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FCC/ISED Test Report

Prepared for:	**Digital Monitoring Products**
Address:	**2500 North Partnership Blvd. Springfield, MO 6582**
EUT:	**1106**
FCC ID:	**CCKPC0237**
IC:	**525A-PC0237**
Test Report No:	**R20210930-20-E1A**
Approved by:	**Nic S. Johnson, NCE** **Technical Manager** **iNARTE Certified EMC Engineer #EMC-003337-NE**
DATE:	**October 13, 2022**
Total Pages:	**37**

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ilac-MRA A2LA ACCREDITED TESTING LABORATORY CERTIFICATE NO. 1953.01

REVISION PAGE

Rev. No.	Date	Description
0	26 July 2022	Original – NJohnson Prepared by GLarsen/FLane
A	20 September 2022	Added FCC ID and IC ID. Output power measurements changed for EIRP to conducted. -JN

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1.0 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

(1) US Code of Federal Regulations, Title 47, Part 15
(2) ISED RSS-Gen, Issue 5
(3) ISED RSS-247, Issue 2

ANSI C63.10-2013 was used as a test method, with guidance from KBD 558074 D01 v05

SUMMARY			
Standard Section	**Test Type and Limit**	**Result**	**Remark**
FCC 15.203	Unique Antenna Requirement	Pass	PCB antenna
FCC 15.35 RSS-Gen, 6.10	Duty cycle of pulsed emissions	Informative only	Duty cycle was applied
FCC 15.209 RSS-Gen, 7.1	Receiver Radiated Emissions	Pass	Meets the requirement of the limit.
FCC 15.247(a)(1)(i) RSS-247, 5.1(c)	Maximum Bandwidth, Limit: Max. 250kHz	Pass	Meets the requirement of the limit.
FCC 15.247(b)(1) RSS-247, 5.1	Maximum Peak Output Power, Limit: Max. 24 dBm	Pass	Meets the requirement of the limit.
FCC 15.209 RSS-Gen, 8.9 RSS-247, 5.5	Transmitter Radiated Emissions	Pass	Meets the requirement of the limit.
FCC 15.247(a) (1) (i) RSS-247, 5.1(c)	Frequency hopping system, Limit: Max. 0.4 Seconds in 20 Second Period	Pass	Meets the requirement of the limit.
FCC 15.209, 15.205 RSS-Gen, 8.9 RSS-247, 5.5	Band Edge Measurement, Limit: 20dB less than the peak value of fundamental frequency	Pass	Meets the requirement of the limit.
FCC 15.207 RSS-Gen. 8.8	Conducted AC Emissions	NA	NA

2.0 EUT DESCRIPTION

2.1 EQUIPMENT UNDER TEST

Summary
The Equipment Under Test (EUT) was 1106 a Wireless transmitter manufactured by DMP wireless devices. It operates in the 902 to 928 MHz ISM band and has transmit and receive capabilities.

EUT	1106
EUT Received	11/9/2020
EUT Tested	11/18/2020 - 12/21/2020
Serial No.	010269 (Assigned by test lab)
Operating Band	902 – 928 MHz
Device Type	FHSS
Power Supply	Internal Battery, 3VDC
Antenna	PCB Trace Antenna

NOTE: For more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.2 DESCRIPTION OF TEST MODES

The EUT operates on, and was tested at the frequencies below:

Channel	Frequency
Low	903.3
Middle	915.0
High	926.6

These are the only three representative channels tested in the frequency range according to FCC Part 15.31 and RSS-Gen Table A1. See the operational description for a list of all channel frequency and designations.

This EUT was set to transmit in a worse-case scenario with modulation on. The manufacturer modified the unit to transmit continuously on the lowest, highest and one channel in the middle.

2.3 DESCRIPTION OF SUPPORT UNITS

None

3.0 LABORATORY DESCRIPTION

3.1 LABORATORY DESCRIPTION

All testing was performed at the following Facility:

The Nebraska Center for Excellence in Electronics (NCEE Labs)
4740 Discovery Drive
Lincoln, NE 68521

A2LA Certificate Number:	1953.01
FCC Accredited Test Site Designation No:	US1060
Industry Canada Test Site Registration No:	4294A-1
NCC CAB Identification No:	US0177

Environmental conditions varied slightly throughout the tests:
Relative humidity of 35 ± 4%
Temperature of 22 ± 3° Celsius

3.2 TEST PERSONNEL

No.	PERSONNEL	TITLE	ROLE
1	Nic Johnson	Technical Manager	Review of Results
2	Fox Lane	Test Engineer	Testing and Report
3	Grace Larsen	Test Engineer	Testing and Report

Notes:
All personnel are permanent staff members of NCEE Labs. No testing or review was sub-contracted or performed by sub-contracted personnel.

3.3 TEST EQUIPMENT

DESCRIPTION AND MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION DATE	CALIBRATION DUE DATE
Keysight MXE Signal Analyzer (44GHz)***	N9038A	MY59050109	July 19, 2022	July 19, 2024
Keysight MXE Signal Analyzer (26.5GHz)***	N9038A	MY56400083	July 19, 2022	July 19, 2024
SunAR RF Motion	JB1	A091418	July 27, 2021	July 27, 2022
EMCO Horn Antenna	3115	6416	July 28, 2021	July 28, 2022
Rohde & Schwarz Preamplifier*	TS-PR18	3545700803	March 21, 2022	March 21, 2024
Trilithic High Pass Filter*	6HC330	23042	March 21, 2022	March 21, 2024
MiniCircuits High Pass Filter*	VHF-1320+	15542	March 21, 2022	March 21, 2024
RF Cable (preamplifier to antenna)*	MFR-57500	01-07-002	March 21, 2022	March 21, 2024
RF Cable (antenna to 10m chamber bulkhead)*	FSCM 64639	01E3872	September 24, 2021	September 24, 2023
RF Cable (10m chamber bulkhead to control room bulkhead)*	FSCM 64639	01E3874	September 24, 2021	September 24, 2023
RF Cable (control room bulkhead to test receiver)*	FSCM 64639	01F1206	September 24, 2021	September 24, 2023
N connector bulkhead (10m chamber)*	PE9128	NCEEBH1	September 24, 2021	September 24, 2023
N connector bulkhead (control room)*	PE9128	NCEEBH2	September 24, 2021	September 24, 2023
TDK Emissions Lab Software	V11.25	700307	NA	NA

*Internal Calibration
**2 year cal cycle
***device was calibrated after testing date and found to be in cal.

Notes:
All equipment is owned by NCEE Labs and stored permanently at NCEE Labs facilities.

4.0 DETAILED RESULTS

Radio Measurements								
CHANNEL	**Occupied Bandwidth (kHz)**	**20 dB Bandwidth (kHz)**	**Peak Conducted POWER* (dBm)**	**Peak Conducted OUTPUT POWER (mW)**	**RESULT**	**Cable loss**	**Antenna Factor**	**Uncorrected Field Strength (dBm)**
Low	84.734	71.96	10.86	12.19	PASS	5.30	26.50	-38.352
Mid	75.819	71.98	10.60	11.48	PASS	-	-	-
High	76.476	71.85	10.29	10.69	PASS	5.43	26.60	-40.073
20 dB Bandwidth Limit = 250 kHz max			Peak Output Power Limit = 30 dBm; EIRP Output Power = Uncorrected Field Strength + Cable Loss + Antenna Factor + EIRP Conversion from 3m(11.77dB)					
*If no corrections or uncorrected measurement is reported. Plot already shows corrected data								

Unrestricted Band-Edge								
CHANNEL	**Hopping /Continuous**	**Band edge /Measurement Frequency (MHz)**	**Relative Highest out of band level (dBuV)**	**Relative Fundamental (dBuV)**	**Measurement Type**	**Delta (dB)**	**Min Delta (dB)**	**Result**
Low	Hopping	902.00	38.196	93.435	Peak	55.239	20.00	PASS
Low	Continuous	902.00	15.133	68.196	Peak	53.063	20.00	PASS
High	Hopping	928.00	37.166	92.532	Peak	55.365	20.00	PASS
High	Continuous	928.00	15.656	66.589	Peak	50.933	20.00	PASS

Peak Vs Average Limit- Restricted Band-Edge									
CHANNEL	**Band edge /Measurement Frequency (MHz)**	**Highest out of band level (dBuV/m @ 3m)**	**Measurement Type**	**Limit (dBuV/m @ 3m)***	**Margin**	**Result**	**Cable loss**	**Antenna Factor**	**Uncorrected out of band (dBuV)**
Low	608-614 MHz	32.67	Peak	46.02	13.35	PASS	4.44	23.0	5.230
High	960-1000MHz	38.48	Peak	53.98	15.50	PASS	5.43	27.1	5.95**
*Limit shown is the peak limit taken from FCC Part 15.209; Peak values are compared to average limit to show compliance. **Value in plot measured in dBm, was converted to dBuV using dBuV = dBm + 107									

4.1 DUTY CYCLE

Manufacturer declared duty cycle:

Manufacturer declares worst case duty cycle is 30ms within a 100ms window.

Duty Cycle Correction Factor(DCCF) = 20*log(Duty Cycle)

-10.46dB = 20*log(0.30)

4.2 RADIATED EMISSIONS

Test Method: ANSI C63.10:2013, Section 6.5, 6.6

Limits for radiated emissions measurements:

Emissions radiated outside of the specified bands shall be applied to the limits in 15.209 as followed:

FREQUENCIES (MHz)	FIELD STRENGTH (μV/m)	MEASUREMENT DISTANCE (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 * log * Emission level (μV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20dB under any condition of modulation.

Test procedures:

a. The EUT was placed on the top of a rotating table above the ground plane in a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The table was 0.8m high for measurements form 30MHz-1Ghz and 1.5m for measurements from 1GHz and higher.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna was a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are used to make the measurement.

d. For each suspected emission, the EUT was arranged to maximize its emissions and then the antenna height was varied from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum emission reading.

e. The test-receiver system was set to use a peak detector with a specified resolution bandwidth. For spectrum analyzer measurements, the composite maximum of several analyzer sweeps was used for final measurements.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. The EUT was maximized in all 3 orthogonal positions. The results are presented for the axis that had the highest emissions.

h. The orientation with the worst-case emissions was used for final measurements.

i. Receive mode emissions were tested and found to be within the measurement noise floor of the test laboratory

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequencies below 1GHz.

