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LP-009

Test report

Number	**T251-0215/25**	Project file: C20242750 Date: 2025-07-14 Pages: 20

Product: **Wireless charger**

Type reference: **buzzard bird40A**

Ratings: Input: WPT (Magnetic field)
Output: 18 – 60 V d.c.
Class |||

Trademark: multipowr

Applicant: **Multipowr NV**
Finlandstraat 11, 9940 Evergem, Belgium

Manufacturer: Multipowr NV
Finlandstraat 11, 9940 Evergem, Belgium

Place of manufacture: Simonyi Technology
Hunyadi út 28, 2699 Szugy, Hungary

Summary of testing

Testing method: ANSI C63.10:2013 (Clause 6.3, 6.4, 6.5, 6.8)

Testing location: SIQ Ljubljana
Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia

Remarks: Date of receipt of test items: 2025-02-10
Number of items tested: 1
Date of performance of tests: 2025-03-05 – 2025-03-12
The test results presented in this report relate only to the items tested.
The test items were tested in the condition as received.
The product complies with the requirements of the testing methods.

Tested by: Luka Cvajnar

Approved by: Marjan Mak

The report shall not be reproduced except in full.

SIQ Ljubljana, Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia
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1 GENERAL

History sheet			
Date	Report No.	Change	Revision
2025-07-14	T251-0215/25	Initial Test Report issued.	--

Environmental conditions:
Ambient temperature: 15 °C to 35 °C
Relative humidity: 30 % to 60 %
Atmospheric pressure: 860 mbar to 1060 mbar

1.1 Equipment under test

Wireless charger
Type: **buzzard BIRD40A**

1.2 General product information

Device is a wireless charger for industrial trolleys. BIRD40A is the energy receiver and it is connected to the battery.

FCC ID: **2BOHG-B04000001**
Contains FCC ID**: A8TBM78ABCDEFGH**

Equipment Description

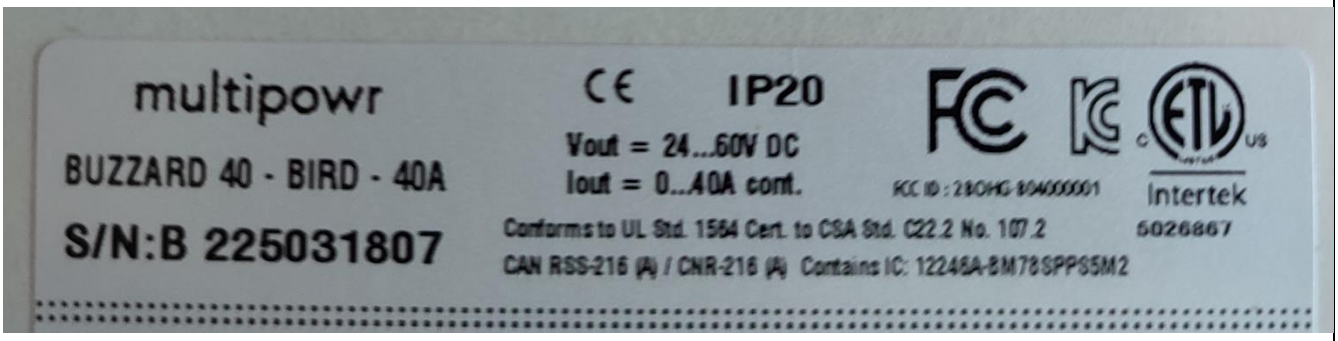
Hardware version :	Rev 5.0
Firmware version :	2.1.1.7
SIQ tested number :	S202500837
Operating frequency:	290 kHz and 330 kHz
One/two/three phase EUT:	Battery powered 20 -58 V d.c.
Floor standing / table-top equipment or a combination:	Floor standing
Built in BLE module	
Manufacturer:	Microchip Technology Inc.
Type	RN4678
Hardware version:	Rev 1.0/ 1522
Firmware version:	1.005

EUT Internal Frequencies

Frequency	Description
290&330 kHz	NFC Transmitter
2.4835 GHz	Bluetooth 5.0 module

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



2 TEST EQUIPMENT

Equipment used					
Radiated measurements					
EMI test receiver	ESW 44		R&S	2024-09-26	2026-03-26
Semi-anechoic chamber	SAC 3m	109071	Comtest engineering	2022-04-14	2025-04-14
Ultra-Broadband Antenna	HL562E	/	Rohde & Schwarz	2023-09-26	2026-09-26
Horn Antenna	HF907	102508	Rohde & Schwarz	2023-08-22	2026-08-22
Active loop antenna	FMZB 1519		Schwarzbeck	2024-09-18	2026-03-18
Turn table (2 m diameter)	TT 2.0 SI	/	Maturo	N/A	
Bore-sight antenna mast	BAM-4.0-P	/	Maturo	N/A	
Multi-channel positioning equipment	Maturo NCD	/	Maturo	N/A	

2.1 Conversion factors and all other formulas

Unit	Conversion unit	Formula of conversion
dBµV	dBµV/m	dBµV/m = dBµV + AF
µV/m	dBµV/m	dBµV/m = 20log(X(µV/m)/1µV)

	Test distance stated in standard	Test distance of measurement	Conversion factor
Class B	3 m	3 m	/
Class A	10 m	3 m	20dB/decade

3 Measurement uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the product, as specified in ETSI TR 100 028-2 and C63.23. This represents an expanded uncertainty expressed at 95% confidence level using a coverage factor k=2.

Measurements	U_{LAB}	$U_{ETSI\ TR\ 100\ 028-2}$	$U_{C63.23}$
AC Line Conducted Emission	3.2 dB	/	±4,13
Spurious emission 30 – 300 MHz	4.2 dB	±6	/
Spurious emission 300 – 1000 MHz	4.4 dB	±6	/
Occupied bandwidth (99% emission bandwidth)	< 2%	±5%	/

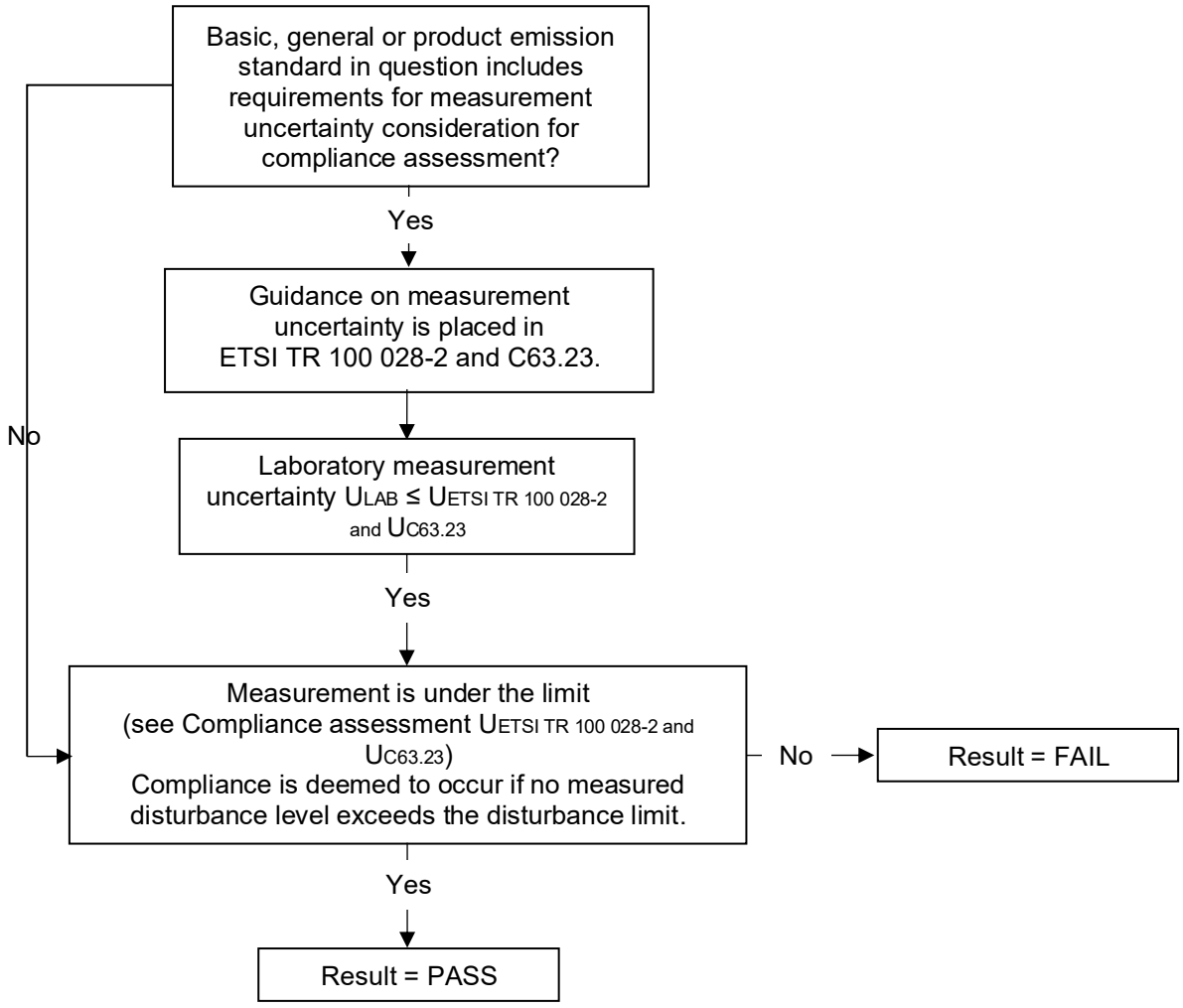
Note: Measurement uncertainty calculated in accordance with ETSI TR 100 028-2 and C63.23.

3.1 Application of decision rule

Application of decision rule and statement of conformity is defined in document TN023 Decision rule and measurement uncertainty.

As a general rule Pass/Fail decisions are based on simple acceptance rule and acceptance limits chosen based on simple acceptance (w = 0, AL = TL) except if a decision rule is governed by particular standard or guidance document.

Decision rule:



4 TEST SUMMARY

STANDARDS (details on first page)	Tested yes	Tested no	Sample pass	Sample not pass
ANSI C63.10-2013 (Clause 6.3, 6.4, 6.5, 6.8); The product also complies with: 47 CFR Part 15, Subpart C (§15.203, §15.207 (a), §15.205; 15.209) RSS-210 Issue 10 (Clause4.3), RSS-Gen, Issue 5 (Clause 6.7, 8.8, 8.9)	☑	☐	☑	☐

Test	Section within the report	47 CFR Part 15	RSS 210, Issue 10 (*1) or RSS-Gen, Issue 5 (*2)	Conclusion
Antenna requirement	5.1	15.203	-	PASS
99% Bandwidth	5.2	-	6.7 (*2)	PASS
Conducted emission	5.3	15.207	8.8 (*2)	N/A
Radiated emission	5.4	15.205, 15.209	8.9 (*2), 7.2 (*1)	PASS
20 dB Emission Bandwidth	5.5	15.215	/	PASS
*Note: Radiated measurements performed in laboratory recognized by ISED Canada: – CAB identifier: SI0001 – ISED#: 21434				

Note: All measurements were performed by radiated method.

4.1 Operating voltages/frequencies used for testing

Section	Test	Operating conditions
5.2	99% Bandwidth	24 V d.c. Battery operated
5.3	Radiated emission	24 V d.c. Battery operated
5.4	20 dB Emission Bandwidth	24 V d.c. Battery operated

5 EMISSION TESTS

5.1 Antenna requirements

Requirement
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion:
PASS

Note: Device has internal antenna. The mounting of antenna is fixed to the radio module and no other antenna should be used.

5.2 99% Bandwidth

5.2.1 Test procedure

The emission bandwidth (×dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated × dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3× the resolution bandwidth.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3×RBW.

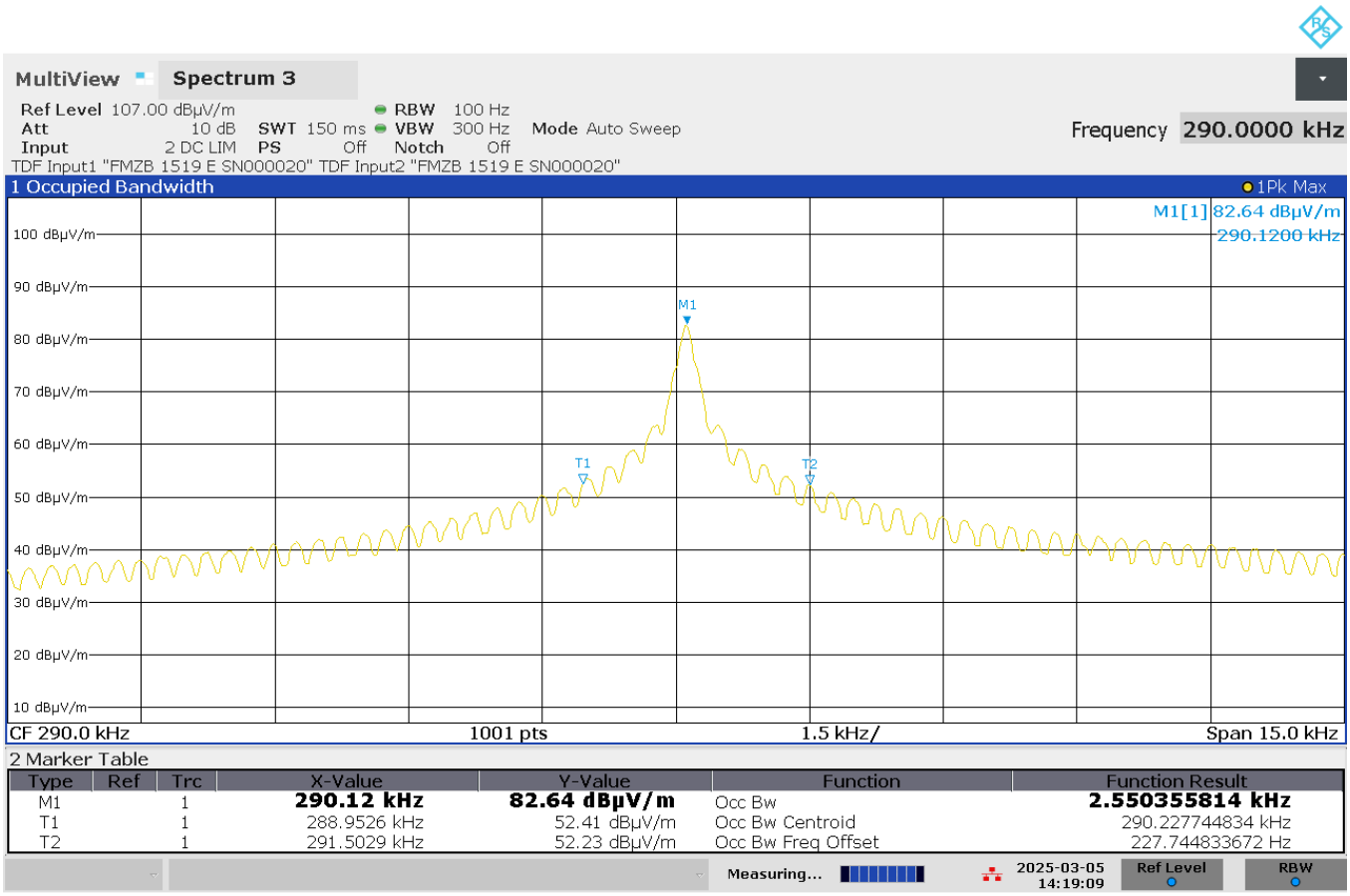
Note: Video averaging is not permitted.

A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

The difference between the two recorded frequencies is the 99% occupied bandwidth.

5.2.2 Test results



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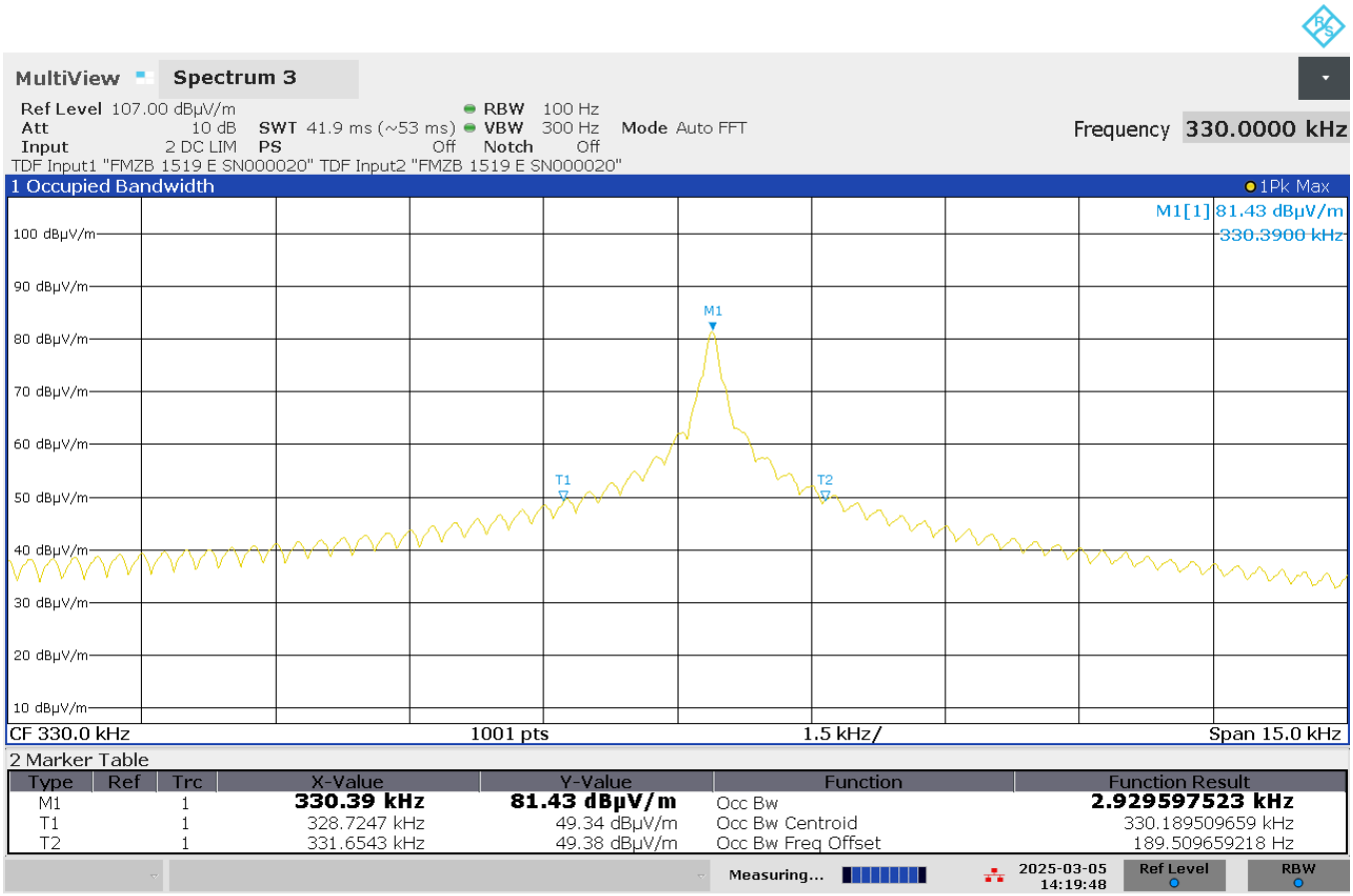
Frequency (MHz)	99 % bandwidth (kHz)	PASS/FAIL
0.290	2.550	PASS



