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C.I.F. A29507456

ISED CABid: ES1909
Lab. Company Number: 4621A

Test Report No:
77695RRF.008A1

Partial Test Report

USA FCC Part 15.31 (h), 15.247, 15.209, Part 90
CANADA RSS-119, RSS-247, RSS-Gen

(*) Identification of item tested	STP8X040
(*) Trademark	SEPURA
(*) Model and /or type reference	STP8X040
Other identification of the product	FCC ID: XX6STP8X040B IC: 8739A-STP8X040B
(*) Features	HW version: PLX-11016M10-01 (Mod State 9) SW version: Main: 181301302937
Applicant	Sepura Limited 9000 Cambridge Research Park, Beach Drive, Waterbeach, Cambridge CB25 9TL, United Kingdom
Test method requested, standard	USA FCC Part 15.31 (10-1-23 Edition): Measurement standard. 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 15.209 (10-1-23 Edition): Radiated emission limits; general requirements. USA FCC Part 90.210 (10-1-23 Edition). CANADA RSS-119 Issue 12 (May 2015), Amendment (April 2022). CANADA RSS-247 Issue 3 (August 2023). CANADA RSS-Gen Issue 5 (April 2018), Amendment 2 (February 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. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. ANSI C63.26-2015: Compliance 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	2024-08-06
Report template No	FDT08_25 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

DEKRA Testing and Certification S.A.U. 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 S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. 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. **IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

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 is:

From 30 MHz to 1 GHz:	Measurement uncertainty ≤± 5.01 dB.
From 1 to 17 GHz:	Measurement uncertainty ≤± 4.22 dB.
From 17 to 26 GHz:	Measurement uncertainty ≤± 4.71 dB.

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 STP8X040. STP8X is a TETRA Hand Portable Radio with GPS and optional Bluetooth, compliant with IECEx/ATEX standards.

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	77695B_10.1	TETRA Portable Handheld Radio	STP8X040	1PR902412G9Y2BL	2024-04-30	Element Under Test
S/01	77695B_100.1	Rechargeable BATTERY	300-00910	-	2024-05-06	Auxiliary Element
S/01	77695B_64.1	STP8X USB Programming Lead	300-00879	-	2024-04-30	Auxiliary Element
S/01	75691_43.1	Laptop	LATITUDE E7240	99RKP12	2024-01-17	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)	
	STP8X Programming Lead	N/A	[X]	[X]	[ ]	
Supplementary information to the ports…….. :	.....					
Rated power supply ..... :	Voltage and Frequency		Reference poles			
			L1	L2	L3	N	PE
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[X]	DC: 7.6V (nominal) Lithium Ion battery					
Rated Power..... :	.....						
Clock frequencies..... :	.....						
Other parameters ..... :	.....						
Software version..... :	.....						
Hardware version ..... :	.....						
Dimensions in cm (W x H x D) ... :	.....						
Mounting position ..... :	[ ]	Table top equipment					
	[ ]	Wall/Ceiling mounted equipment					
	[ ]	Floor standing equipment					
	[X]	Hand-held equipment					
	[ ]	Other:					
Modules/parts..... :	Module/parts of test item		Type	Manufacturer		
	.....		.....	.....		
Accessories (not part of the test item) ..... :	Description		Type	Manufacturer		
	Car Kit		.....	Sepura		
Documents as provided by the applicant..... :	Description		File name	Issue date		
	.....		.....	.....		

(3) Only for Medical Equipment

Identification of the client

Sepura Limited
9000 Cambridge Research Park, Beach Drive, Waterbeach, Cambridge CB25 9TL, United Kingdom

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2024-06-20
Date (finish)	2024-06-25

Document history

Report number	Date	Description
77695RRF.008	2024-07-30	First release.
77695RRF.008A1	2024-08-06	Second release. Minor typos corrected. This test report cancels and replaces the test report 77695RRF.008.