2. The resolution bandwidth 1 MHz for all measurements and at frequencies above 1GHz, A peak detector was used for all measurements above 1GHz. Measurements were made with an EMI Receiver.

Deviations from test standard:

No deviation.

Test setup:

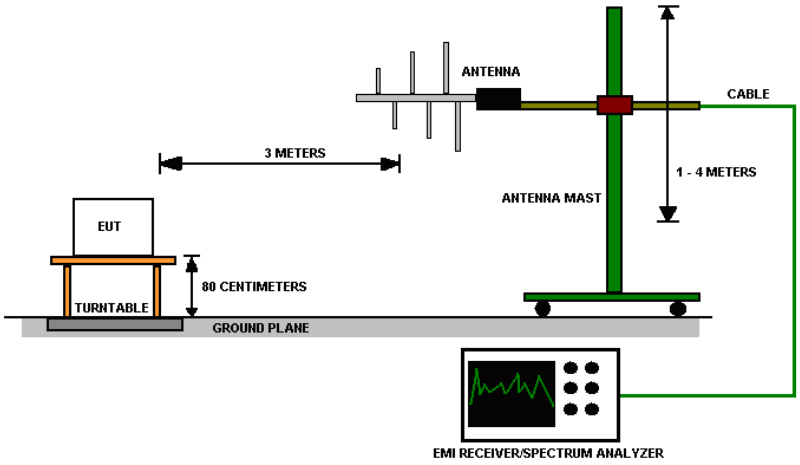

Figure 1 - Radiated Emissions Test Setup

EUT operating conditions
The EUT was powered by internal battery unless specified and set to transmit continuously on the lowest frequency channel, highest frequency channel and one in the middle of its operating range.

Test results:

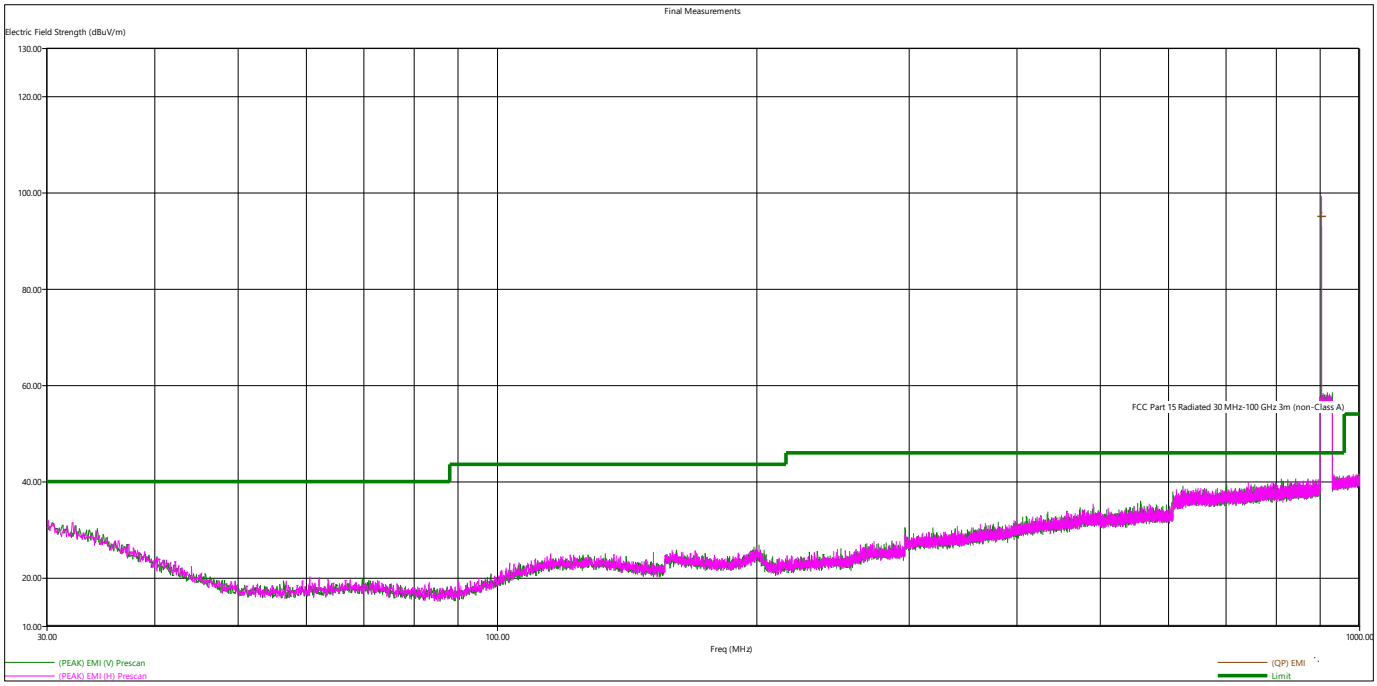

Figure 2 - Radiated Emissions Plot, 30 MHz-1 GHz Low Channel

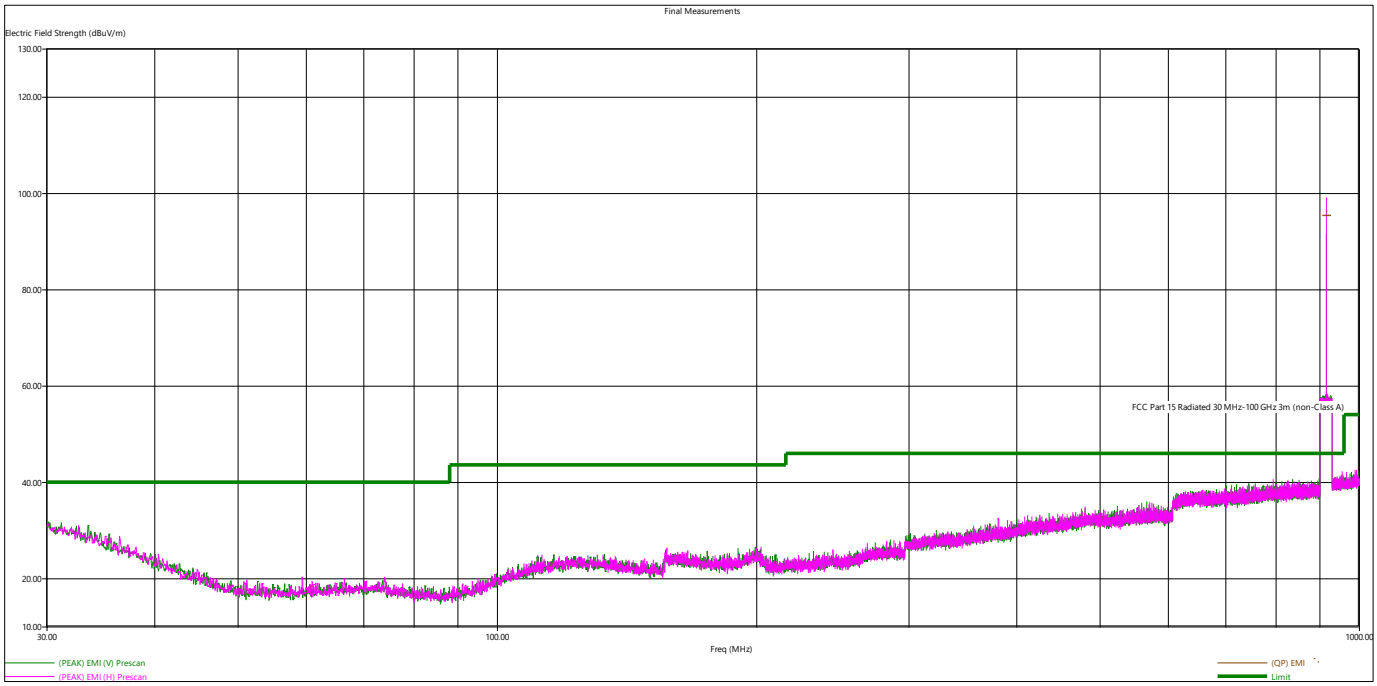

Figure 3 - Radiated Emissions Plot, 30 MHz-1 GHz, Mid Channel

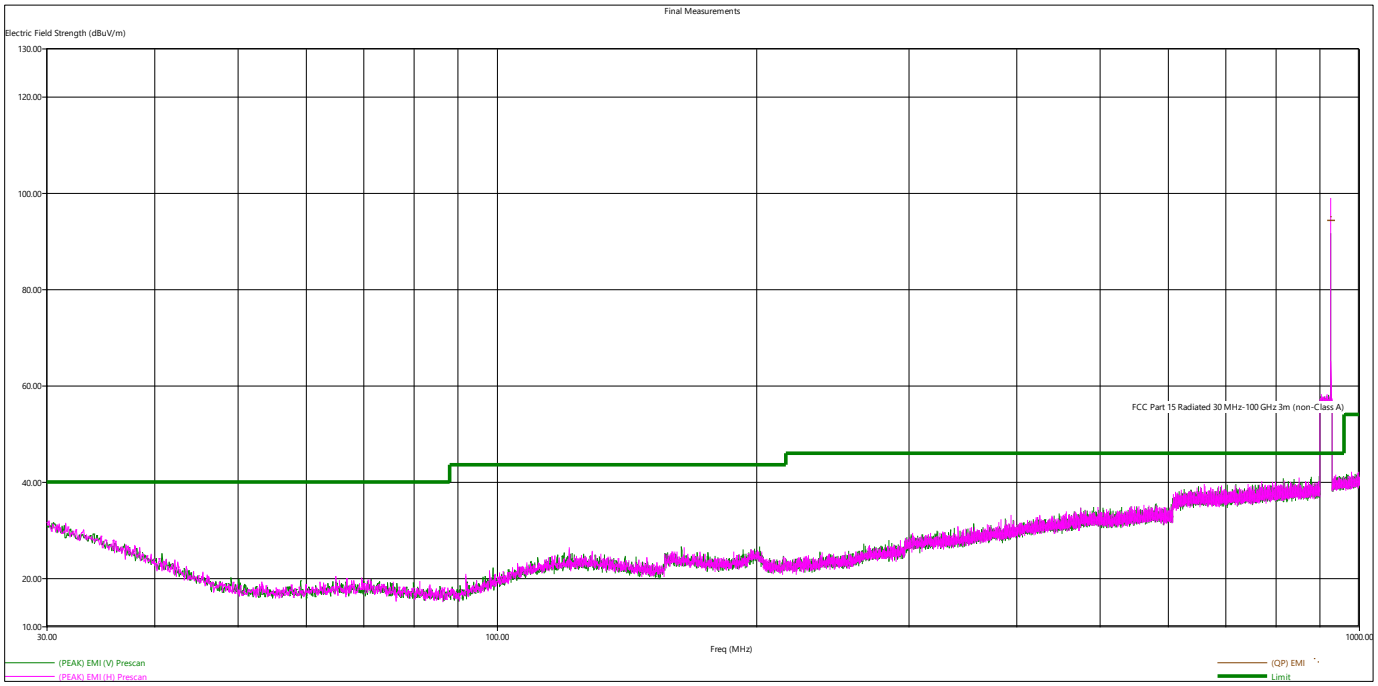

Figure 4 - Radiated Emissions Plot, 30 MHz-1 GHz High Channel

REMARKS:
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The EUT was measured in both the horizontal and vertical orientation. It was found that the Horizontal position produced the highest emissions, and this orientation was used for all testing. See Annex A for test photos.

Quasi-Peak Measurements, 30 MHz -1 GHz							
Frequency	**Level**	**Limit**	**Margin**	**Height**	**Angle**	**Pol**	**Channel**
MHz	**dBµV/m**	**dBµV/m**	**dB**	**cm.**	**deg.**		
903.351600	94.90	NA	NA	107.00	349.00	H	Low
915.023280	95.24	NA	NA	104.00	350.00	H	Mid
926.644560	94.19	NA	NA	104.00	351.00	H	High

*All other measurements found to be at least 6dB below the limit line.

Peak Measurements, 1 GHz - 10 GHz							
Frequency	**Level**	**Limit**	**Margin**	**Height**	**Angle**	**Pol**	**Channel**
MHz	**dBµV/m**	**dBµV/m**	**dB**	**cm.**	**deg.**		
1806.714000	61.37	73.98	12.61	316.00	5.00	H	Low
2710.028000	59.91	73.98	14.07	164.00	186.00	V	Low
4516.534000	57.03	73.98	16.95	127.00	307.00	H	Low
6323.008000	57.56	73.98	16.42	130.00	226.00	H	Low
7226.918000	53.98	73.98	20.00	151.00	211.00	H	Low
8130.054000	59.55	73.98	14.43	126.00	55.00	V	Low
1830.000000	56.61	73.98	17.37	196.00	8.00	H	Mid
2745.102000	62.23	73.98	11.75	162.00	189.00	V	Mid
4574.568000	58.53	73.98	15.45	332.00	63.00	H	Mid
7320.030000	56.23	73.98	17.75	284.00	162.00	H	Mid
6404.966000	58.62	73.98	15.36	137.00	120.00	V	Mid
8235.088000	61.91	73.98	12.07	232.00	302.00	V	Mid
1853.336000	53.94	73.98	20.04	297.00	188.00	H	High
2780.046000	62.24	73.98	11.74	155.00	180.00	V	High
4633.334000	60.52	73.98	13.46	372.00	78.00	H	High
7413.112000	57.44	73.98	16.54	357.00	157.00	H	High
6486.476000	56.50	73.98	17.48	135.00	198.00	V	High
8339.668000	64.02	73.98	9.96	225.00	297.00	V	High

Average Measurements, 1 GHz- 10 GHz							
Frequency	**Average Level***	**Limit**	**Margin**	**Height**	**Angle**	**Pol**	**Channel**
MHz	**dBµV/m**	**dBµV/m**	**dB**	**cm.**	**deg.**		
1806.714000	50.91	53.98	3.07	316.00	5.00	H	Low
2710.028000	49.45	53.98	4.53	164.00	186.00	V	Low
4516.534000	46.57	53.98	7.41	127.00	307.00	H	Low
6323.008000	47.1	53.98	6.88	130.00	226.00	H	Low
7226.918000	43.52	53.98	10.46	151.00	211.00	H	Low
8130.054000	49.09	53.98	4.89	126.00	55.00	V	Low
1830.000000	46.15	53.98	7.83	196.00	8.00	H	Mid
2745.102000	51.77	53.98	2.21	162.00	189.00	V	Mid
4574.568000	48.07	53.98	5.91	332.00	63.00	H	Mid
7320.030000	45.77	53.98	8.21	284.00	162.00	H	Mid
6404.966000	48.16	53.98	5.82	137.00	120.00	V	Mid
8235.088000	51.45	53.98	2.53	232.00	302.00	V	Mid
1853.336000	43.48	53.98	10.5	297.00	188.00	H	High
2780.046000	51.78	53.98	2.2	155.00	180.00	V	High
4633.334000	50.06	53.98	3.92	372.00	78.00	H	High
7413.112000	46.98	53.98	7.00	357.00	157.00	H	High
6486.476000	46.04	53.98	7.94	135.00	198.00	V	High
8339.668000	53.56	53.98	0.42	225.00	297.00	V	High

The EUT was maximized in all 3 orthogonal axes. The worst-case is shown in the table above.
*Average Level = Peak Level – 10.46 (Duty Cycle Correction Factor from section 4.1)

4.3 PEAK OUTPUT POWER

Test Method: ANSI C63.10, Section(s) 7.8.5

Limits of bandwidth measurements:
For an FHSS system with 50 channels or more, the output power is required to be less than 1000 mW or 30 dBm.

EIRP was calculated from field strength measurements using ANSI C63.10:2013, Section 9.5, Equation (22). The field strength was measured at a 3m distance and maximized.

Test procedure: Conducted

Deviations from test standard:
No deviation.

Test setup:

See Section 4.2

EUT operating conditions:
The EUT was powered by internal battery unless specified and set to transmit continuously on the lowest frequency channel, highest frequency channel and one in the middle of its operating range.

Test results:
Refer to section 4.0 for the results table.

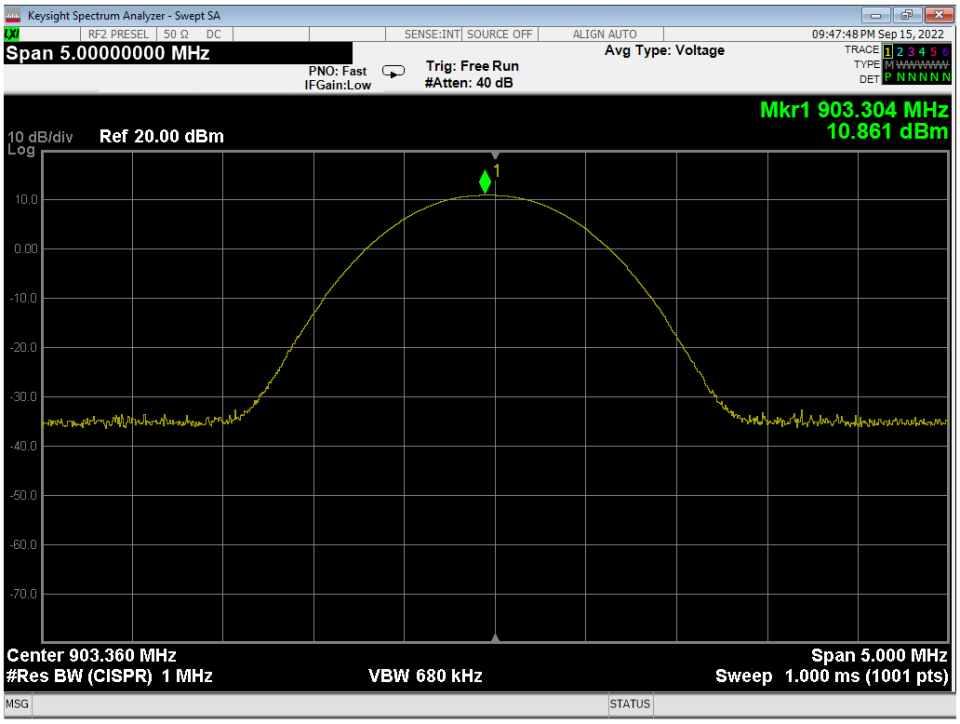

Figure 5 – Output Power, Low Channel.

