DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29507456

ISED CABid: ES1909
Lab. Company Number: 4621A

Test Report No:
79045RRF.006A1

Partial Test Report

USA FCC 15.31(h), 15.209, 15.247, 24, 27
CANADA RSS-130, RSS-133, RSS-247, RSS-Gen

(*) Identification of item tested	Device to track Pet using LTE, BLE, WiFi and GNSS
(*) Trademark	DATAMARS, Kippy
(*) Model and /or type reference	PetLinkDOG US v1
(*) Derived model not tested	PetLinkDOG US a1
Other identification of the product	FCC ID: NDX-PLDOG1 IC: 8521A-PLDOG1
(*) Features	LTE CAT-M1, Bluetooth LE, GNSS, WIFI scan (RX ONLY) HW version: 6V2 US SW version: 10.4.64
Applicant	DATAMARS SA via Industria 16, Lamone, N/A 6814 Switzerland
Test method requested, standard	USA FCC Part 15.31(h) (10-1-23 Edition): Measurement standard. USA FCC Part 15.209 (10-1-23 Edition): Radiated emission limits; general requirements. USA FCC Part 15.247 (10-1-23 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 24 (10-1-23 Edition). USA FCC Part 27 (10-1-23 Edition). CANADA RSS-130 Issue 2, February 2019. CANADA RSS-133 Issue 7, July 2024. CANADA RSS-247 Issue 3, Aug. 2023. CANADA RSS-Gen Issue 5, amendment 2, Feb. 2021. Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum: System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05r02 dated April 2, 2019. Measurement Guidance for Certification of Licensed Digital Transmitters. 971168 D01 Power Meas License Digital Systems v03r01 dated April 9, 2018. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. ANSI C63.26-2015 IEEE/ANSI Standard for Testing of Transmitters Used in Licensed Radio Services.

Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager  Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456)
Date of issue	2024-11-13
Report template No.	FDT08_25 (*) "Data provided by the client"

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Competences and guarantees

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DEKRA Testing and Certification is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

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DEKRA Testing and Certification is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the radiated emissions of the EUT from 30 MHz to 1 GHz is: Measurement uncertainty ≤ ±5.35 dB (with factor k=2).

The total uncertainty of the measurement system for the radiated emissions of the EUT from 1 to 17 GHz is: Measurement uncertainty ≤ ±4.32 dB (with factor k=2).

The total uncertainty of the measurement system for the radiated emissions of the EUT from 17 to 40 GHz is: Measurement uncertainty ≤ ±5.51 dB (with factor k=2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").

2. The sample consists of a Device to track Pet using LTE, BLE, WiFi and GNSS. Pet tracker.

3. Declaration of Similarity/Family:

Declaration of Similarity – PetLinkDOG US a1 and PetLinkDOG US v1

Lamone, 19 Aug 2024

Datamars SA, with its registered office at Via Industria 16, 6814 Lamone, Switzerland, declares that the following products:

- PetLinkDOG US a1
- PetLinkDOG US v1

have exactly the same features, except that have a different SIM provider.

The models are identical from the RF point of view, and the difference described above do not lead to different RF performance or behaviour between the devices.

Datamars SA

Damien Pachoud
Chief Production and Technology Officer

DR003759

DATAMARS

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results. The laboratory is not responsible for such information and it is not covered by accreditation.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial Nº	Date of Reception	Application
S/01	79045B_17.1	Device to track Pet	PetLinkDOG US v1	-	2024-06-17	Element Under Test
	79045B_1.1	USB Charging cable	-	-	2024-04-22	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Samples used for radiated tests.

Test sample description

Ports…… :	Port name and description	Cable						
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)			
	serial com on USB	1.5 m	[X]	[ ]	[ ]			
	SMA cable	0.03 m	[X]	[ ]	[ ]			
Supplementary information to the ports…… :	.....							
Rated power supply ..... :	Voltage and Frequency		Reference poles					
			L1	L2	L3	N	PE	
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]	
	[X]	DC: Li-ion polymer 4.4 max voltage, 650mAh, Feten Energy, FTN-P952525						
Rated Power..... :	3W							
Clock frequencies..... :	32 MHz, 32.768 kHz, 26 MHz							
Other parameters ..... :	.....							
Software version..... :	10.4.64							
Hardware version ..... :	6V2 US							
Dimensions in cm (W x H x D) ... :	65x34x21mm3							
Mounting position ..... :	[ ]	Table top equipment						
	[ ]	Wall/Ceiling mounted equipment						
	[ ]	Floor standing equipment						
	[ ]	Hand-held equipment						
	[X]	Other:						
Modules/parts..... :	Module/parts of test item		Type	Manufacturer				
	Modem LTE		ME310G1WW0	Telit				
	GNSS receiver		MIA-M10Q	UBLOX				
	BLE		nRF52832	Nordic Semi				
	WIFI scanner		ESP8684H2	Espressif Systems				
Accessories (not part of the test item) ..... :	Description		Type	Manufacturer				
	USB charging cable EU		CMA-052022-0	CFE Electronic Co				
	USB charging cable US		CMA-052021-0	CFE Electronic Co				
Documents as provided by the applicant..... :	Description		File name	Issue date				
	.....		.....	.....				

(3) Only for Medical Equipment.

Identification of the client

DATAMARS SA
via Industria 16, 6814 Lamone, Switzerland

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2024-07-09
Date (finish)	2024-07-10

Document history

Report number	Date	Description
79045RRF.006	2024-09-10	First release.
79045RRF.006A1	2024-11-13	Second release. It is modified to correct antenna gain value. This modification test report cancels and replaces the test report 79045RRF.006

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

In the semi-anechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Álvaro Gutiérrez and Pablo Redondo.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
06791	SEMIANECHOIC ABSORBER LINED CHAMBER	FACT 3 200 STP	ETS LINDGREN	N/A
06792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06609	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2025-04-22
06615	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2025-04-04
06143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2027-01-22
06496	HORN ANTENNA 1-18 GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2026-12-01
04657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2026-06-12
06144	PRE-AMPLIFIER G>40dB 10MHz-6GHz	BLNA 0160-01N	BONN ELEKTRONIK	2024-07-25
03783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2025-03-15
08856	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-4A	BONN ELEKTRONIK	2025-02-27
07817	EMI TEST RECEIVER 2 Hz-44 GHz	ESW44	ROHDE AND SCHWARZ	2026-07-01
08912	WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE AND SCHWARZ	2025-10-05
07760	DIGITAL MULTIMETER	FLUKE	175	2024-11-08
04848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	N/A

Testing verdicts

Not applicable:	N/A
Pass:	P
Fail:	F
Not measured:	N/M

Summary

FCC 15, 24, 27 / CANADA RSS-130, RSS-133, RSS-247, RSS-Gen PARAGRAPH			
Requirement – Test case		**Verdict**	**Remark**
FCC 15.31 (h), 15.209 (a), 15.247 (d), 24.238 (a) (b), 27.53 (g) / RSS-130 4.7.1, RSS-133 6.5.1, RSS-247 5.5, RSS-Gen 8.9	Emission limitations radiated (Transmitter)	P	(1)
Supplementary information and remarks: (1) Only simultaneous transmission radiated spurious emission test was requested.			

Appendix A: Test results

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TEST CONDITIONS

(*): Data provided by the Applicant.

POWER SUPPLY (*):

Vnominal: 3.85 Vdc

Type of Power Supply: Li-ion external battery.

ANTENNA (*):

Technologies	Antenna Gain (dBi)	Type of Antenna
BLE (2M)	-5.49	Monopole on Flex PCB
LTE Cat-M1 Band 2	-2.26	Monopole on Flex PCB
LTE Cat-M1 Band 12	-9.49	Monopole on Flex PCB

TEST FREQUENCIES:

Frequency range	Technologies	Modulations	Worst case
f < 1 GHz	LTE Cat-M1 Band 12	16QAM	Low Channel 23035 (701.5 MHz)
1 GHz < f < 2 GHz	LTE Cat-M1 Band 2	16QAM	Middle Channel 18900 (1880 MHz)
f > 2 GHz	Bluetooth Low Energy (2M)	GFSK	Low Channel (2402 MHz)

The test set-up was made according to the general provisions of FCC 558074 D01 15.247 Meas Guidance v05r02 dated April 2, 2019.

For cellular technologies, the EUT was controlled by a communication tester to transmit at maximum power on the test channels and modes as required.

TEST FREQUENCIES FOR SIMULTANEOUS TRANSMISSION MODE RADIATED TESTS:

The EUT was configured to simultaneously transmit the following signals at maximum output power:

- **Operation Mode 1**

Simultaneous transmission mode LTE Cat-M1 Band 12, Bluetooth Low Energy (2M):

LTE Cat-M1 12:	Low Channel (701.5 MHz). BW 5 MHz. RB Size 1. RB Offset 0 .16QAM.
BLE (2M):	Low Channel (2402 MHz). GFSK.

- **Operation Mode 2**

Simultaneous transmission mode LTE Cat-M1 Band 2, Bluetooth Low Energy (2M):

LTE Cat-M1 2:	Middle Channel (1880 MHz). BW 5 MHz. RB Size 1. RB Offset 0. 16QAM.
BLE (2M):	Low Channel (2402 MHz). GFSK.

FCC 15.31 (h), 15.209 (a), 15.247 (d), 24.238 (a) (b), 27.53 (g) / RSS-130 4.7.1, RSS-133 6.5.1, RSS-247 5.5, RSS-Gen 8.9 Emission limitations radiated (Transmitter)

Limits:

1. Bluetooth Low Energy:

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/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	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit specified when measuring with peak detector function corresponding to 20 dB above the indicated values in the table above.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required.

2. LTE Cat-M1 Band 12. FCC §2.1053 & §27.53 (g) / RSS-130 4.7.1.

FCC §27.53 (g):

> (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

RSS-130:

> 4.7.1. The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log10 p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

3. LTE Cat-M1 Band 2. FCC §2.1051 and §24.238 (a) (b) / RSS-133 6.5.1:

FCC §24.238:

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB. P in watts.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS-133:

5.6. Unwanted emission limits

Unwanted emissions shall be measured in terms of average values while the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified in table 3, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment’s operating frequency range.

For the unwanted emission limits, in the 1 MHz bands immediately outside and adjacent to the frequency block group, the power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth (OBW). Beyond these 1 MHz bands, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth may be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% of the OBW, as applicable.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the table 3.

Table 3: Unwanted emission limits for all equipment

Offset frequency from the edge of the frequency block group (MHz)	Unwanted emission limit
≤ 1	-13 dBm/(1% of OBW)
> 1	-13 dBm/MHz

Method:

The measurement was performed with the EUT inside a semi-anechoic chamber.

The spectrum was scanned from 30 MHz to at least the 10th harmonic of the highest frequency of the co-located radios up to 40 GHz.

The EUT was placed on a non-conductive stand at a 3-meter distance from the measuring antenna for measurements up to 17 GHz and at 1.5-meter distance for measurements above 17 GHz.

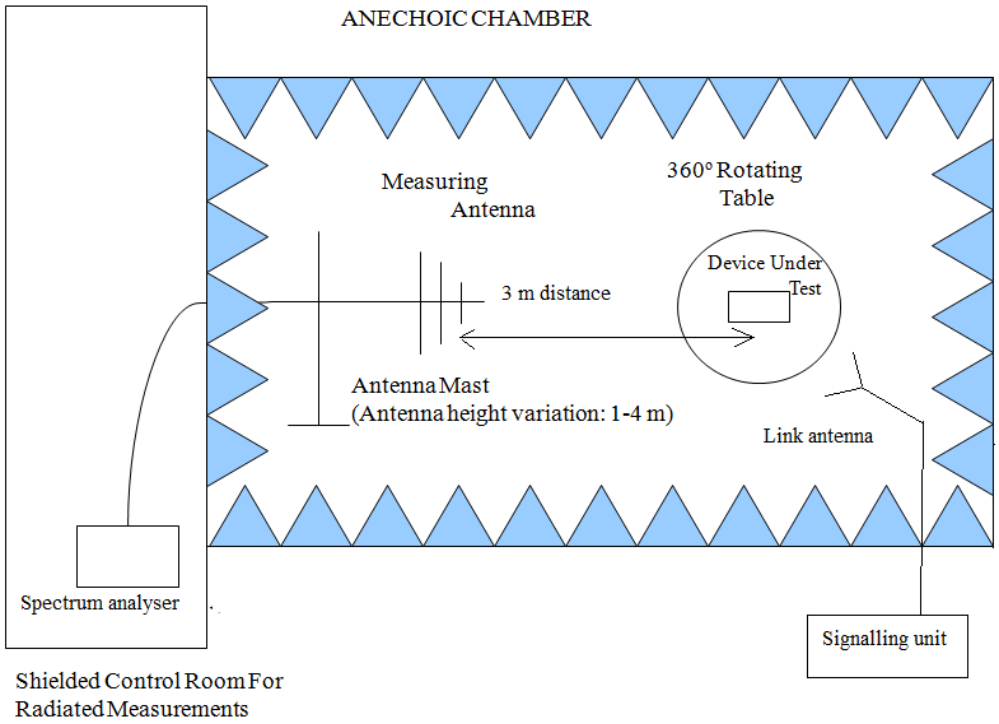
Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded. Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

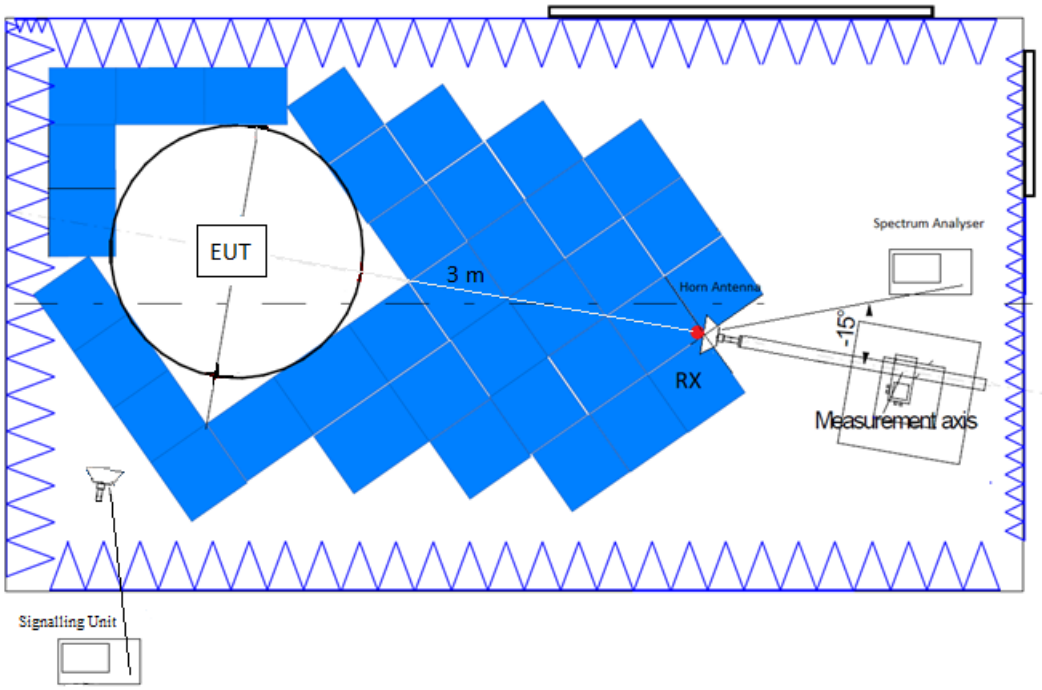
For radiated measurements above 17 GHz performed at a distance closer than the distance specified in standard, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

Test setup:

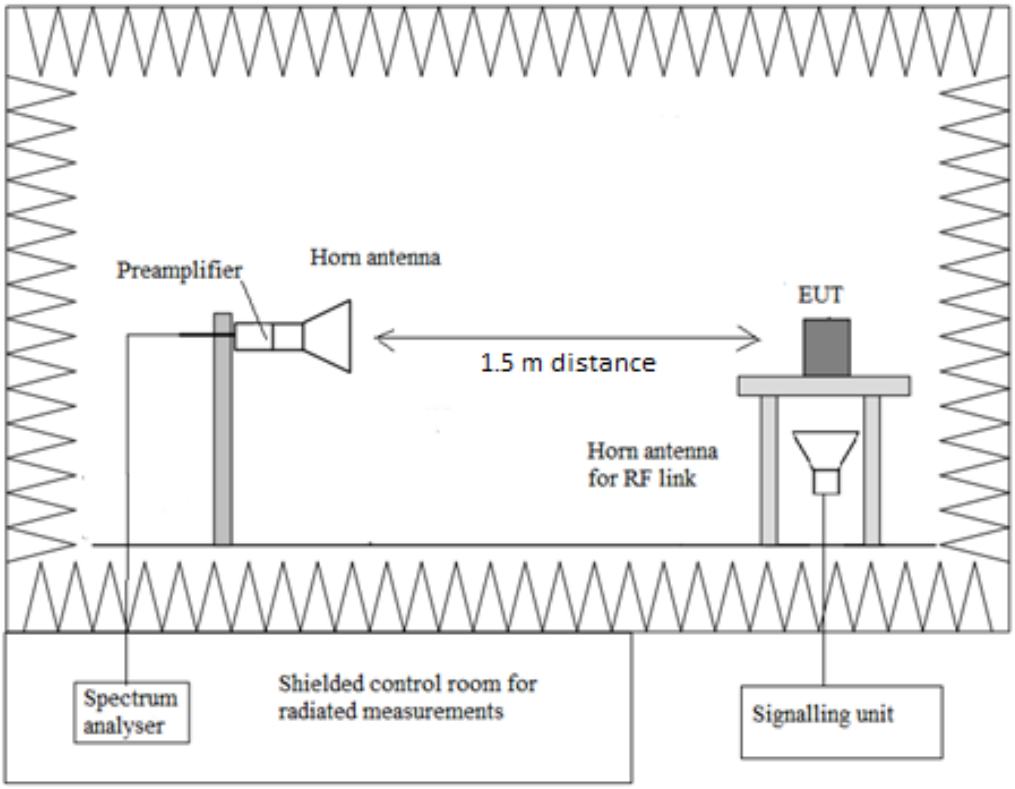
Radiated measurements below 1 GHz:



Radiated measurements between 1 GHz and 17 GHz:



Radiated measurements above 17 GHz:



Results:

- **Operation Mode 1**

Frequency range 30 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 26 GHz:

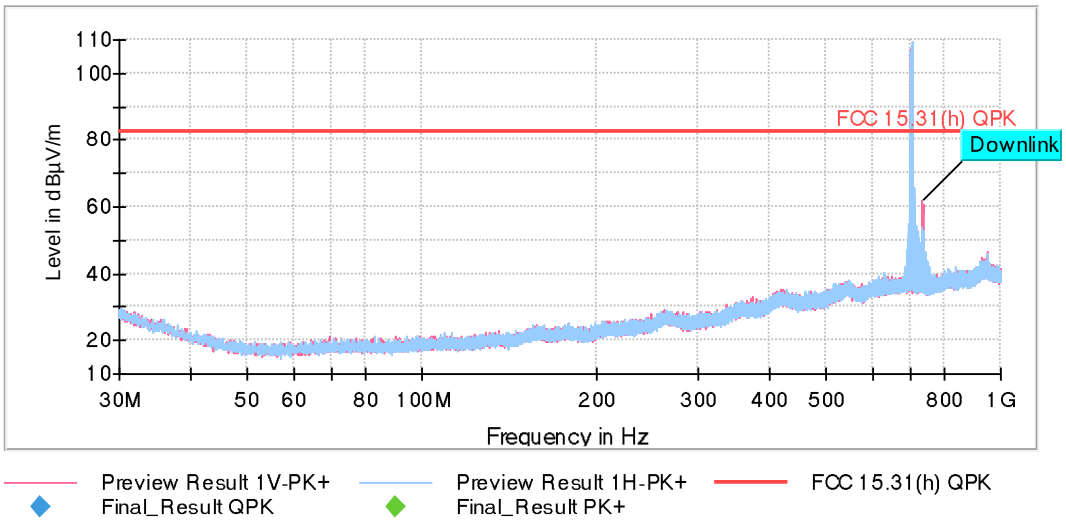
No spurious frequencies at less than 20 dB below the limit.

Verdict

Pass

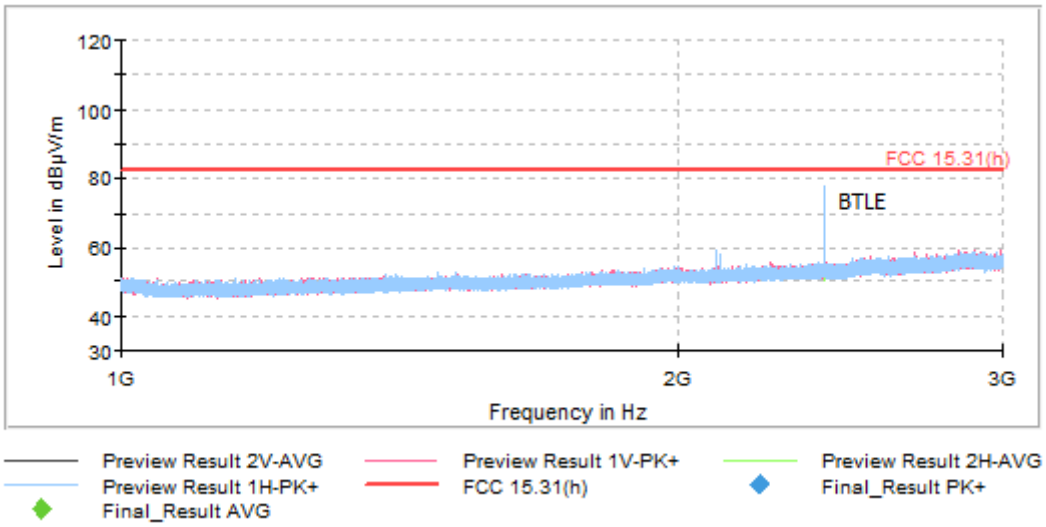
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	30.312 kHz	PK+	100 kHz	1 s	0 dB
1 GHz - 3 GHz	30.769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 30 MHz - 1 GHz

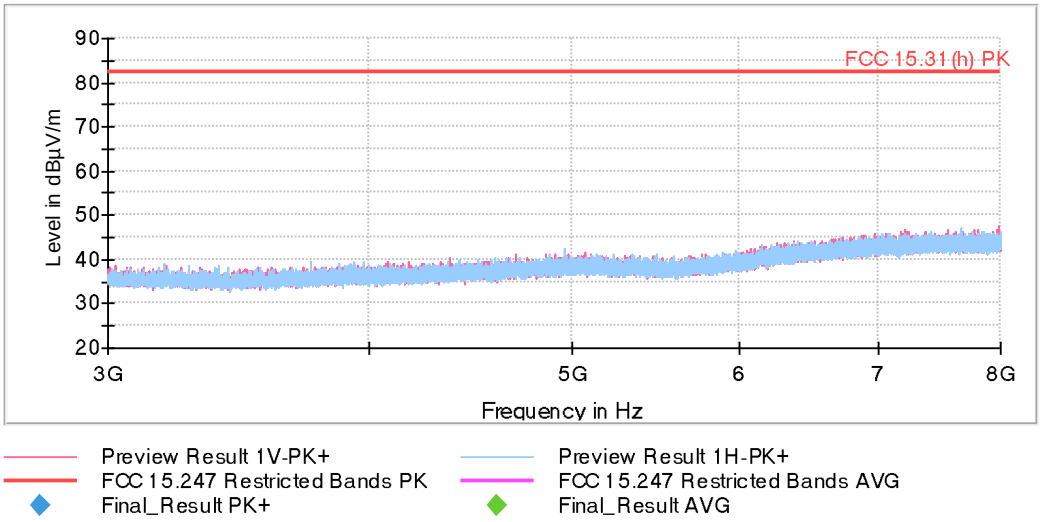


The peak above the limit is the LTE Cat-M1 Band 12 carrier frequency (701.5 MHz).

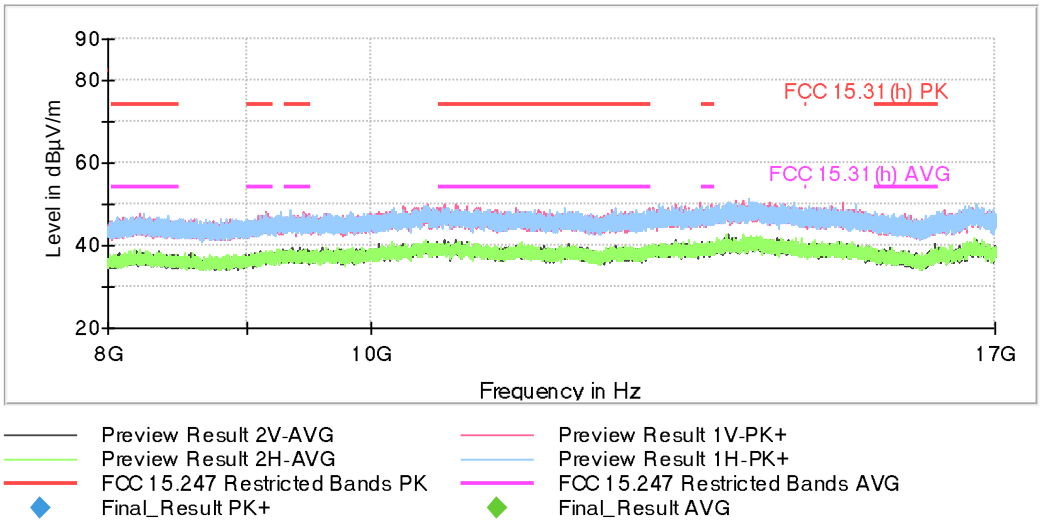
FREQUENCY RANGE 1 - 8 GHz

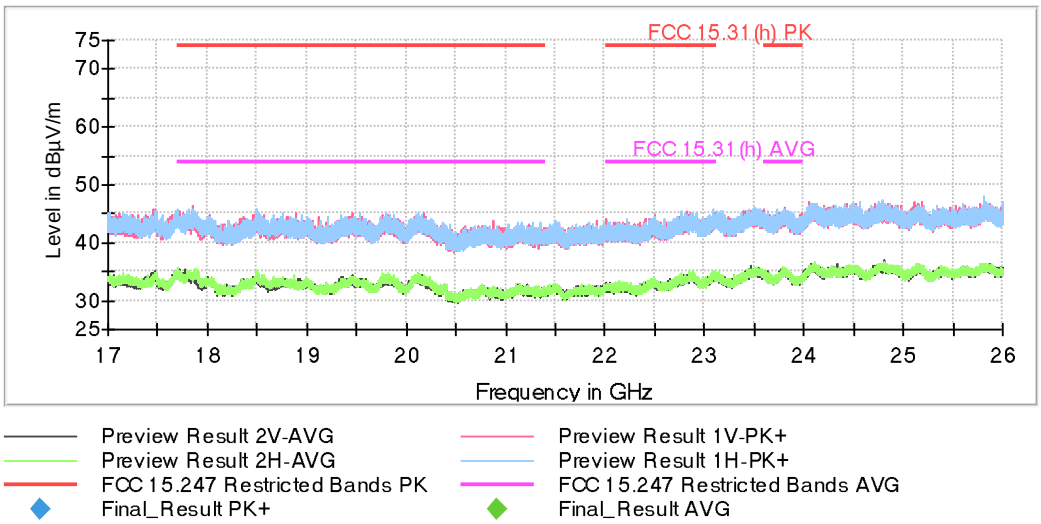


The peak below the limit is the BLE (2M) carrier frequency (2402 MHz).



FREQUENCY RANGE 8 - 26 GHz





- **Operation Mode 2**

Frequency range 30 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 26 GHz:

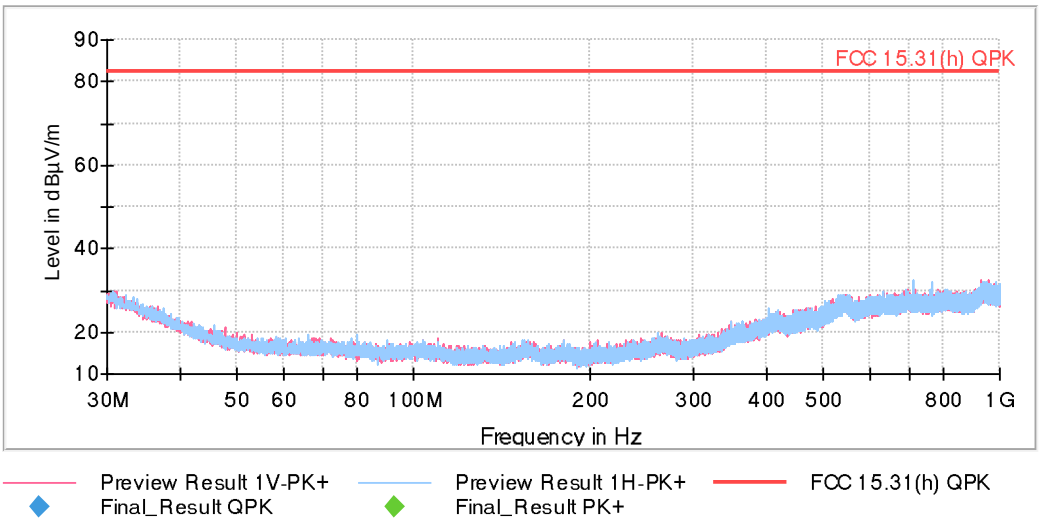
No spurious frequencies at less than 20 dB below the limit.

Verdict

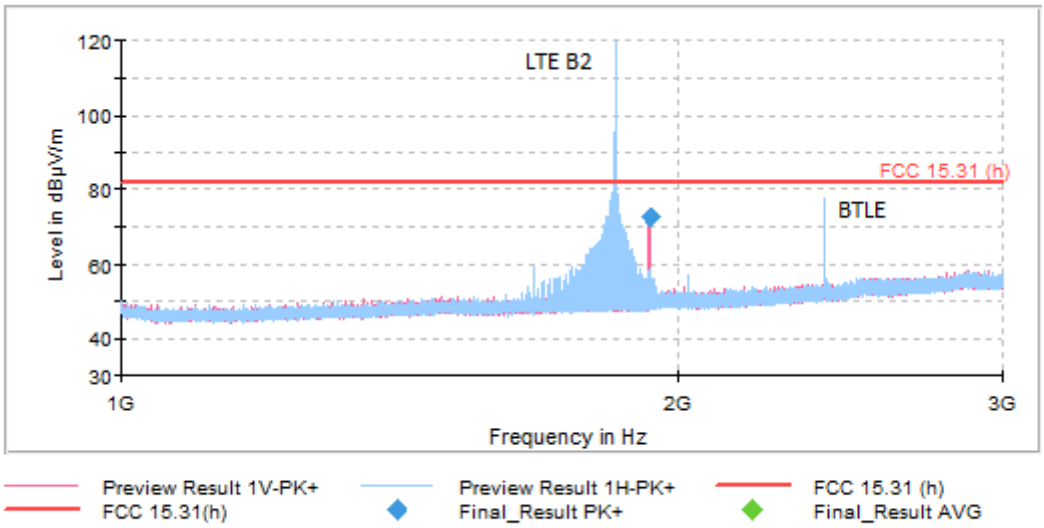
Pass

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	30.312 kHz	PK+	100 kHz	1 s	0 dB
1 GHz - 3 GHz	30.769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

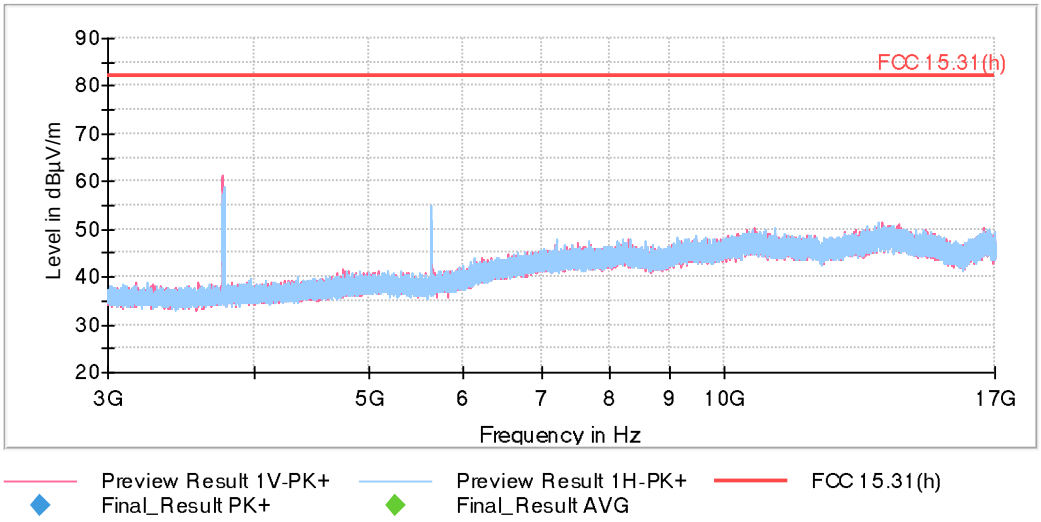
FREQUENCY RANGE 30 MHz - 1 GHz

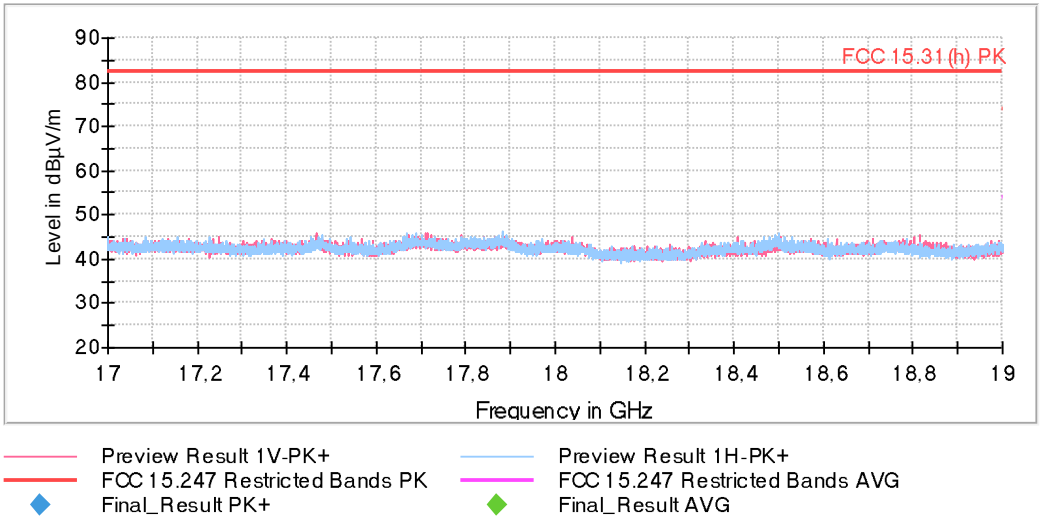


FREQUENCY RANGE 1 - 19 GHz



The peak above the limit on the left is the LTE Cat-M1 Band 2 carrier frequency (1880 MHz).
The peak below the limit on the centre is the LTE Cat-M1 Band 2 downlink.
The peak below the limit on the right is the BLE (2M) carrier frequency (2402 MHz).





FREQUENCY RANGE 19 - 26 GHz