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 semianechoic 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: Sergio Carrasco and Álvaro Gutiérrez.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
06791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	N/A
06792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06609	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2025-04-22
06615	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2025-04-04
06143	HYBRID BILOG ANTENNA 30 MHz - 6 GHz	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 MESS-ELEKTRONIK	2026-06-12
03783	PRE-AMPLIFIER G>30 dB, 1-18 GHz	BLMA 0118-3A	BONN ELEKTRONIK	2025-02-07
08856	PRE-AMPLIFIER G>30 dB 17 - 40 GHz	BLMA 1840-4A	BONN ELEKTRONIK	2025-02-27
08866	EMI TEST RECEIVER 2 Hz-44 GHz	ESW44	ROHDE AND SCHWARZ	2026-06-12
07760	DIGITAL MULTIMETER	175	FLUKE	2024-11-08
04848	EMC/RF MEASUREMENT SOFTWARE	EMC32	ROHDE AND SCHWARZ	N/A

Testing verdicts

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

Summary

FCC PART 15, 90 PARAGRAPH / RSS-119, RSS-247, RSS-Gen			
Requirement – Test case		**Verdict**	**Remark**
FCC 15.31 (h), FCC 15.209 (a), 15.247 (d), 90.210 (b) / RSS-119 5.8, RSS-247 5.5, RSS-Gen 8.9	Transmitter out of band radiated emissions with simultaneous transmissions	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

(*) Declared by the Applicant

POWER SUPPLY (*):

Vnominal: 7.6 Vdc

Type of Power Supply: Lithium Ion battery

ANTENNA (*):

Modulation	Maximum Declared Antenna Gain	Type of Antenna
Bluetooth Basic Rate	-2.9 dBi	Integral chip antenna
TETRA	+1.86 dBi	Extended Helical Antenna

RADIOS AND CHANNELS TESTED (worst-cases):

Bluetooth Classic / FHSS		
Mode:	Basic Rate (GFSK - 1-DH5)	
Channel Spacing:	1 MHz	
Frequency Range:	2400 MHz to 2483.5 MHz	
Transmit Channel:	Channel	Channel Frequency (MHz)
	Middle	2441

TETRA	
Mode:	Single Channel (only one channel at a time)
Channel Spacing:	25 kHz
Frequency Range:	407 MHz to 473 MHz
Transmit Channel:	Channel Frequency (MHz)
	429.9875
	469.9875

The EUT was tested in the following operating mode:

- Continuous transmission with a modulated carrier at maximum power in all required channels selecting the supported data rates/modulations types.

During transmitter test the EUT was being controlled by the SW tool to operate in a continuous transmit mode on the test channel as required and in each of the different modulation modes.

TESTED SIMULTANEOUS TRANSMISSION MODES:

- **Operation Mode 1:**

Simultaneous transmission mode Bluetooth Classic, TETRA, with the EUT configured to simultaneously transmit the following signals at maximum output power:
Bluetooth Basic Rate in the Middle Channel (2441 MHz), TETRA in Channel Frequency 429.9875 MHz.

- **Operation Mode 2:**

Simultaneous transmission mode Bluetooth Classic, TETRA, with the EUT configured to simultaneously transmit the following signals at maximum output power:
Bluetooth Basic Rate in the Middle Channel (2441 MHz), TETRA in Channel Frequency 469.9875 MHz.

RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m (Loop antenna for the range between 9 kHz to 30 MHz, Bilog antenna for 30 MHz to 1000 MHz, Double ridge horn antenna 1 GHz-17 GHz) and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (horn antenna).

