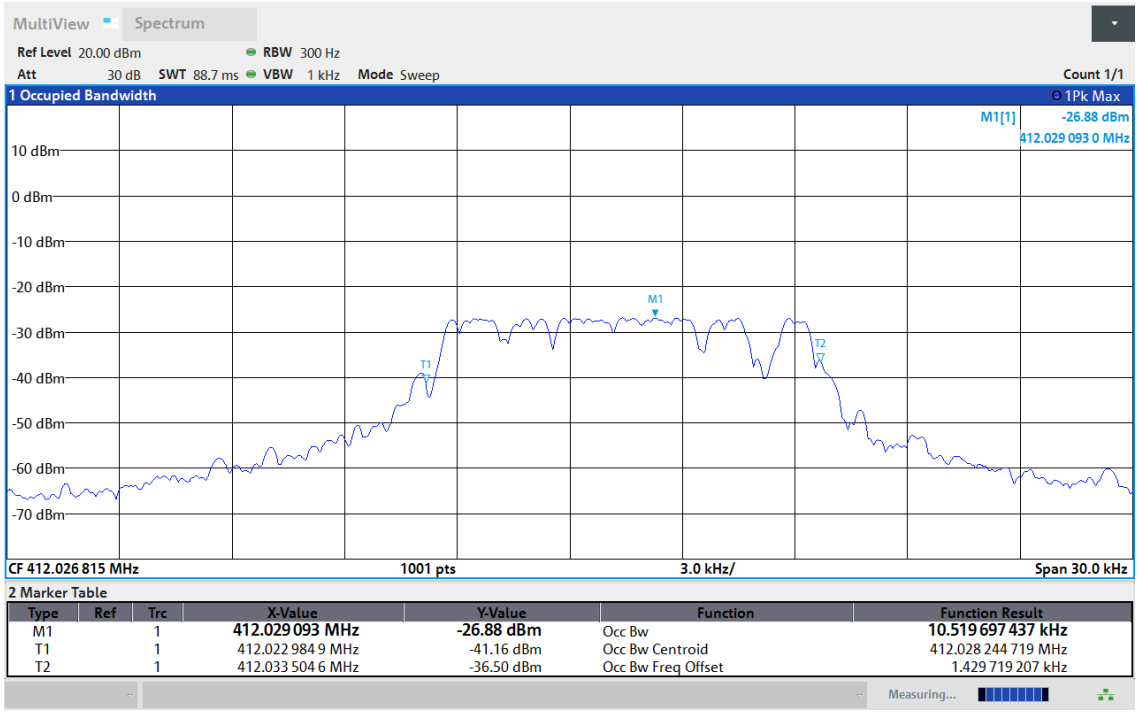

Figure 8.5-14: *99% bandwidth, Genie 9 Position Trinary 412 MHz*

End of Report