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Frequency (MHz)	99 % bandwidth (kHz)	PASS/FAIL
0.33039	2.929	PASS

5.3 Conducted emission measurement (intentional radiator)

The test is not applicable due to the battery power supply.

5.4 Radiated emission measurement (intentional radiator)

5.4.1 Test procedure

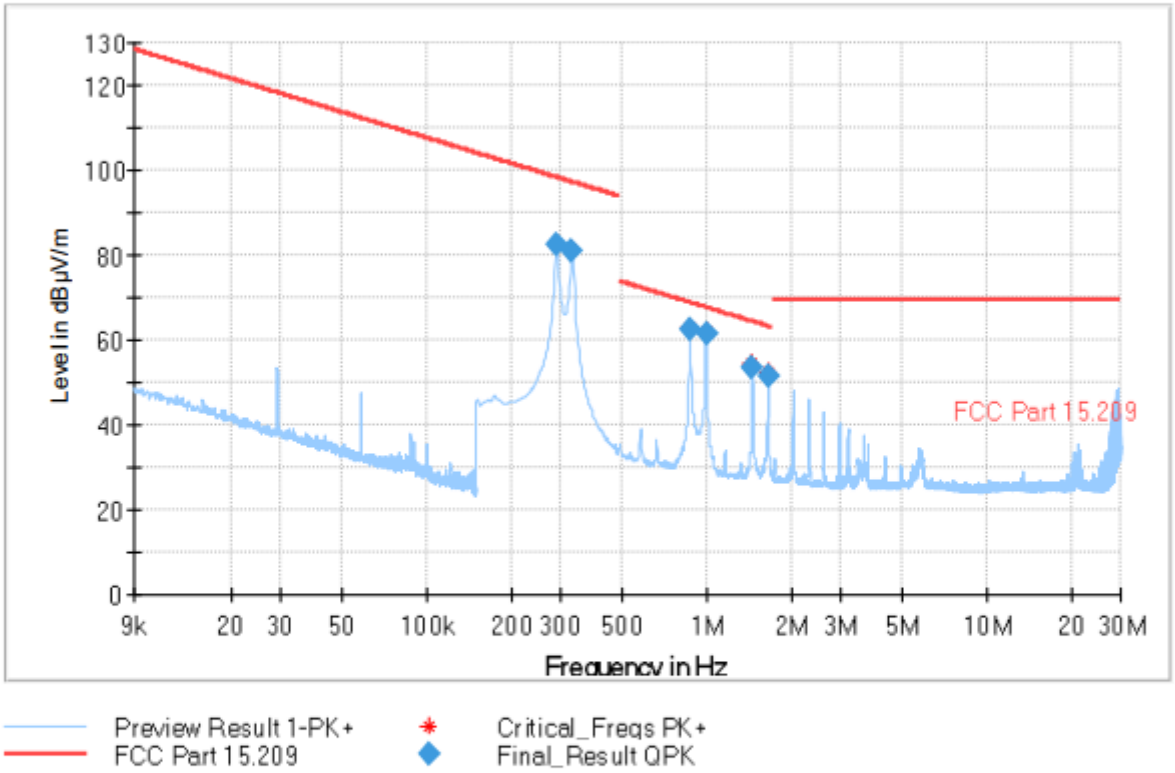
1. The EUT was placed on the top of a rotating table 0.8 meters above the ground in an Anechoic Chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
3. The antenna is 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 set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to PEAK and QUASI-PEAK Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The highest points would be re-tested one by one using the quasi-peak method.

5.4.2 Test results

EUT Information

EUT:	Buzzard BIRD40A
Operating mode:	Waiting for NEST40A; Supplied with 24 V d.c.
Antenna polarization:	Coaxial

Full Spectrum



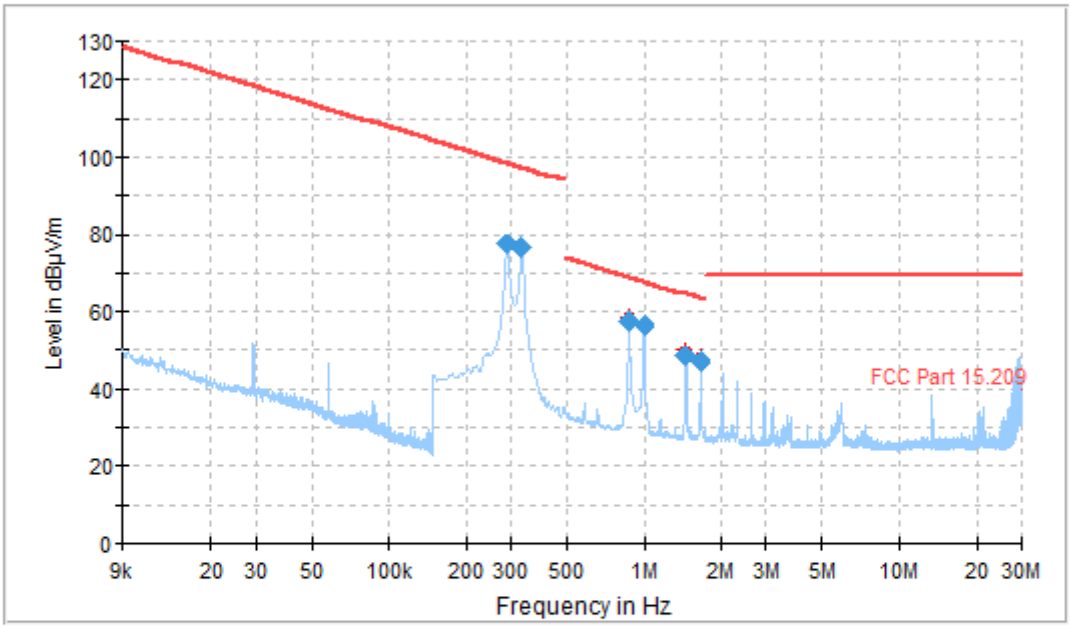
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/
0.289500	82.26	98.37	16.11	1000.0	9.000	100.0	H	21.0	16.9
0.330000	81.20	97.23	16.03	1000.0	9.000	100.0	H	21.0	16.9
0.870000	62.58	68.83	6.24	1000.0	9.000	100.0	H	13.0	16.9
0.991500	61.39	67.70	6.31	1000.0	9.000	100.0	H	13.0	16.9
1.450500	53.29	64.40	11.11	1000.0	9.000	100.0	H	21.0	16.9
1.653000	51.60	63.27	11.67	1000.0	9.000	100.0	H	13.0	16.9

EUT Information

EUT:	Buzzard BIRD40A
Operating mode:	Waiting for NEST40A; Supplied with 24 V d.c.
Antenna polarization:	Coplanar

Full Spectrum



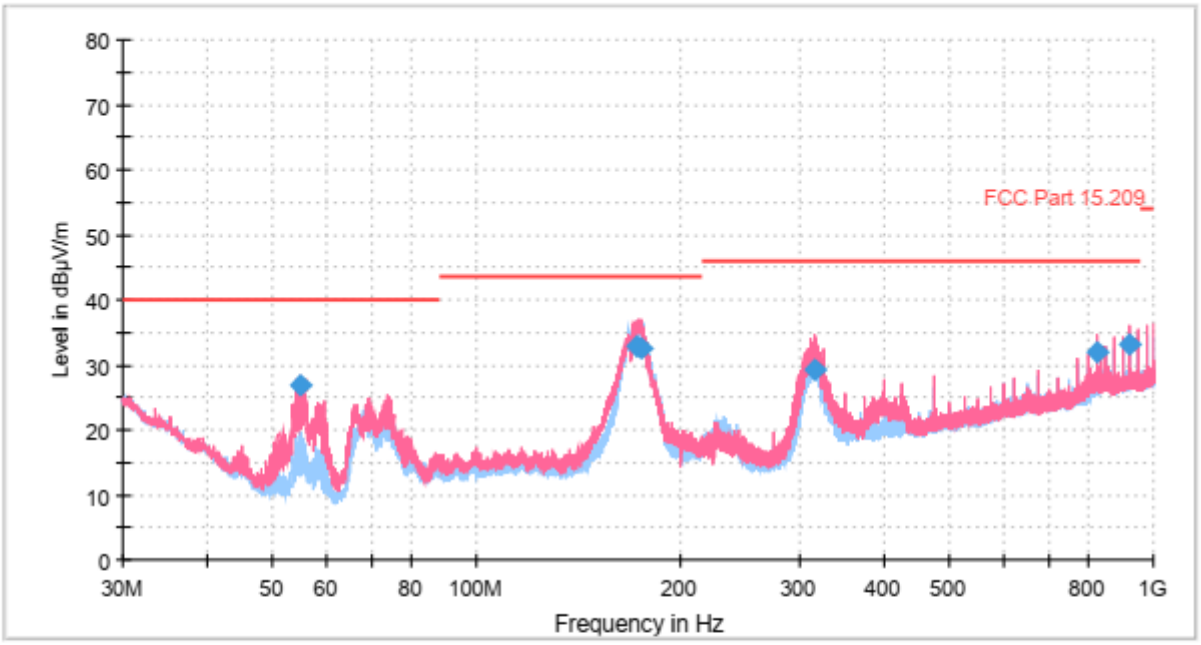
Final_Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/
0.289500	77.57	98.37	20.79	1000.0	9.000	100.0	H	104.0	16.9
0.330000	76.51	97.23	20.72	1000.0	9.000	100.0	H	104.0	16.9
0.870000	57.67	68.83	11.15	1000.0	9.000	100.0	H	104.0	16.9
0.991500	56.60	67.70	11.10	1000.0	9.000	100.0	H	92.0	16.9
1.450500	48.68	64.40	15.72	1000.0	9.000	100.0	H	92.0	16.9
1.653000	46.85	63.27	16.42	1000.0	9.000	100.0	H	104.0	16.9

EUT Information

EUT: Buzzard BIRD40A
Operating mode: Waiting for NEST40A; Supplied with 24 V d.c.

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	DET 2 (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
54.840000	26.85	---	40.00	13.15	100.0	V	222.0
172.650000	32.82	---	43.50	10.68	100.0	V	235.0
174.900000	32.56	---	43.50	10.94	102.0	V	242.0
316.380000	29.29	---	46.00	16.71	100.0	V	4.0
825.000000	31.98	---	46.00	14.02	115.0	V	209.0
924.990000	33.25	---	46.00	12.75	157.0	V	240.0

5.5 20 dB Emission Bandwidth(15.215 (c))

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

5.5.1 Test procedure

As per ANSI C63:10-2013:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Steps a) through c) might require iteration to adjust within the specified tolerances.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.

f) Set detection mode to peak and trace mode to max hold.

g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyser marker to the highest level of the displayed trace (this is the reference value).

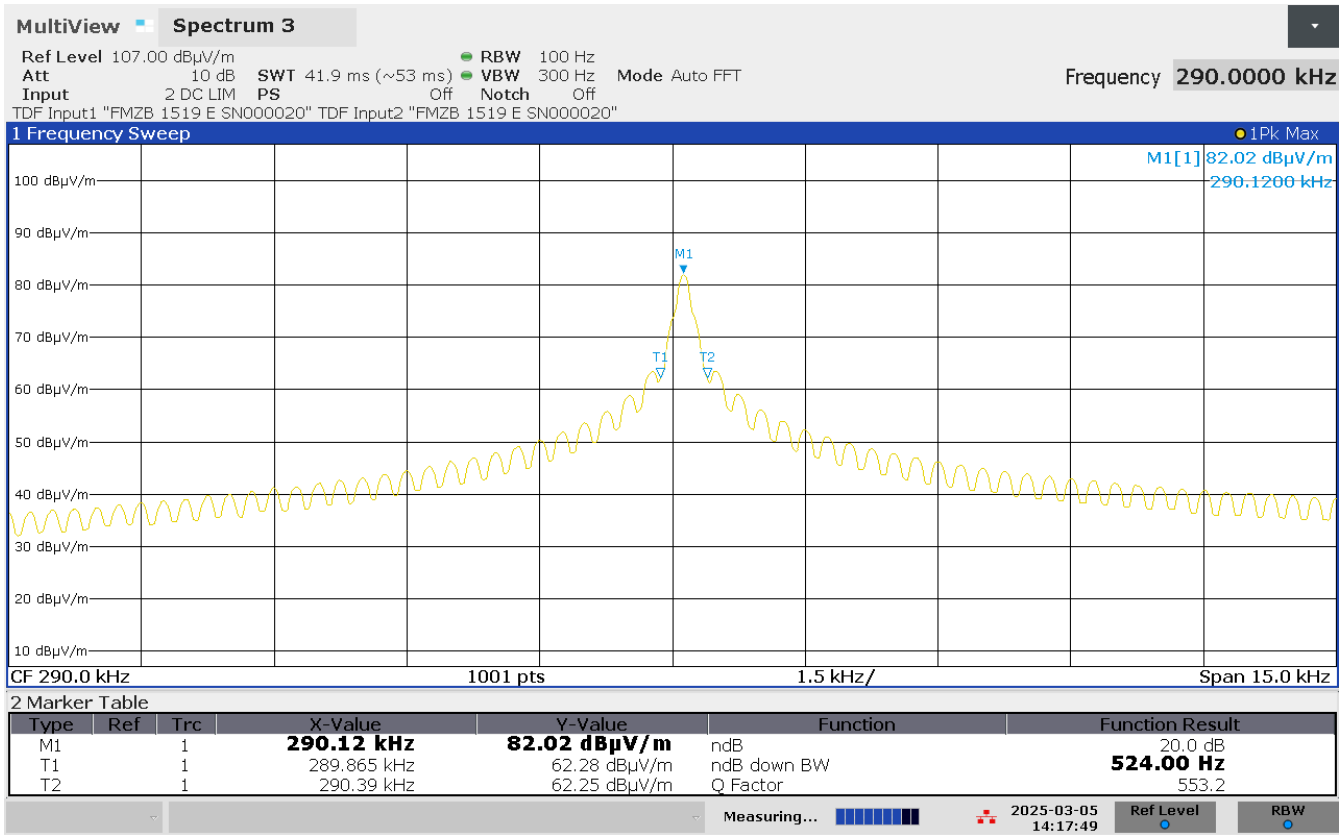
h) Determine the “−xx dB down amplitude” using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyser and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

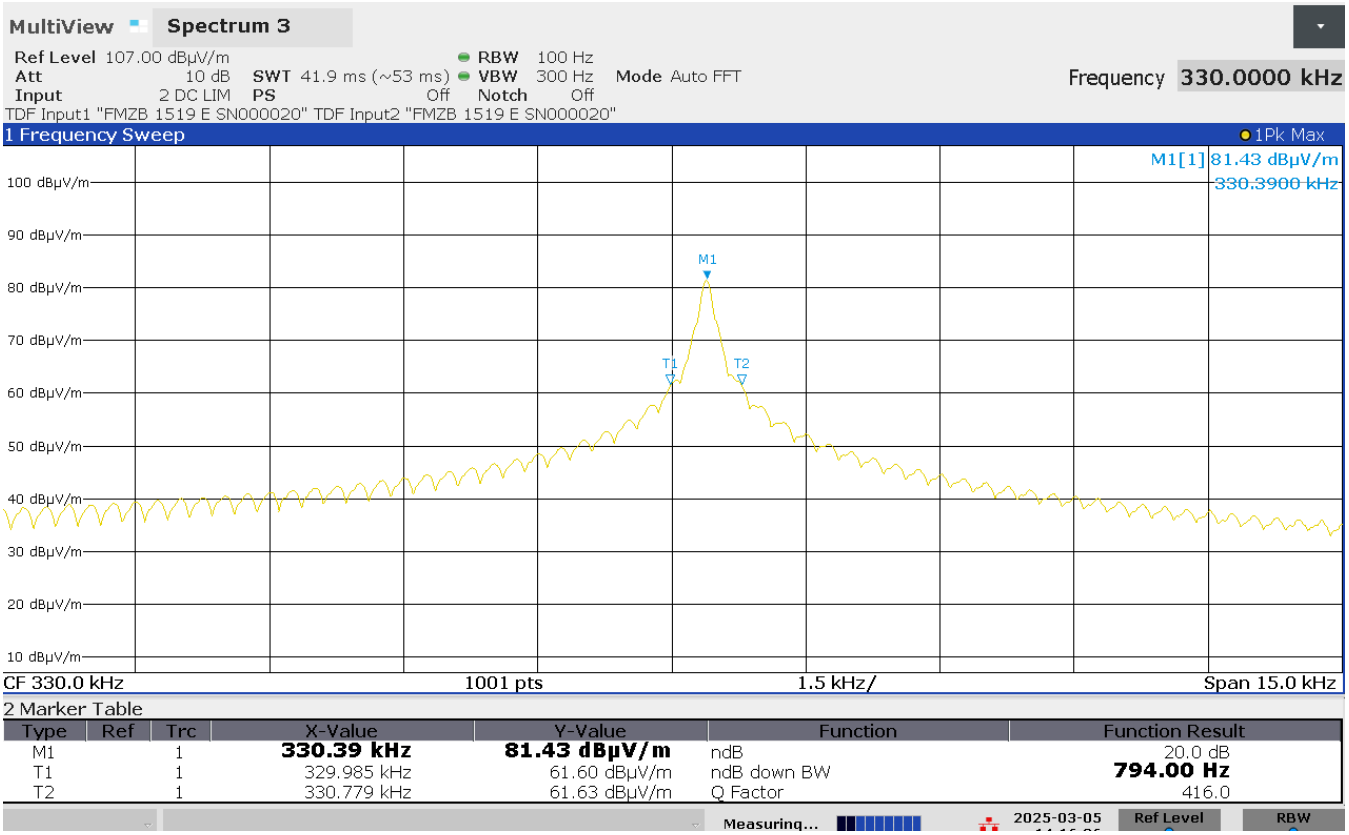
j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “−xx dB down amplitude” determined in step h). If a marker is below this “−xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “−xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.5.2 Test results



DUT Frequency (kHz)	20 dB Bandwidth (Hz)	Band Edge Left (kHz)	Band Edge Right (kHz)	Max Level (dBµV/m)	Result
290.12	524.00	289.865	290.390	82.02	PASS



DUT Frequency (kHz)	20 dB Bandwidth (Hz)	Band Edge Left (kHz)	Band Edge Right (kHz)	Max Level (dBµV/m)	Result
330.32	794	329.985	330.779	81.43	PASS

----------END OF TEST REPORT----------