

ISED CABid: ES1909

Lab. Company Number: 4621A

Test Report No:
85701RRF.001

Partial Test Report

USA FCC Part 15.247, 15.209

CANADA RSS-247, RSS-Gen

(*) Identification of item tested	Audio Controller
(*) Trademark	IDNEO
(*) Model and /or type reference	TUX BLUETOOTH
Other identification of the product	FCC ID: 2BGE31TUX0624 IC: N/A
(*) Features	Bluetooth BR/EDR HW version: Sample D (TUX board: BA001089C / HMI board: BA001087E) SW version: 3.12.303
Applicant	IDNEO TECHNOLOGIES, S.A.U Carrer Rec de Dalt, 3, 08100 Mollet del Vallès, Barcelona (SPAIN)
Test method requested, 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. CANADA RSS-247 Issue 4 (July 2025). CANADA RSS-Gen Issue 5 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 C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024: American National Standard for Testing Unlicensed Wireless Devices.
Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager 
Date of issue	2026-03-13
Report template No	FDT08_26 (*) "Data provided by the client"

Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456)

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Acronyms

Acronym ID	Acronym Description
E.I.R.P.	Effective Isotropic Radiated Power
Raw Rec	Measured Voltage in the Receiver
Trd Corr.	Transducer Correction
Sig Path	Signal Path
Preamp	Preamplifier value
Detector	Detector used
Equipment	Equipment Type
Freq	Frequency
Freq Rng	Frequency Range
MP	Measurement Point
Mod	Modulation
Operation Band	Operation Band
Peak Power	Maximum Peak Conducted Output Power
Pol	Polarization
Port	Active Port
RU	Resource Unit
Unwanted Freq	Unwanted Emissions Frequency
Unwanted Lvl	Unwanted Emissions Level

Competences and guarantees

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

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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 EUT from 30 MHz to 1 GHz is:
Measurement uncertainty $\leq \pm 5,35$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 1 GHz to 17 GHz is:
Measurement uncertainty $\leq \pm 4,32$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 26 GHz is:
Measurement uncertainty $\leq \pm 5,51$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the conducted testing of EUT is:

- RF Peak Output Power: Measurement uncertainty $\leq \pm 0,80$ dB
- Accumulated Dwell Time: Measurement uncertainty $\leq \pm 0,16$ %
- Minimum Frequency Occupation Time: Measurement uncertainty $\leq \pm 0,53$ %
- Hopping Frequency Separation: Measurement uncertainty $\leq \pm 1,74$ %
- Occupied Channel Bandwidth: Measurement uncertainty $\leq \pm 1,24$ %
- Conducted Band-edge spurious emissions: Measurement uncertainty $\leq \pm 1,76$ 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 Audio Controller. The TUX is a general purpose Linux-based controller including functions such as audio and speech processing and BT interface.

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 N°	Date of Reception	Application
S/01	85701B_1.1	Module "DUT"		EP001597C25335-00003000	2026-02-02	Element Under Test
S/01	74067_11.1	MINI PC		GEFN11100C6Q	2023-08-22	Auxiliary Element
S/01	74067_12.1	AC/DC Charger			2023-08-22	Auxiliary Element
S/01	74067_13.1	CLYCLOPS BENCH 5 - CM			2023-08-22	Auxiliary Element
S/01	74067_14.1	ANTENA With Fakra Cable			2023-08-22	Auxiliary Element
S/01	74067_17.1	Supply Cable			2023-08-22	Auxiliary Element
S/01	74067_19.1	Ethernet Cable			2023-08-22	Auxiliary Element
S/01	74067_2.1	Device Anacrylics			2023-08-22	Auxiliary Element
S/01	74067_3.1	Device Anacrylics			2023-08-22	Auxiliary Element
S/01	74067_4.1	Device Anacrylics			2023-08-22	Auxiliary Element
S/01	82686B_10.1	Module		25119-00538	2025-05-30	Auxiliary Element
S/01	82686B_11.1	Module		25119-00557	2025-05-30	Auxiliary Element
S/01	82686B_4.1	Fakra to 4 Multipin Cable			2025-05-30	Auxiliary Element
S/01	82686B_5.1	Power Cable			2025-05-30	Auxiliary Element
S/01	82686B_7.1	Power Cable			2025-05-30	Auxiliary Element
S/01	82686B_8.1	Module		25119-00556	2025-05-30	Auxiliary Element
S/01	82686B_9.1	Module		25119-00539	2025-05-30	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Conducted/Radiated

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded			
	Ethernet		[X]	[]			
	A2B		[X]	[]			
	Speakers		[X]	[]			
	BT Antenna		[X]	[]			
			[]	[]			
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:	[]	[]	[]	[]	[]
	[]	AC:	[]	[]	[]	[]	[]
	[]	DC:					
[X]	DC: 12V						
Rated Power	up to 300W						
Clock frequencies.....	I2S=3.072MHz, TDM=12.288MHz, A2B=48MHz, DDR4 = 4267MHz, eMMC=400MHz						
Other parameters	DCDC=2.2MHz, 100BaseT1=100MHz, RGMII=125MHz, SPI = 1MHz, I2C=100kHz						
Software version	3.12.303						
Hardware version	HW version: Sample D (TUX board: BA001089C / HMI board: BA001087E)						
Dimensions in cm (W x H x D)							
Mounting position	[]	Table top equipment					
	[]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					

	☒ Other: Automotive Component		
Modules/parts.....:	Module/parts of test item	Type	Manufacturer
	ENW89823C4K	Bluetooth	Panasonic
	R8A77960JBR1BG	Microcontrol ler	Renesas
			
			
Accessories (not part of the test item):	Description	Type	Manufacturer
			
			
			
			
			
Documents as provided by the applicant.....:	Description	File name	Issue date
			
			
			

Identification of the client

IDNEO TECHNOLOGIES, S.A.U
Carrer Rec de Dalt, 3, 08100 Mollet del Vallès, Barcelona (SPAIN)

Testing period and place

Test Location	DEKRA TESTING AND CERTIFICATION S.A.U. C/ Severo Ochoa, 6 - Parque Tecnológico de Andalucía; 29590 Campanillas (Málaga) (Location B)
Date (start)	2026-02-11
Date (finish)	2026-02-16

Document history

Report number	Date	Description
85701RRF.001	2026-03-13	First release.

Environmental conditions

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

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

In the semianechoic chamber, the following limits were not exceeded during the test.

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

In the chamber for conducted measurements, the following limits were not exceeded during the test:

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

Remarks and comments

The tests have been performed by the technical personnel: Álvaro Gutiérrez Naranjo.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
07445	DC POWER SUPPLY 30V/5A	U8002A	KEYSIGHT TECHNOLOGIES	--
05850	DIGITAL MULTIMETER	179	FLUKE	2026-11-06
07817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2026-07-01
06615	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2026-04-24
06609	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2026-04-21
07796	EXTENSION FOR OPEN SWITCH UNIT UP TO 40GHz	OSP-B157Wx	ROHDE AND SCHWARZ	2027-01-09
06496	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK	2026-12-01
04657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2026-06-12
06143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2027-01-22
08848	OPEN SWITCH UNIT UP TO 7.5 GHz	OSP-B157W8 PLUS	ROHDE AND SCHWARZ	2027-01-02
00922	POWER SUPPLY DC 40 V / 40 A	NGPE 40/40	ROHDE AND SCHWARZ	2027-10-02
03783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2026-03-17
06142	PRE-AMPLIFIER G>38dB 30MHz-6GHz	BLNA 0360-01N	BONN ELEKTRONIK	2026-07-30
10573	PRE-AMPLIFIER G>46dB 18-40 GHz	BLMA 1840-5G	BONN ELEKTRONIK	2026-03-07
06791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	--
06793	SHIELDED ROOM	S101	ETS LINDGREN	--
07794	SIGNAL AND SPECTRUM ANALYZER 10Hz-40GHz	FSV40	ROHDE AND SCHWARZ	2027-06-10
04848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	--
06611	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2026-04-21
07798	WMS32	WMS32	ROHDE AND SCHWARZ	--

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

Summary

Bluetooth EDR

FCC PART 15 PARAGRAPH/ RSS-247			
Requirement – Test case	Verdict	Remark	Location
FCC 15.247 (a) (1) / RSS-247 6.2.3.1 (a) 20 dB Bandwidth	N/A	N/A	N/A
RSS-247 6.2.3.1 (b) / FCC 15.247 (a) (1) (iii) Time of Occupancy (Dwell Time)	N/A	N/A	N/A
FCC 15.247 (b) / RSS-247 6.3.2. Maximum output power and antenna gain	P	1	B
FCC 15.247 (d) / RSS-247 6.6 Band-edge emissions compliance (Transmitter)	N/A	N/A	N/A
FCC 15.247 (a) (1) (iii) / RSS-247 6.2.3.1 (b) Number of hopping channels	N/A	N/A	N/A
FCC 15.247 (d) / RSS-247 6.6. Emission limitations radiated (Transmitter)	P	1	B
<u>Supplementary information and remarks:</u> (1) Tests performed only on worst case operational mode			

Appendix A: Test results. Bluetooth EDR

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 12
Type of Power Supply: DC

ANTENNA (*):

Type of Antenna: Internal
Maximum Declared Antenna Gain: Average -3.5dBi / Peak -1.54dBi

TEST FREQUENCIES (*):

Modulation	Data rates	Middle Channel
BTEDR 8DPSK	3-DH5	2441 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

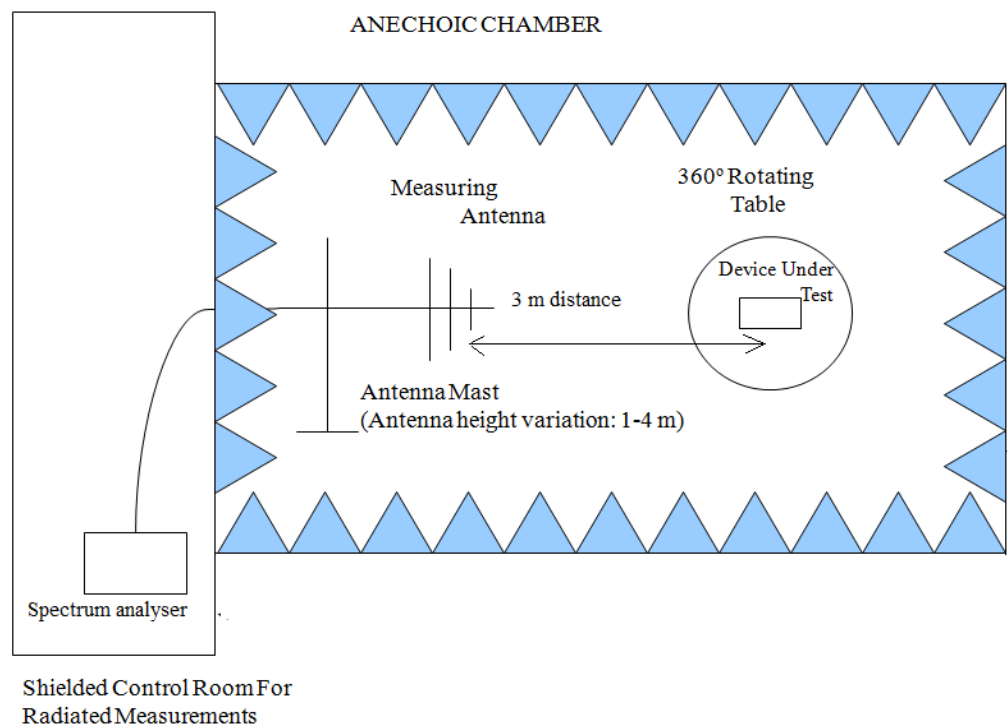
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

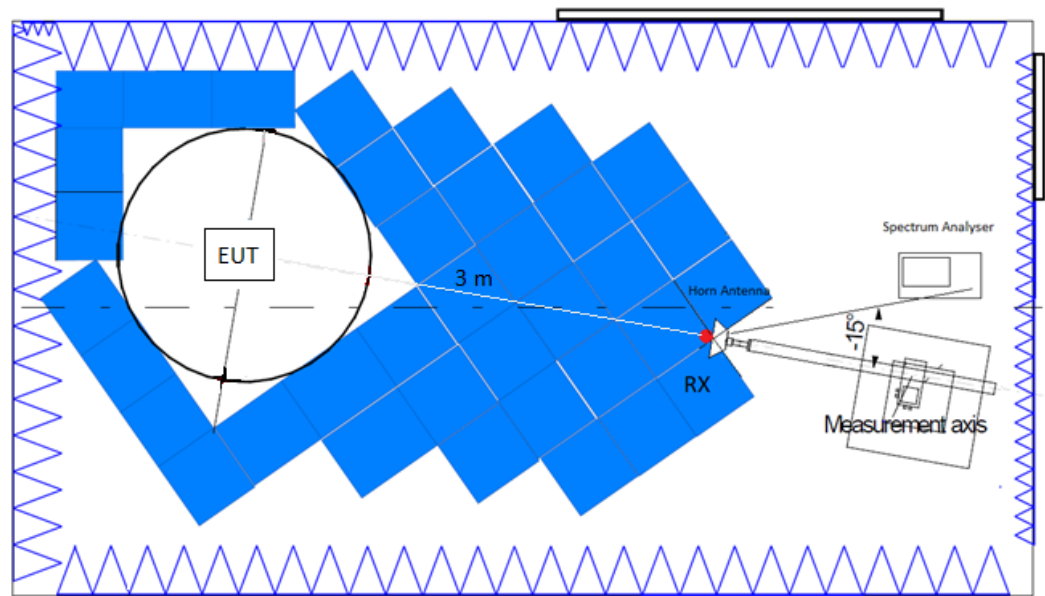
Measurements were made in both horizontal and vertical planes of polarization.

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

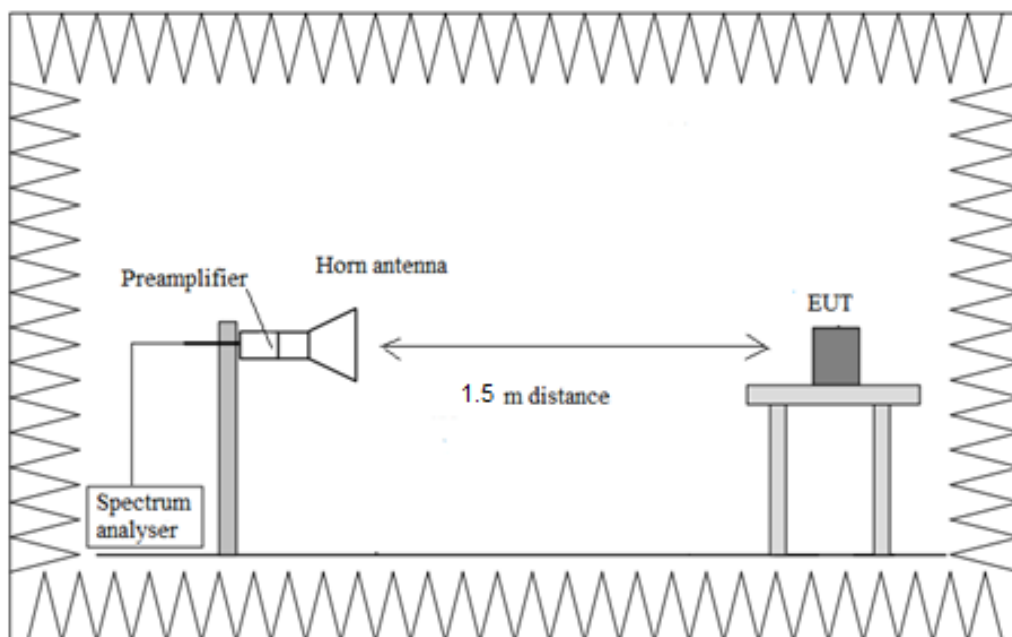
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



SAMPLE CALCULATION

For radiated measurements:

Values measures by the test receiver / analyzer are converted to field strength, in dBuV/m, at the regulatory distance using the following calculation:

$$\text{Unwanted Lvl (dBuV/m)} = \text{Raw Rec (dBuV)} + \text{Preamp (dB)} + \text{Trd Corre. (dB/m)} + \text{SigPath (dB)}$$

Where,

Raw Rec (dBuV): Measured voltage in the receiver / spectrum analyzer in dBuV

Preamp (dB): Path loses due to preamplifier

Trd Corr. (dB/m): Antenna factor in dB/m

SigPath (dB) = Cable loss (dB) – External Gain amplifier (dB) – Distance factor (dB)

Cable loss (dB): Cable loss

External Gain amplifier (dB): Gain from external amplifier (when used)

Distance factor (dB): Distance factor in dB. When measurement distance is different to limit distance

The field strength, calculated by this way is compared with the regulatory limit.

TEST CASES DETAILS

FCC 47 CFR Part 15.247 / RSS-247

RSS-247 6.3.2 / FCC 15.247 (b) [Pkcp] Maximum Peak Conducted Output Power

Limits

No Limit has been set to this test case

Modulation: BT (8DPSK 3-DH5)

Results

Operation Band (MHz)	Equipment	Freq (MHz)	Port	Peak Power (dBm)	E.I.R.P. (dBm)
[2400, 2483.5]	Frequency Hopping Spread Spectrum systems (DSS)	2441.00000	1	8.1370	6.597

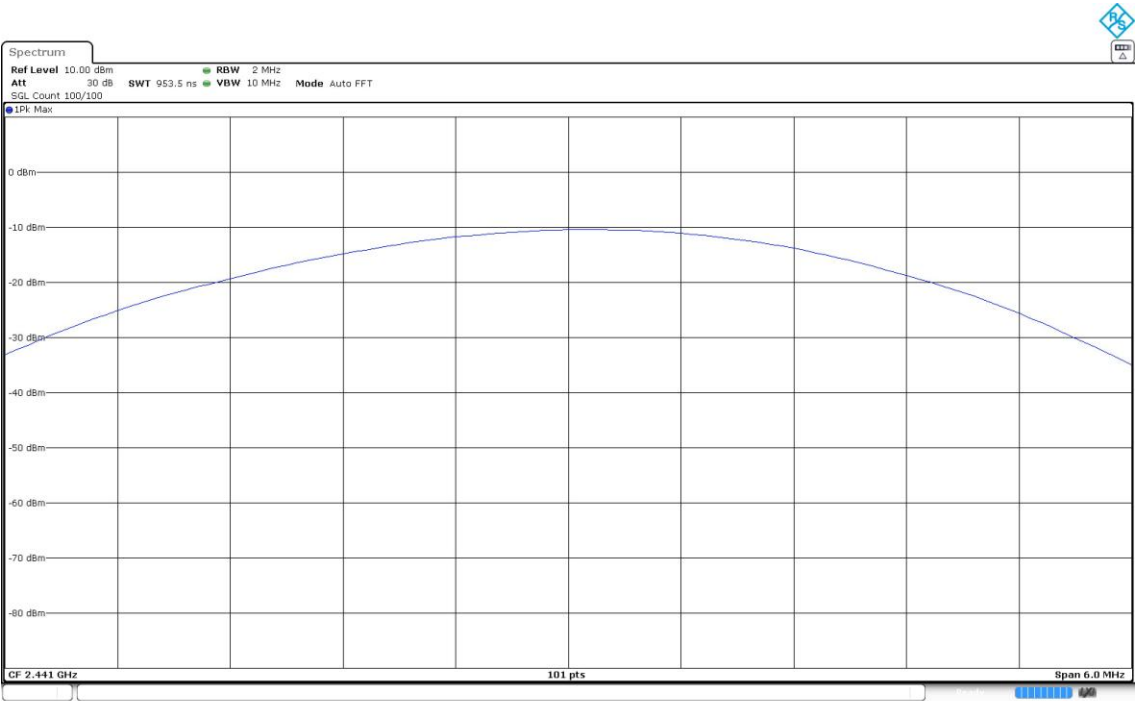
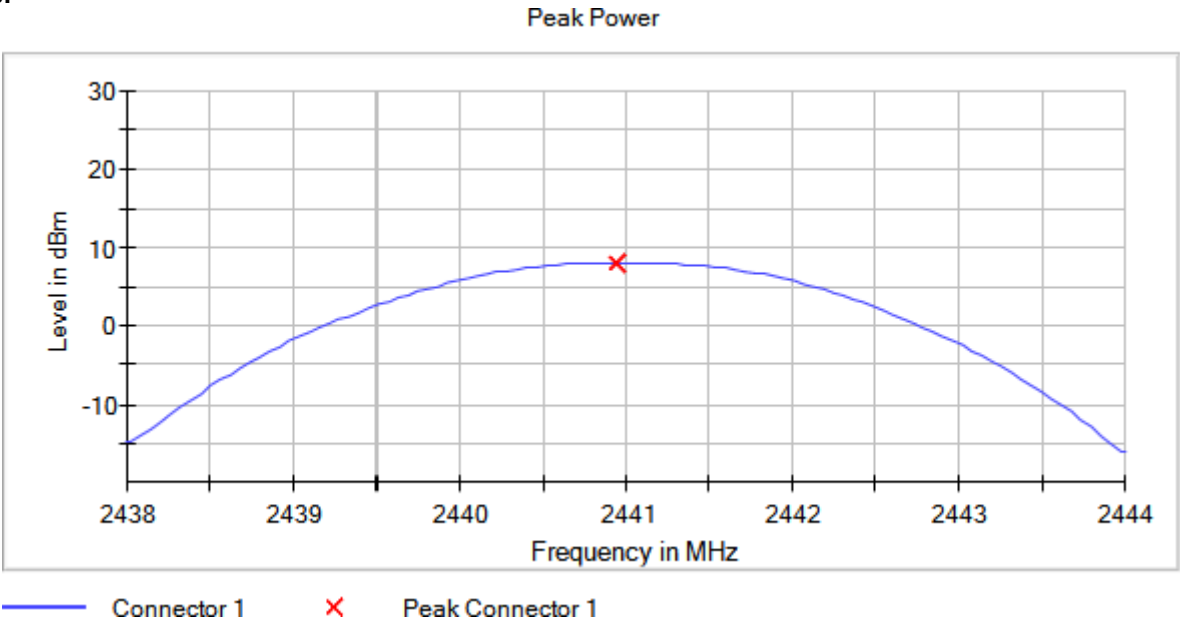
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)
Frequency MHz = 2441.00000 Active Port = 1
Modulation = BT (8DPSK 3-DH5)

Images:



RSS-247 6.6 / FCC 15.247 (d) [RSE] Emission limitations radiated
(Transmitter)

Limits

No Limit has been set to this test case

Modulation: BT (8DPSK 3-DH5)

Results

Operation Band (MHz)	Freq Rng (GHz)	Freq (MHz)	Port	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[2400, 2483.5]	[0.03, 1]	2441.00000	1	124.963	24.47	V	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	124.963	22.04	V	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	221.624	28.11	H	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	221.624	24.12	H	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	30.145	29.35	H	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	30.145	24.17	H	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	37.663	31.28	H	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	37.663	22.96	H	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	46.830	27.27	H	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	46.830	23.95	H	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	47.993	25.38	V	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	47.993	21.16	V	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	499.965	22.49	H	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	499.965	18.17	H	QP
[2400, 2483.5]	[0.03, 1]	2441.00000	1	61.428	26.32	V	PK
[2400, 2483.5]	[0.03, 1]	2441.00000	1	61.428	24.47	V	QP

Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [0.03, 1]

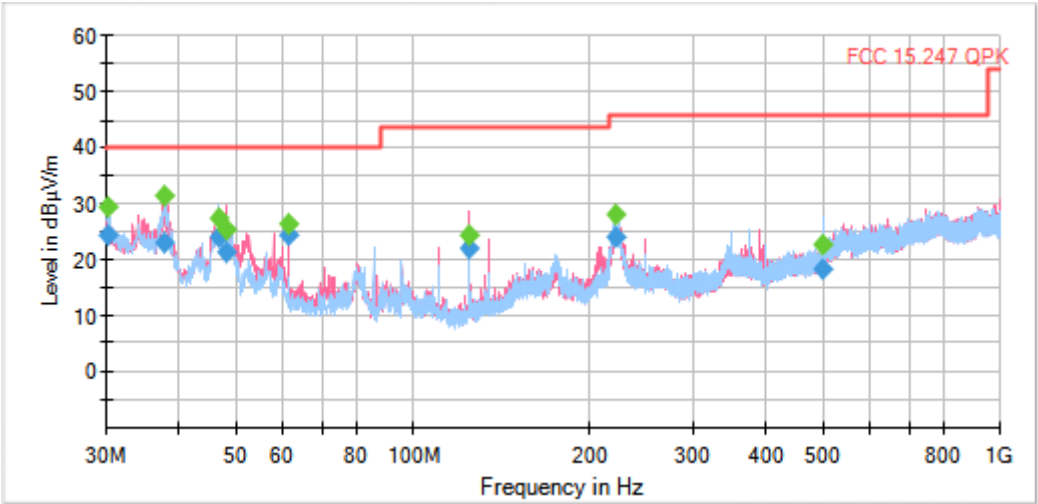
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2441.00000

Active Port = 1

Modulation = BT (8DPSK 3-DH5)

Images:



Tables:
Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [1, 17]

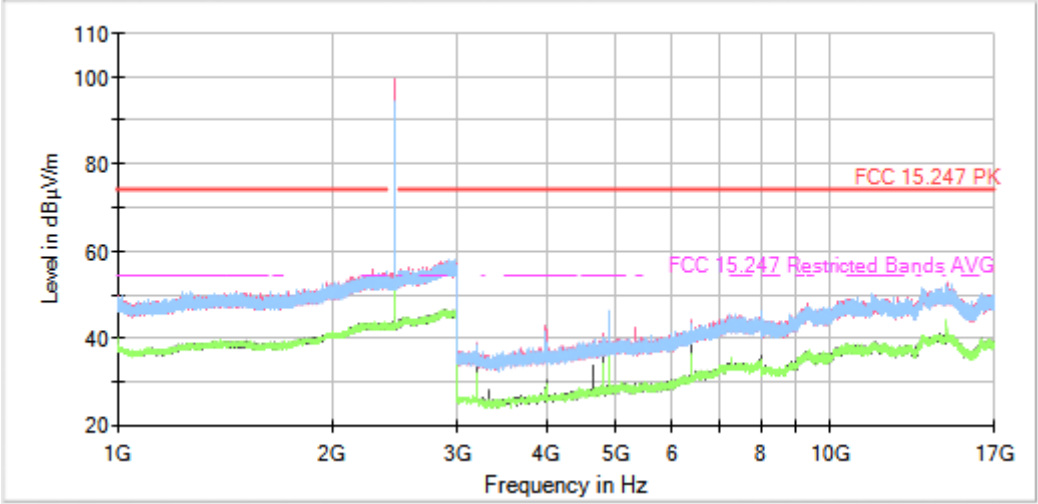
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2441.00000

Active Port = 1

Modulation = BT (8DPSK 3-DH5)

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	100 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
	3 GHz - 17 GHz	466,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
	17 GHz - 26 GHz	281,25 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Operation Band MHz = [2400, 2483.5]

Frequency Range GHz = [17, 26]

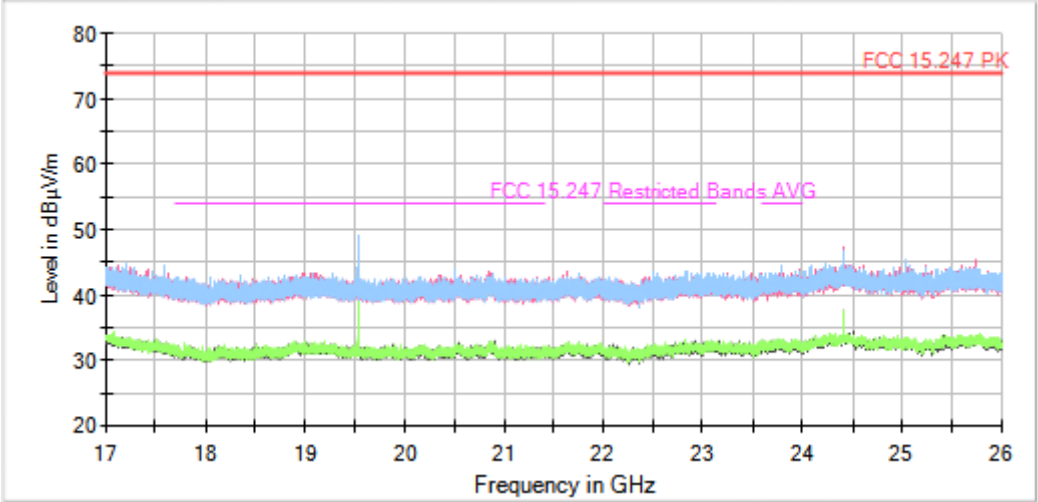
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2441.00000

Active Port = 1

Modulation = BT (8DPSK 3-DH5)

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	1 GHz - 3 GHz	100 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
	3 GHz - 17 GHz	466,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
	17 GHz - 26 GHz	281,25 kHz	PK+ ; AVG	1 MHz	1 s	0 dB