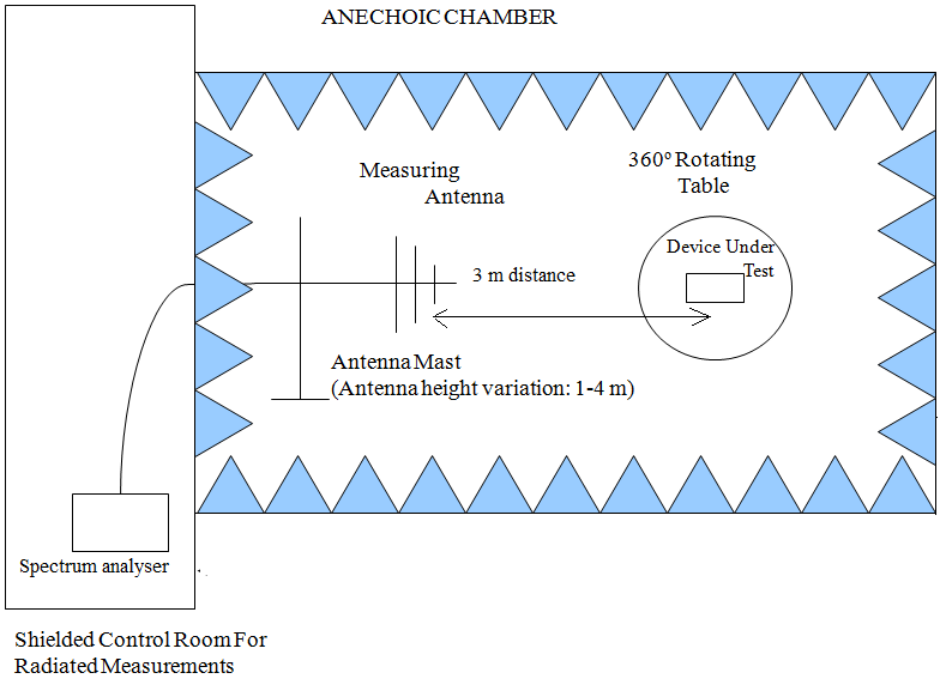
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

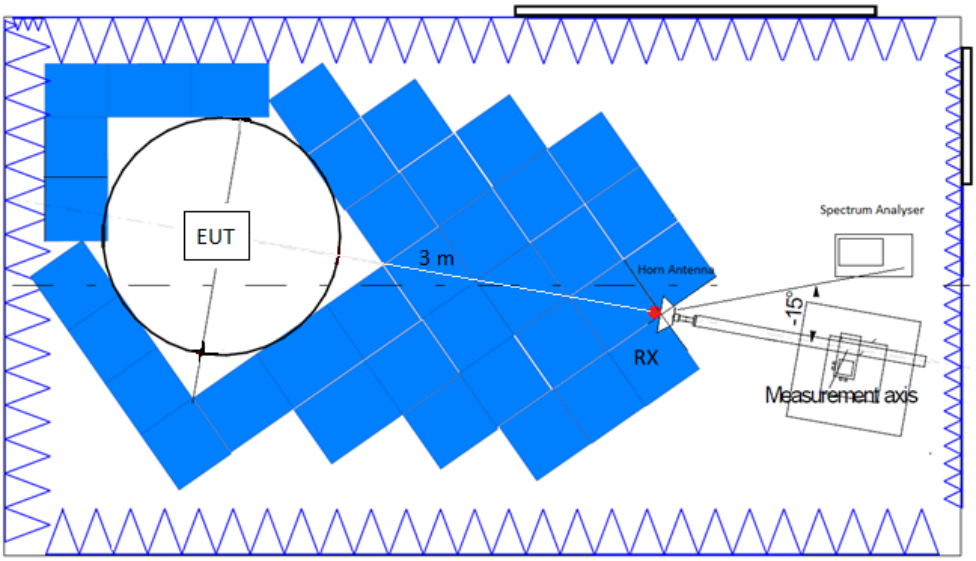
The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies between 30 MHz up to 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