*See Section 4.0 for included corrections

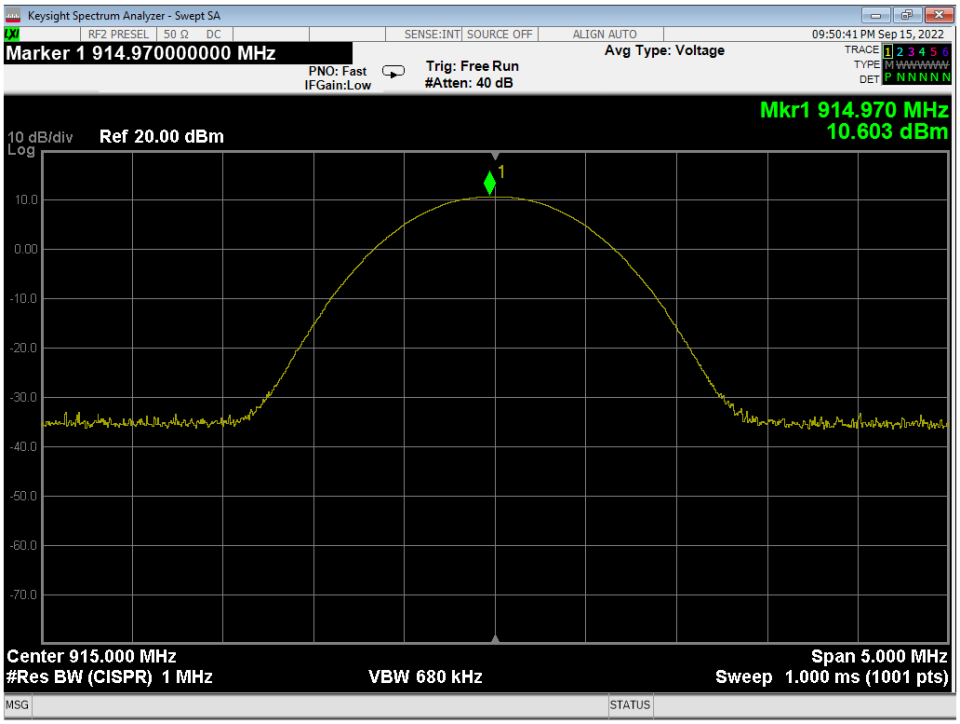

Figure 6 – Output Power, Mid Channel

*Corrections included in plot offset

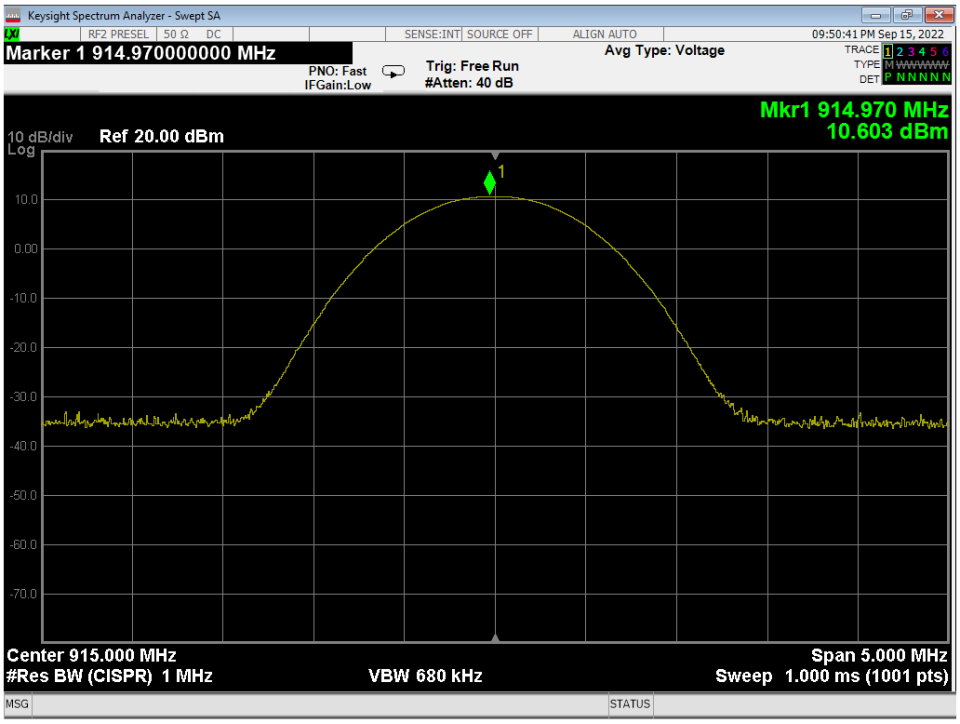

Figure 7 – Output Power, High Channel

*See Section 4.0 for included corrections

4.4 BANDWIDTH

Test Method: ANSI C63.10, Section(s) 6.9.2 (20 dB BW)
ANSI C63.10, Section(s) 6.9.3 (99% BW)

Limits of bandwidth measurements:
From FCC Part 15.247 (1) (i) and RSS-247 5.1(c)

The maximum allowed 20 dB bandwidth of the hopping channel is 250 kHz.

Test procedures:
Bandwidth measurement was taken at a distance of 3m from the EUT. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3 kHz RBW.

The 20dB bandwidth is defined as the bandwidth of which is higher than peak power minus 20dB.

The 99% occupied bandwidth was measured using the test receiver's occupied bandwidth function.

Test setup:

All the measurements were done at 3m test distance while operating at low, mid, and high channels. See Section 4.3 for more details.

Deviations from test standard:
No deviation.

Test setup:

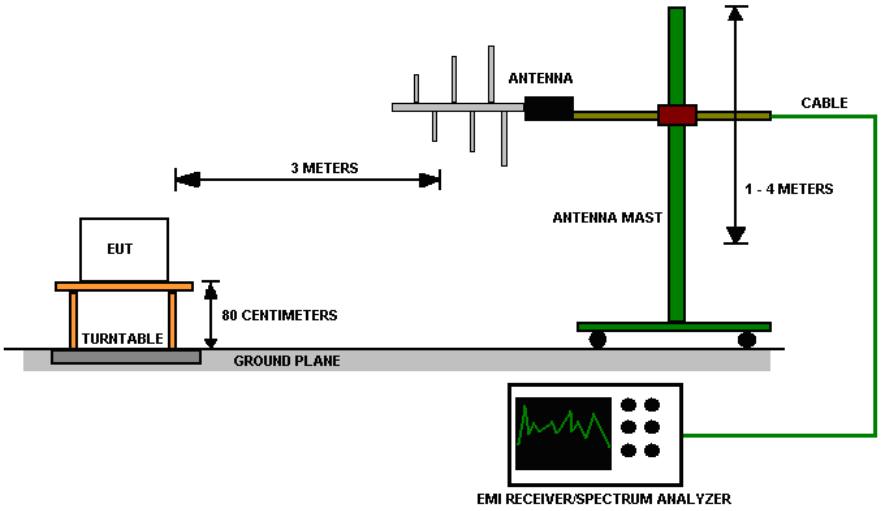

Figure 8 - Bandwidth Measurements Test Setup

EUT operating conditions:
The EUT was powered by internal battery unless specified and set to transmit continuously on the lowest frequency channel, highest frequency channel and one in the middle of its operating range.

Test results:

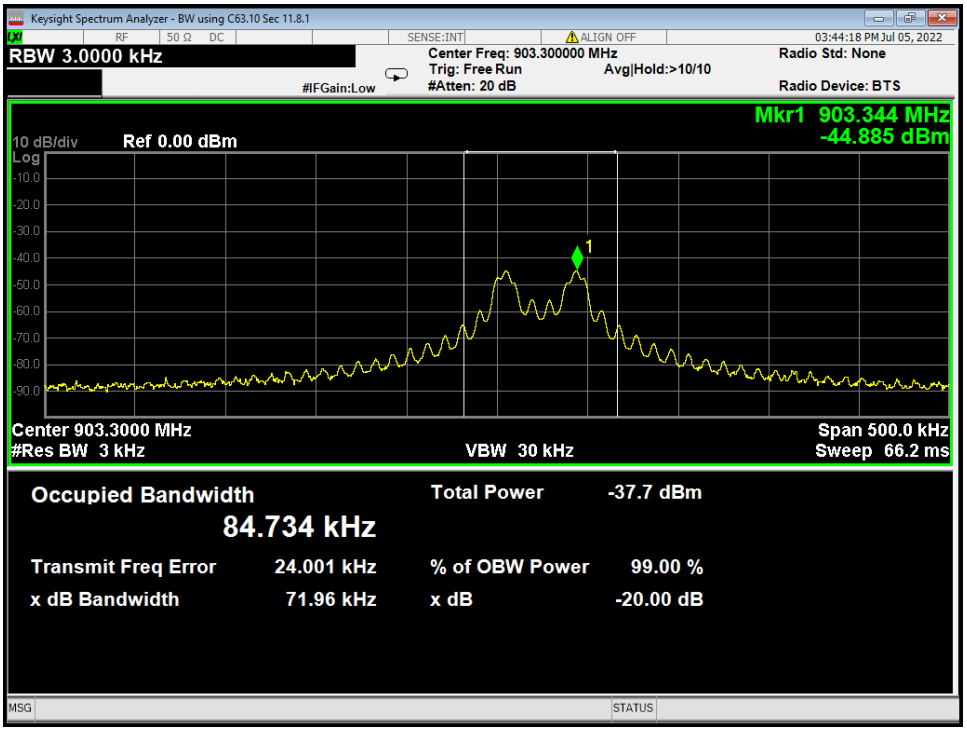

Figure 9 –Bandwidth, Low Channel

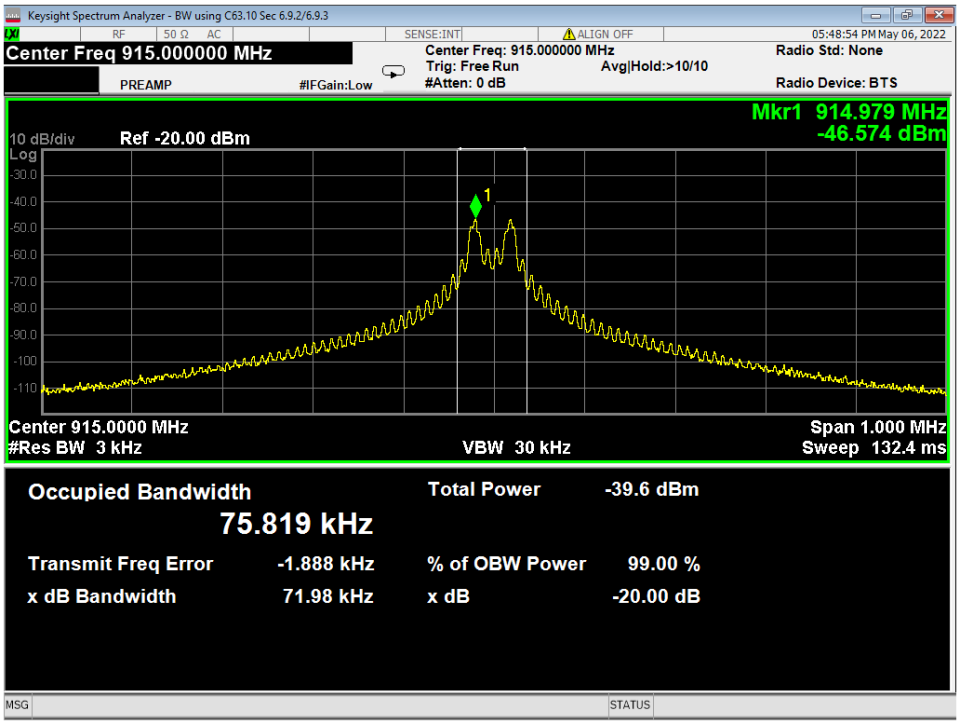

Figure 10 - Bandwidth, Mid Channel

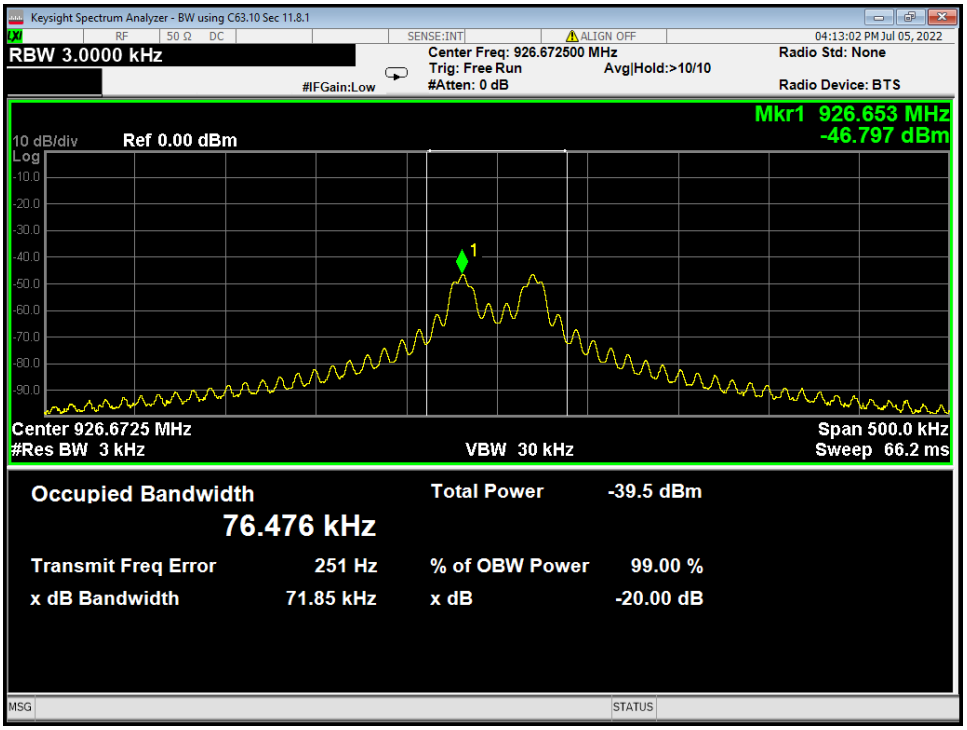

Figure 11 - Bandwidth, High Channel

4.5 BANDEDGES

Test Method: ANSI C63.10, Section(s) 6.10.6

Limits of bandedge measurements:
For emissions outside of the allowed band of operation (902 – 928MHz), the emission level needs to be 20dB under the maximum fundamental field strength. However, if the emissions fall within one of the restricted bands from 15.205 the field strength levels need to be under that of the limits in 15.209.

Test procedures:
All measurements were taken at a distance of 3m from the EUT.

The EUT was maximized in all 3 orthogonal positions in a similar manner as described in Section 4.2.

Deviations from test standard:
No deviation.

Test setup:
All the measurements were done at 3m test distance while operating on the highest and lowest channel depending on which band edge was investigated.

EUT operating conditions:
The EUT was powered by internal battery unless specified and set to transmit continuously on the lowest frequency channel and the highest frequency channel.

Test results:

Refer to section 4.0 for the results table.

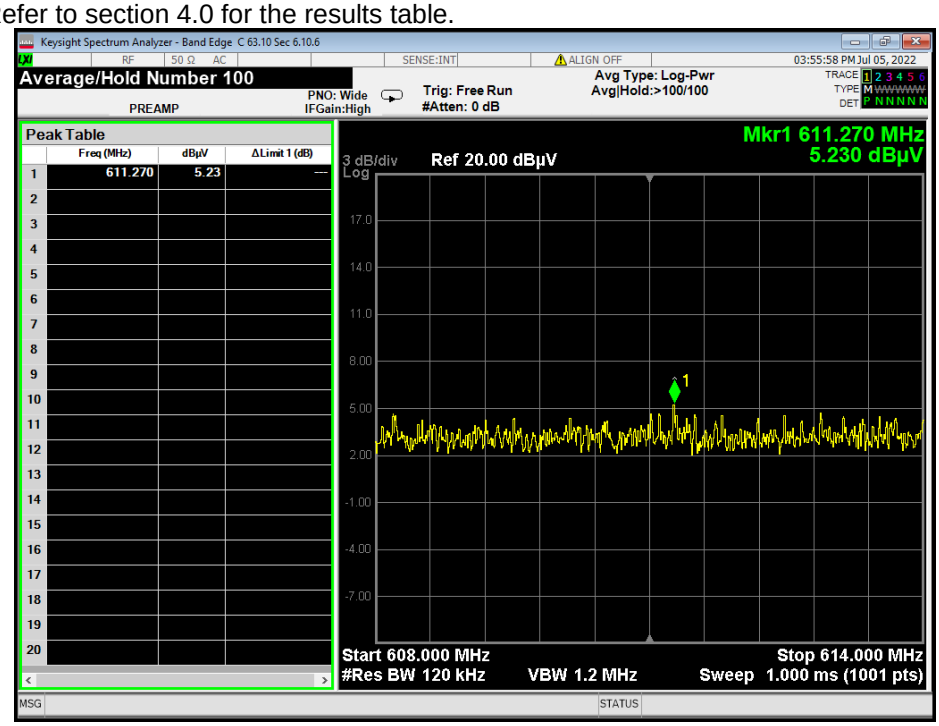

Figure 12 - Band-edge Measurement, Low Channel, Restricted Frequency, Continuous

Measurement shown is uncorrected, see the following corrections

Corrected Field Strength at 3m = Level(dBuV/m at 3m) + Antenna Factor(dB) + Cable Loss(dB)

32.67dBuV/m at 3m = 5.230 + 23.0 + 4.44

Limit = 46.02dBuV/m at 3m

Margin = 46.02 – 32.67 = 13.35dB

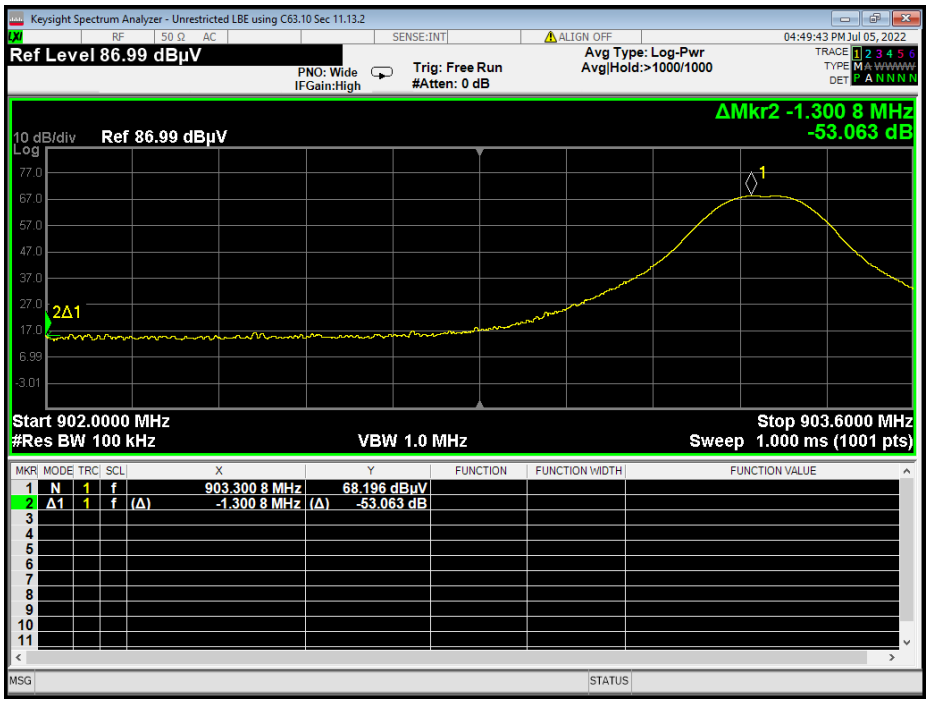

Figure 13 - Band-edge Measurement, Low Channel, Unrestricted Frequency, Continuous

The plot shows an uncorrected measurement, used for relative measurements only.

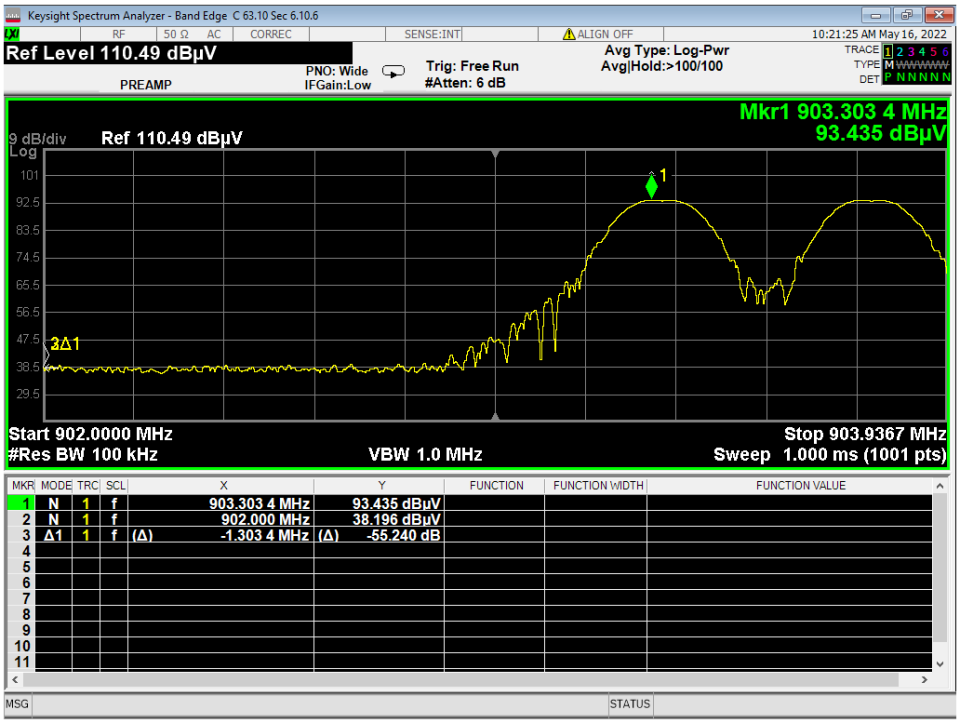

Figure 14 - Band-edge Measurement, Low Channel, Unrestricted Frequency, Hopping

The plot shows a corrected measurement, used for relative measurements only.

