ncee labs
Product Compliance Solutions

4740 Discovery Drive | Lincoln, NE 68521
tel- 402.323.6233 | tel -888.657.6860 | fax - 402.323.6238
info@nceelabs.com | http://nceelabs.com

FCC/ISED DXX Part 15.225
Test Report

Prepared for:	**Block, Inc.**
Address:	**1955 Broadway, Suite 600, Oakland, CA 94612 United States**
Model Name:	**Bitkey**
Model Number:	**BK003**
Test Report No:	**R20251010-70-E1A**
Approved By:	

Fox Lane,
EMC Test Engineer

DATE:	**26 February 2026**
Total Pages:	**20**

ACCREDITED
TESTING LABORATORY
CERTIFICATE NO. 1953.01

Revision Page

Rev. No.	Date	Description
0	26 February 2026	Issued by FLane Prepared by ESchmidt
A	26 February 2026	Added standard sections to test sections – FL

TABLE OF CONTENTS

1 Summary of Test Results

The worst-case measurements were reported in this report. Summary of test results presented in this report correspond to the following section(s):

1.1 Emissions Test Results

The EUT was tested for compliance to:

US CFR Title 47 FCC Part 15.225, 15.209, 15.207
RSS-Gen Issue 5
RSS-210 Issue 11

Table 1 – Emissions Test Results

Emissions Tests	Test Method and Limits	Result
Radiated Emissions	FCC Part 15.225 (a), (b), (c), (d) FCC Part 15.209 RSS-Gen, Issue 5, 6.5, 6.13 RSS-210 Issue 11 B.6(a)	Complies
Conducted Emissions	FCC Part 15.207 RSS-Gen, Issue 5, 8.8	Complies
Band Edges	FCC Part 15.225 (b) (c) RSS-210 Issue 11 B.6(a)	Complies
Frequency Error	FCC 15.225(e) RSS-210 B.6(b)	Complies
Occupied Bandwidth	RSS-Gen 6.7	Complies

2 EUT Description

2.1 Equipment under Test (EUT)

Table 2 – Equipment under Test (EUT)

Model Name	Bitkey
Model Number	BK003
FCC ID	2AF3K-BK003
IC	21827-BK003
EUT Received	6 February 2026
EUT Tested	9 February 2026 - 13 February 2026
Serial No.	604WS27101300057
Operating Band	13.553 – 13.567MHz
Device Type	☐ GMSK ☐ GFSK ☐ BT BR ☐ BT EDR 2MB ☐ BT EDR 3MB ☐ 802.11x ☒ NFC
Power Supply / Voltage	Internal Battery / 5VDC Charger: Block Inc. Model SWJ3-01 (Representative Power Supply)

2.2 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
FCC Lab Registration No:	134067
Industry Canada Test Site Registration No:	4294A
NCC CAB Identification No:	US0177

Environmental conditions varied slightly throughout the tests:

Relative humidity of 28 ± 4%
Temperature of 22 ± 3° C

2.3 EUT Setup

The EUT was powered by 120 VAC / 60Hz (5 VDC Output) for all tests. It was programmed to run a continuous NFC transmission.

3 Test Results

3.1 Radiated Emissions, Band Width, Field Strength and Band edge

Test:	FCC Part 15.225 (a), (b), (c), (d) FCC Part 15.209 RSS-Gen, Issue 5, 6.5, 6.13 RSS-210 Issue 11 B.6(a) RSS-Gen 6.7
Test Specifications:	Class B
Test Result:	Complies

3.1.1 Test Description

Radiated emissions measurements were made from 30MHz to 1GHz at a distance of 3m (Radiated Emissions) and 3m (Bandwidth, Field Strength and Band edges) inside a semi-anechoic chamber. The EUT was rotated 360°, the antenna height varied from 1-4 meters and both the vertical and horizontal antenna polarizations examined. For measurements below 30 MHz, the loop antenna was used to measure in all 3 axes. The results were compared against the limits. Measurements were made by first using a spectrum analyzer to acquire the signal spectrum; individual frequencies were then measured using a CISPR 16.1 compliant receiver with the following bandwidth setting:

30MHz – 1GHz: 120kHz IF bandwidth, 60kHz steps
150kHz – 30MHz: 9kHz RBW, 4.5 kHz steps

Intermodulation products were investigated by measuring spurious emissions with each of the two 2.4 GHz radios running in parallel with the NFC radio. No intermodulation products were found above the labs system sensitivity.

3.1.2 Test Results

No radiated emissions measurements were found in excess of the limits. Test result data can be seen below.

3.1.3 Test Environment

Testing was performed at the NCEE Labs Lincoln facility in the 10m semi-anechoic chamber. Laboratory environmental conditions varied slightly throughout the test:

Relative humidity of 30 ± 5%
Temperature of 23 ±2° C

3.1.4 Test Setup

See Section 2.3 for further details.

3.1.5 Test Equipment Used

DESCRIPTION AND MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION DATE	CALIBRATION DUE DATE

Keysight MXE Signal Analyzer (44GHz)	N9038A	MY59050109	July 14, 2025	July 15, 2027
Keysight MXE Signal Analyzer (26.5GHz)	N9038A	MY56400083	July 15, 2025	July 16, 2027
SunAR RF Motion	JB1	A082918-1	July 25, 2025	July 25, 2026
Com-Power Active Loop Antenna	AI-130R	10160084	July 22, 2025	July 22, 2027
Com-Power LISN, Single Phase	LI-220C	20070017	July 15, 2025	July 16, 2027
Agilent Preamp*	87405A	3207A01475	July 18, 2025	July 18, 2027
ETS – Lindgren- VSWR on 10m Chamber	10m Semi-anechoic chamber-VSWR	4740 Discovery Drive	May 15, 2024	May 15, 2027
NCEE Labs-NSA on 10m Chamber*	10m Semi-anechoic chamber-NSA	NCEE-001	May 22, 2024	May 22, 2026
RF Cables (3m Ant. to Control room Bulkhead)	MFR-57500	1E3874	July 18, 2025	July 18, 2027
RF Cable (antenna to 10m chamber bulkhead)*	FSCM 64639	01E3872	July 18, 2025	July 18, 2027
RF Cable (10m chamber bulkhead to control room bulkhead)*	FSCM 64639	01E3874	July 18, 2025	July 18, 2027
RF Cable (control room bulkhead to test receiver)*	FSCM 64639	01F1206	July 18, 2025	July 18, 2027
N connector bulkhead (10m chamber)*	PE9128	NCEEBH1	July 18, 2025	July 18, 2027
N connector bulkhead (control room)*	PE9128	NCEEBH2	July 18, 2025	July 18, 2027
TDK Emissions Lab Software	V11.25	700307	NA	NA

*Internal Characterization

3.1.6 Test Pictures and/or Figures

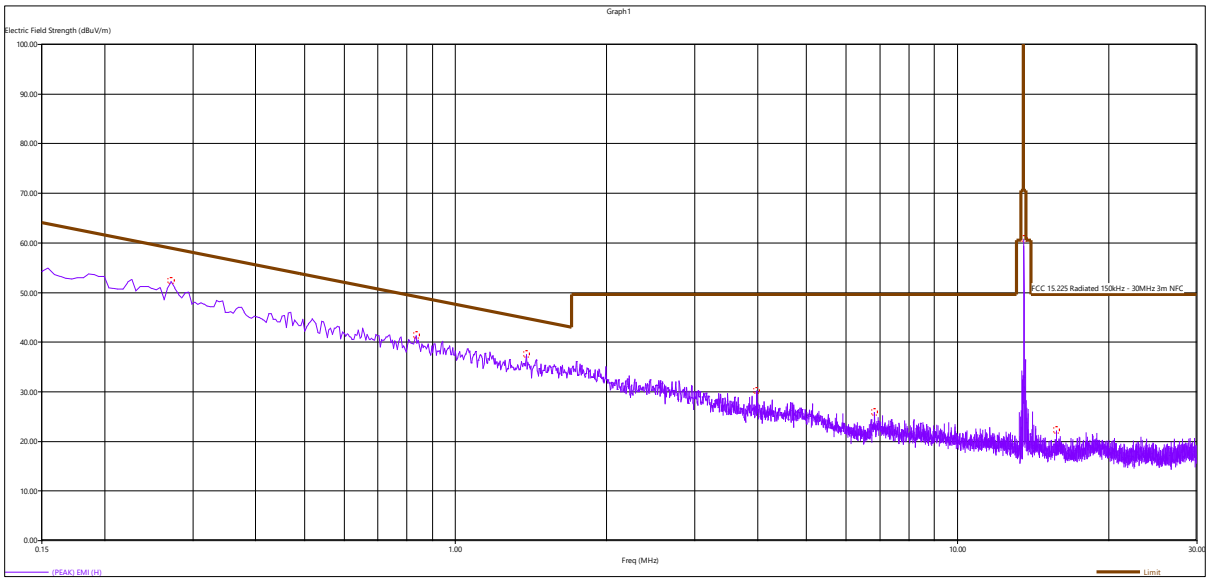


Figure 1 – NFC Radiated Emissions Plot, 150kHz – 30MHz

All emissions were found to be at least 6dB below limit line.

Peak Measurements, 150kHz – 30MHz			
Freq (MHz)	**(PEAK) EMI (H) (dBuV/m)**	**Limit (dBuV/m)**	**(PEAK) Margin (H) (dB)**
0.271500	52.19	58.93	6.74
0.834000	41.33	49.18	7.85
1.383000	37.52	44.79	7.27
3.979500	30.10	49.54	19.44
6.837000	25.79	49.54	23.75
13.560000	64.62	104.00	39.38
15.756000	22.10	49.54	27.44

The EUT was maximized in all 3 orthogonal axes. The worst-case is shown in the plot and table above. All other emissions were found to be at least 6dB below the limit line.

NFC Field Strength			
Field Strength (dBµV/m)	**Limit (dBµV/m)***	**Margin**	**Result**
64.62	104.00	39.38	PASS

*Limit extrapolated to 3m test distance.

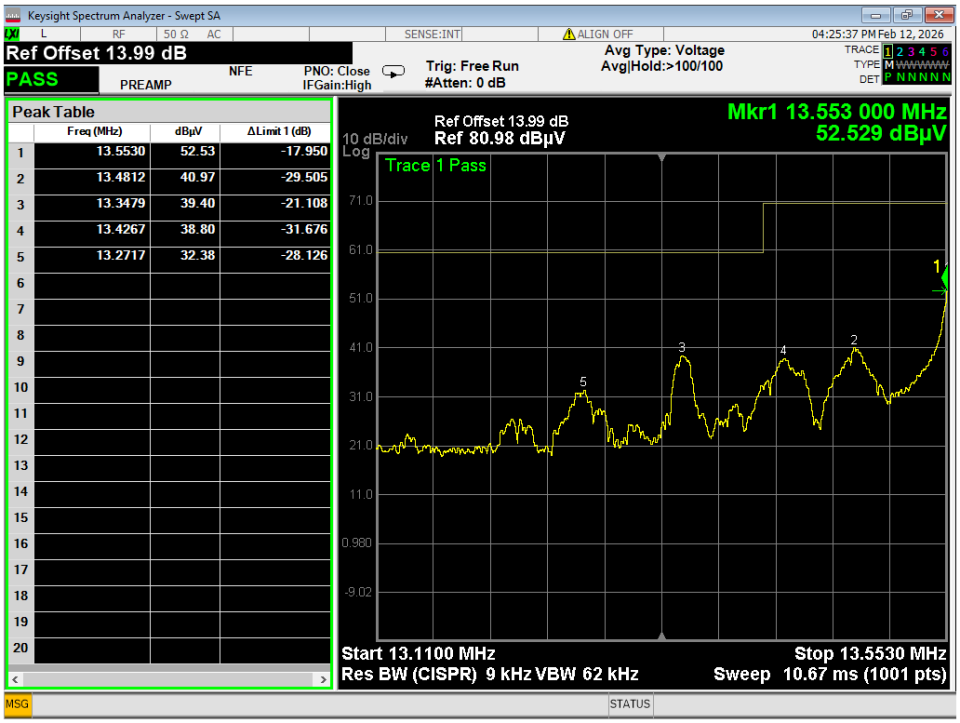


Figure 2 – Lower Band Edge

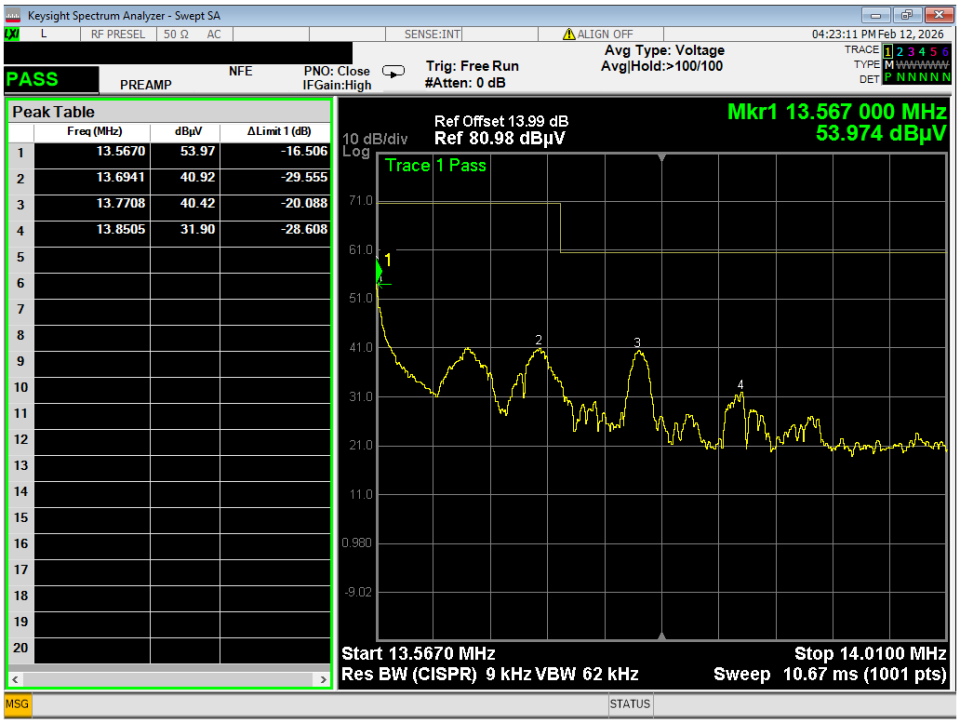


Figure 3 – Upper Band Edge

Band Edge Measurements				
Band edge /Measurement Frequency (MHz)	**Corrected band level dBµV/m @ 3m**	**Limit* dBµV**	**Margin**	**Result**
13.553	52.53	70.48	17.95	PASS
13.567	53.97	70.48	16.51	PASS

*Limit extrapolated to 3m test distance

The EUT was maximized in all 3 orthogonal axes. The worst case is shown in the plot above. All other emissions were found to be at least 6dB below the limit line.

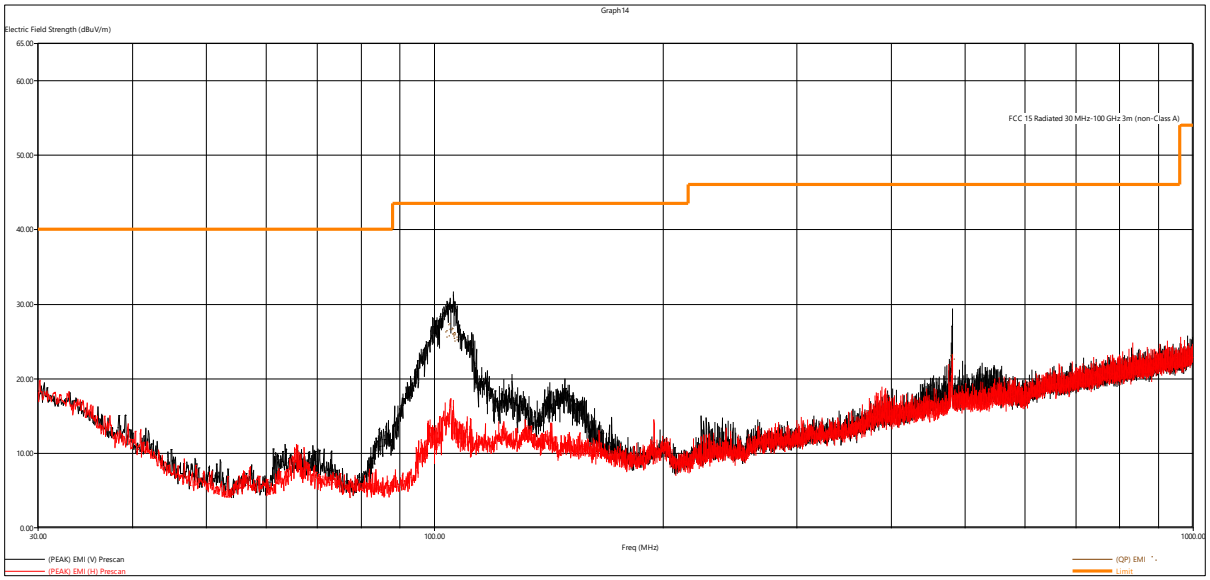


Figure 4 – NFC Radiated Emissions Plot, 30MHz – 1GHz

All emissions found to be at least 6dB below limit line

Quasi-Peak Measurements, 30MHz – 1GHz						
Frequency	**Level**	**Limit**	**Margin**	**Height**	**Angle**	**Pol**
MHz	**dBµV/m**	**dBµV/m**	**dB**	**cm.**	**deg.**	
103.849200	25.92	43.52	17.60	112.02	58.75	V
104.798880	26.91	43.52	16.61	110.05	136.50	V
105.771600	26.28	43.52	17.24	105.82	78.00	V
106.109280	25.70	43.52	17.82	104.02	124.00	V
106.389840	25.36	43.52	18.16	104.44	82.75	V
481.137360	22.81	46.02	23.21	154.83	83.75	V

The EUT was maximized in all 3 orthogonal axes. The worst-case is shown in the plot and table above. All other emissions were found to be at least 6dB below the limit line. System Noise floor was at least 6 dB below the limit line throughout the test range.

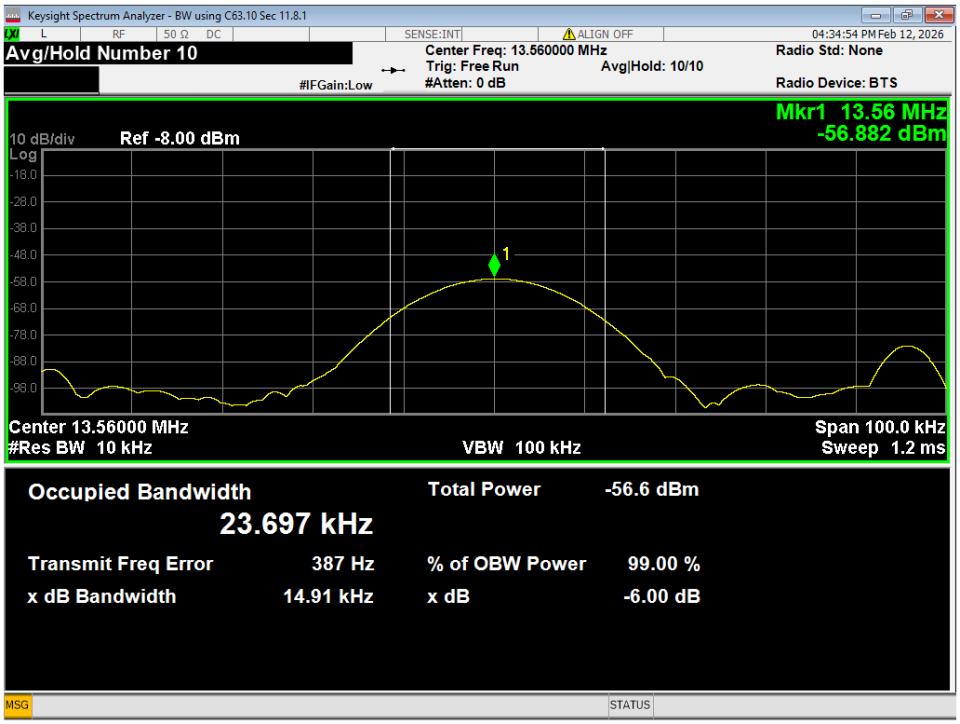


Figure 5 – NFC Occupied Bandwidth

3.2 Frequency Error

Test:	FCC 15.225(e) RSS-210 B.6(b)
Test Result:	Complies

3.2.1 Test Description

Frequency error was determined using the built-in frequency error function of the spectrum analyzer. The analyzer finds the occupied bandwidth, calculates the center of the given band then returns the deviation with respect to the given transmit frequency. The temperature was varied from -20°C to 50°C. The voltage to the wall wart charger was varied from 102VAC to 138VAC.
Limit: 100 PPM = 1356Hz

3.2.2 Test Results

No results were found to be in excess of the limits. A table of the results can be seen below.

3.2.3 Test Environment

Testing was performed at the NCEE Labs Lincoln facility.
Laboratory environmental conditions varied slightly throughout the test:

Relative humidity of 30 ± 5%
Temperature of 23 ±2° C

3.2.4 Test Setup

See Section 2.3 for further details.

3.2.5 Test Equipment Used

See section 2.4 for the equipment list.

3.2.6 Test results

Bitkey	
Temperature (°C)	Channel (Hz)
	13.56000 Nom.
-20	270
-10	293
0	284
10	113
20	149
30	107
40	101
55	115

W3		Nominal Voltage: 120VAC
Voltage (VAC)	Temperature	Frequency Error (Hz)
102	20°C	278
120	20°C	263
138	20°C	262

Limit: 100 PPM = 0.01% = 0.01 x 13.56 kHz = 1356 Hz
Values shown in Hz.
Uncertainty = ±200 Hz

3.3 Conducted AC Mains Emissions

Test Method: ANSI C63.10-2020, Section(s) 6.2

Limits for conducted emissions measurements:

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

Notes:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.
4. All NFC transmissions were within the 13.553 – 13.567MHz band, which was excluded from measurements with NFC active. For the idle scans, the EUT was charging and the display was active.

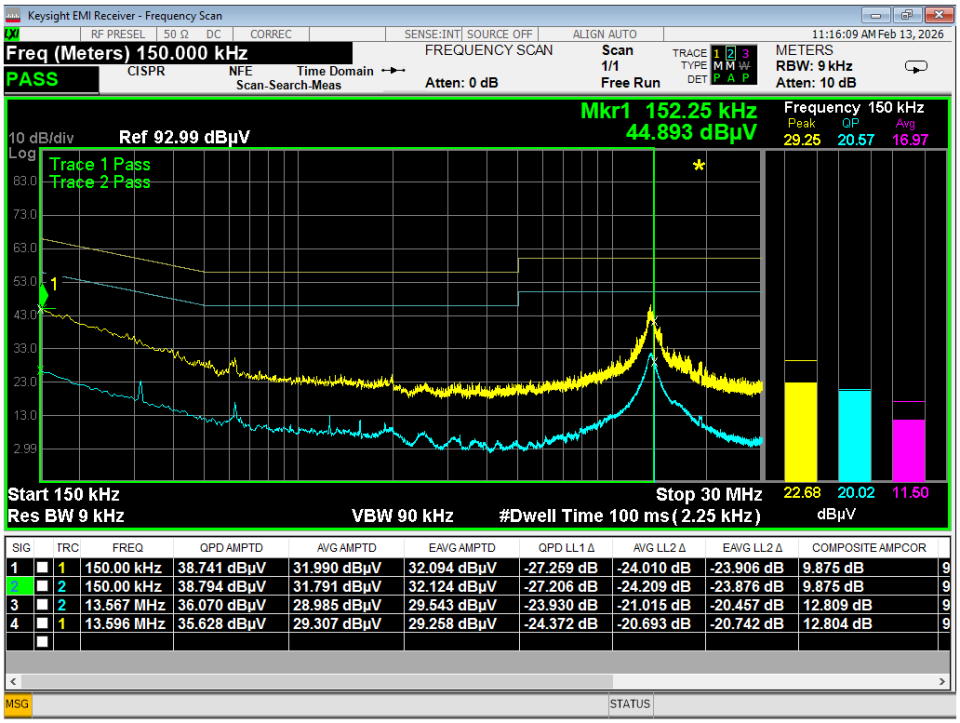
Test Procedures:

a. The EUT was placed 0.8m above a ground reference plane and 0.4 meters from the conducting wall of a shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provides 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference as well as the ground.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits are not reported.
d. Results were compared to the 15.207 limits.

Deviation from the test standard:
No deviation

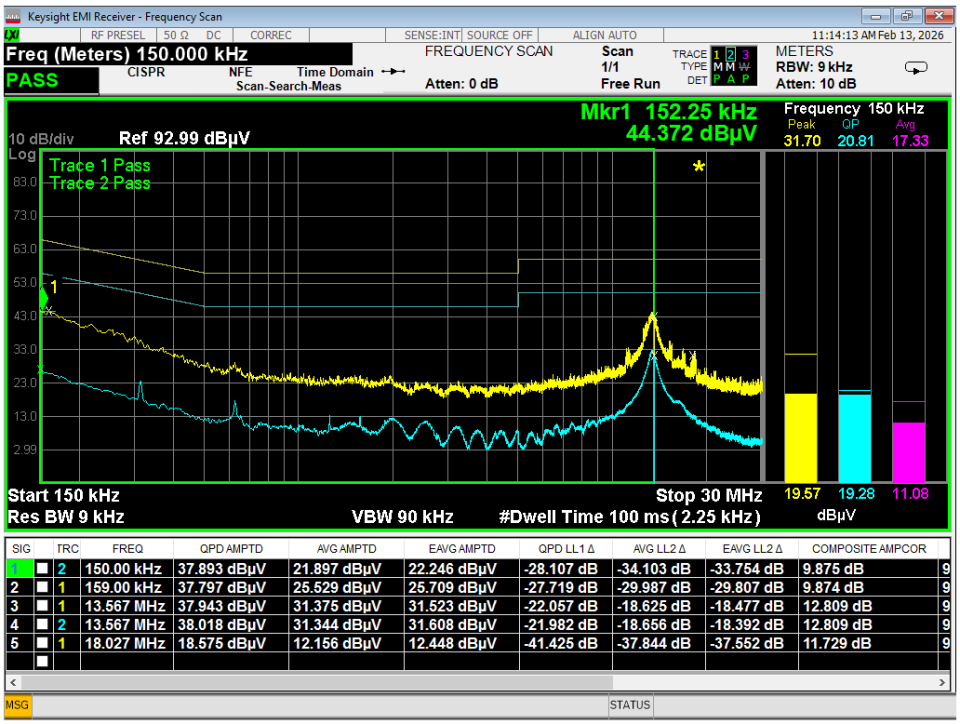
EUT operating conditions:
Details can be found in section 2.1 of this report.

Test Results:



SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	EAVG AMPTD	QPD LL1 Δ	AVG LL2 Δ	EAVG LL2 Δ	COMPOSITE AMPCOR	
1	1	150.00 kHz	38.741 dBµV	31.990 dBµV	32.094 dBµV	-27.259 dB	-24.010 dB	-23.906 dB	9.875 dB	9
2	2	150.00 kHz	38.794 dBµV	31.791 dBµV	32.124 dBµV	-27.206 dB	-24.209 dB	-23.876 dB	9.875 dB	9
3	2	13.567 MHz	36.070 dBµV	28.985 dBµV	29.543 dBµV	-23.930 dB	-21.015 dB	-20.457 dB	12.809 dB	9
4	1	13.596 MHz	35.628 dBµV	29.307 dBµV	29.258 dBµV	-24.372 dB	-20.693 dB	-20.742 dB	12.804 dB	9

Figure 6 – Conducted Emissions Plot, Line, NFC on, 13.553-13.567MHz excluded



SIG	TRC	FREQ	QPD AMPTD	AVG AMPTD	EAVG AMPTD	QPD LL1 Δ	AVG LL2 Δ	EAVG LL2 Δ	COMPOSITE AMPCOR	
1	2	150.00 kHz	37.893 dBµV	21.897 dBµV	22.246 dBµV	-28.107 dB	-34.103 dB	-33.754 dB	9.875 dB	9
2	1	159.00 kHz	37.797 dBµV	25.529 dBµV	25.709 dBµV	-27.719 dB	-29.987 dB	-29.807 dB	9.874 dB	9
3	1	13.567 MHz	37.943 dBµV	31.375 dBµV	31.523 dBµV	-22.057 dB	-18.625 dB	-18.477 dB	12.809 dB	9
4	2	13.567 MHz	38.018 dBµV	31.344 dBµV	31.608 dBµV	-21.982 dB	-18.656 dB	-18.392 dB	12.809 dB	9
5	1	18.027 MHz	18.575 dBµV	12.156 dBµV	12.448 dBµV	-41.425 dB	-37.844 dB	-37.552 dB	11.729 dB	9

Figure 7 – Conducted Emissions Plot, Neutral, NFC on, 13.553-13.567MHz excluded

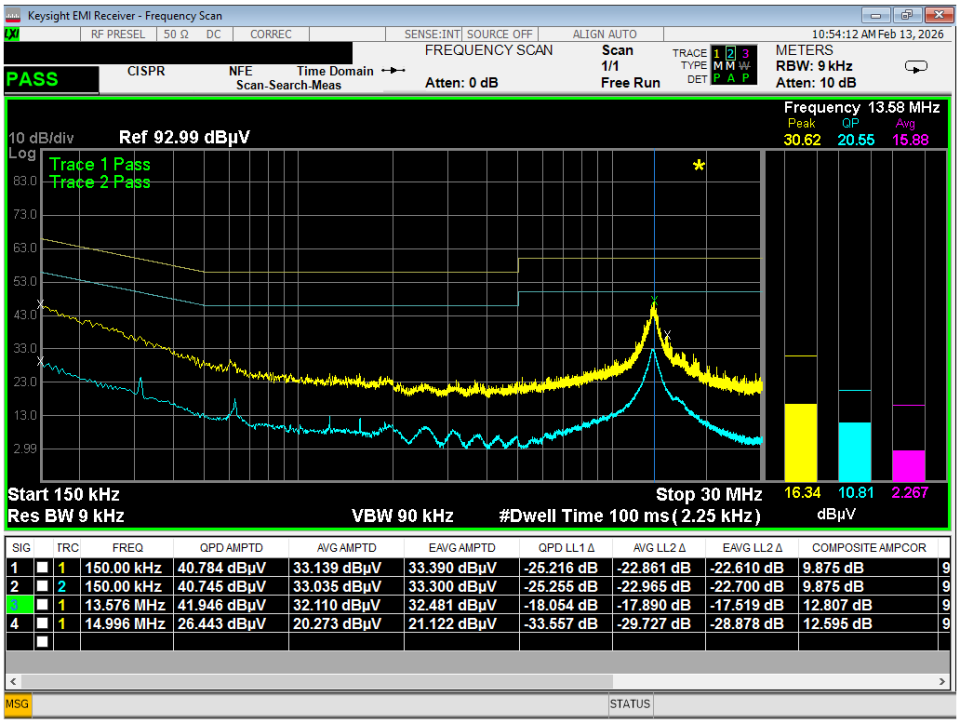


Figure 8 – Conducted Emissions Plot, Line, Idle

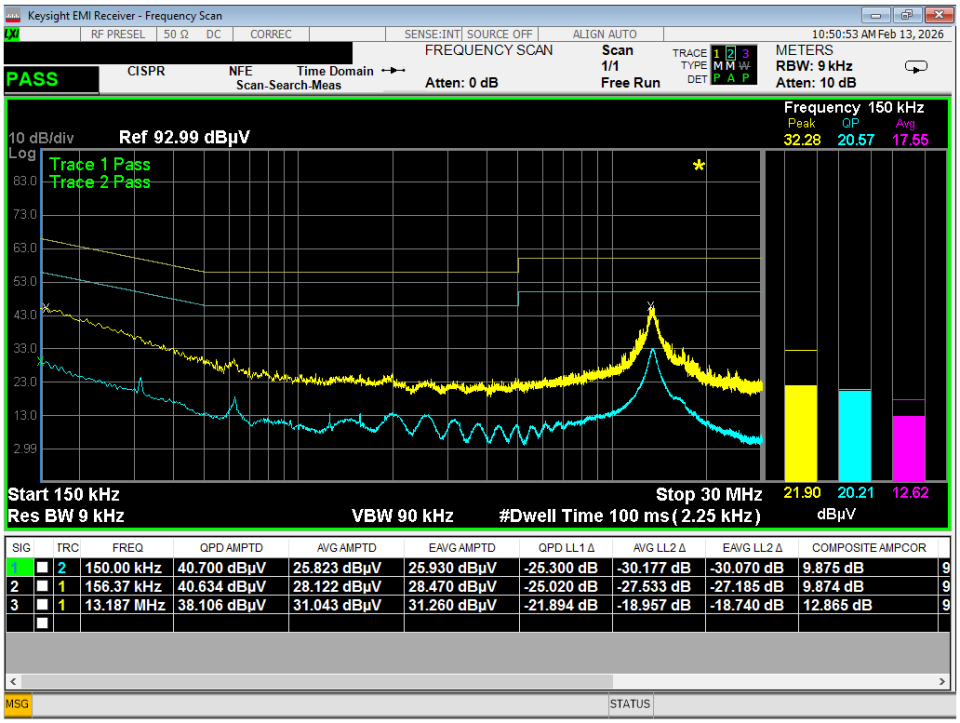


Figure 9 – Conducted Emissions Plot, Neutral, Idle

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 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