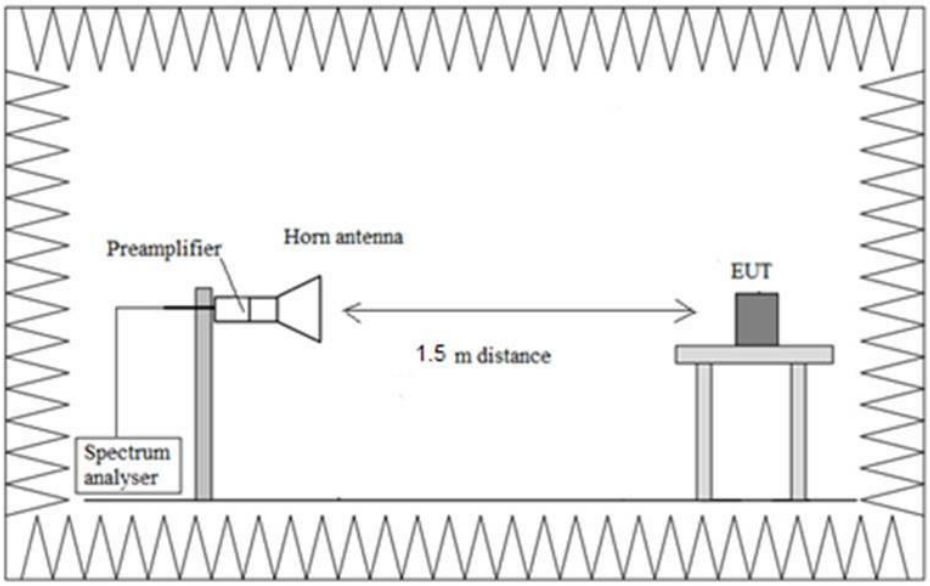
Radiated measurements setup 30 MHz < f < 1 GHz:



Radiated measurements setup f > 1 GHz up to 17 GHz:



Radiated measurements setup f > 17 GHz:



Radiated emissions

Limits:

FCC §15.247: Radiated emissions which fall in the restricted bands, as defined in §15.205 (a), appearing outside of the band 13.110 MHz - 14.010 MHz band 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 - 40000	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 corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

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

FCC §2.1051, §90.221:

(d) On any frequency removed from the assigned frequency by more than 75 kHz, the attenuation of any emission must be at least 43 + 10 log (P) dB.

RSS-119 5.5, 5.8:

Table 17 - Emission Mask Y

Displacement Frequency. fd (kHz)	Minimum Attenuation (dB)	Resolution Bandwidth (Hz)
12.375 < fd ≤ 13.975	whichever is the lesser attenuation: 30 + 16.67(fd–12.375) or 55 + 10 log10(p)	Specified in Section 4.2.2
fd > 13.975	whichever is the lesser attenuation: 57 or 55 + 10 log10(p)	Specified in Section 4.2.2

Results:

- **Operation Mode 1:**

Frequency range 30 MHz - 1 GHz:

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

Frequency range 1 - 26 GHz:

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

Verdict:

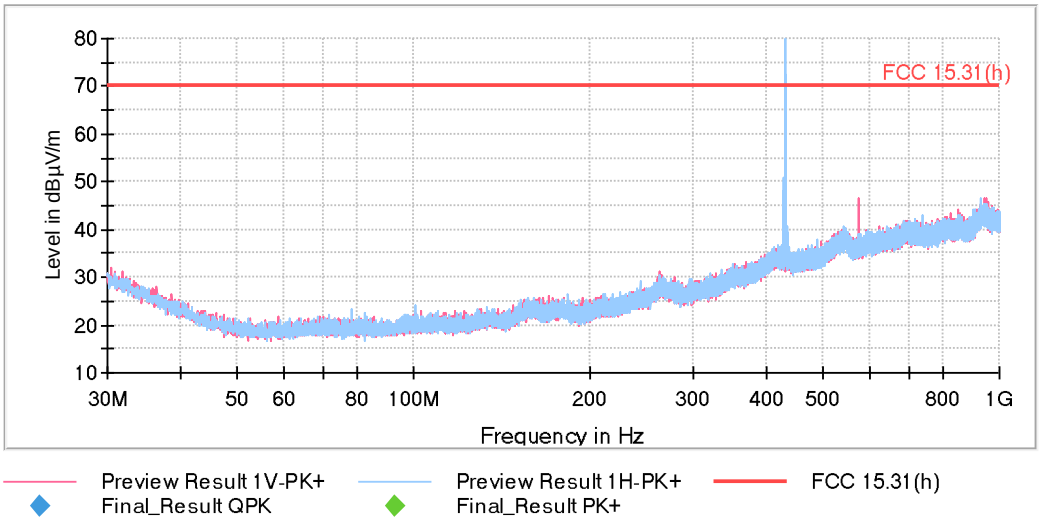
PASS

Attachments:

Spectrum Analyzer Parameters:

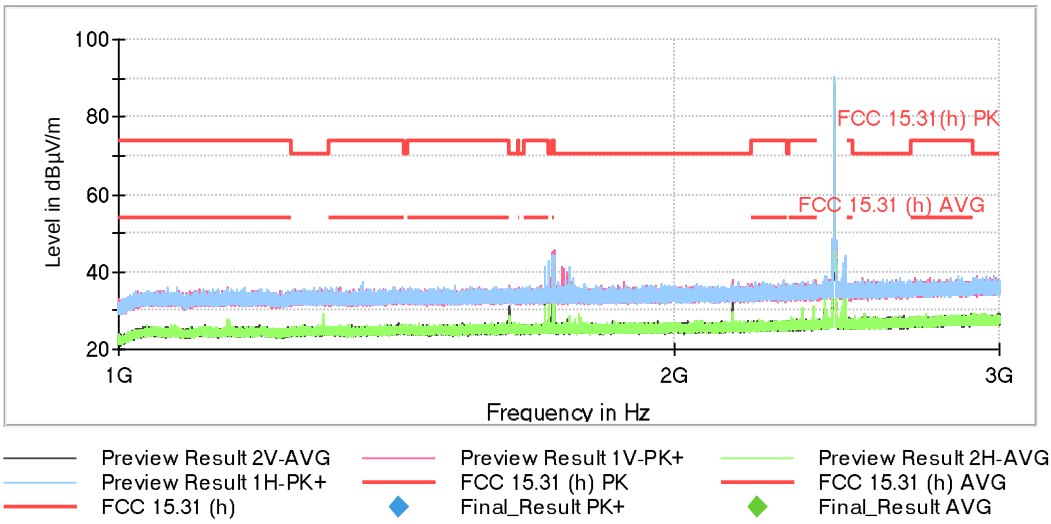
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	30.312 kHz	PK+	100 kHz	1 s	0 dB
1 GHz - 3 GHz	30.769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 30 MHz - 1 GHz:

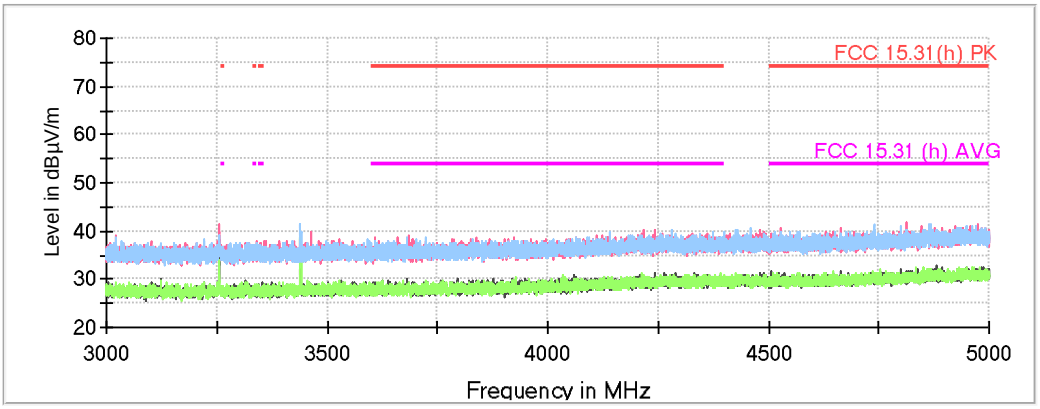


The peak above the limit is the TETRA carrier frequency.