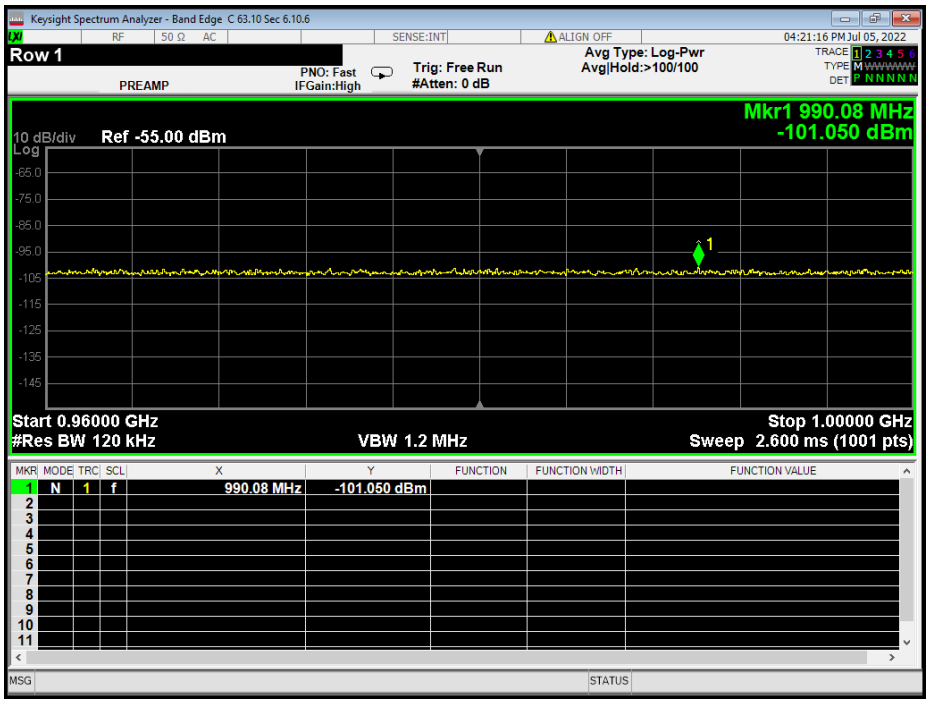

Figure 15 - Band-edge Measurement, High Channel, Restricted Frequency, Continuous

Measurement shown in uncorrected, see the following corrections

Corrected Field Strength at 3m = Level(dBuV/m at 3m) + 107(dBm to dBuV conversion) Antenna Factor(dB) + Cable Loss(dB)

38.48dBuV/m at 3m = -101.050 + 107 + 27.1 + 5.43

Limit = 53.98dBuV/m at 3m

Margin = 53.98 – 38.48 = 15.50dB

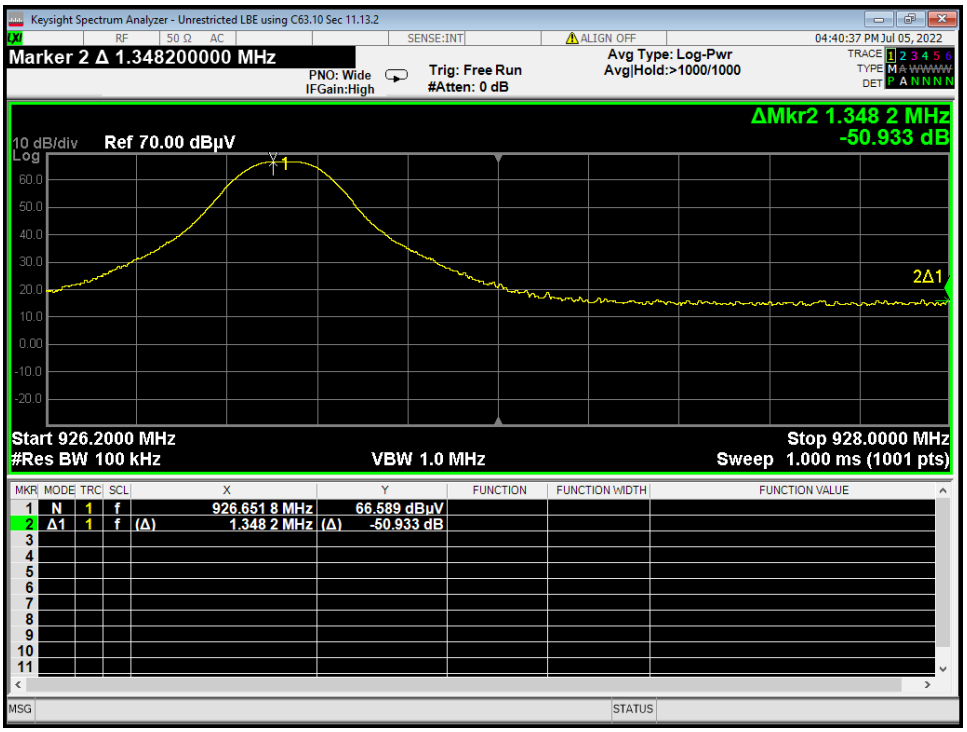

Figure 16 - Band-edge Measurement, High Channel, Unrestricted Frequency, Continuous

The plot shows an uncorrected measurement, used for relative measurements only.

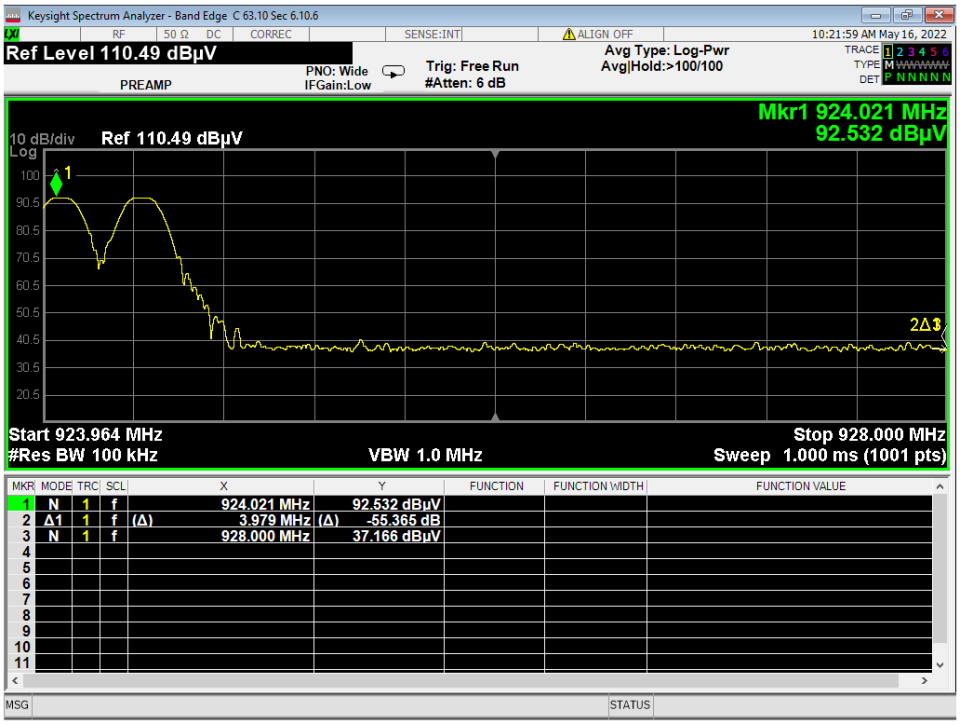

Figure 17 - Band-edge Measurement, High Channel, Unrestricted Frequency, Hopping

The plot shows a corrected measurement, used for relative measurements only.

4.6 CARRIER FREQUENCY SEPERATION, NUMBER OF HOPPING CHANNELS, TIME OF OCCUPANCY

Test Method: ANSI C63.10, Section 7.8.2, 7.8.3, 7.8.4

Limits for Time of Occupancy
Average time of occupancy on any frequency should not to exceed 0.4 seconds within a 20 second period.

Test procedures:
The method from FCC DA 00-705

All measurements were taken at a distance of 3m from the EUT.

Test setup:
All the measurements were performed at 3m test distance while hopping mode was enabled.

EUT operating conditions:
The EUT was powered internal batter unless otherwise specified and set to Hopping mode. Both Low interference mode and Standard mode were investigated, worst case was reported.

Test results:

Lowest recorded Period was 1.574 seconds, 20s/1.574s = 12.706 transmissions within 20 second Dwell.

On time recorded was 31.13ms

Time of Occupancy =
On time * number of transmissions over 20 seconds
31.13ms * 12.706 transmissions = 395.538ms < 400ms (15.247 Limit)

Total Hop Count =
53 Channels

Minimum Frequency Separation = 363kHz
Limit = 20dB Bandwidth = 71.85kHz

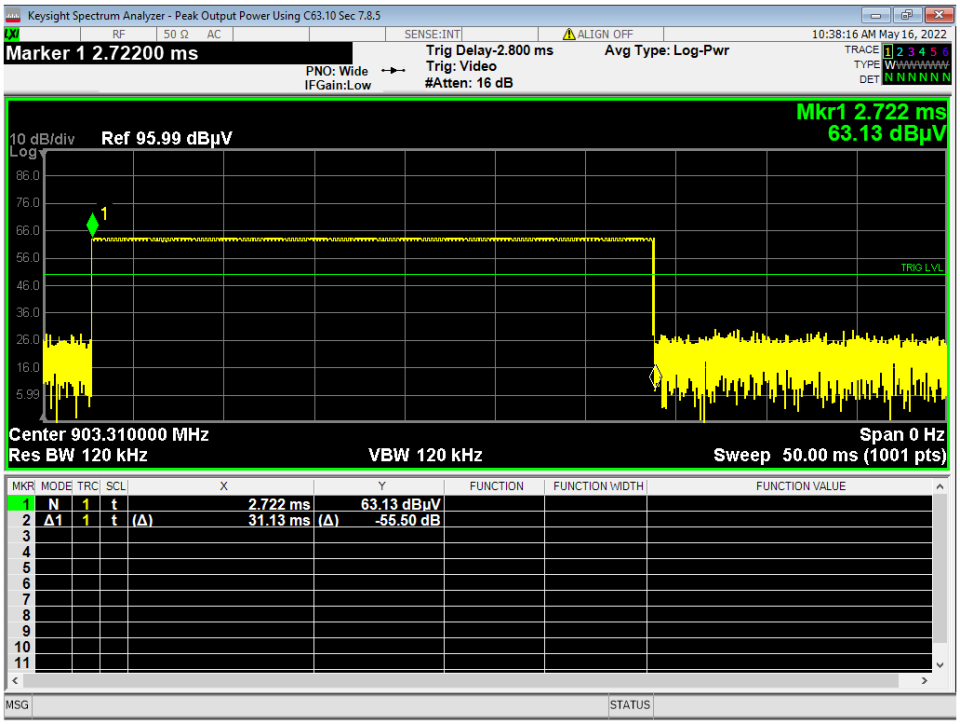

Figure 18 – On time

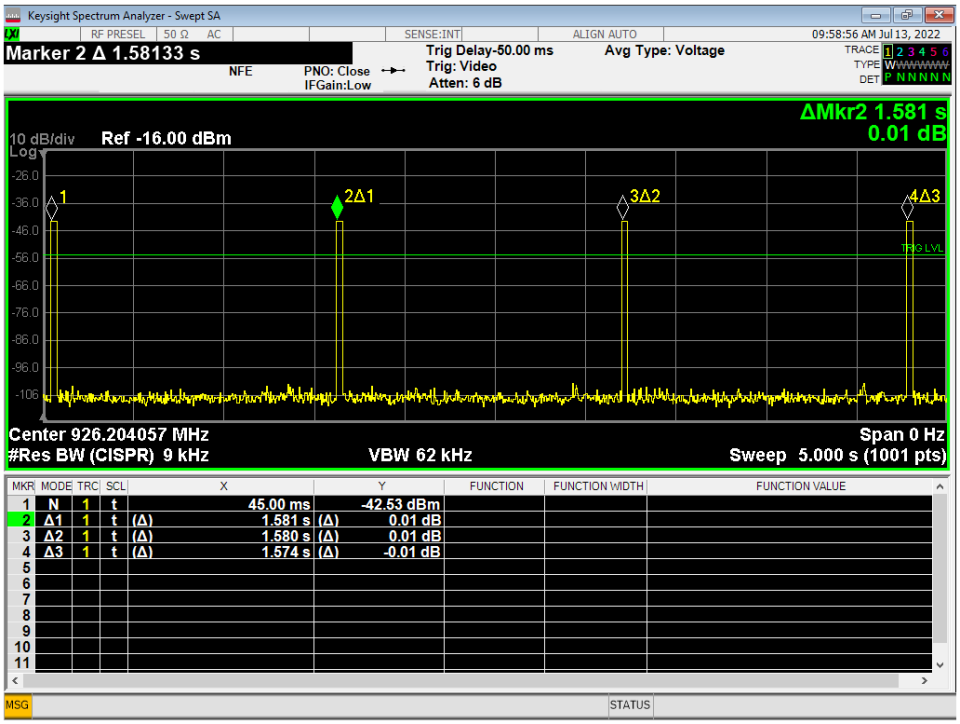

Figure 19 – Period

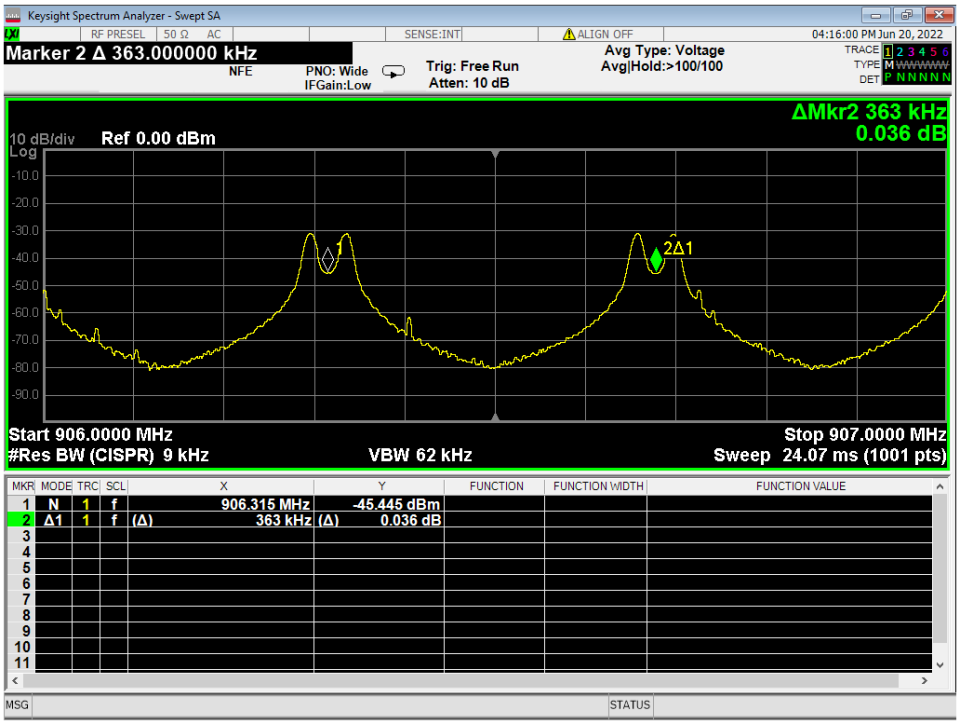

Figure 20 – Minimum Frequency Separation, 363.0 kHz

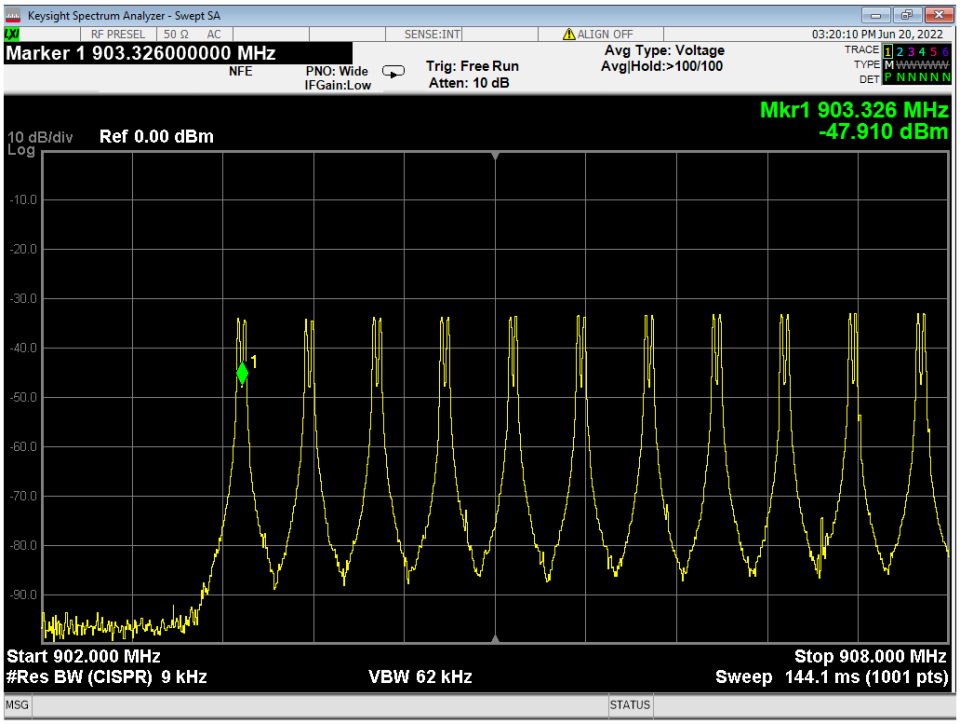

Figure 21 – Hop Count, 902-908MHz

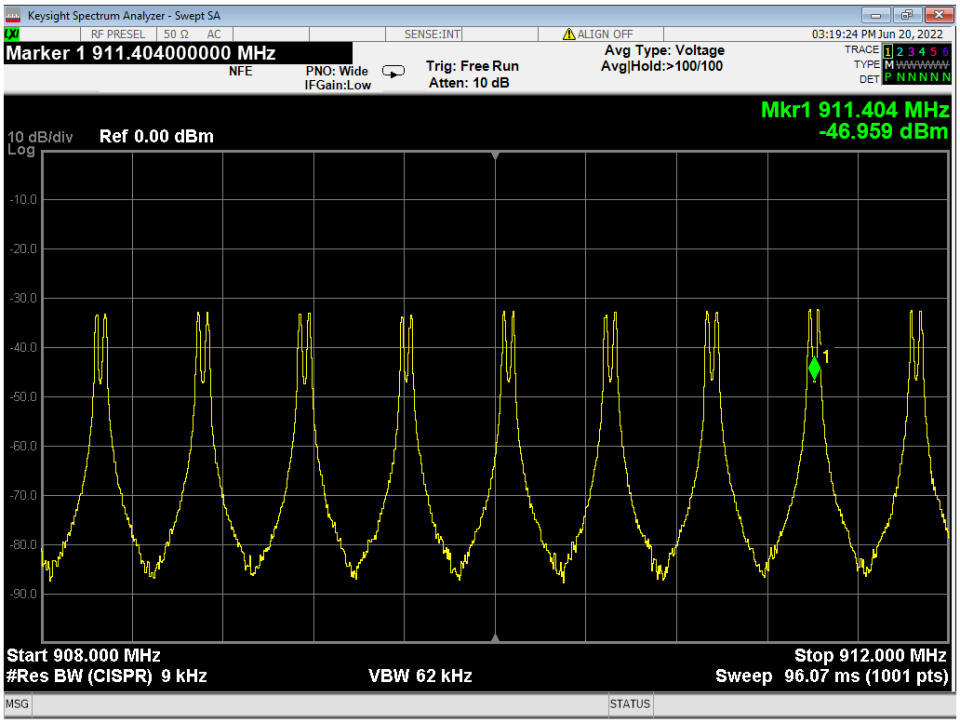

Figure 22 – Hop Count, 908-912MHz

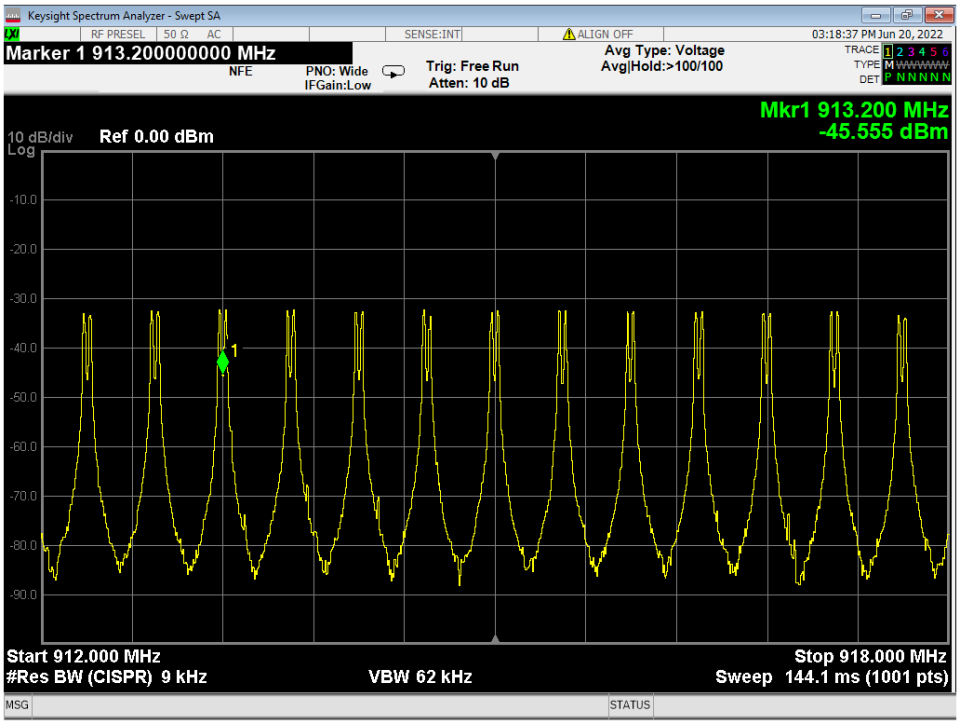

Figure 23 – Hop Count, 912-918MHz

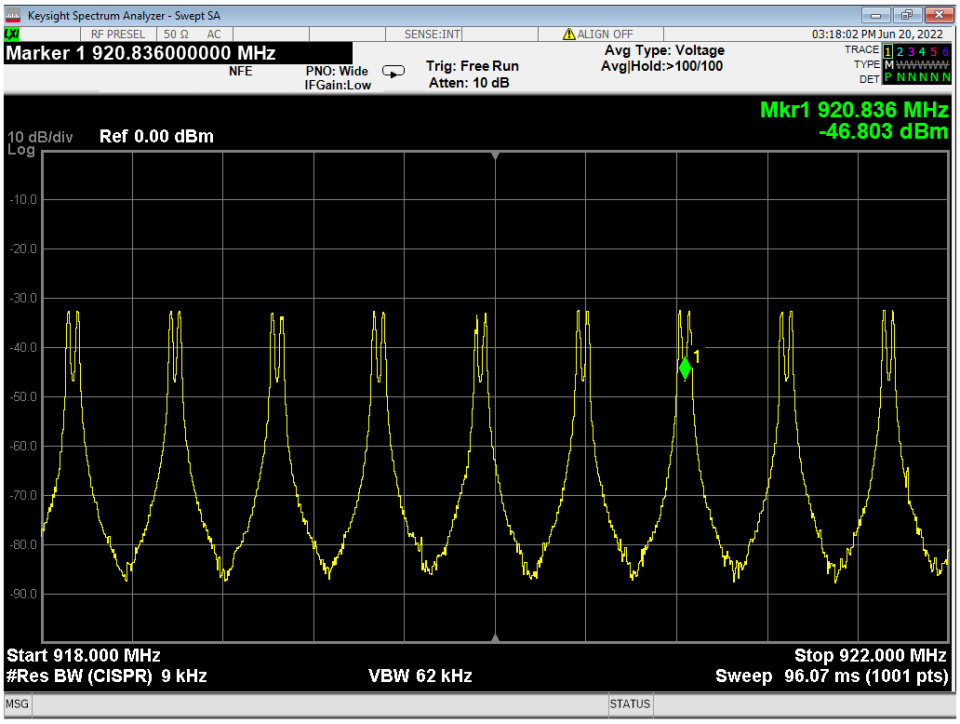

Figure 24 – Hop Count, 918-922MHz

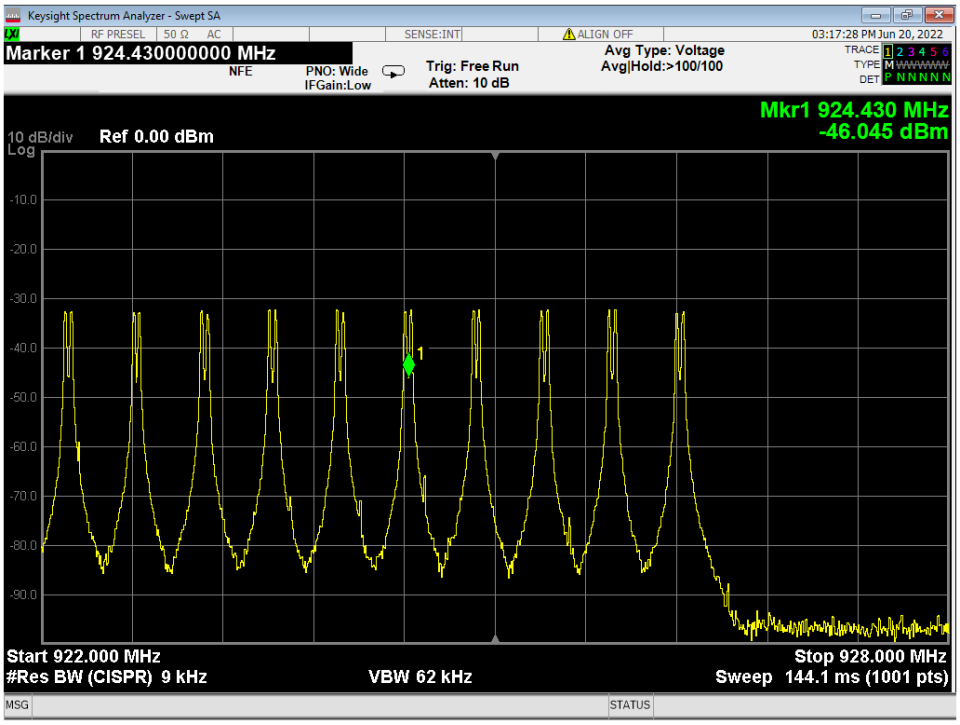

Figure 25 – Hop Count, 922-928MHz

APPENDIX A: SAMPLE CALCULATION

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF – (-CF + AG) + AV

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

AG = Amplifier Gain

AV = Averaging Factor (if applicable)

Assume a receiver reading of 55 dBμV is obtained. The Antenna Factor of 12 and a Cable Factor of 1.1 is added. The Amplifier Gain of 20 dB is subtracted, giving a field strength of 48.1 dBμV/m.

FS = 55 + 12 – (-1.1 + 20) + 0 = 48.1 dBμV/m

The 48.1 dBμV/m value can be mathematically converted to its corresponding level in μV/m.

Level in μV/m = Common Antilogarithm [(48.1 dBμV/m)/20]= 254.1 μV/m

AV is calculated by the taking the 20*log(T_{on}/100) where T_{on} is the maximum transmission time in any 100ms window.

EIRP Calculations

In cases where direct antenna port measurement is not possible or would be inaccurate, output power is measured in EIRP. The maximum field strength is measured at a specified distance and the EIRP is calculated using the following equation;

EIRP (Watts) = [Field Strength (V/m) x antenna distance (m)]^2 / 30
Power (watts) = 10^[Power (dBm)/10] / 1000
Voltage (dBµV) = Power (dBm) + 107 (for 50Ω measurement systems)
Field Strength (V/m) = 10^[Field Strength (dBµV/m) / 20] / 10^6
Gain = 1 (numeric gain for isotropic radiator)
Conversion from 3m field strength to EIRP (d=3):

EIRP = [FS(V/m) x d^2]/30 = FS [0.3] for d = 3

EIRP(dBm) = FS(dBµV/m) – 10(log 10^9)+ 10log[0.3] = FS(dBµV/m) - 95.23

10log(10^9) is the conversion from micro to milli

APPENDIX B – MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been for tests performed in this test report:

Test	Frequency Range	Uncertainty Value (dB)
Radiated Emissions, 3m	30MHz - 1GHz	±4.31
Radiated Emissions, 3m	1GHz - 18GHz	±5.08
Emissions limits, conducted	30MHz – 18GHz	±3.03

Expanded uncertainty values are calculated to a confidence level of 95%.

REPORT END