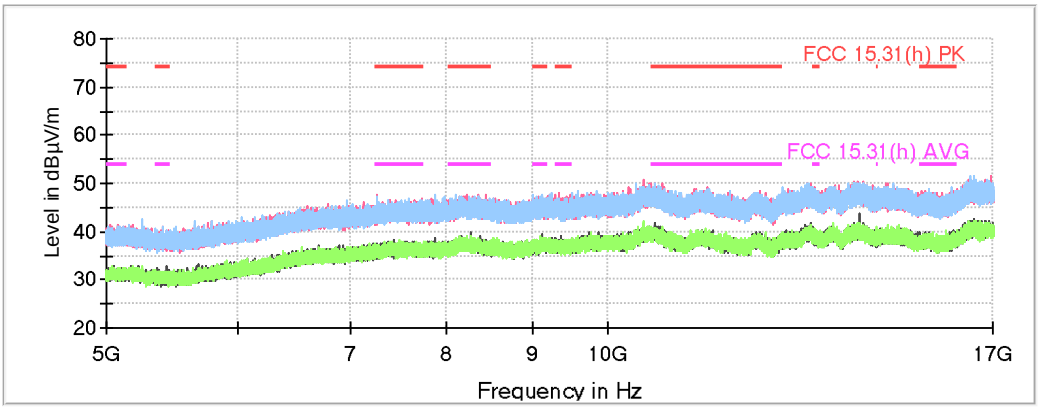
FREQUENCY RANGE 1 - 26 GHz:



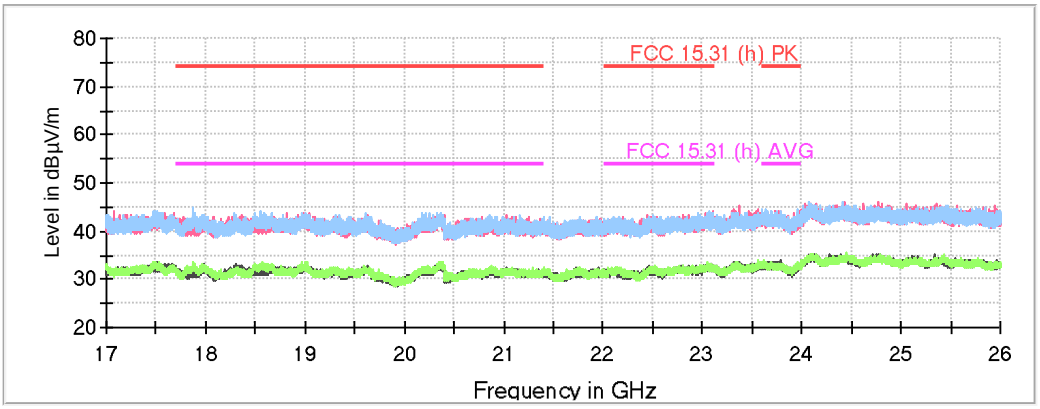
The peak above the limit is the Bluetooth Classic (Basic Rate) carrier frequency.



Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands AVG
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands PK
Final_Result AVG



Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG



Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

- **Operation Mode 2:**

Frequency range 30 MHz - 1 GHz:

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

Frequency range 1 - 26 GHz:

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

Verdict:

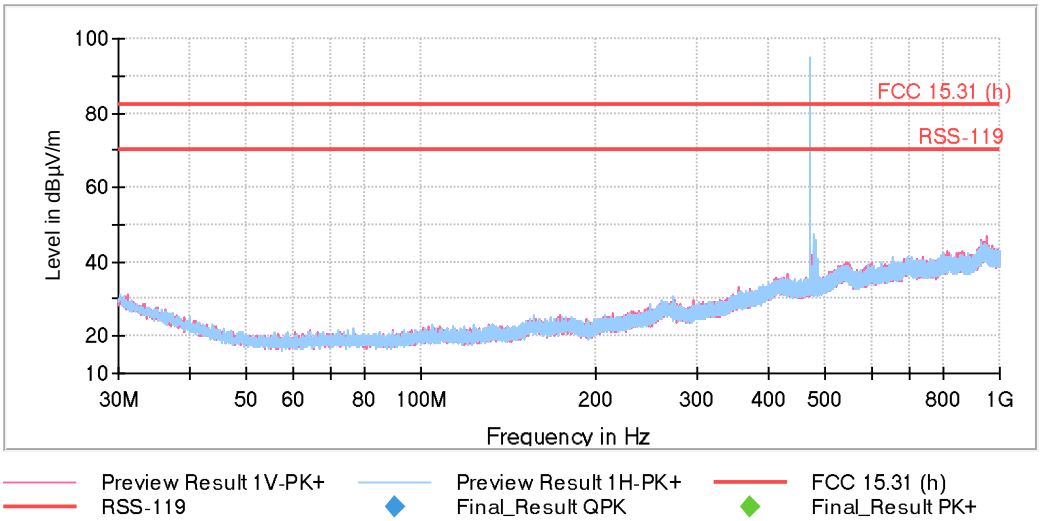
PASS

Attachments:

Spectrum Analyzer Parameters:

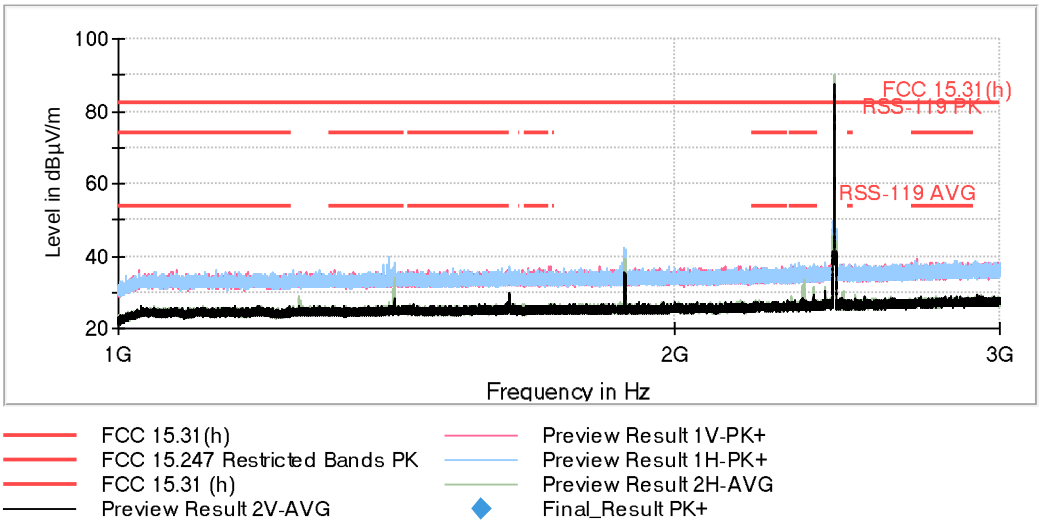
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	30.312 kHz	PK+	100 kHz	1 s	0 dB
1 GHz - 3 GHz	30.769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 30 MHz - 1 GHz:

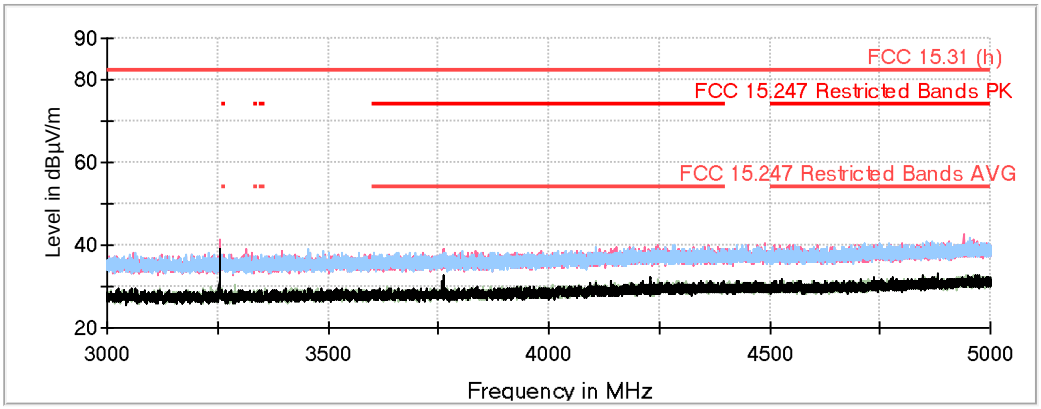


The peak above the limit is the TETRA carrier frequency.

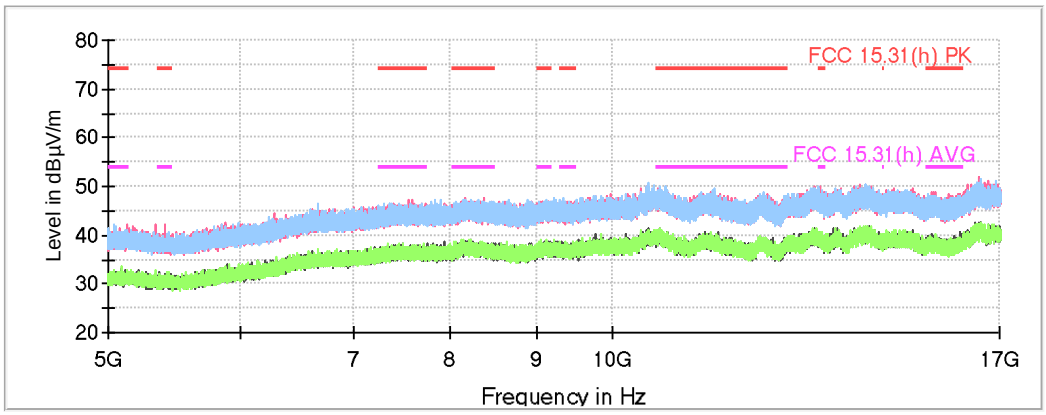
FREQUENCY RANGE 1 - 26 GHz:



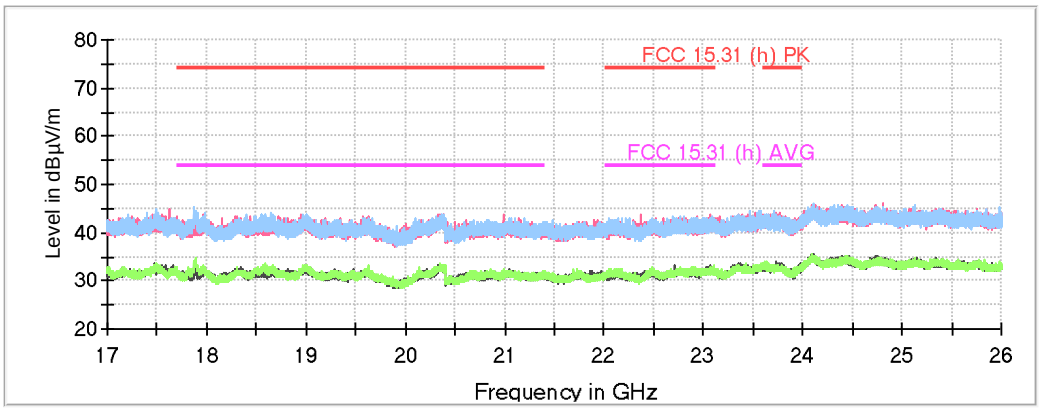
The highest peak is the Bluetooth Classic (Basic rate) carrier frequency.



FCC 15.31 (h)
FCC 15.247 Restricted Bands PK
FCC 15.31 (h)
Preview Result 2V-AVG
Preview Result 1V-PK+
Preview Result 1H-PK+
Preview Result 2H-AVG
Final_Result PK+



Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG



Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG