



Canada

## RF Test Report

As per

### RSS-247 Issue 2:2017 & FCC Part 15 Subpart 15.247

Unlicensed Intentional Radiators

on the

**EB-STATE3LT02**

Issued by:

**TÜV SÜD Canada Inc.**  
11 Gordon Collins Dr,  
Gormley, ON, L0H 1G0  
Canada  
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Testing produced for

**ecobee**

Prepared by:

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*Amir Emami*

See Appendix A for full client &  
EUT details.

Reviewed by:

Min Xie,  
Sr. Project Engineer

*Min*

 Innovation, Science and  
Economic Development Canada

Registration #  
6844A-3



Testing Laboratory  
Certificate #2955.02



R-14023, G-20072  
C-14498, T-20060



Registration #  
CA6844

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Report Issued: 3/4/2022

Report File #: 71690101650RB-000 (DTS)

Client	Ecobee Inc.
Product	EB-STATE3LT02
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247


  
Canada

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Client	Ecobee Inc.	 Canada
Product	<b>EB-STATE3LT02</b>	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Report Scope

This report addresses the EMC verification testing and test results of Ecobee Inc's **EB-STATE3LT02** and is herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:

RSS-247 Issue 2:2017

FCC Part 15 Subpart C 15.247

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc. accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc., unless otherwise stated.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Summary

The results contained in this report relate only to the item(s) tested.

EUT:	EB-STATE3LT02
FCC Certification #, FCC ID:	WR9EBSTAT3LT02
ISED Certification #, IC:	7981A- EBSTAT3LT02
EUT passed all tests performed	Yes
Tests conducted by	Min Xie
Report reviewed by	Amir Emami

For testing dates, see "Testing Environmental Conditions and Dates".

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203	Antenna Requirement	Unique	Pass See Justification
FCC 15.205 RSS-GEN (Table 6)	Restricted Bands for Intentional Operation	QuasiPeak Average	Pass
FCC 15.207 RSS-GEN (Table 3)	Power Line Conducted Emissions	QuasiPeak Average	Pass
FCC 15.209 RSS-GEN (Table 4)	Spurious Radiated Emissions	QuasiPeak Average	Pass
FCC 15.247(a)2 RSS-247 5.2(a)	6 dB Bandwidth	> 500 kHz	Pass
FCC 15.247(b)2 RSS-247 5.4(d)	Max Output Power	< 1 Watt	Pass
FCC 15.247(b)4 RSS-247 5.4(d)	Antenna Gain	< 6 dBi	Pass See Justification
FCC 15.247(d) RSS-247 5.5	Antenna Conducted Spurious	< 20 dBc	Pass
FCC 15.247(e) RSS-247 5.2(b)	Spectral Density	< 8 dBm (3 kHz BW)	Pass
<b>Overall Result</b>			<b>Pass</b>

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued. Note that 'PASS' / 'FAIL' grade is independent of any measurement uncertainties. A 'PASS' / 'FAIL' grade within measurement uncertainty is marked with a '\*'.

Client	Ecobee Inc.
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### **Notes, Justifications, or Deviations**

The following notes, justifications for tests not performed or deviations from the above listed specifications apply:

The EUT uses a PCB trace antenna with 2dBi gain which satisfies the Antenna requirement specified in FCC 15.203 and 15.247(b)4 (RSS-247 section 5.4(d)).

For the Restricted Bands of operation, the EUT is designed to only operate between 2400 – 2483.5 MHz.

The EUT is not a hybrid system and FCC 15.247 (f) does not apply to it.

For maximum permissible exposure is designed to operate greater than 20 cm from any personnel during normal operation. No testing is required, however worst case calculated exposure compliance follows later in this report.

The EUT contains a 902 – 928 MHz FHSS transmitter and a 2400 – 2483.5 MHz DTS transmitter. The Firmware guarantees simultaneous will not occur. Antenna co-location testing is therefore not applicable.

For maximum permissible exposure, this device operates at less than 1 Watt at 2400 – 2483.5 MHz and is designed to operate greater than 20 cm from any personnel during normal operation. No testing is required, however worst case calculated exposure compliance was shown in the RF Exposure exhibits.

Client	Ecobee Inc.	 Canada
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## Sample Calculation(s)

### Radiated Emission Test

E-Field Level = Received Signal + Antenna Factor + Cable Loss – Pre-Amp Gain

E-Field Level =  $50\text{dB}\mu\text{V} + 10\text{dB/m} + 2\text{dB} - 20\text{dB}$

E-Field Level =  $42\text{dB}\mu\text{V/m}$

Margin = Limit – E-Field Level

Margin =  $50\text{dB}\mu\text{V/m} - 42\text{dB}\mu\text{V/m}$

Margin = 8.0 dB (pass)

### Power Line Conducted Emission Test

E-Field Level = Received Signal + Attenuation Factor + Cable Loss + LISN Factor

E-Field Level =  $50\text{dB}\mu\text{V} + 10\text{dB} + 2.5\text{dB} + 0.5\text{dB}$

E-Field Level =  $63\text{dB}\mu\text{V}$

Margin = Limit – E-Field Level

Margin =  $73\text{dB}\mu\text{V} - 63\text{dB}\mu\text{V}$

Margin = 10.0 dB (pass)

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
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## Applicable Standards, Specifications and Methods

ANSI C63.4:2014 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10:2013 American National Standard For Testing Unlicensed Wireless Devices

CFR 47 FCC 15 Subpart C Code of Federal Regulations – Radio Frequency Devices, C Intentional Radiators

FCC KDB 558074: FCC KDB 558074 Digital Transmission Systems, 2019 measurements and procedures

FCC KDB 447498: RF exposure procedures and equipment authorization policies 2015 for mobile and portable devices

ICES-003 Issue 7 Digital Apparatus - Spectrum Management and 2020 Telecommunications Policy Interference-Causing Equipment Standard

RSS-GEN Issue 5 General Requirements and Information for the Certification 2018+A1:2019+A2:2021 of Radio Apparatus

RSS-247 Issue 2:2017 Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

ISO 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Document Revision Status

Revision	Date	Description	Initials
000	March 4, 2022	Initial Release	MX
-	-	-	-

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Definitions and Acronyms

The following definitions and acronyms are applicable in this report.  
See also ANSI C63.14.

**DTS** – Digital Transmission System

**LISN** – Line Impedance Stabilization Network

**NCR** – No Calibration Required

**NSA** – Normalized Site Attenuation

**N/A** – Not Applicable

**RF** – Radio Frequency

**AE** – Auxiliary Equipment. A digital accessory that feeds data into or receives data from another device (host) that in turn, controls its operation.

**Antenna Port** – Port, other than a broadcast receiver tuner port, for connection of an antenna used for intentional transmission and/or reception of radiated RF energy.

**BW** – Bandwidth. Unless otherwise stated, this refers to the 6 dB bandwidth.

**EMC** – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

**EMI** – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

**EUT** – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.

**ITE** – Information Technology Equipment. Has a primary function of entry, storage, display, retrieval, transmission, processing, switching, or control of data and/or telecommunication messages and which may be equipped with one or more ports typically for information transfer.

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## Testing Facility

Testing for EMC on the EUT was carried out at TÜV SÜD Canada testing lab near Toronto, Ontario. The testing lab has calibrated 3m semi-anechoic chambers which allow measurements on a EUT that has a maximum width or length of up to 2m and a height of up to 3m. The testing lab also has a calibrated 10m Open Area Test Site (OATS). The chambers are equipped with a turntable that is capable of testing devices up to 5000lb in weight and are equipped with a mast that controls the polarization and height of the antenna. Control of the mast occurs in the control room adjoining the shielded chamber. This facility is capable of testing products that are rated for single phase or 3-phase AC input and DC capability is also available. Radiated emission measurements are performed using a BiLog antenna and a Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN and using the vertical ground plane if applicable.

### ***Calibrations and Accreditations***

The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, CA6844), Innovation, Science and Economic Development Canada (ISED, 6844A-3) and Voluntary Control Council for Interference (VCCI, R-14023, G-20072, C-14498, and T-20060). This chamber was calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. The NSA data is kept on file at TÜV SÜD Canada. For radiated susceptibility testing, a 16 point field calibration has been performed on the chamber. The field uniformity data is kept on file at TÜV SÜD Canada. TÜV SÜD Canada Inc. is accredited to ISO 17025 by A2LA with Testing Certificate #2955.02. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or biennial basis as listed for each respective test.

Client	Ecobee Inc.	 Canada
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## Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
Dec 15, 2021	Radiated Emissions	MX	20.9	26.2	102.7
Dec 16, 2021	Radiated Emissions	MX	22.1	32.1	100.3
Dec 17, 2021	Radiated Emissions	MX	23.7	29.1	102
Dec 20, 2021	Antenna Conducted Emissions	MX	19.8	17.6	101.1
Dec 21, 2021	Antenna Conducted Emissions	MX	21.9	18.0	102.3
Feb 17, 2022	Power Line Conducted	MX	23.2	22.3	100.5

Client	<b>Ecobee Inc.</b>
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## **Detailed Test Results Section**

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## 6dB Bandwidth of Digitally Modulated Systems

### Purpose

The purpose of this test is to ensure that the bandwidth occupied exceeds a stated minimum. This helps ensure the utilization of the frequency allocation is sufficiently wide. This also helps prevent corruption of data by ensuring adequate data separation to distinguish the reception of the intended information.

### Limits and Method

The limit is as specified in FCC Part 15.247(a)2 and RSS-247 5.2(a).

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. This should be measured with a 100 kHz RBW and a 300 kHz VBW.

The method is given in FCC KDB 558074 Section 8.1 and ANSI C63.10.

### Results

The EUT passed. The minimum measured 6 dB BW was of all modulations were greater than 500 kHz.

Additional 99% bandwidth were measured for information purpose. There is no requirement on 99% bandwidth.

The EUT supports three modes of operation, 802.11 b/g/n. The n-mode only support 20 MHz nominal bandwidth. Three Channels for each mode were measured. The following tables show the 6 dB and 99% bandwidth: The external attenuator and cable loss were accounted for as reference offset in the spectrum analyzer.

Client	Ecobee Inc.	 Canada
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Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Bandwidth - B-Mode					
Channel	Frequency (MHz)	6 dB BW (MHz)	99% BW (MHz)	6 dB BW Limit (kHz)	Pass/Fail
1	2412	10.100	13.99	500	Pass
6	2437	10.096	13.99	500	Pass
11	2462	10.096	13.99	500	Pass

Bandwidth G-Mode					
Channel	Frequency (MHz)	6 dB BW (MHz)	99% BW (MHz)	6 dB BW Limit (kHz)	Pass/Fail
1	2412	15.192	16.44	500	Pass
6	2437	15.240	16.49	500	Pass
11	2462	15.240	16.44	500	Pass

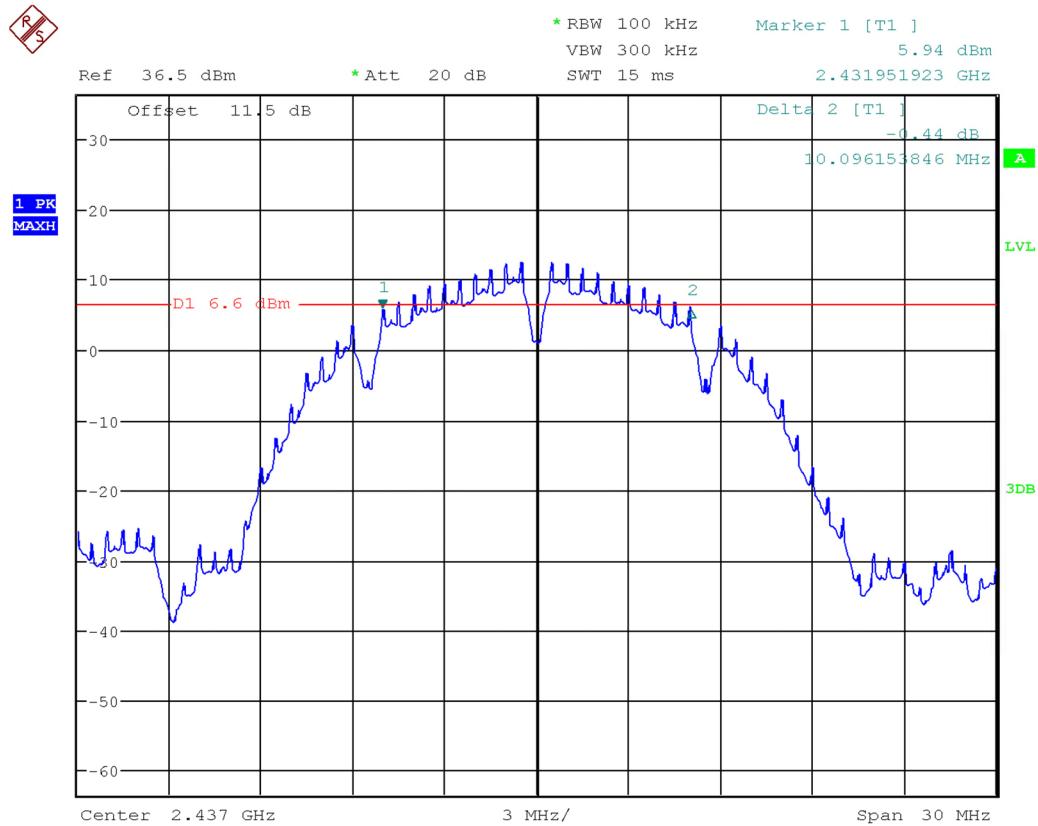
Bandwidth N-Mode					
Channel	Frequency (MHz)	6 dB BW (MHz)	99% BW (MHz)	6 dB Limit ( kHz)	Pass/Fail
1	2412	15.620	17.60	500	Pass
6	2437	15.670	17.54	500	Pass
11	2462	15.620	17.60	500	Pass

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Graphs

The graphs shown below show the DTS Bandwidth and OBW of the device during antenna conducted measurement operation of the EUT. This is measured by a max hold on the spectrum analyzer.

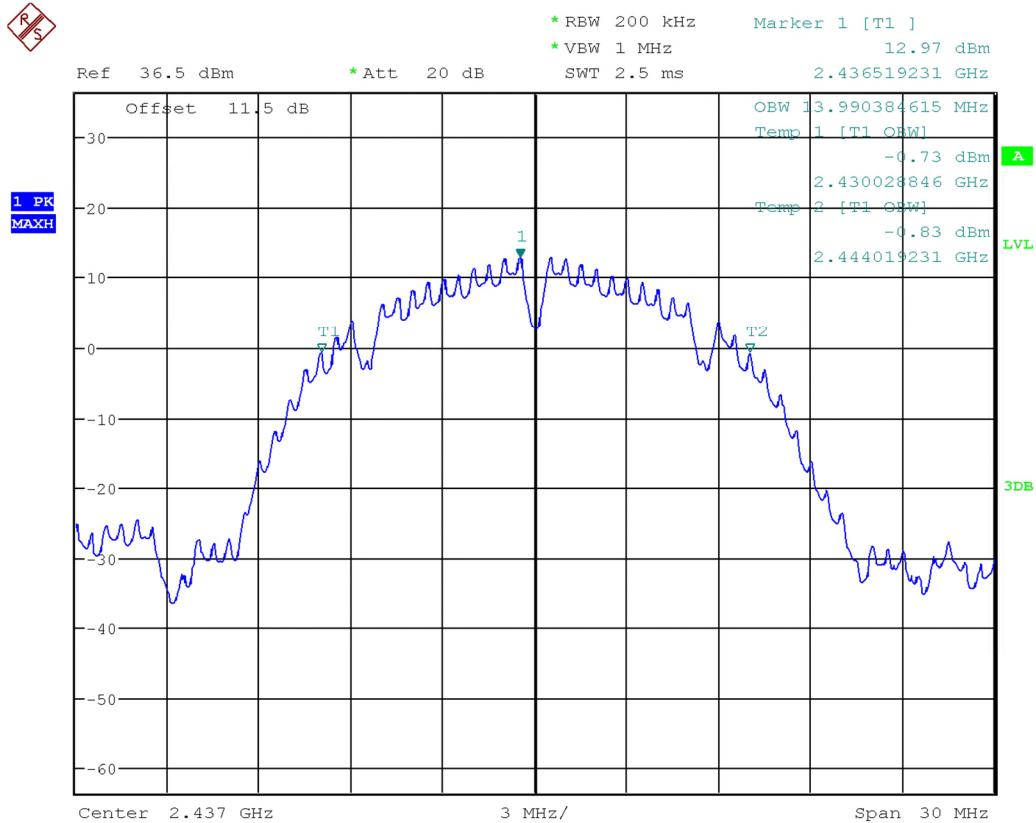
6 dB Bandwidth B- Mode  
Mid Channel



Date: 20.DEC.2021 10:21:01

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

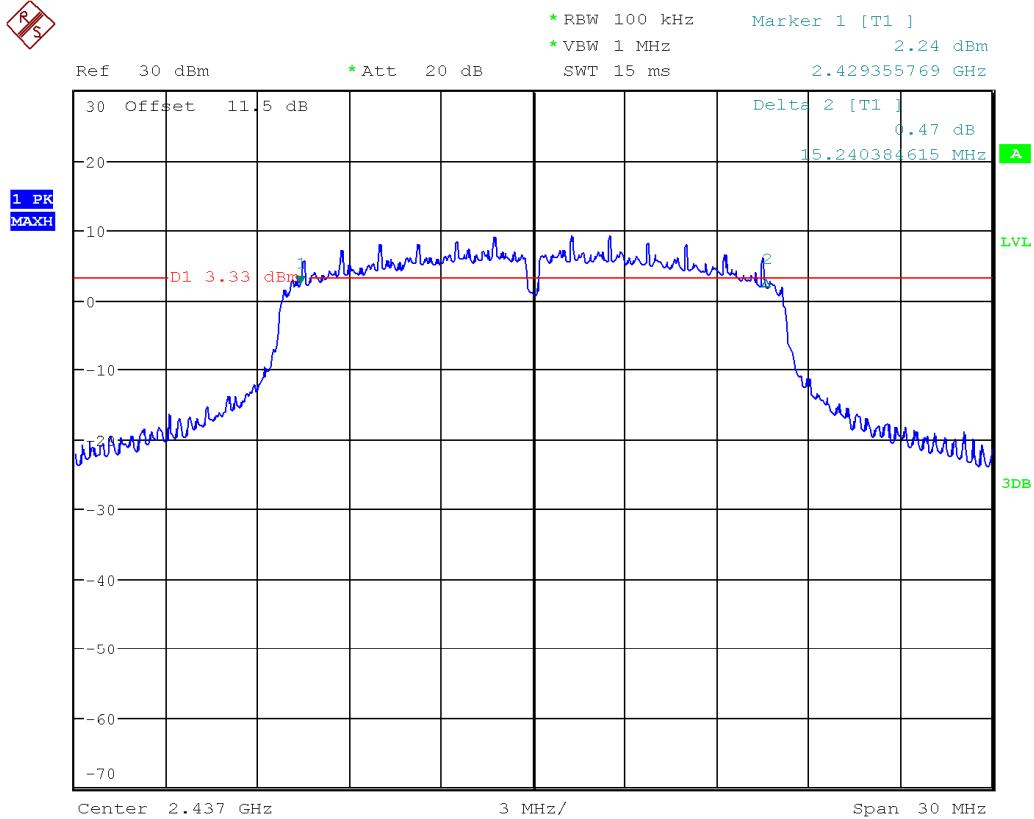
**99% Bandwidth B- Mode  
Mid Channel**



Date: 20.DEC.2021 10:23:04

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

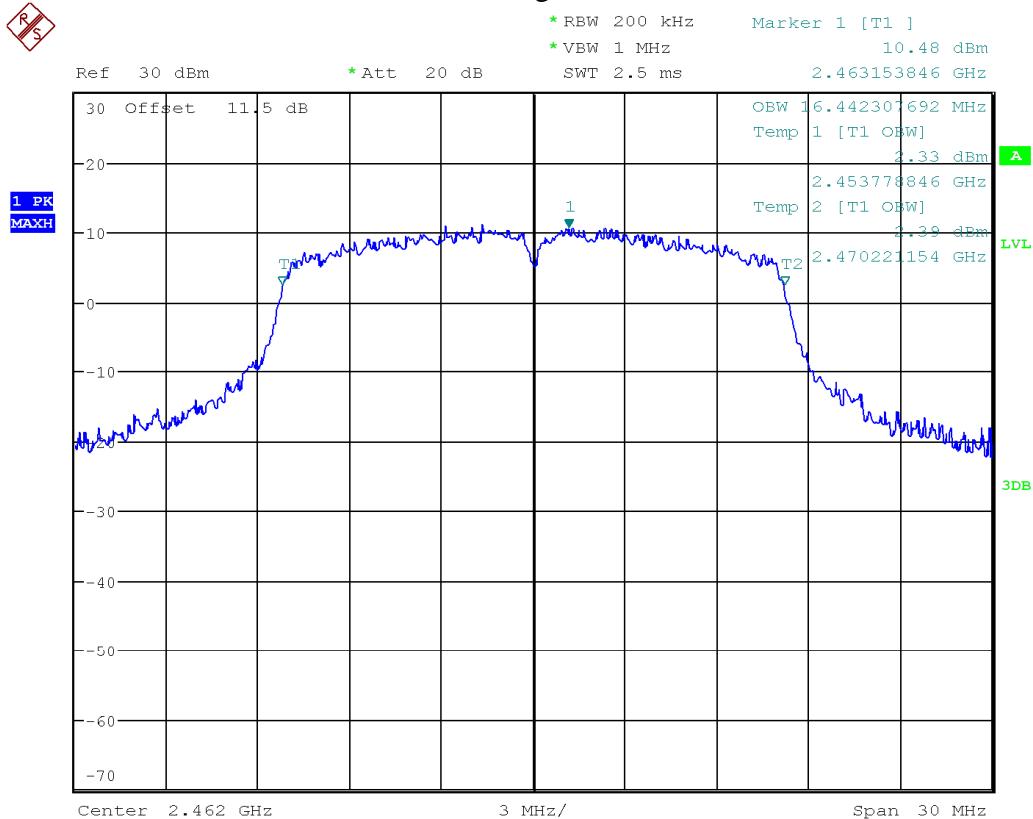
6 dB Bandwidth, G - Mode  
Mid Channel



Date: 20.DEC.2021 11:33:45

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

99% Bandwidth, G - Mode  
High Channel



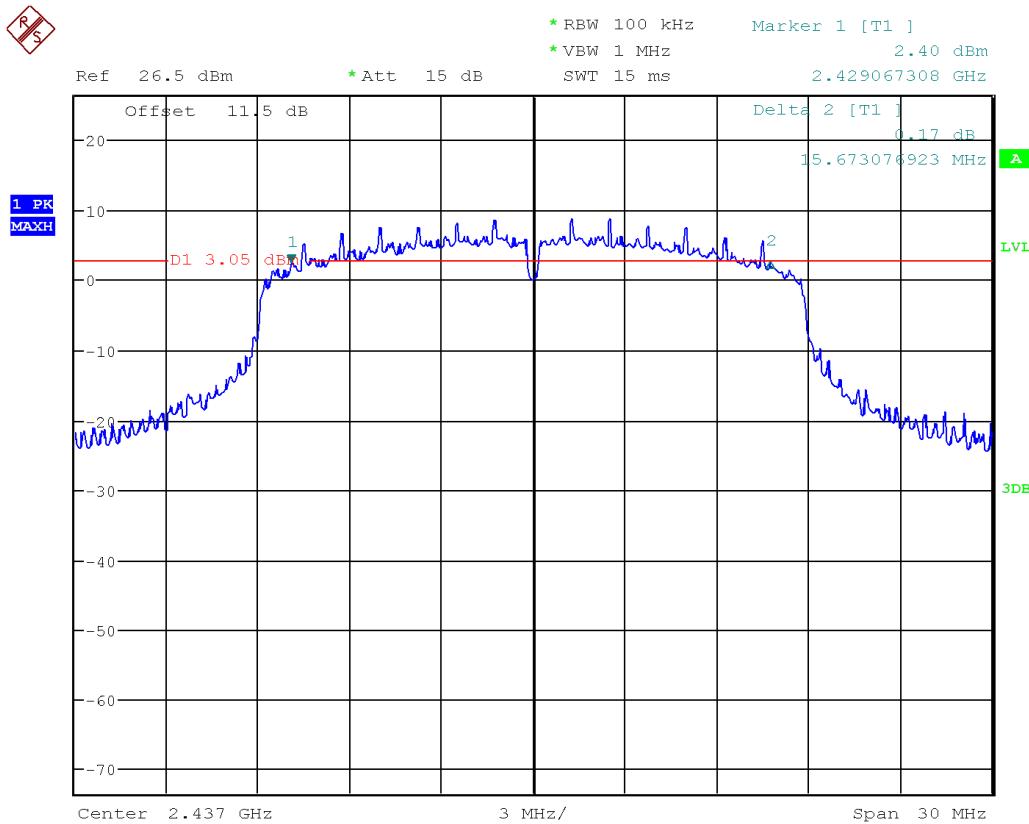
Date: 20.DEC.2021 12:02:00

Client	Ecobee Inc.
Product	EB-STATE3LT02
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247



### 6 dB Bandwidth, N-Mode Mid Channel

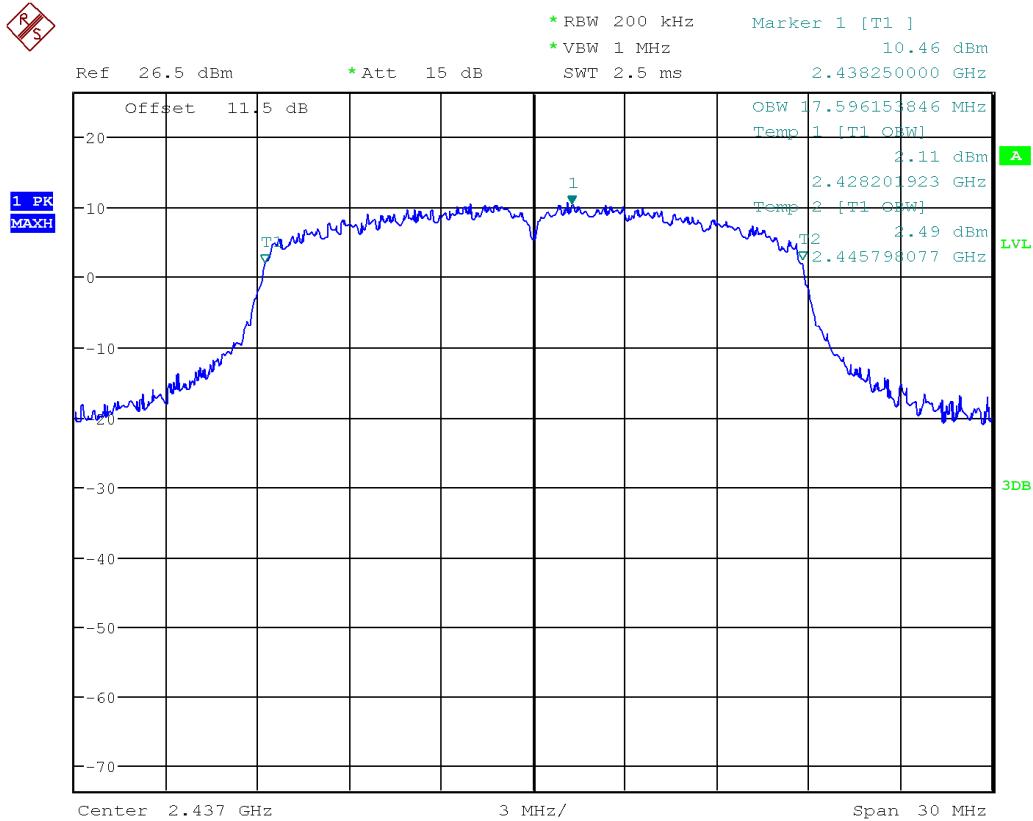
RS



Date: 21.DEC.2021 09:38:59

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### 99% Bandwidth, N-Mode Mid Channel



Date: 21.DEC.2021 09:40:12

Note: See 'Appendix B – EUT & Test Setup Photos' for photos showing the test set-up.

### Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	FSQ26	Rohde & Schwarz	Nov 30, 2021	Nov 30, 2023	GEMC 234
Attenuator 10 dB	8493B	Agilent	NCR	NCR	GEMC 133

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Maximum Conducted Output Power

### Purpose

The purpose of this test is to ensure that the maximum power conducted to the radiating element does not exceed the limits specified. This ensures that if the end-user replaces the antenna, the maximum power does not exceed an amount which may create an excessive power level.

### Limits and Method

The limits are defined in FCC Part 15.247(b) and RSS-247 5.4(d).

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands, the peak limit is 1 watt (30 dBm).

The method is given in FCC KDB 558074 and ANSI C63.10 section 11.9.2.2.2 (AVGSA-1).

### Results

The EUT passed. The EUT was set to transmit at pre-set power. The EUT supports three modes of operation, 802.11 b/g/n. The n-mode only support 20 MHz nominal bandwidth. Three Channels for each mode were measured. The following tables show the peak power: The external attenuator and cable loss were accounted for as reference offset in the spectrum analyzer.

Output Power: B-Mode					
Channel	Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
1	2412	19.73	93.97	1000	Pass
6	2437	20.02	100.46	1000	Pass
11	2462	19.59	90.99	1000	Pass

Output Power: G-Mode					
Channel	Frequency (MHz)	Avg Power (dBm)	Avg Power (mW)	Limit (mW)	Pass/Fail
1	2412	18.50	70.79	1000	Pass
6	2437	18.22	66.37	1000	Pass
11	2462	18.26	66.99	1000	Pass

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

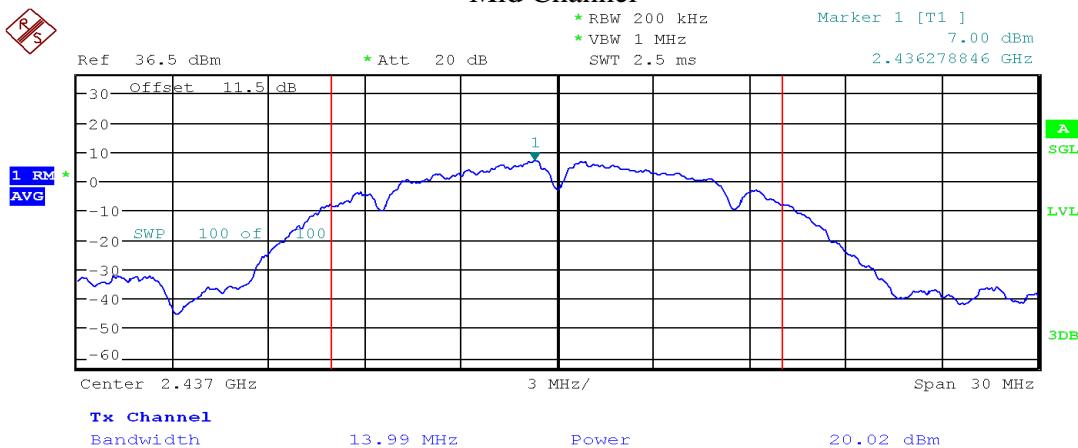
Output Power: N-Mode					
Channel	Frequency (MHz)	Power (dBm)	Power (mW)	Limit (mW)	Pass/Fail
1	2412	18.19	65.92	1000	Pass
6	2437	18.46	70.15	1000	Pass
11	2462	18.32	67.92	1000	Pass

Note: The external attenuator and cable loss are accounted for as reference offset in the spectrum analyzer

## Graphs

The graphs shown below show the average power output of the device during the conducted measurement operation of the EUT. The integrated band power measurement method was used.

Average Power: B-Mode  
Mid Channel

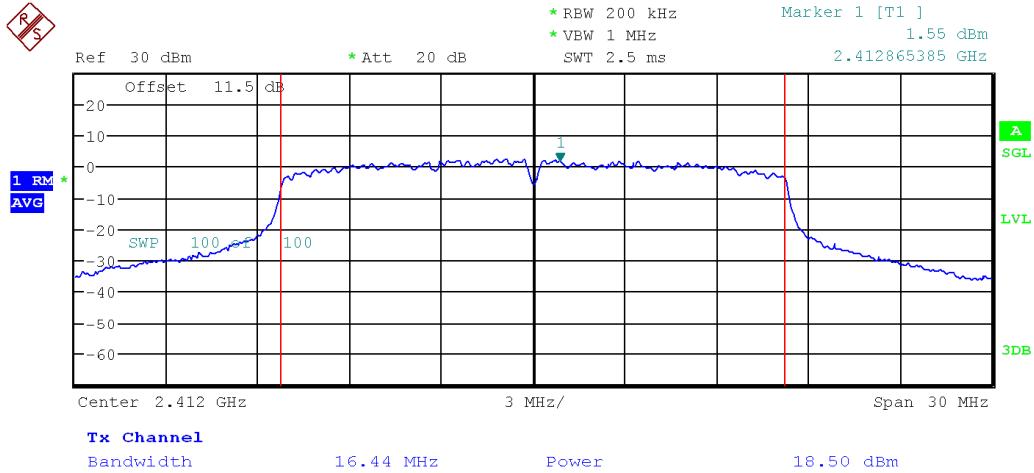


Date: 20.DEC.2021 10:24:32

Client	Ecobee Inc.
Product	EB-STATE3LT02
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247

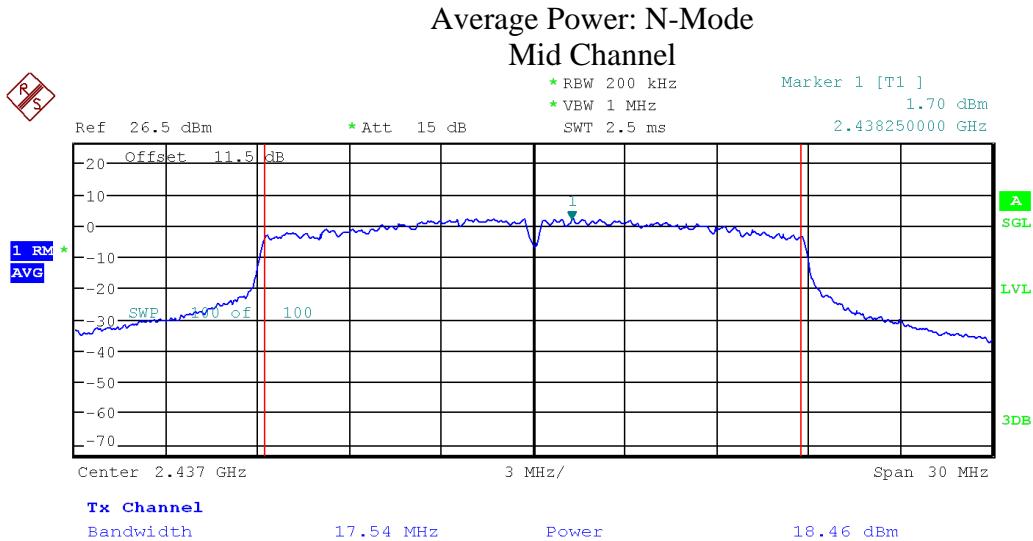


### Average Power: G-Mode Low Channel



Date: 20.DEC.2021 11:13:21

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Date: 21.DEC.2021 09:45:01

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

## Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	FSQ26	Rohde & Schwarz	Nov 30, 2021	Nov 30, 2023	GEMC 234
Attenuator 10 dB	8493B	Agilent	Oct 4, 2021	Oct 4, 2022	GEMC133

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Power Spectral Density

### Purpose

The purpose of this test is to ensure that the maximum power spectral density to the radiating element does not exceed the limits specified. This ensures that the modulation is significantly wide enough, or low enough in power that it will allow for co-operation of other wireless devices operating within this frequency allocation.

### Limits and Method

The limits are defined in 15.247(e) and RSS-247 5.2(b).

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

The method is given in FCC KDB 558074 and ANSI C63.10 Section 11.10.3 (AVG PSD-1).

### Results

The EUT passed. The EUT was set to transmit at maximum power. The EUT supports three modes of operation, 802.11 b/g/n. The n-mode only support 20 MHz nominal bandwidth. Three Channels for each mode were measured. The following tables show the peak power spectral density: External attenuator and cable loss were accounted for as reference offset in the spectrum analyzer.

PSD: B-Mode				
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm/3kHz)	Pass/Fail
1	2412	-6.31	8	Pass
6	2437	-6.01	8	Pass
11	2462	-6.03	8	Pass

PSD: G-Mode				
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm/3kHz)	Pass/Fail
1	2412	-9.77	8	Pass
6	2437	-10.45	8	Pass
11	2462	-10.13	8	Pass

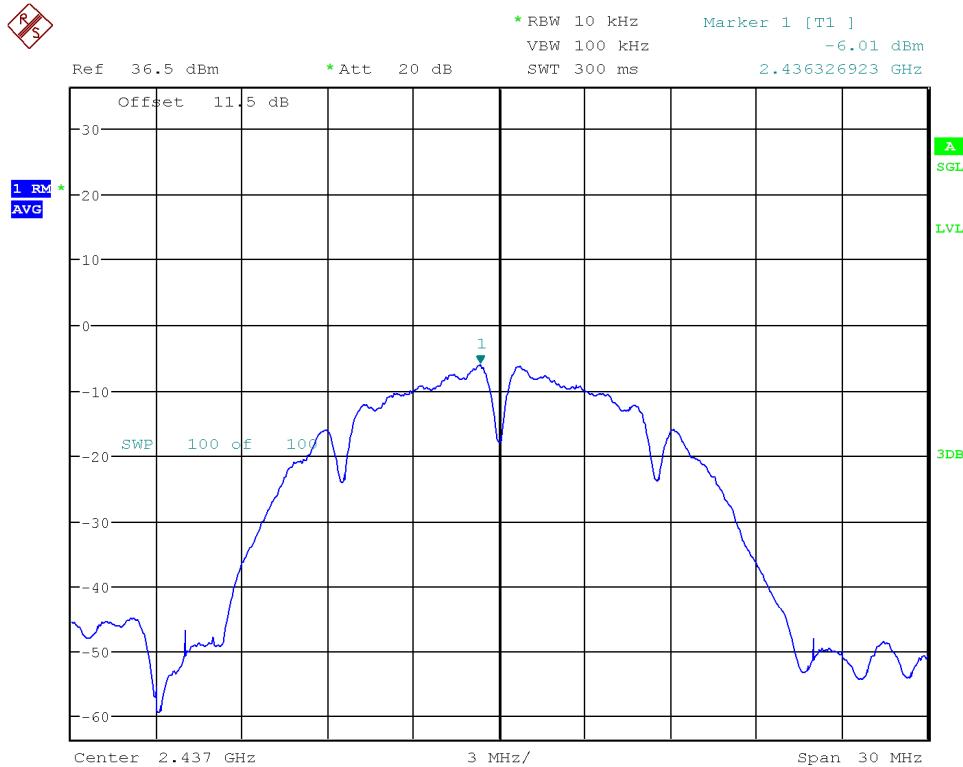
Client	Ecobee Inc.	 Canada
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PSD: N-Mode					
Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm/3kHz)	Pass/Fail	
1	2412	-10.03	8	Pass	
6	2437	-9.90	8	Pass	
11	2462	-9.91	8	Pass	

## Graphs

The graphs shown below show the power spectral density of the device during the conducted measurement operation of the EUT. Low, middle, and high channels were investigated. The external attenuator and cable loss are accounted for as reference offset in the spectrum analyzer.

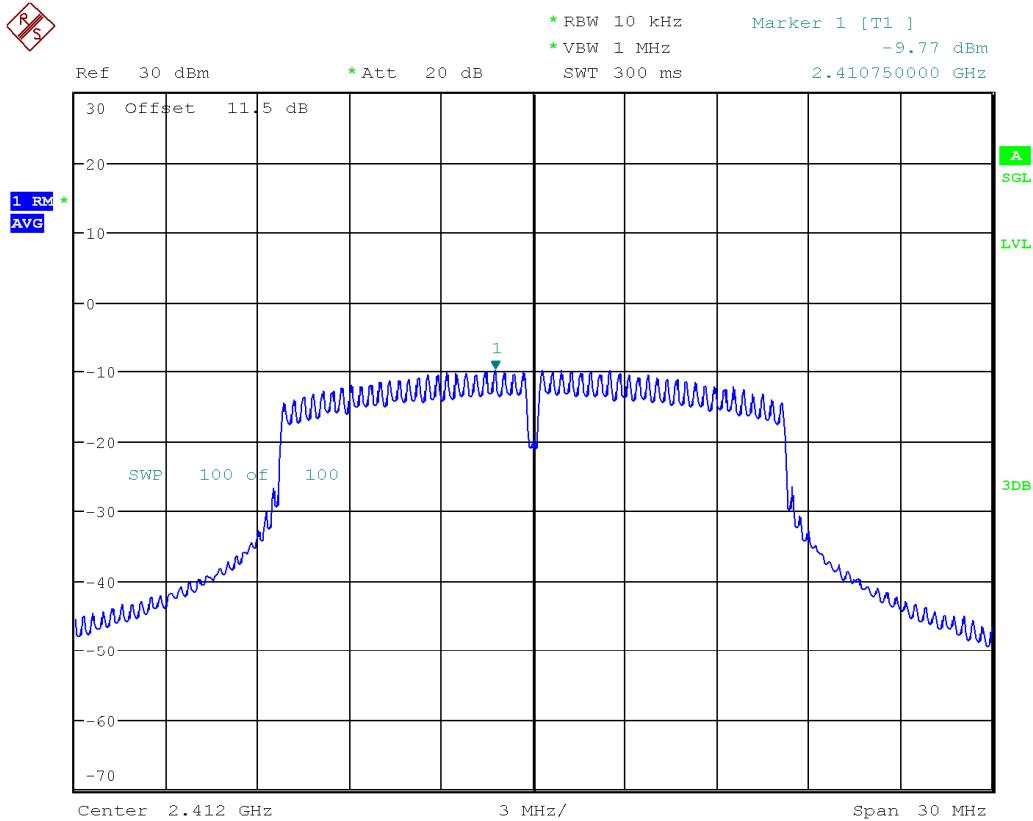
Average Power Spectral Density: B-Mode  
Mid Channel



Date: 20.DEC.2021 10:36:29

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

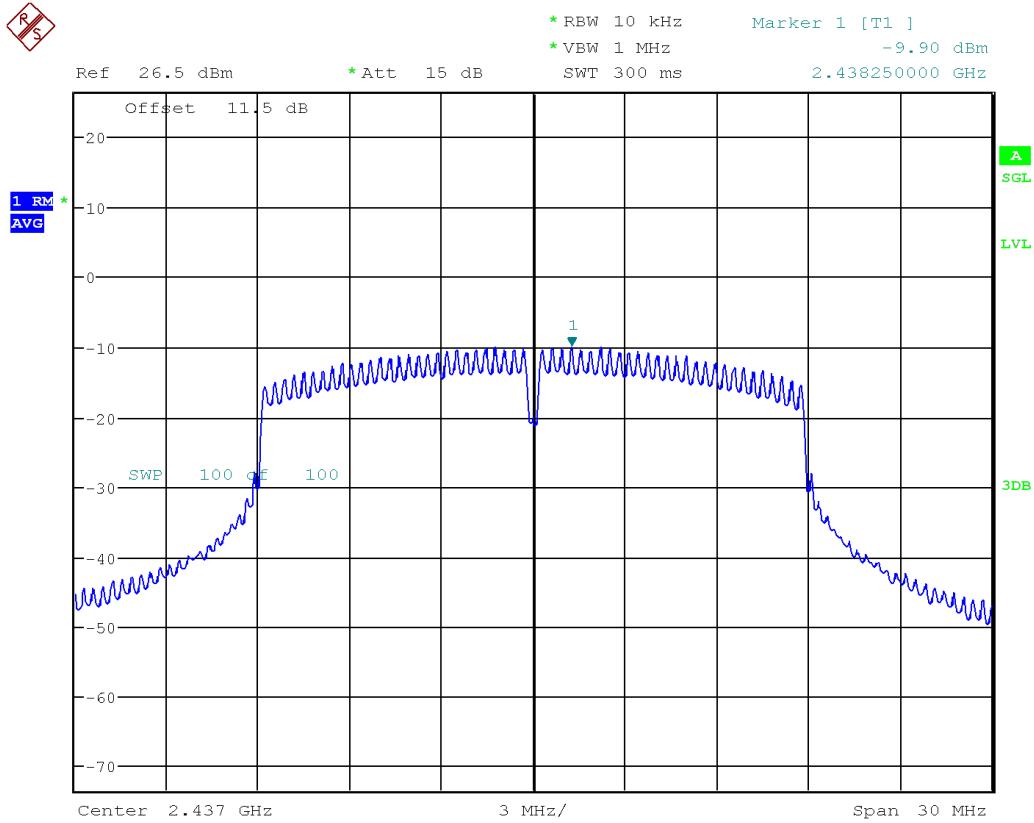
### Average Power Spectral Density: G-Mode Low Channel



Date: 20.DEC.2021 11:06:57

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Average Power Spectral Density: N-Mode Mid Channel



Date: 21.DEC.2021 09:23:31

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

### Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	FSQ26	Rohde & Schwarz	Nov 30, 2021	Nov 30, 2023	GEMC 234
Attenuator 10 dB	8493B	Agilent	NCR	NCR	GEMC 133

Client	Ecobee Inc.
Product	<b>EB-STATE3LT02</b>
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247



## ***Antenna Spurious Conducted Emissions (-30 dBc Requirement)***

### **Purpose**

The purpose of this test is to ensure that the maximum power conducted to the radiating element at frequencies outside of the authorized spectrum does not exceed the limits specified. This ensures that the only the intended signal is delivered to the radiating element.

### **Limits and Method**

The limits are defined in 15.247(d) and RSS-247 5.5. In any 100 kHz band, as the maximum conducted power was measured using RMS averaging, the peak spurious harmonics emissions must be at least 30 dB below the fundamental. Spurious Conducted emissions are to be evaluated up to the 10<sup>th</sup> harmonic. This -30 dBc requirement also applies at the 'band edge' or 2.4 GHz and 2.4835 GHz.

The method is given in FCC KDB 558074 Section 11 and ANSI C63.10

### **Results**

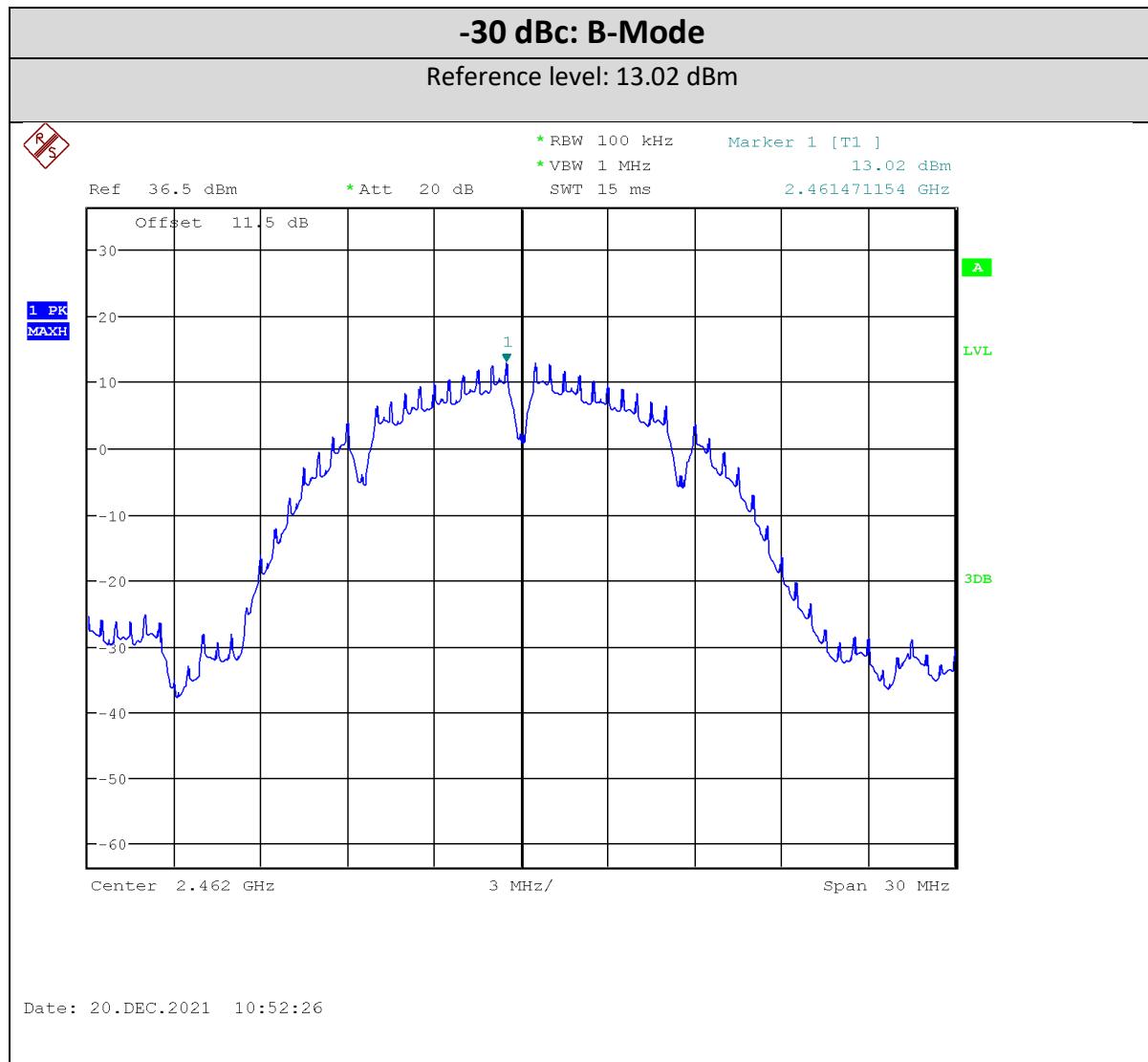
The EUT passed. Low, middle and high bands were measured. The -30 dBc requirement is shown for the lower band edge at 2.4 GHz in the low band and for the higher band edge at 2.4835 GHz in the high band.

Client	Ecobee Inc.	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247
Product	EB-STATE3LT02	
Standard(s)		

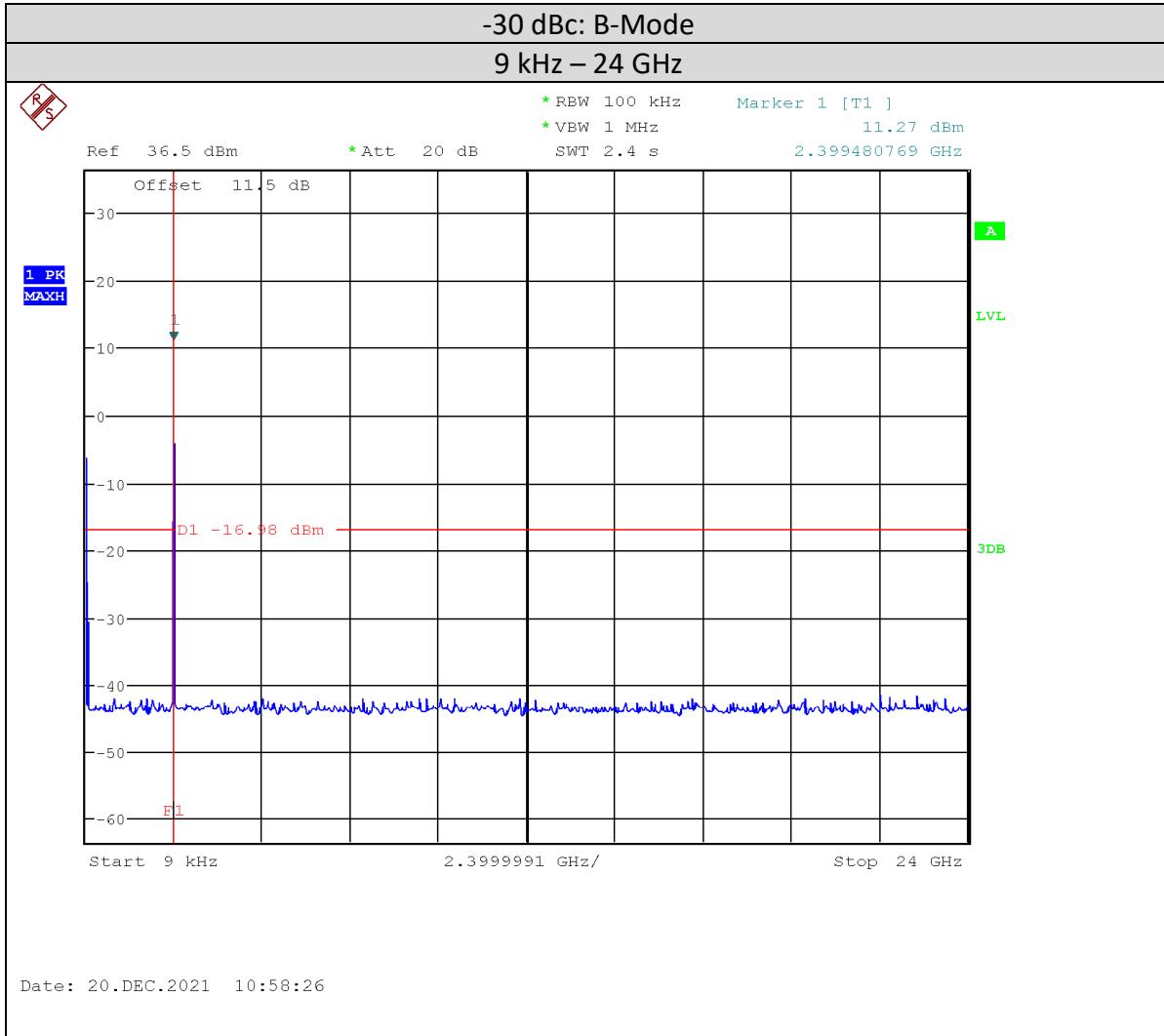


## Graphs

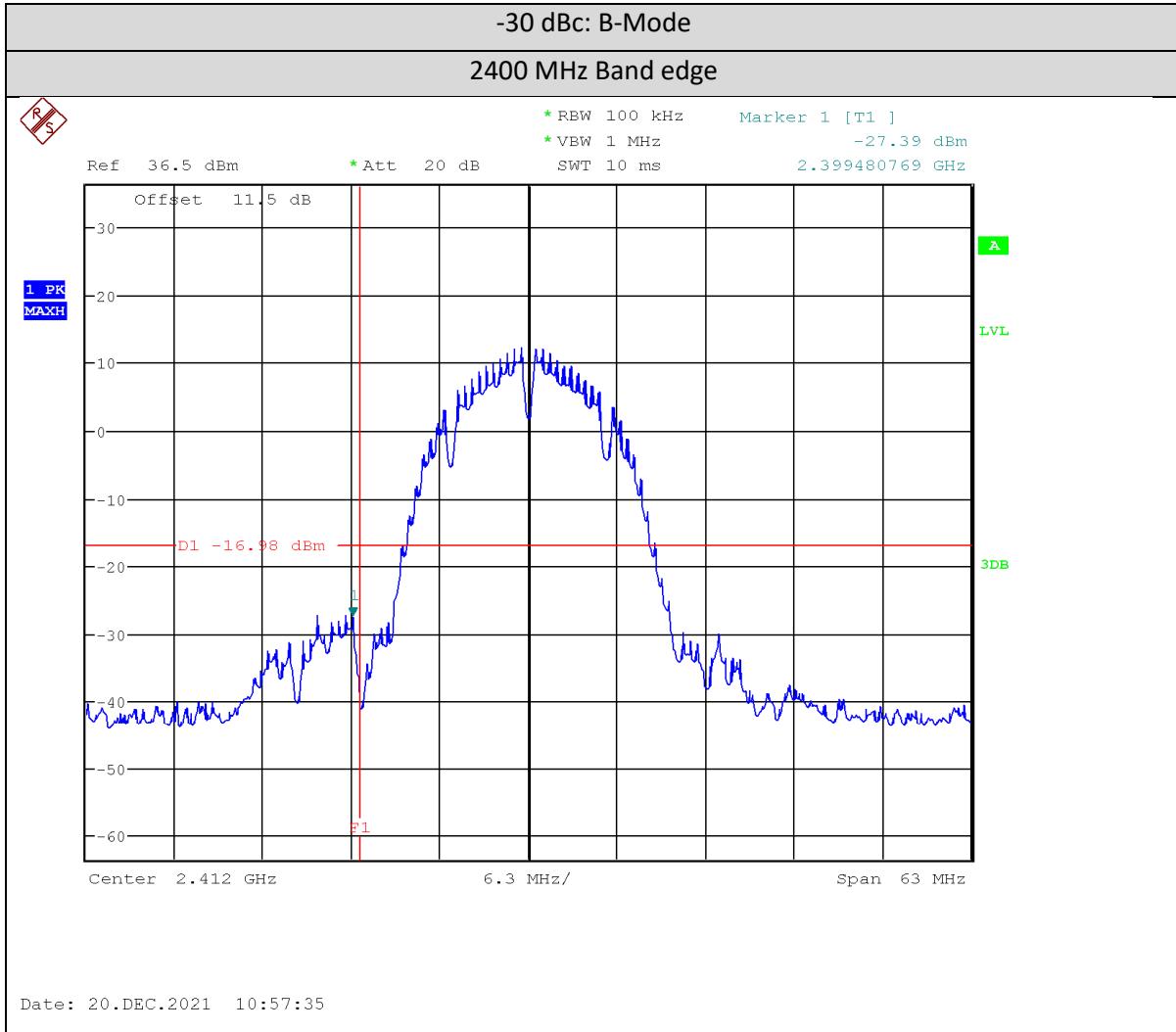
The graphs shown below show the power output of the device during the conducted measurement operation of the EUT.



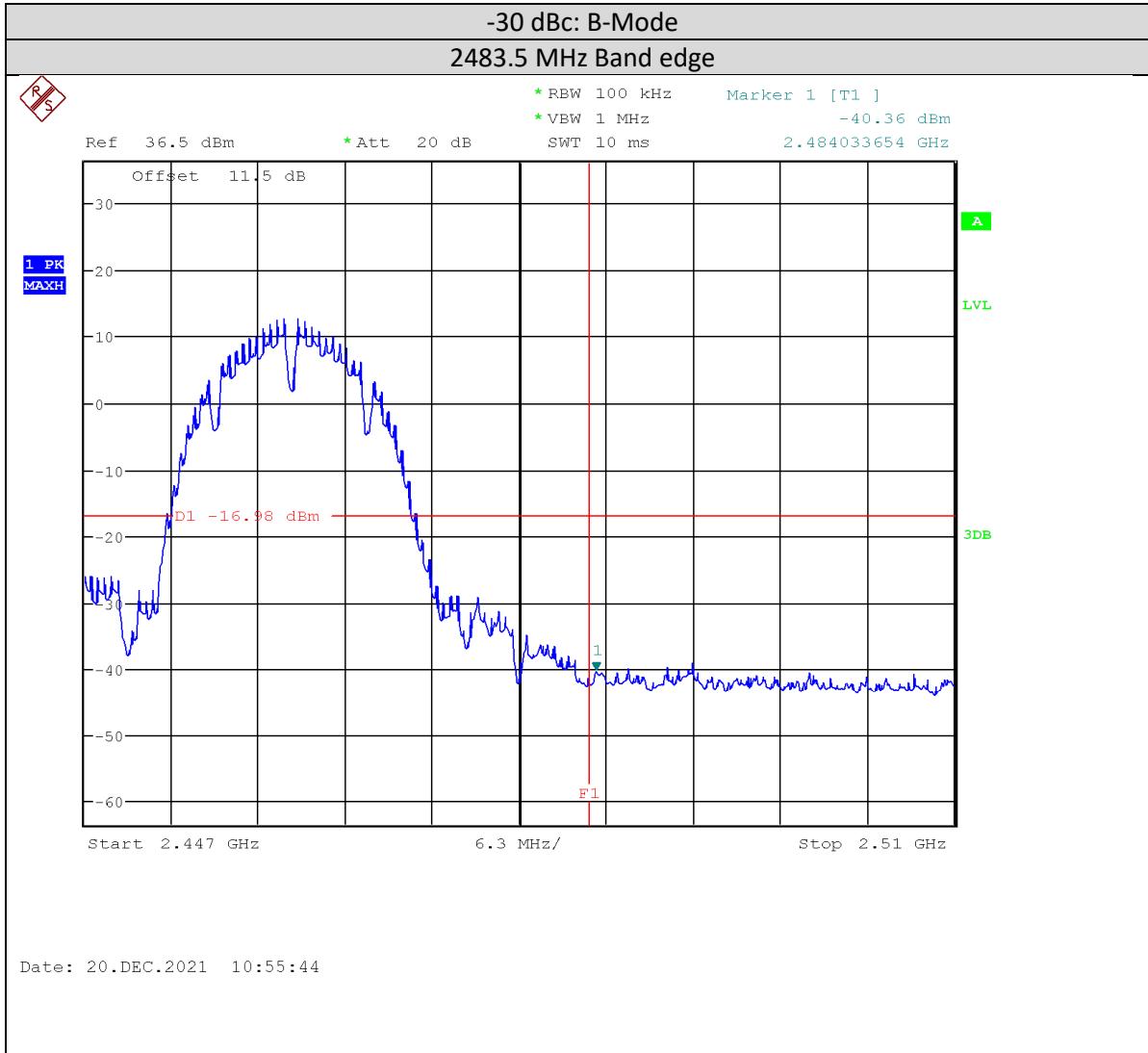
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



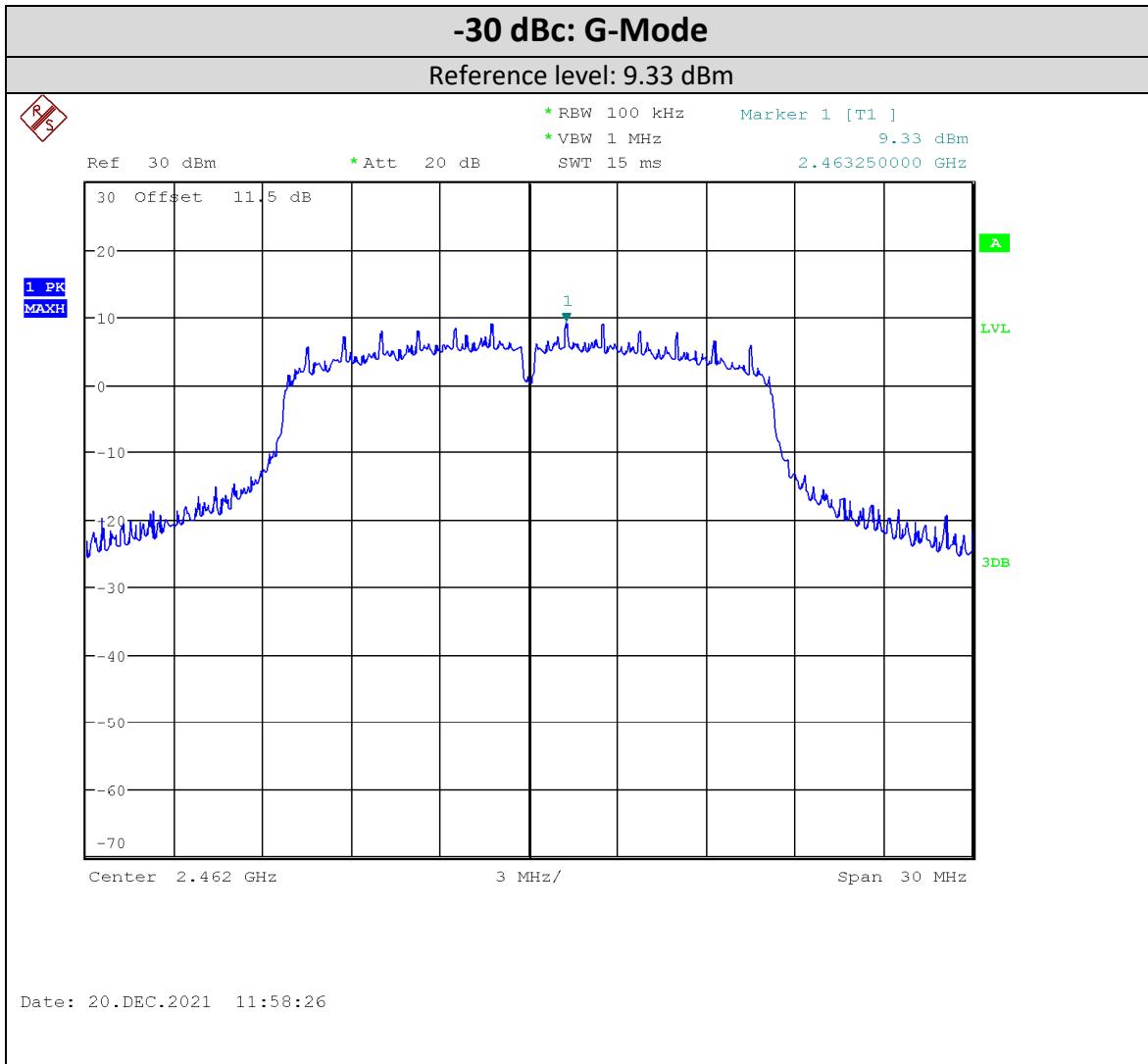
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



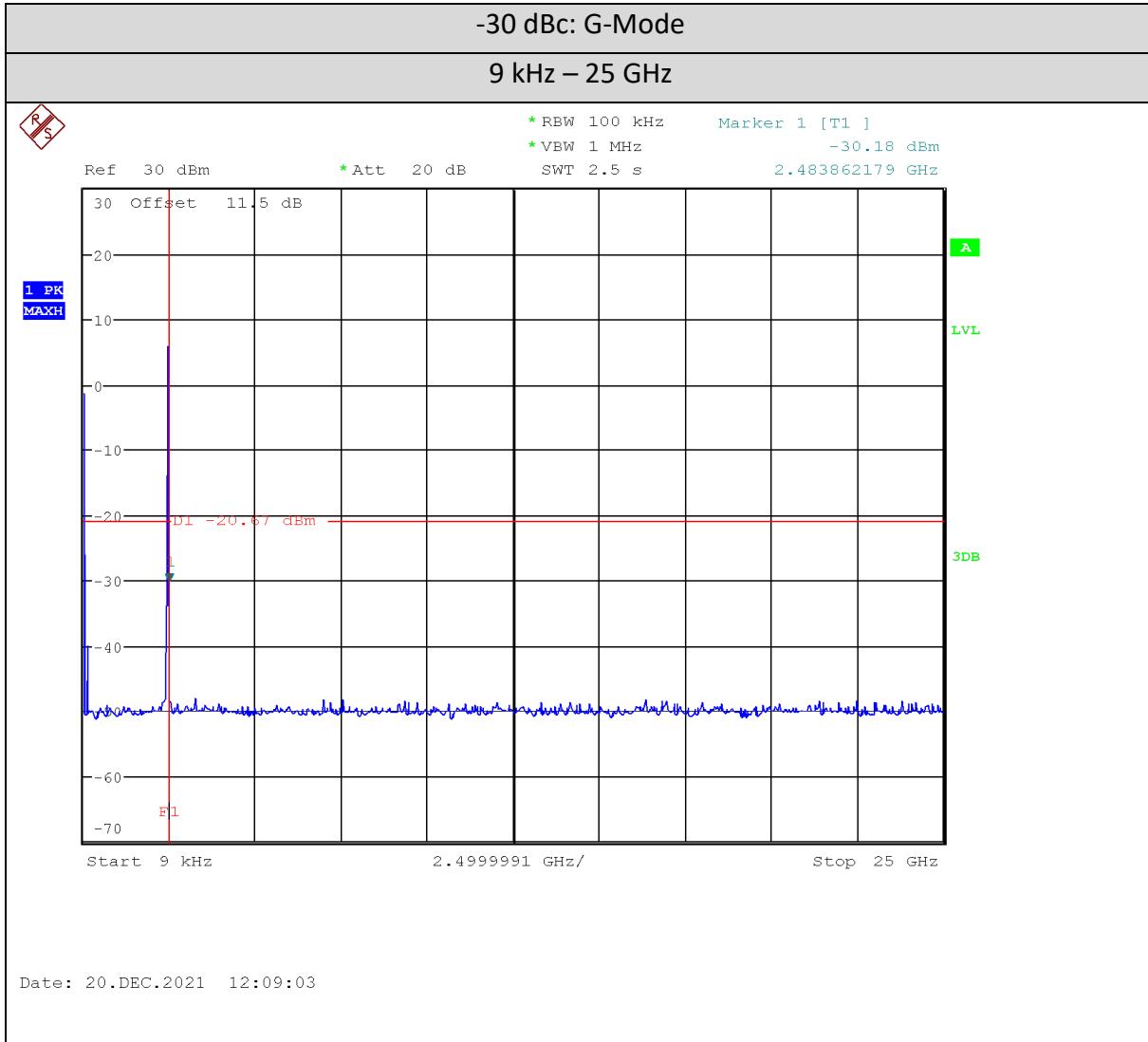
Client	<b>Ecobee Inc.</b>	
Product	<b>EB-STATE3LT02</b>	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	Canada



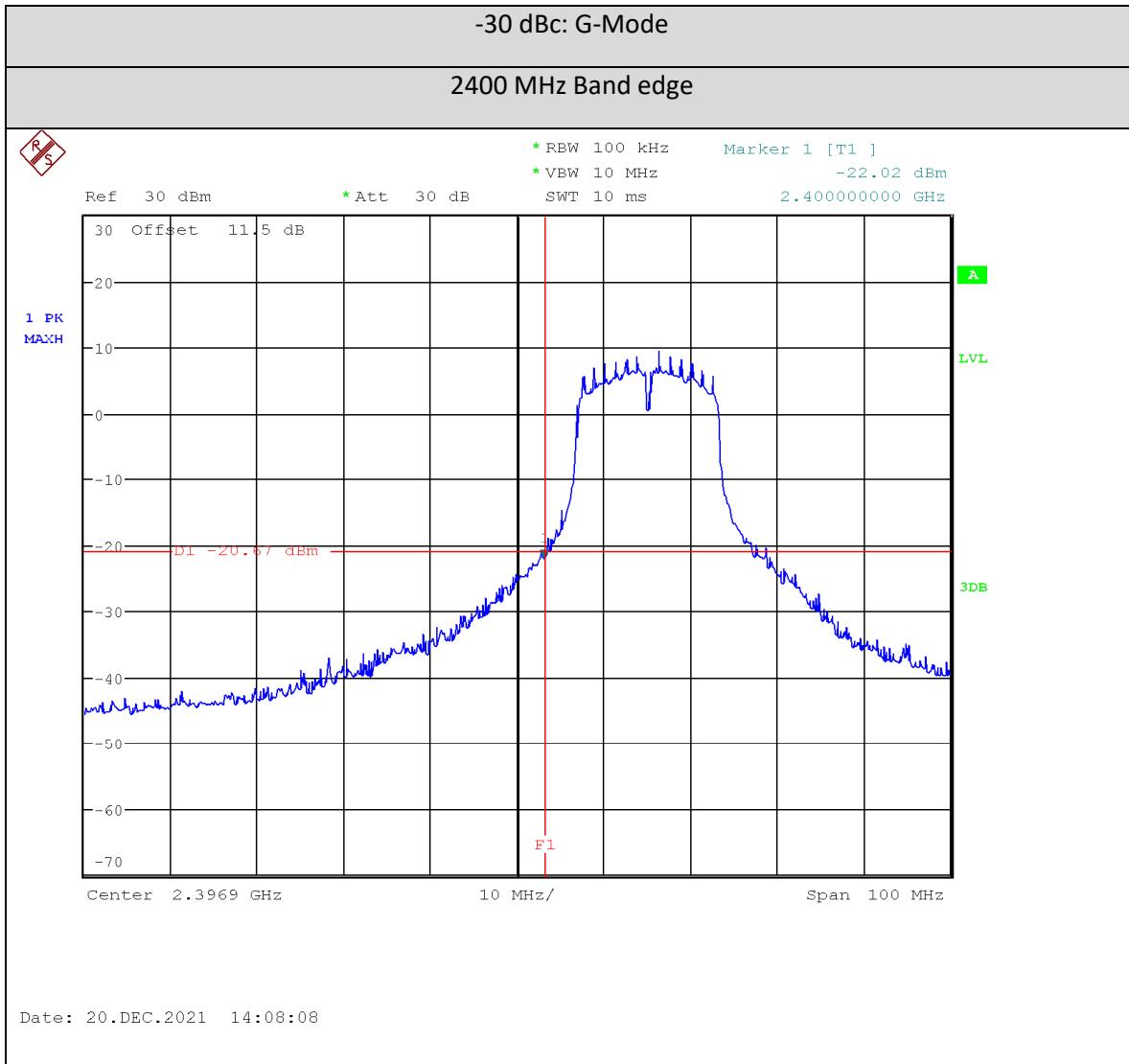
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



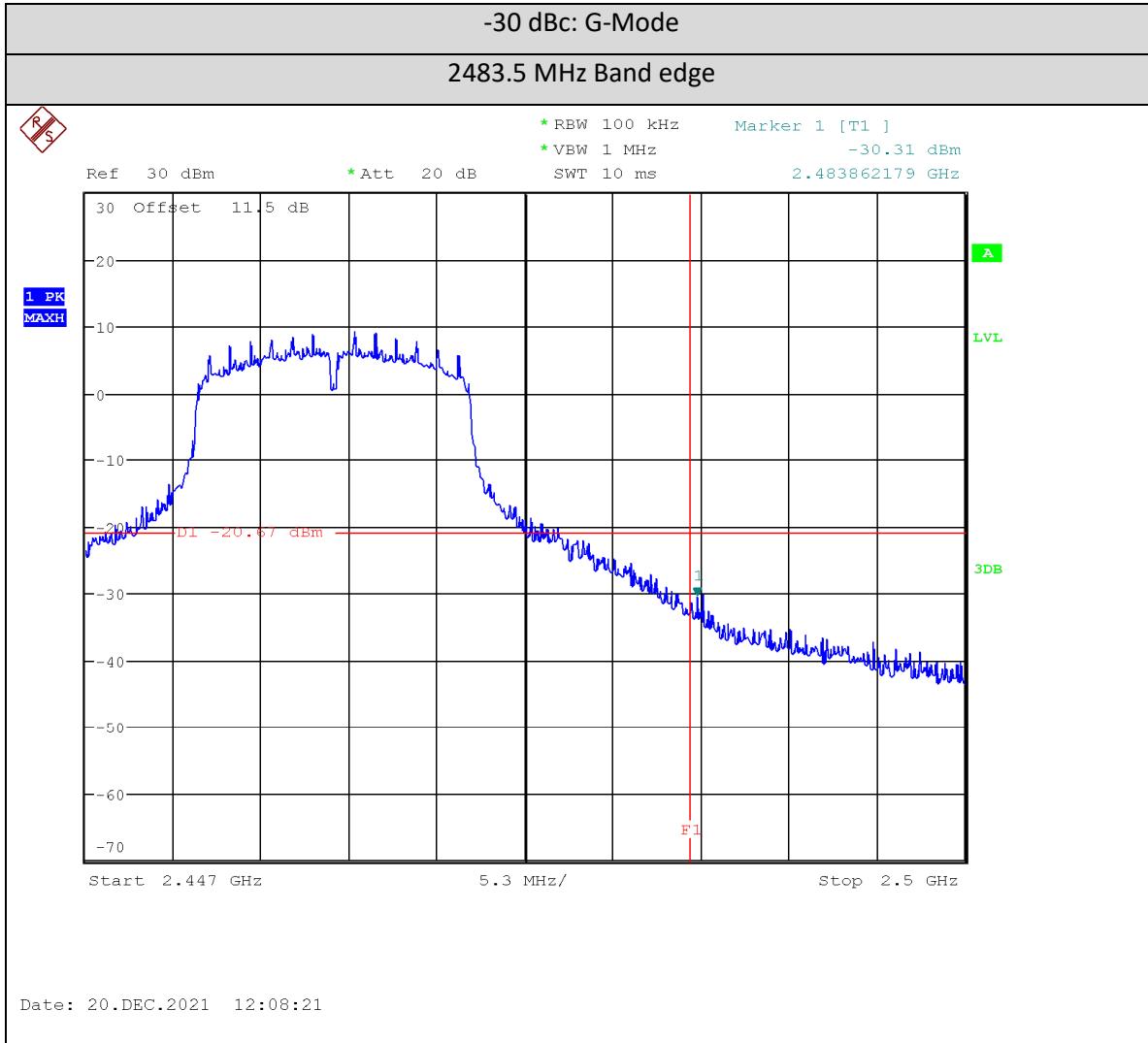
Client	<b>Ecobee Inc.</b>	
Product	<b>EB-STATE3LT02</b>	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	Canada



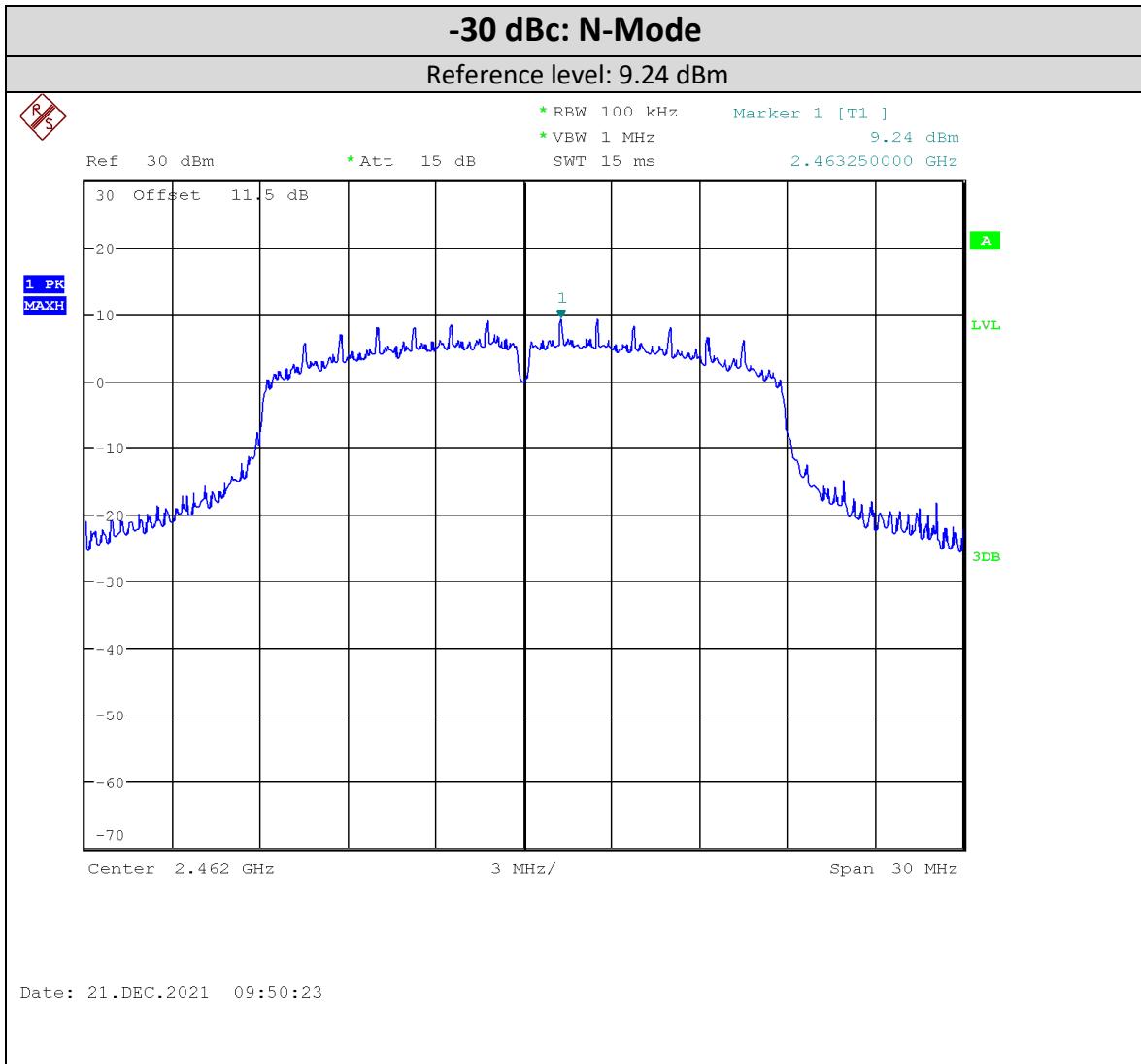
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



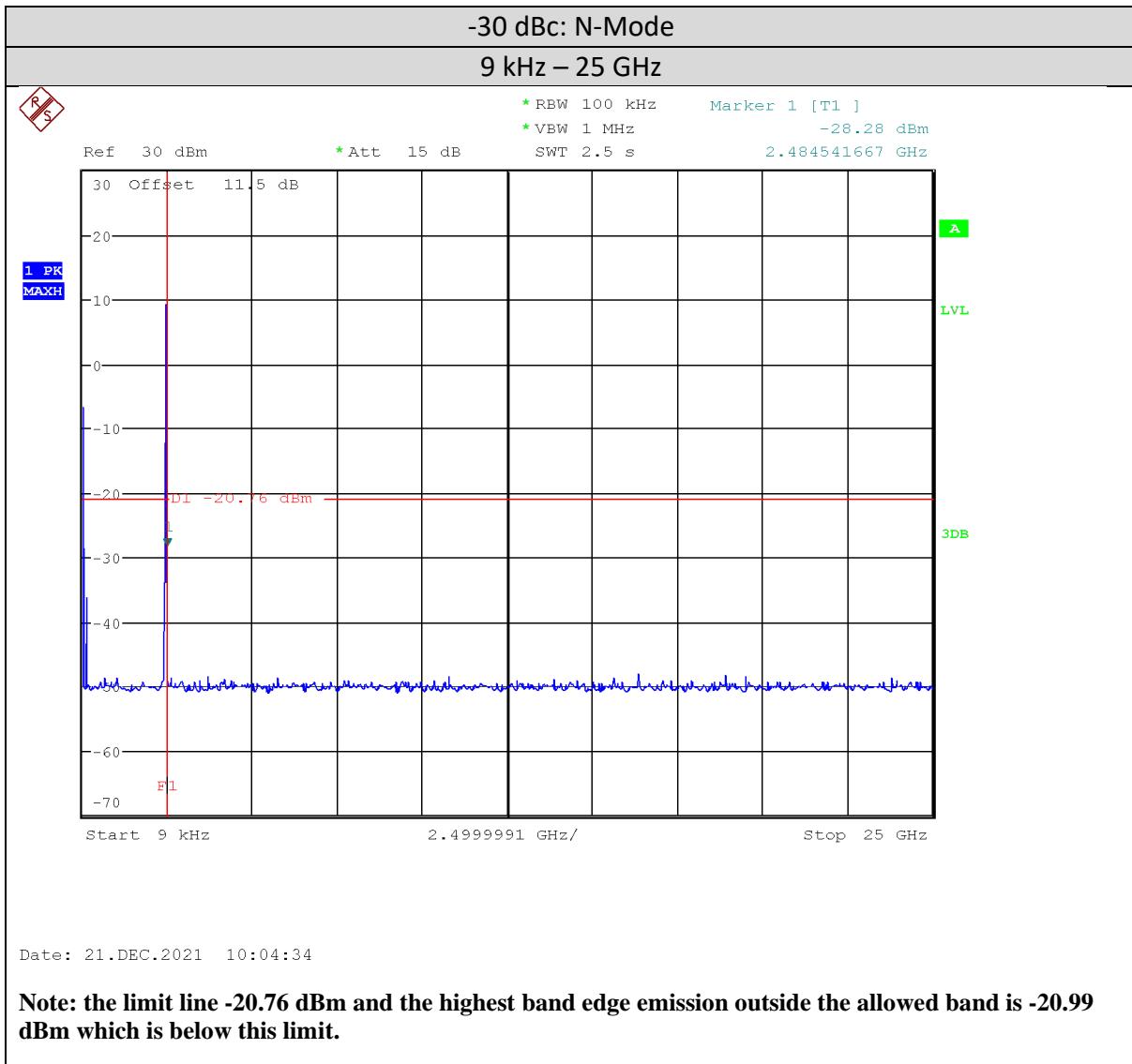
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



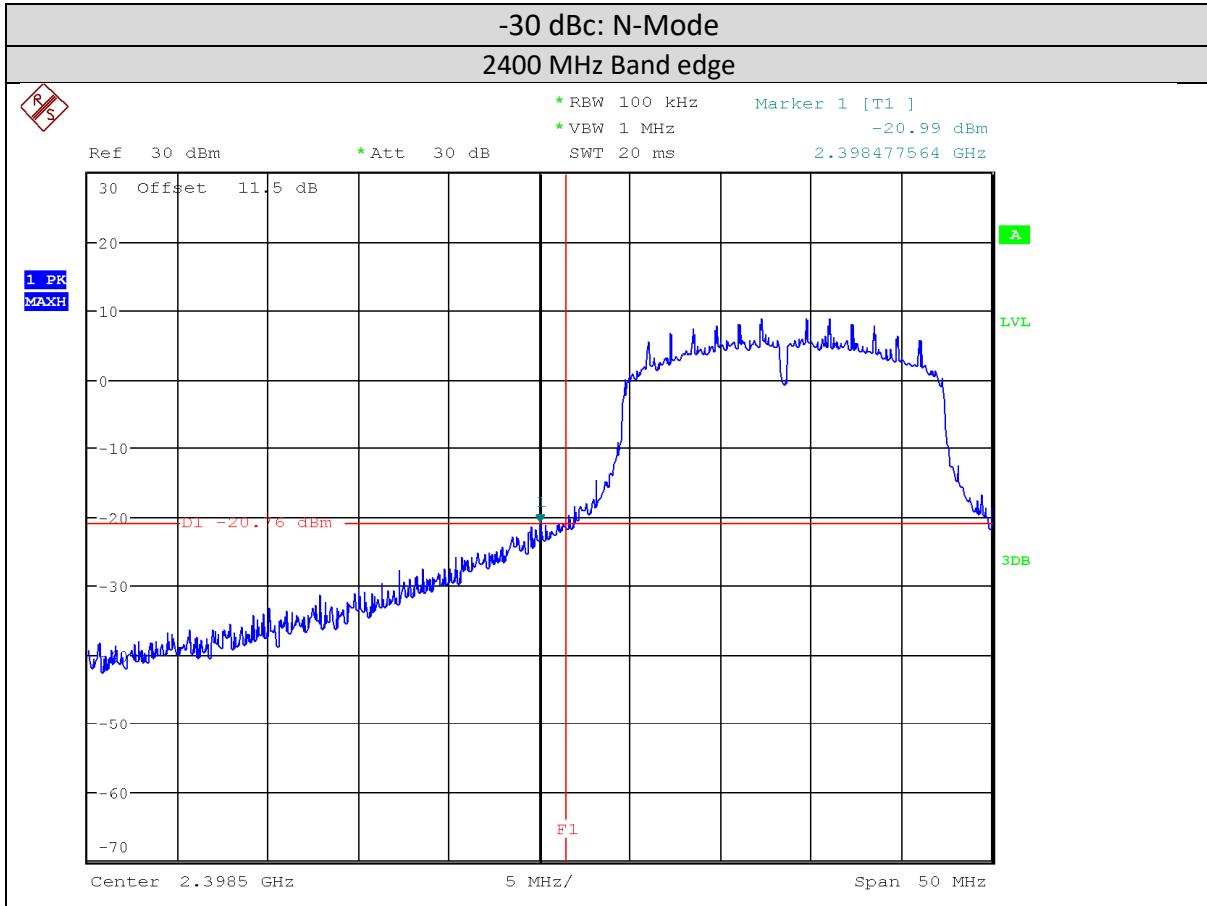
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



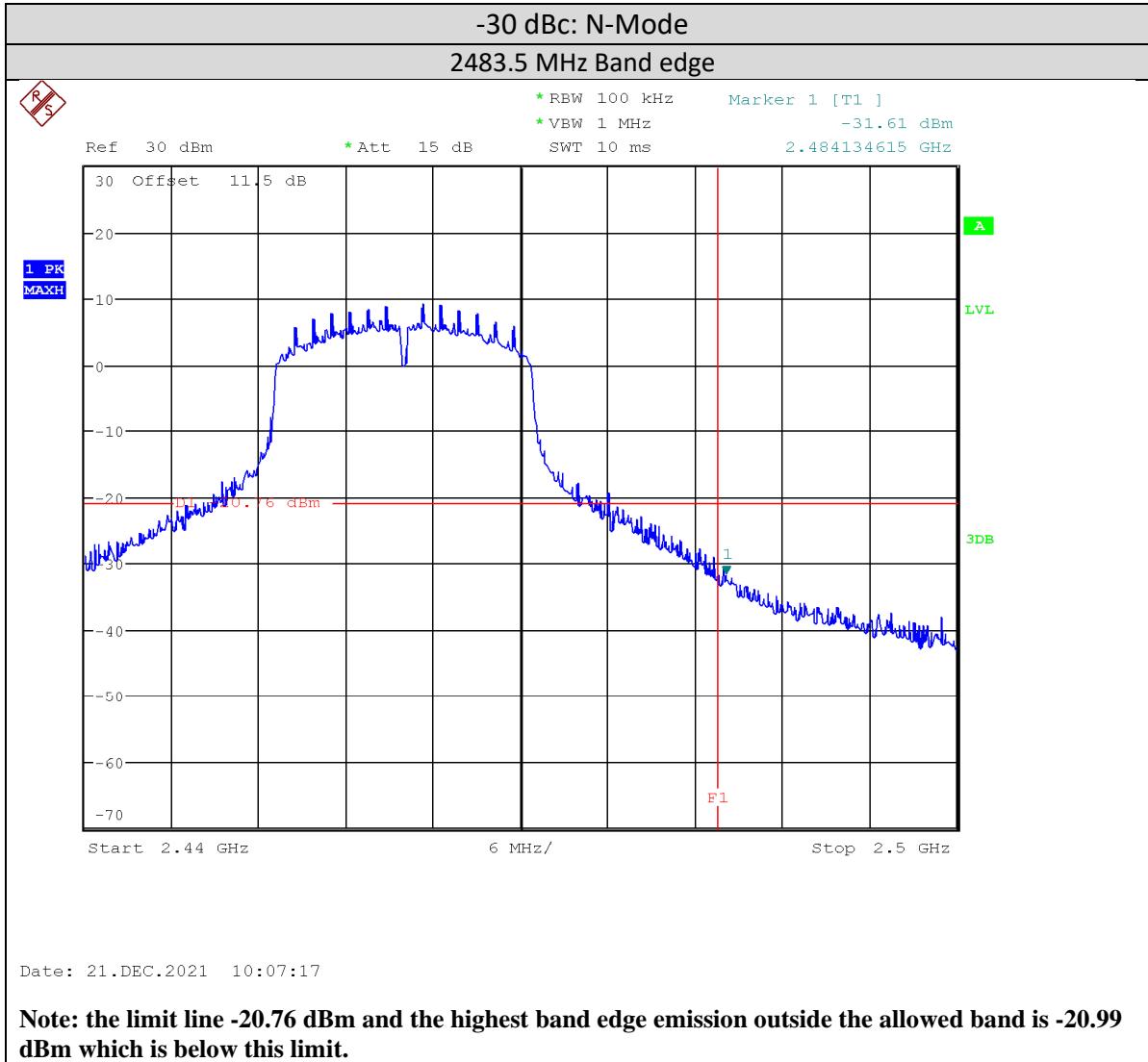
Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Date: 21.DEC.2021 10:37:04

**Note: the limit line -20.76 dBm and the highest band edge emission outside the allowed band is -20.99 dBm which is below this limit.**

Client	<b>Ecobee Inc.</b>	
Product	<b>EB-STATE3LT02</b>	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	Canada



See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

## Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	FSQ26	Rohde & Schwarz	Nov 30, 2021	Nov 30, 2023	GEMC 234
Attenuator 10 dB	8493B	Agilent	NCR	NCR	GEMC 133

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Transmitter Spurious Radiated Emissions

### Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

### Limits and Method

The method is as defined in FCC KDB 558074 Section 12.2 and ANSI C63.10.

The limits, as defined in 15.247(d) for unintentional radiated emissions, apply for those emissions that fall in the restricted bands, as defined in Section 15.205(a). These emissions must comply with the radiated emission limits specified in Section 15.209(a).

All unintentional emissions must also meet the ‘Spurious Conducted Emissions’ requirements of -20 dBc or greater. See also ‘Antenna Spurious Conducted Emissions (-20dBc)’ for further details.

Frequency	Field Strength Limit ( $\mu$ V/m)	Field Strength at 3m (dB $\mu$ V/m)
0.009 MHz – 0.490 MHz	2400/F(kHz) <sup>a</sup> (at 300m)	128.5 to 93.8 <sup>a</sup>
0.490 MHz – 1.705 MHz	24000/F(kHz) <sup>a</sup> (at 30m)	73.8 to 63.0 <sup>a</sup>
1.705 MHz – 30 MHz	30 <sup>a</sup> (at 30m)	69.5 <sup>a</sup>
30 MHz – 88 MHz	100 <sup>a</sup> (at 3m)	40.0 <sup>a</sup>
88 MHz – 216 MHz	150 <sup>a</sup> (at 3m)	43.5 <sup>a</sup>
216 MHz – 960 MHz	200 <sup>a</sup> (at 3m)	46.0 <sup>a</sup>
Above 960 MHz	500 <sup>a</sup> (at 3m)	54.0 <sup>a</sup>
Above 1000 MHz	500 <sup>b</sup> (at 3m)	54.0 <sup>b</sup>
Above 1000 MHz	5 mV/m <sup>c</sup> (at 3m)	74.0 <sup>c</sup>

<sup>a</sup>Limit is with Quasi Peak detector with bandwidths as defined in CISPR-16-1-1

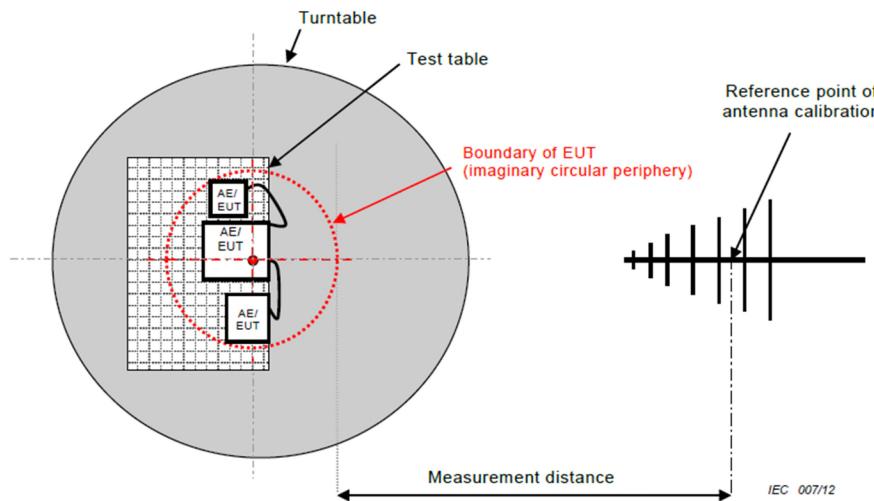
<sup>b</sup>Limit is with 1 MHz measurement bandwidth and using an Average detector

<sup>c</sup>Limit is with 1 MHz measurement bandwidth and using a Peak detector

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Typical Radiated Emissions Setup



### Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is  $\pm 5.67\text{dB}$  for 30MHz – 1GHz and  $\pm 4.58\text{dB}$  for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.

### Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector over a full 0-360°. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to the 10<sup>th</sup> harmonic (a minimum of 24.835 GHz).

Devices scanned may be scanned at alternate test distances and in accordance with FCC Part 15, Subpart A, Section 15.31, an extrapolation factor of 20 dB/decade was used above 30 MHz and 40 dB/decade below 30 MHz. For example, for 1 meter measurements, an extrapolation factor 9.5 dB from 20 Log (1m / 3m) is applied.

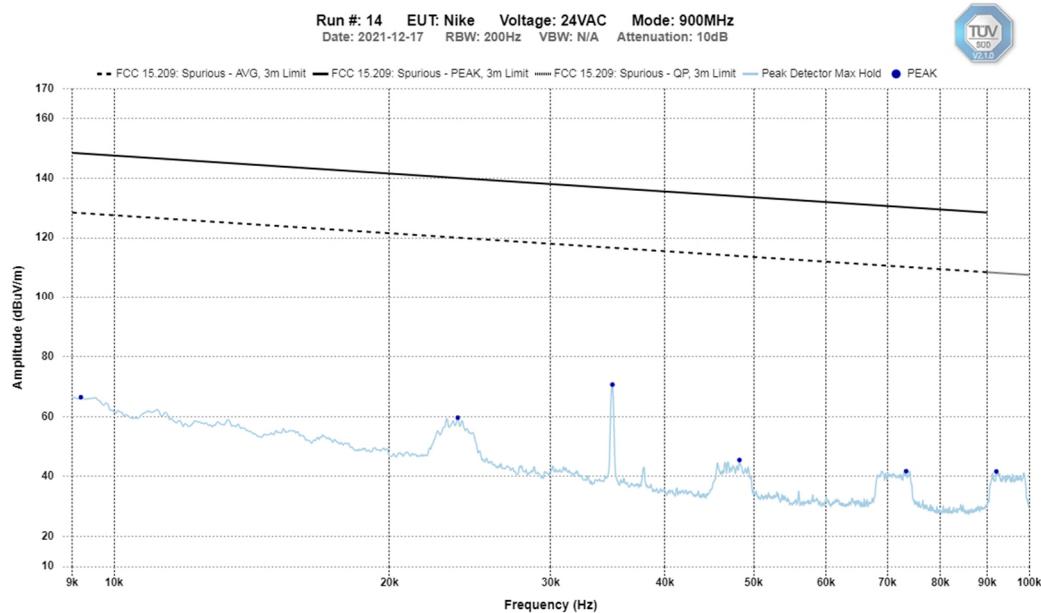
The EUT supports three modes of operation, 802.11 b/g/n. Low, middle and high channels in each mode were measured; however, the worst case graphs are presented.

Band edge measure graphs were shown for illustrations purpose. See final measurement section for all measurements.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

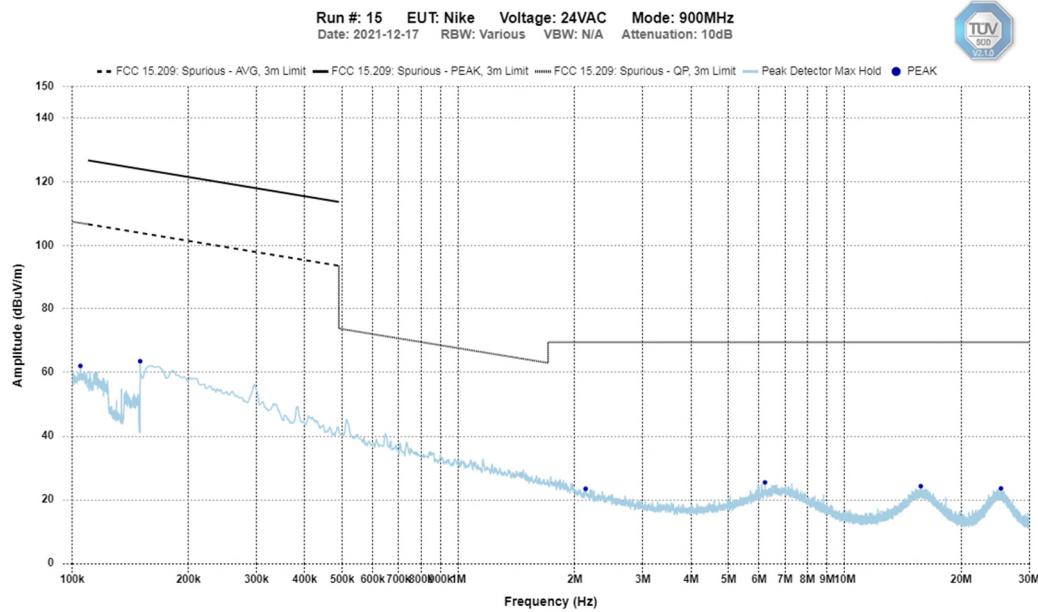
## Spurious Emissions

Low Channel  
9 kHz – 150 kHz  
Peak Emission Graph

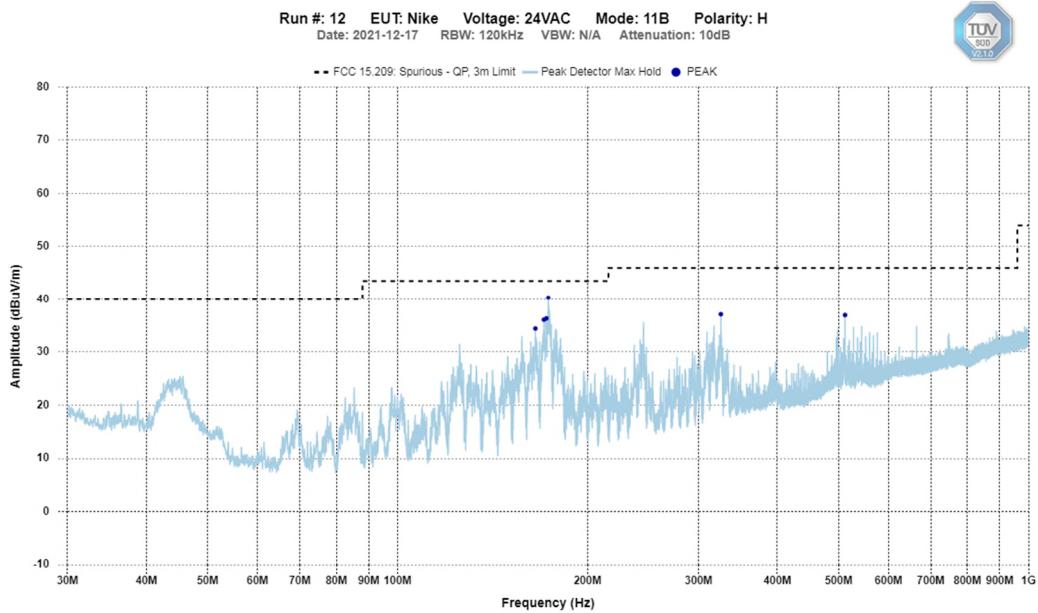


Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Low Channel  
150 kHz – 30 MHz  
Peak Emission Graph

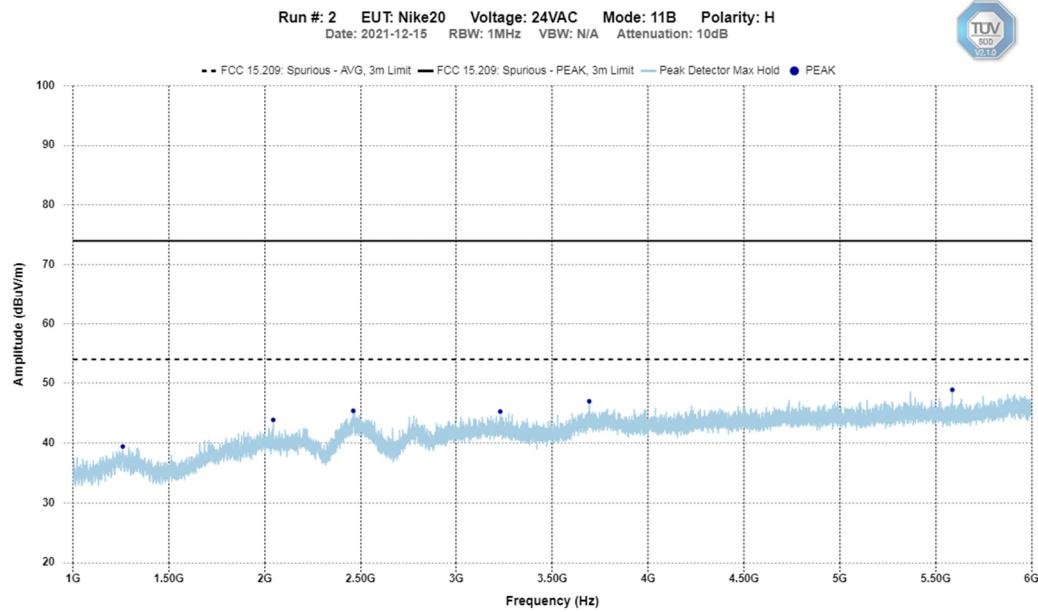


Low Channel – 30 MHz – 1 GHz  
Horizontal - Peak Emission Graph

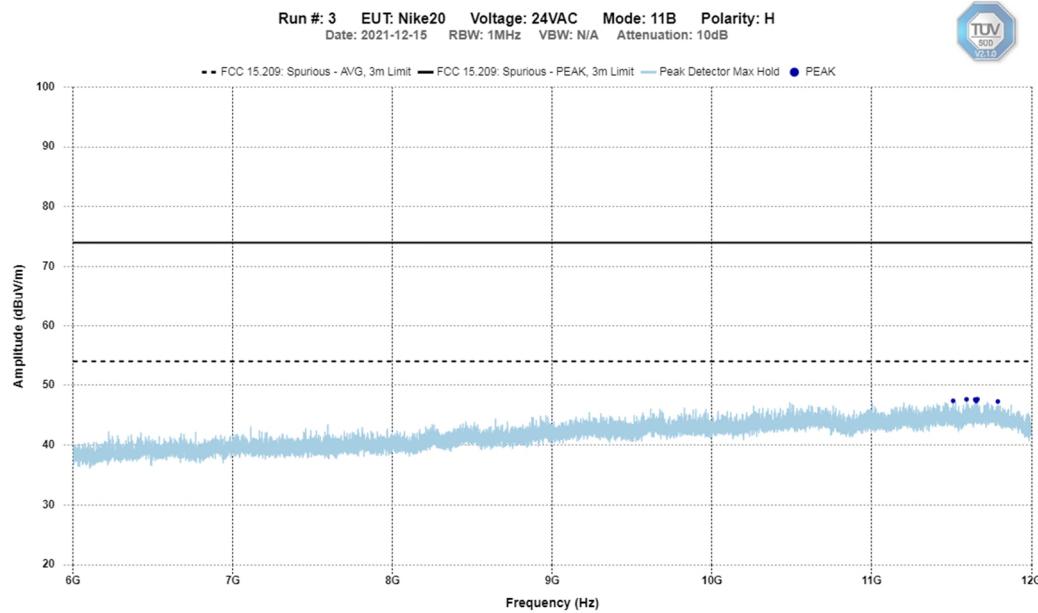


Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Low Channel – 1 GHz – 6 GHz Horizontal - Peak Emission Graph

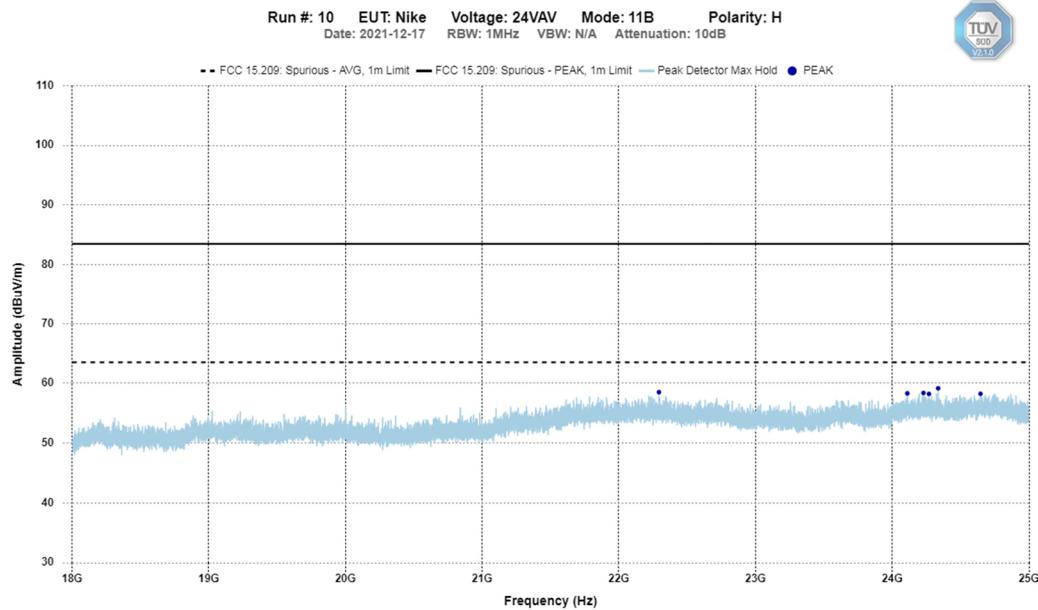


### Low Channel – 6 GHz – 12 GHz Horizontal - Peak Emission Graph

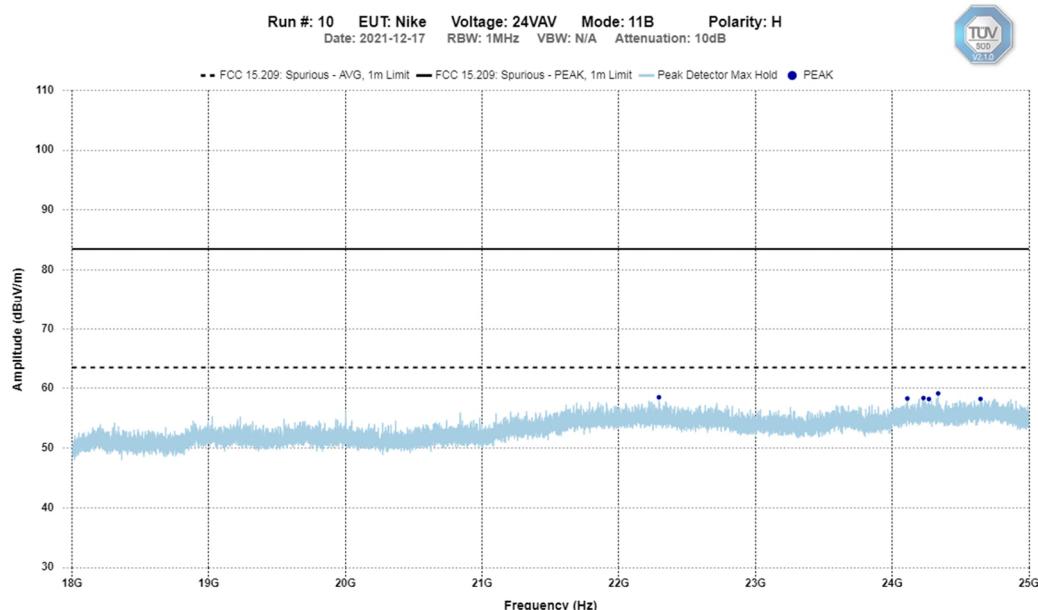


Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Low Channel – 12 GHz – 18 GHz Horizontal - Peak Emission Graph



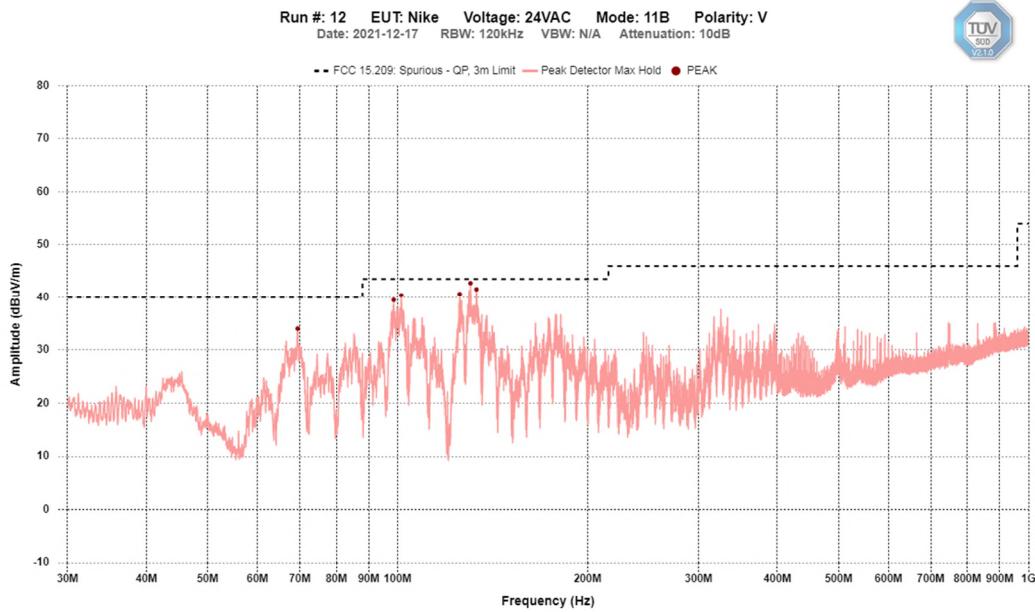
### Low Channel – 18 GHz – 25 GHz Horizontal - Peak Emission Graph



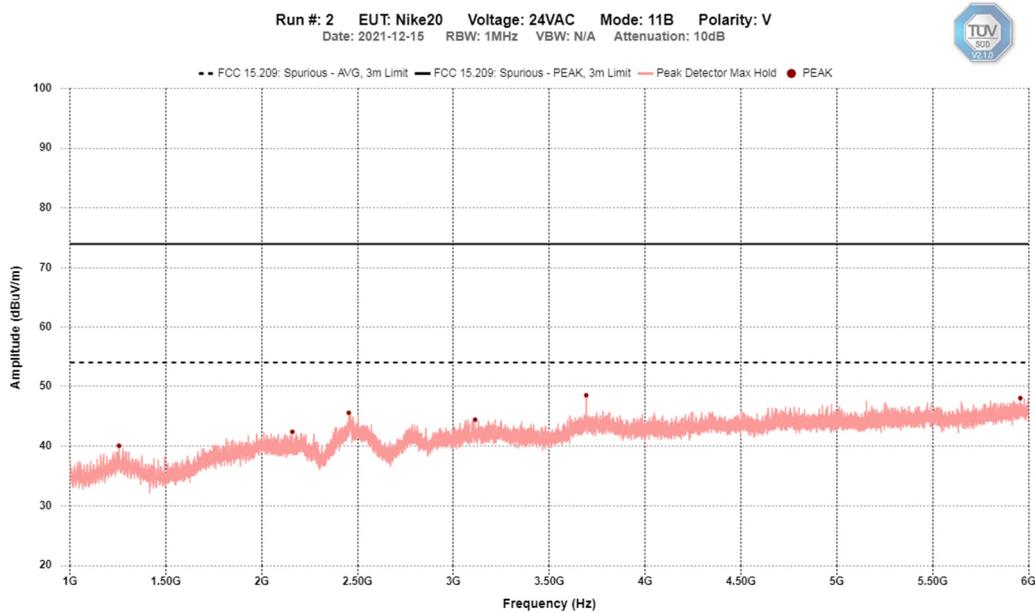
**Plot for 12 GHz – 25 GHz was taken at a 1 meter distance. All emissions were noise floor of measurement instrument. No emissions were found in this frequency range.**

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Low Channel – 30 MHz – 1 GHz Vertical - Peak Emission Graph

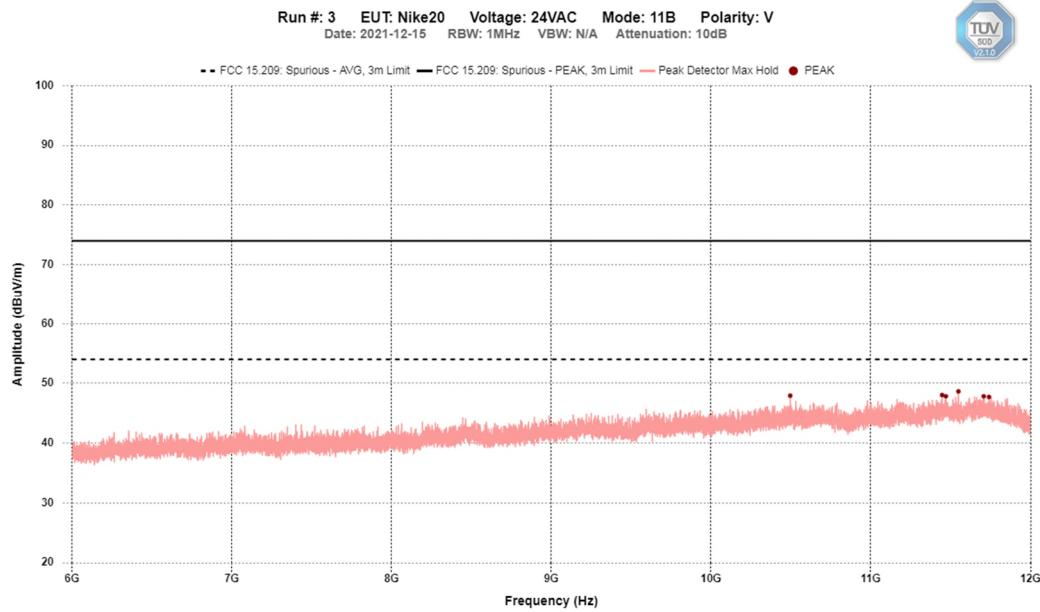


### Low Channel – 1 GHz – 6 GHz Vertical - Peak Emission Graph

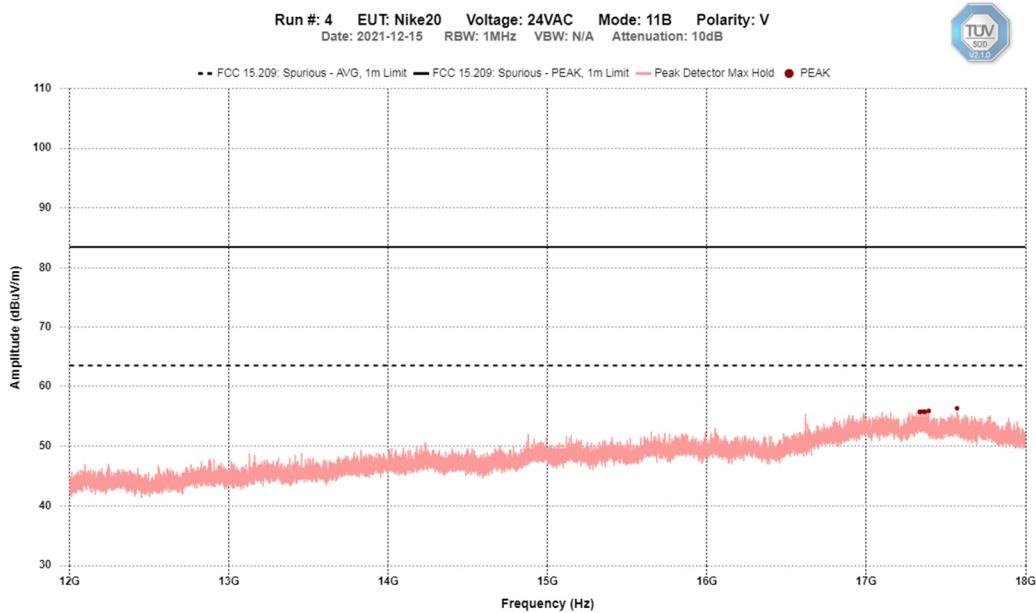


Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Low Channel – 6 GHz – 12 GHz Vertical - Peak Emission Graph

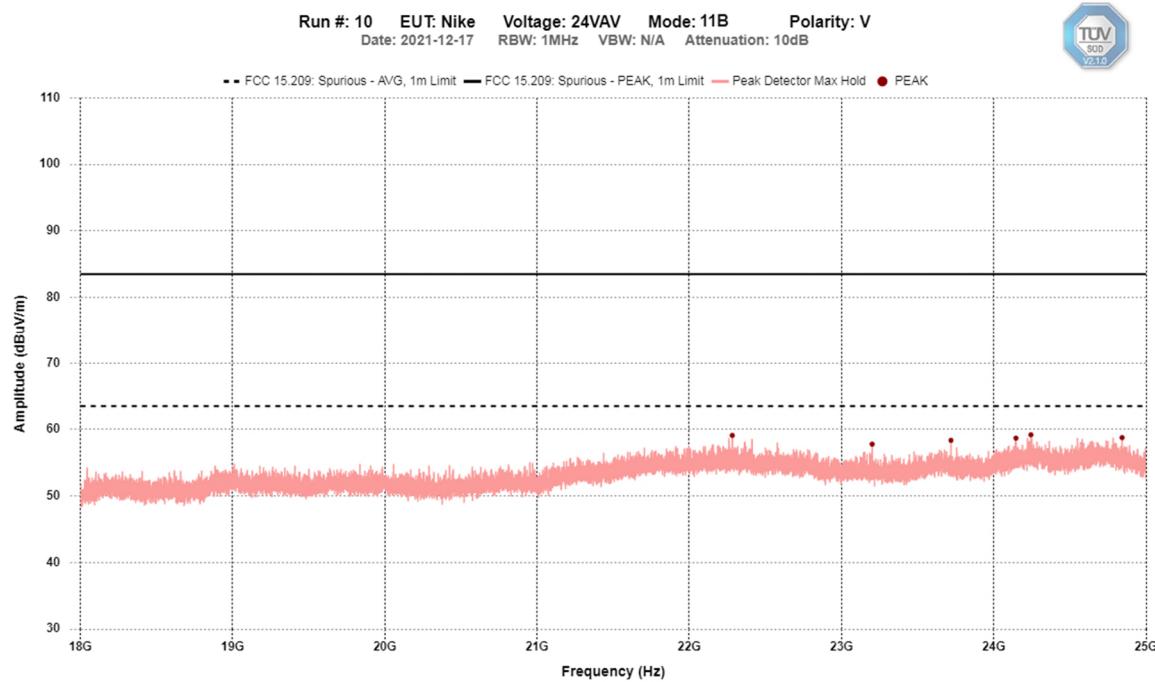


### Low Channel – 12 GHz – 18 GHz Vertical - Peak Emission Graph



Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Low Channel – 18 GHz – 25 GHz Vertical - Peak Emission Graph



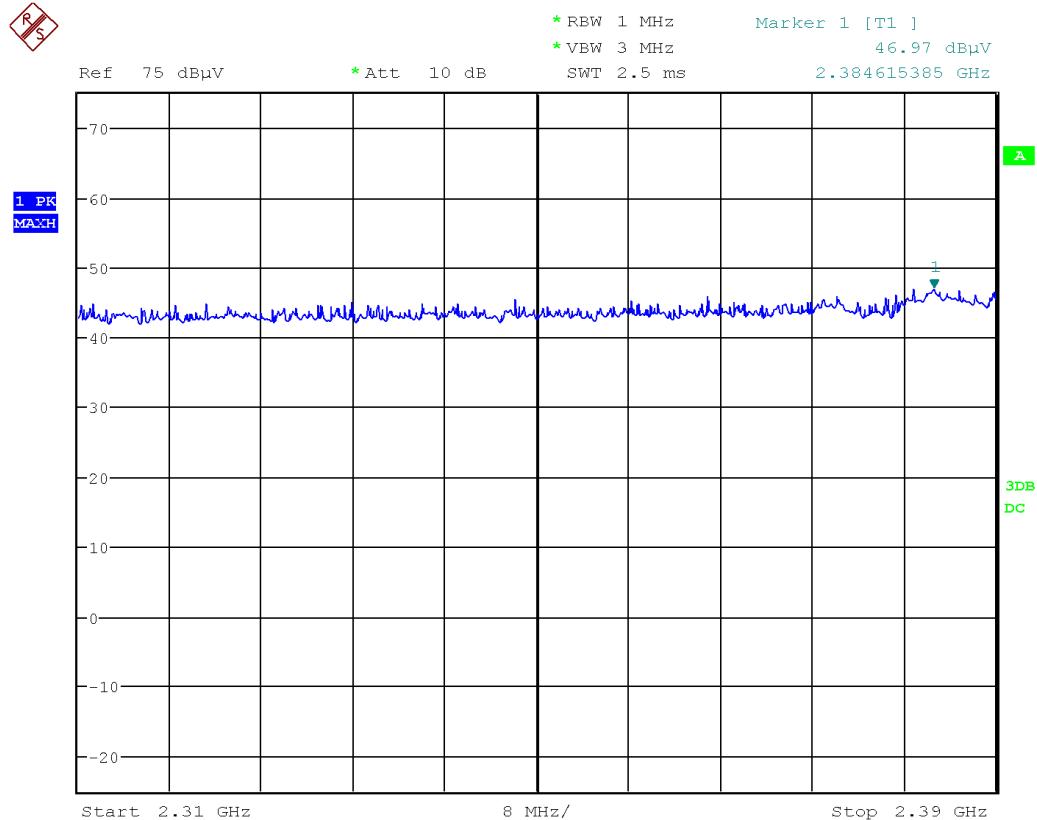
Plot was taken at a 1 meter distance. All emissions were noise floor of measurement instrument. No emissions were found in this frequency range.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Band edge measurements – B-Mode

Band Edge – Low Channel (802.11b)

Horizontal - Peak Emission



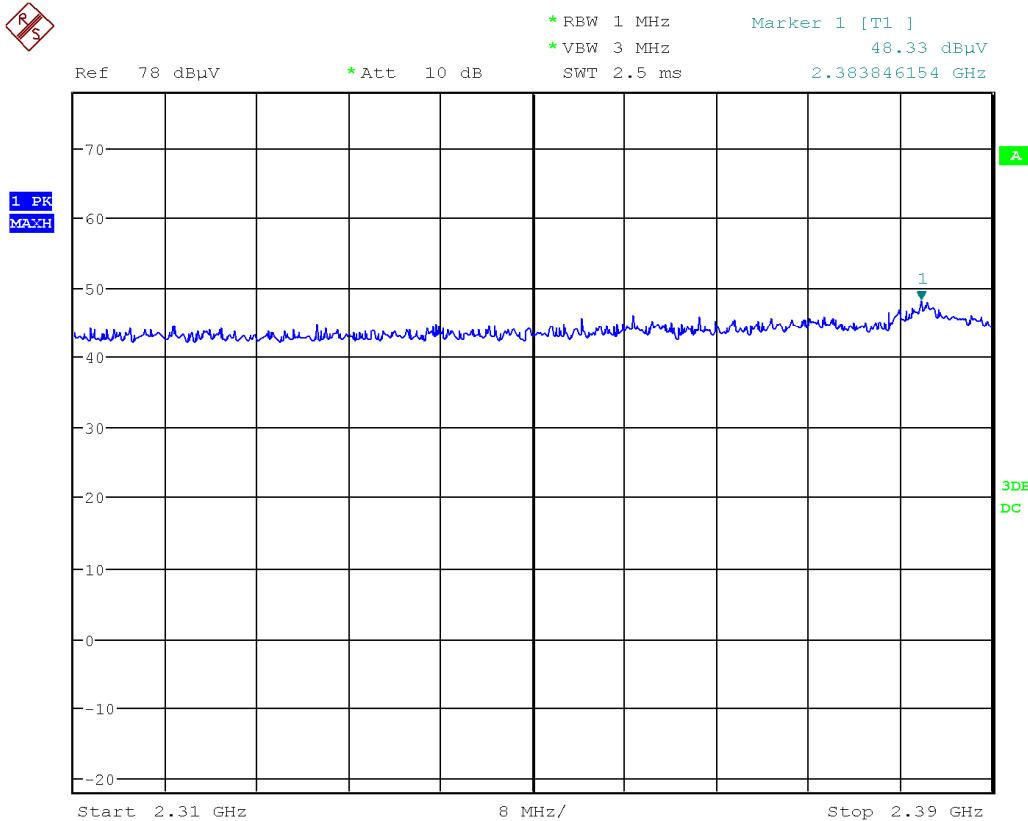
Date: 14.DEC.2021 10:50:10

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Band Edge – Low Channel (802.11b)  
Vertical - Peak Emission

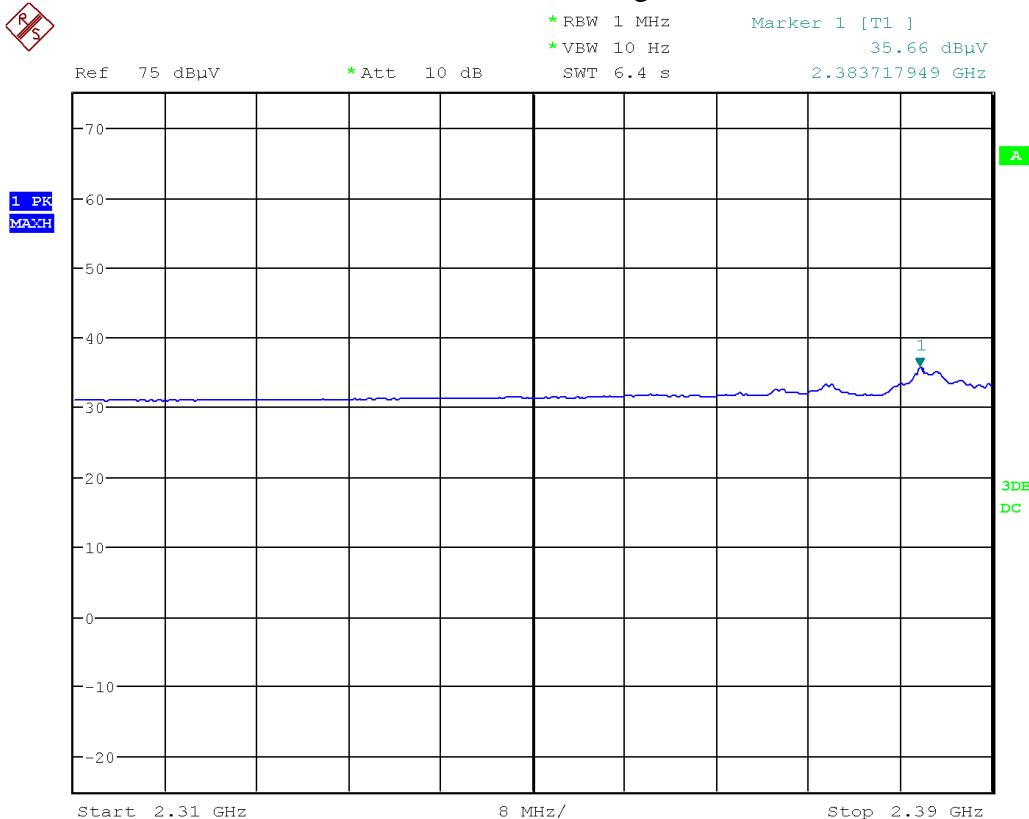


Date: 14.DEC.2021 10:39:04

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11b)  
Horizontal - Average Emission

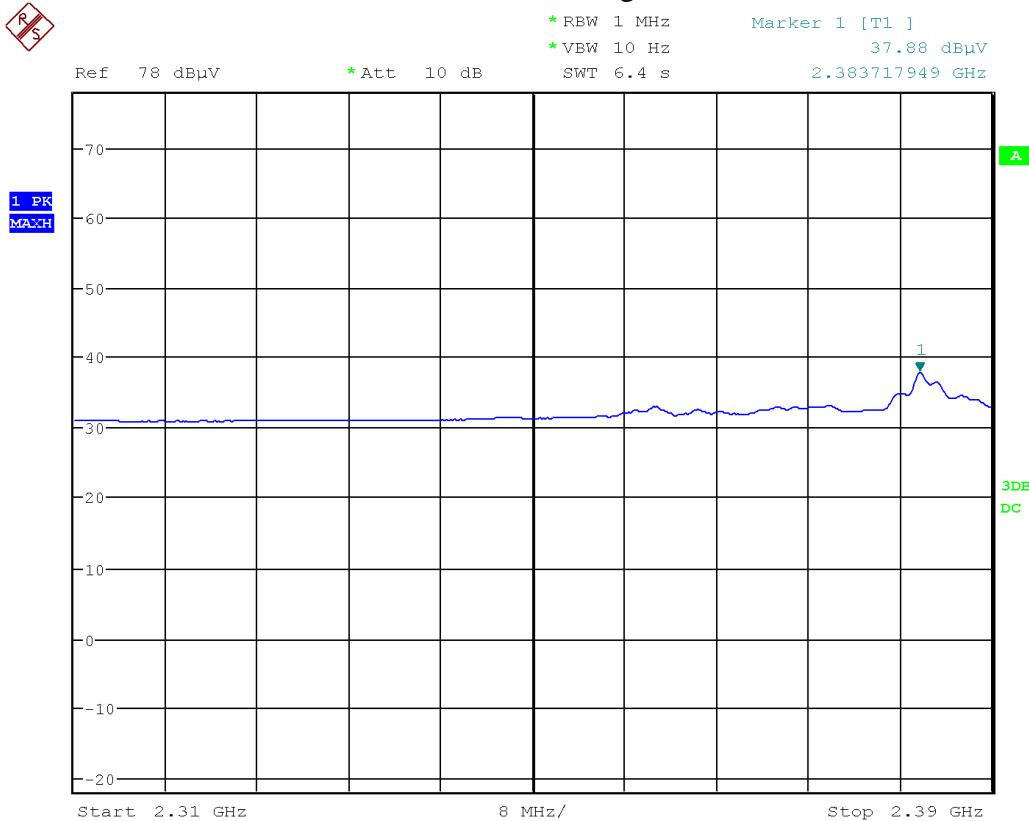


Date: 14.DEC.2021 10:50:36

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	TÜV SÜD Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11b)  
Vertical – Average Emission

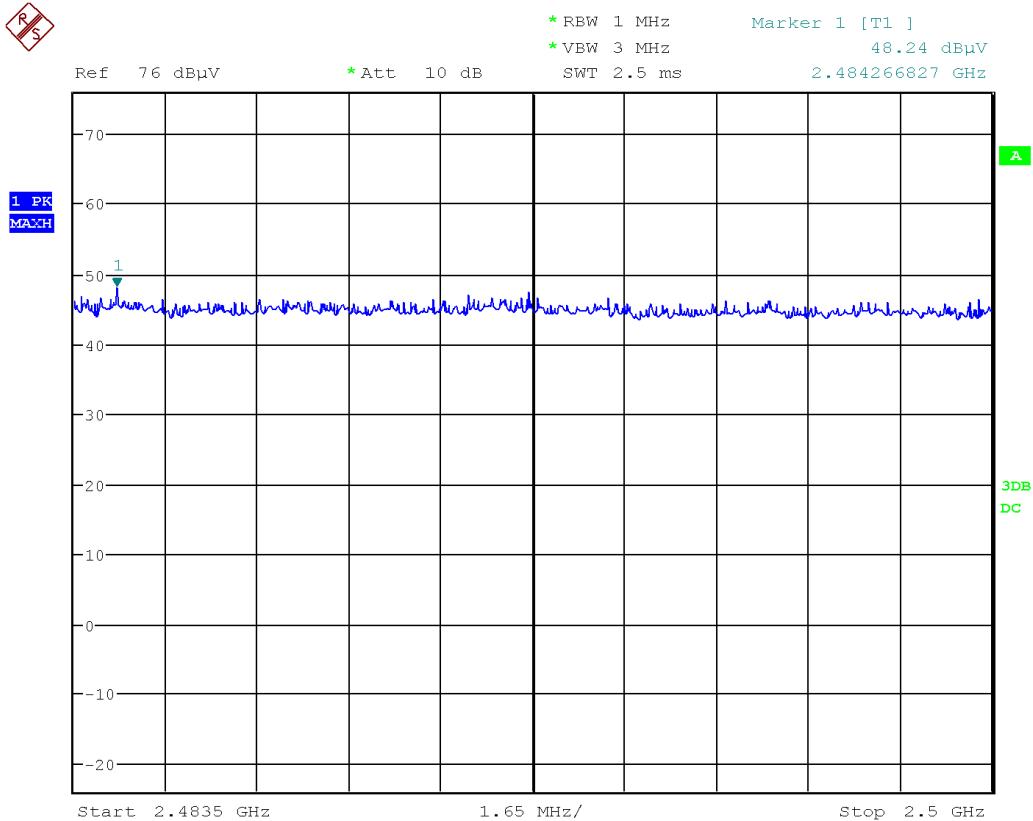


Date: 14.DEC.2021 10:39:30

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11b)  
Horizontal - Peak Emission

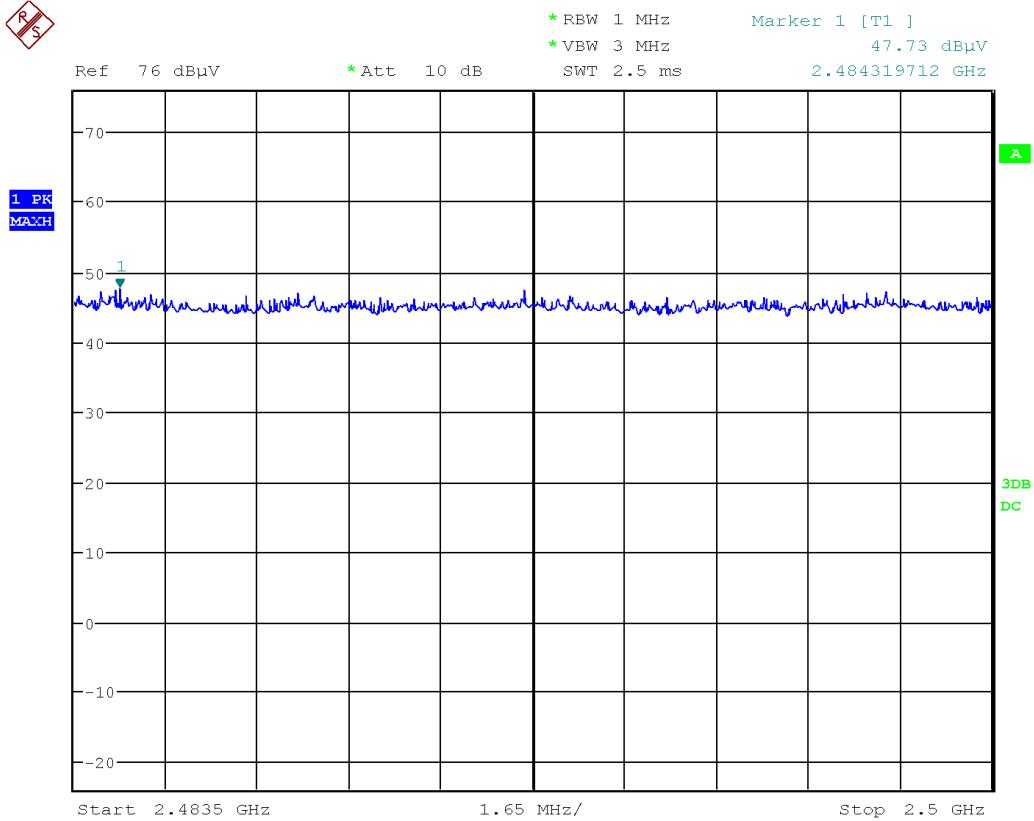


Date: 14.DEC.2021 11:03:27

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11b)  
Vertical - Peak Emission



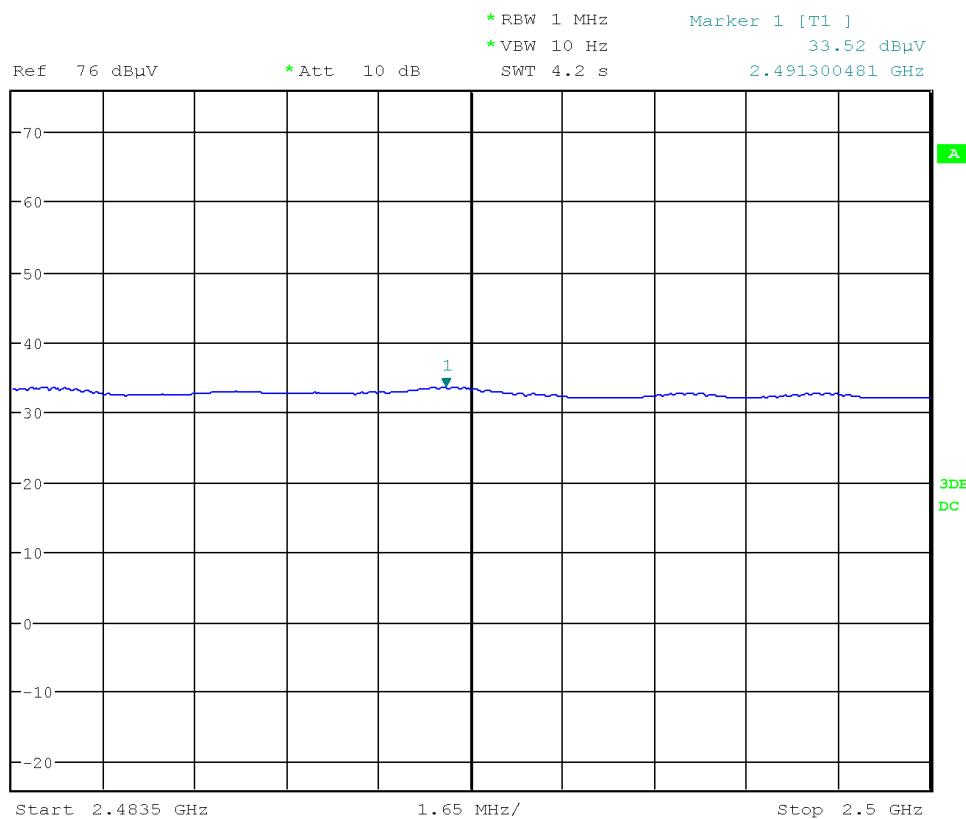
Date: 14.DEC.2021 11:07:50

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11b)  
Horizontal - Average Emission

RS

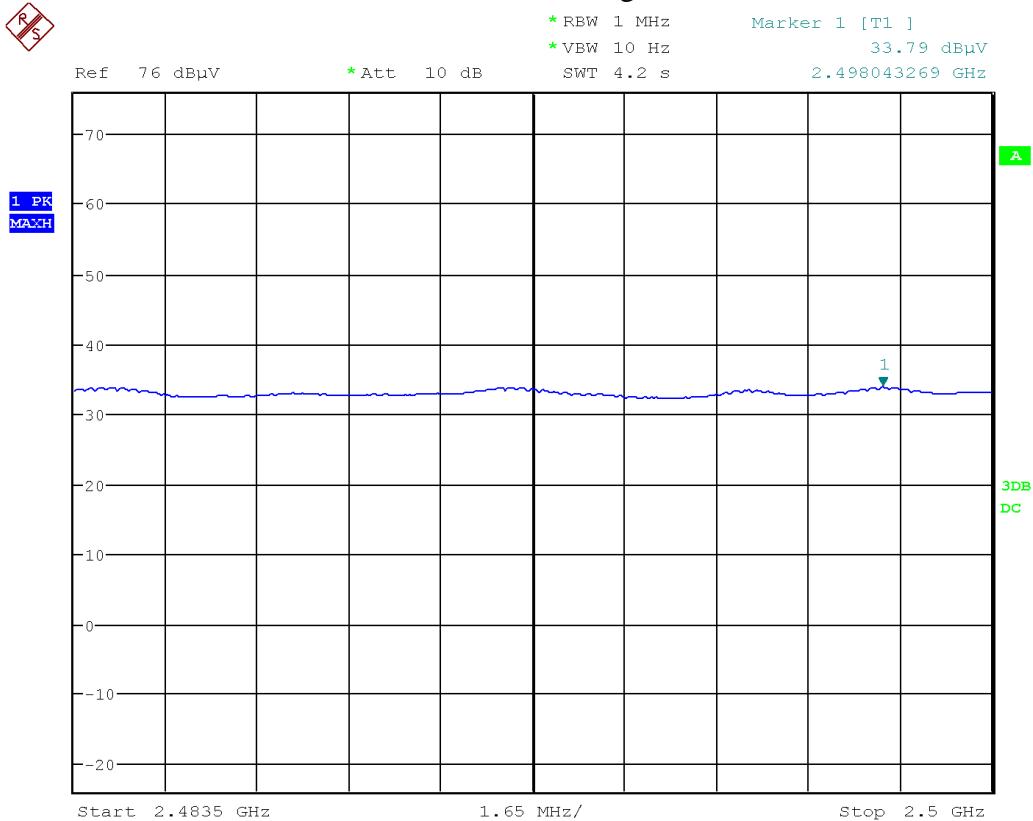


Date: 14.DEC.2021 11:03:45

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11b)  
Vertical – Average Emission



Date: 14.DEC.2021 11:08:08

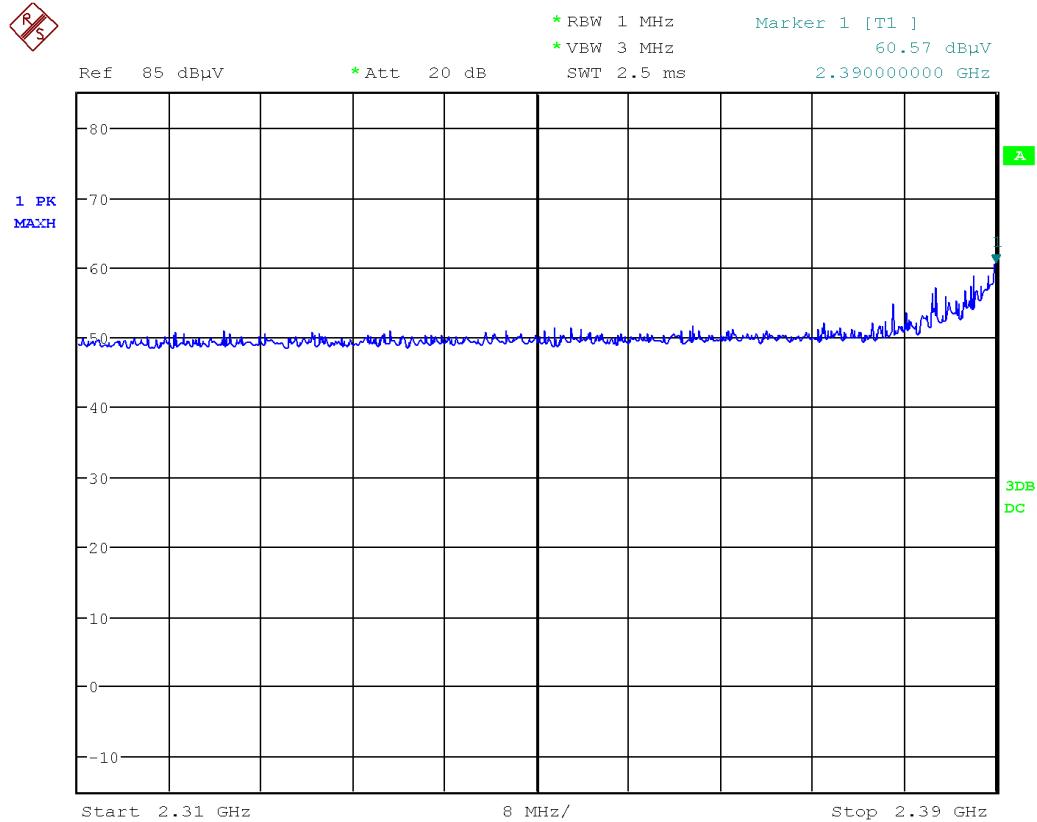
Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Band edge measurements – G-Mode

Band Edge – Low Channel (802.11g)

Horizontal - Peak Emission

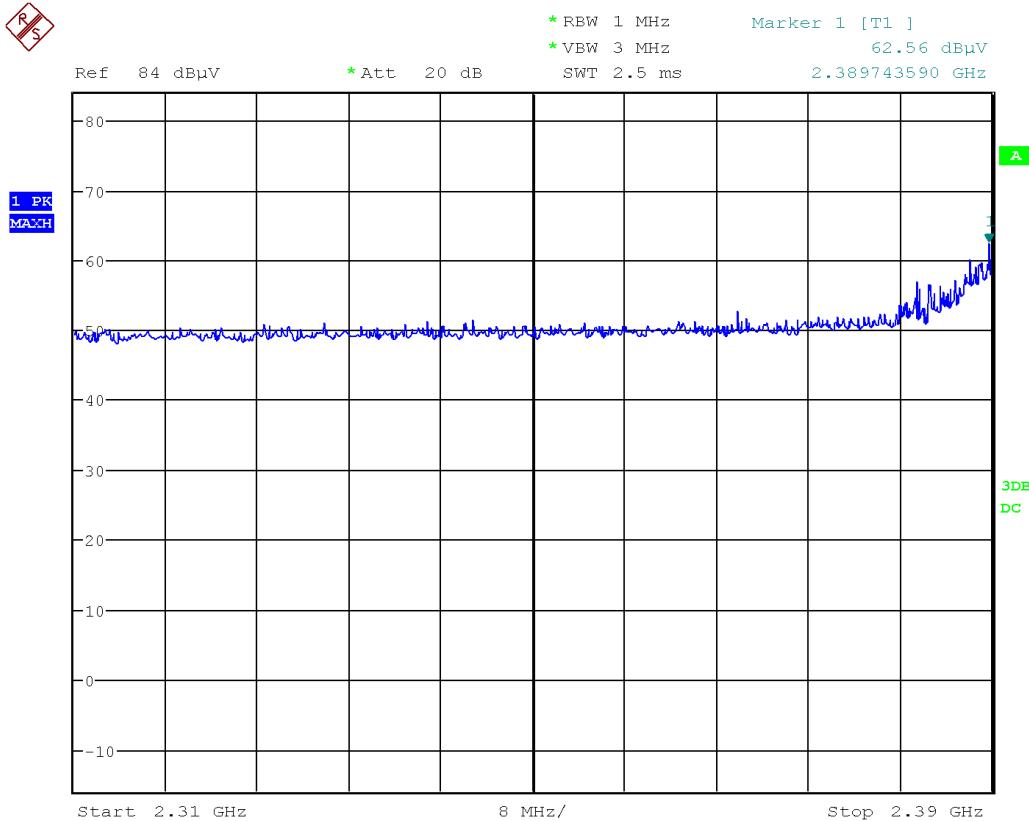


Date: 14.DEC.2021 16:52:27

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11g)  
Vertical - Peak Emission



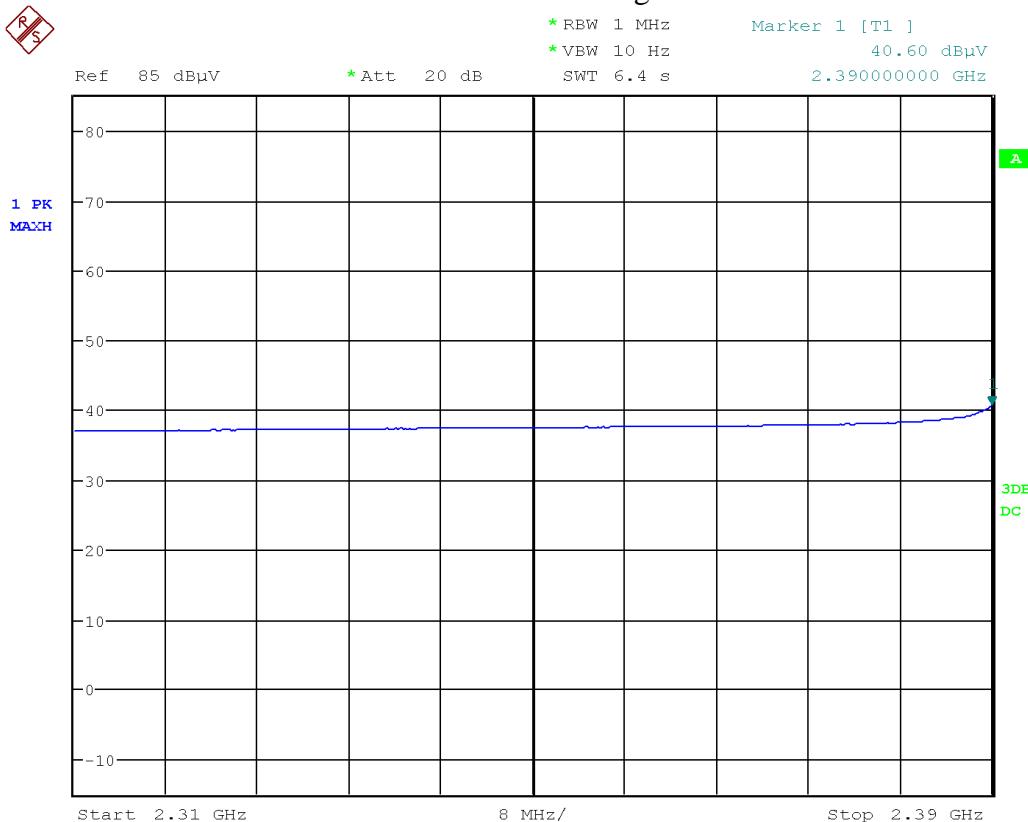
Date: 14.DEC.2021 16:56:15

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



### Band Edge – Low Channel (802.11g) Horizontal - Average Emission

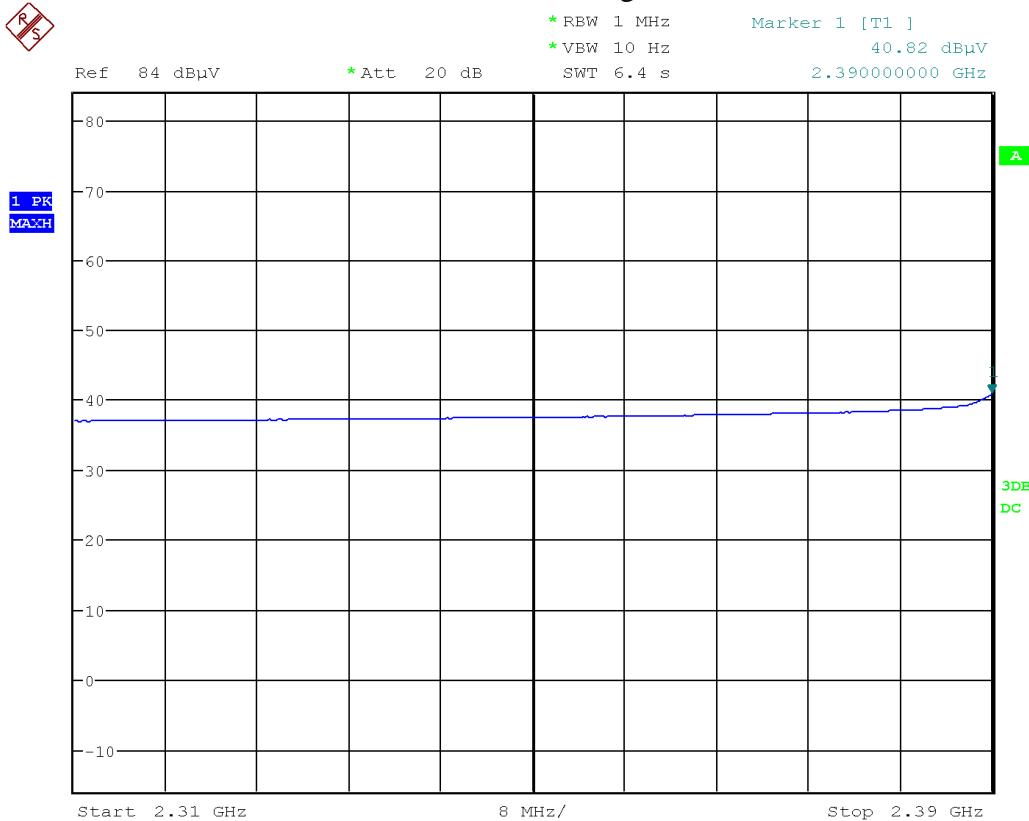


Date: 14.DEC.2021 16:52:53

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11g)  
Vertical – Average Emission

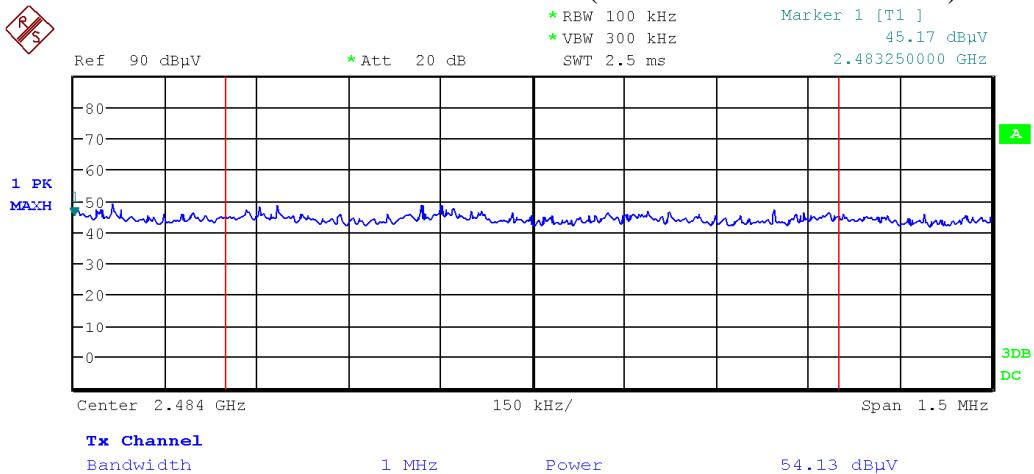


Date: 14.DEC.2021 16:56:41

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

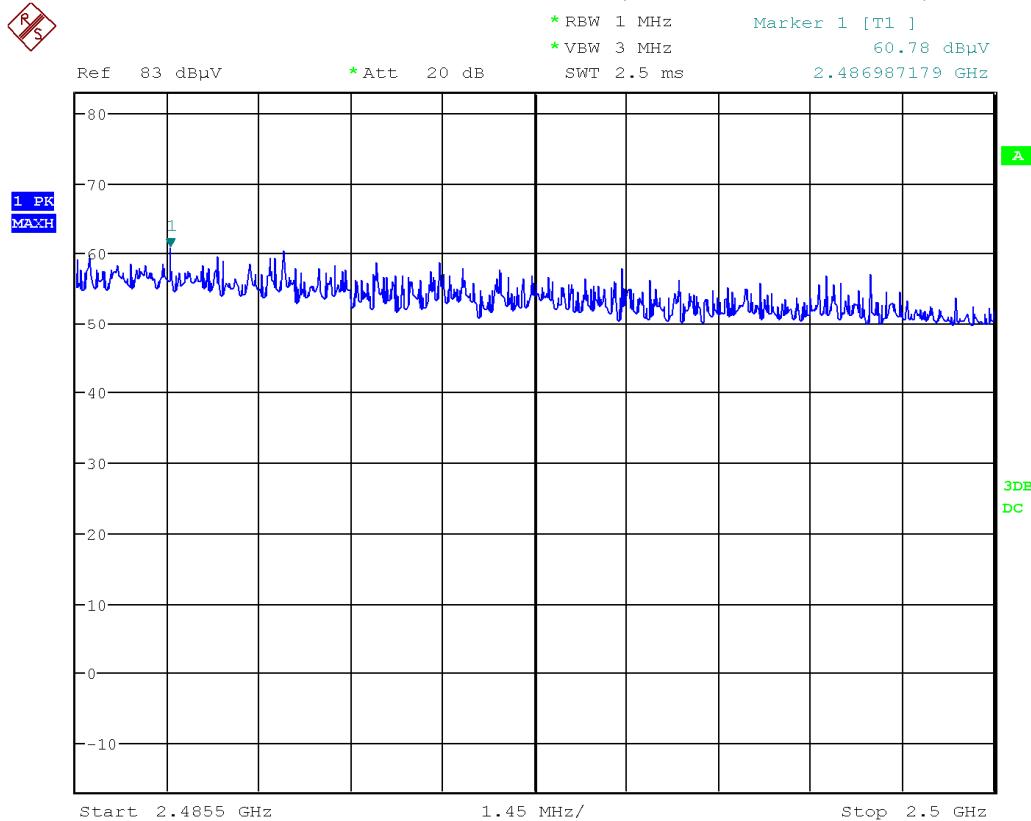
Band Edge – High Channel (802.11g)  
Horizontal - Peak Emission (2483.5 MHz – 2485.5 GHz)



Date: 14.DEC.2021 17:22:40

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11g)  
Horizontal - Peak Emission (2.4855 GHz – 2.5 GHz)



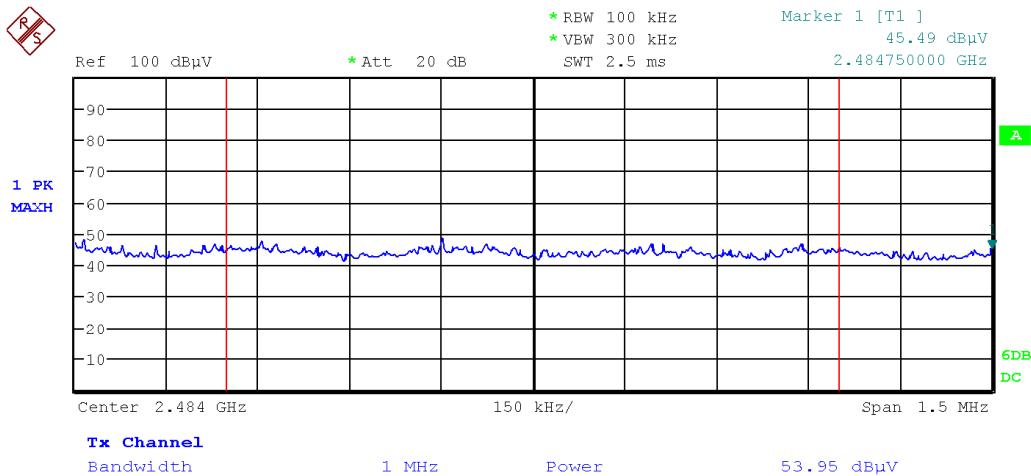
Date: 14.DEC.2021 17:18:38

Note: Restricted band Band Edge plot was taken at a 3m measurement distance.

For peak emission appearing with in 2 MHz of the Band Edge (2483.5 MHz – 2485.5 MHz), the Integration method was used to perform peak measurement. For peak emission above 2485.5 MHz, the standard method was used. The marker and integration plots show the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

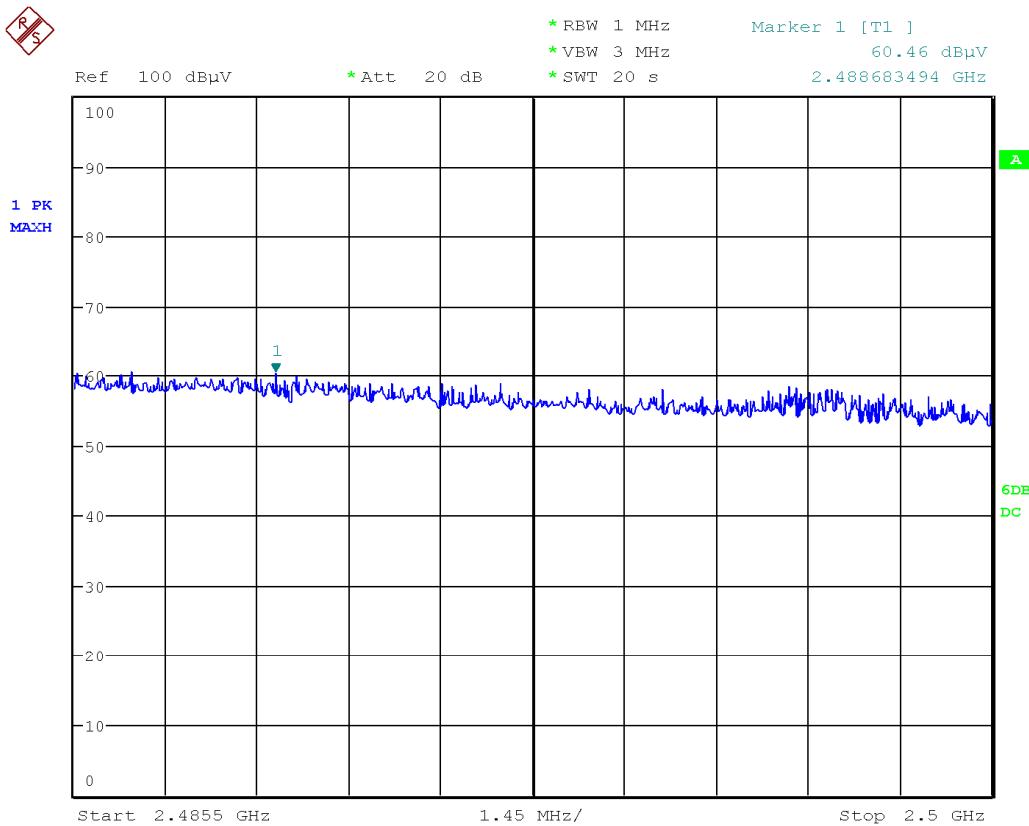
Band Edge – High Channel (802.11g)  
Vertical - Peak Emission (2483.5 MHz – 2485.5 GHz)



Date: 14.DEC.2021 17:14:18

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11g)  
Vertical - Peak Emission (2.4855 GHz – 2.5 GHz)



Date: 14.DEC.2021 17:09:55

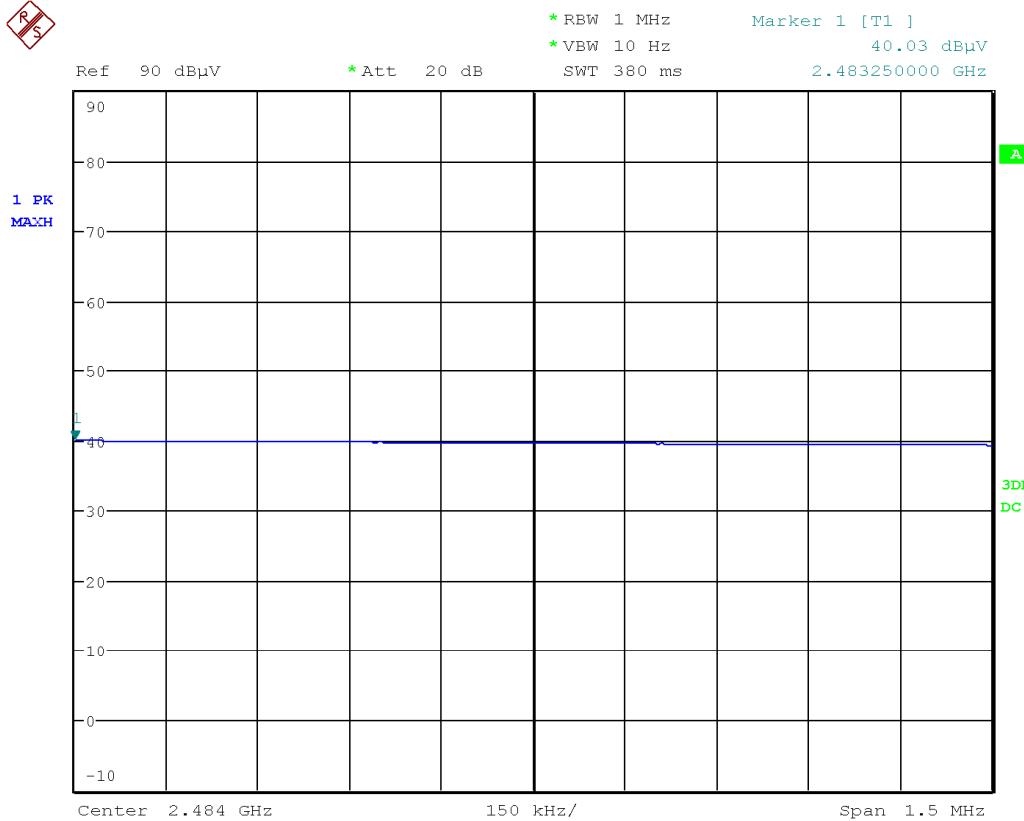
Note: Restricted band Band Edge plot was taken at a 3m measurement distance.

For peak emission appearing with in 2 MHz of the Band Edge (2483.5 MHz – 2485.5 MHz), the Integration method was used to perform peak measurement. For peak emission above 2485.5 MHz, the standard method was used. The marker and integration plots show the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11g)  
Horizontal - Average Emission (2483.5 MHz – 2485.5 GHz)

RS

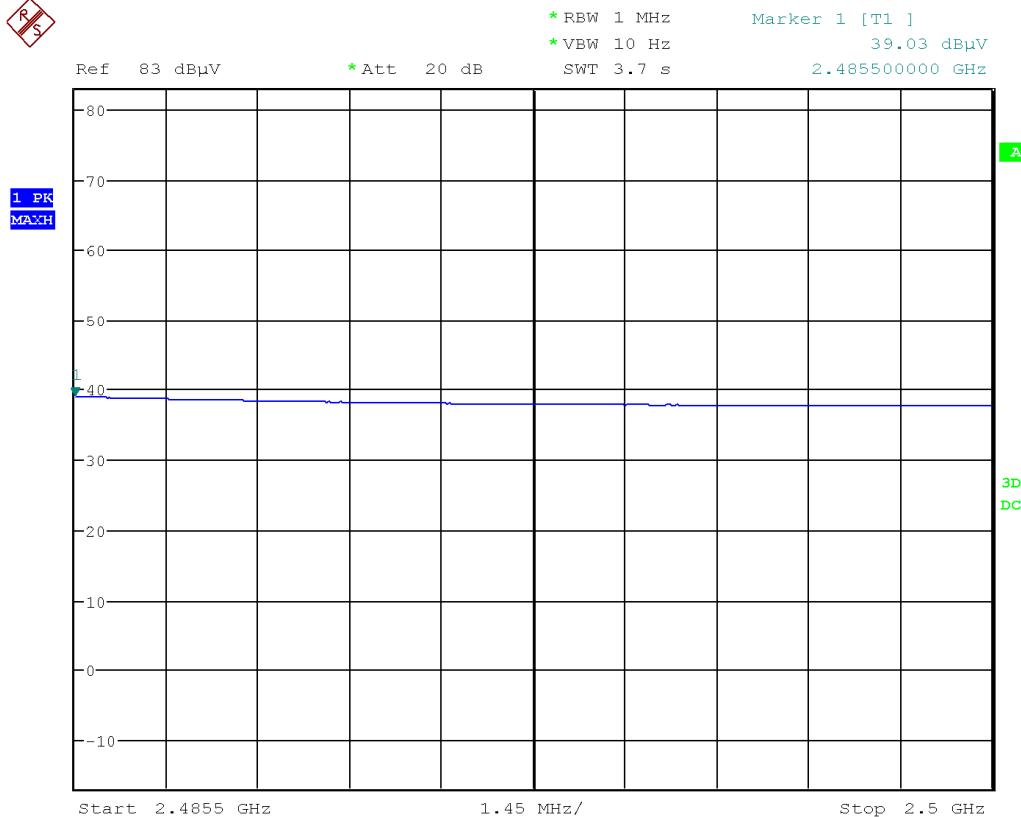


Date: 14.DEC.2021 17:23:59

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11g)  
Horizontal - Average Emission (2.4855 GHz – 2.5 GHz)

RS

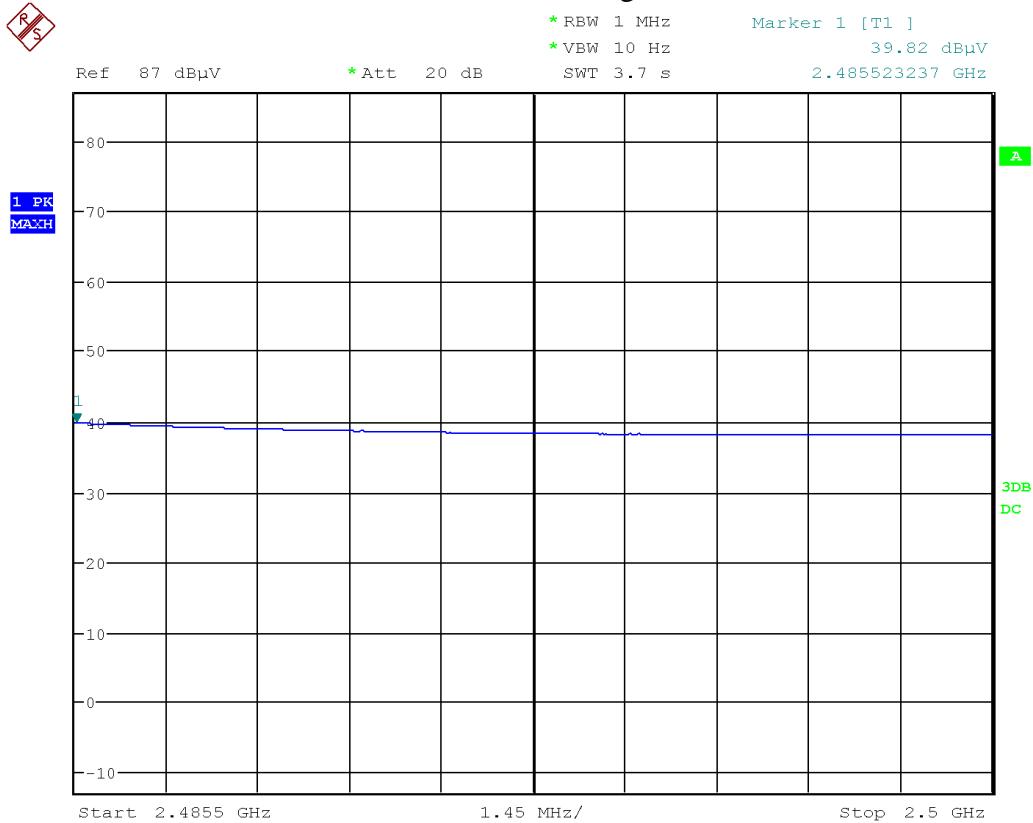


Date: 14.DEC.2021 17:18:56

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11g)  
Vertical – Average Emission



Date: 14.DEC.2021 17:04:23

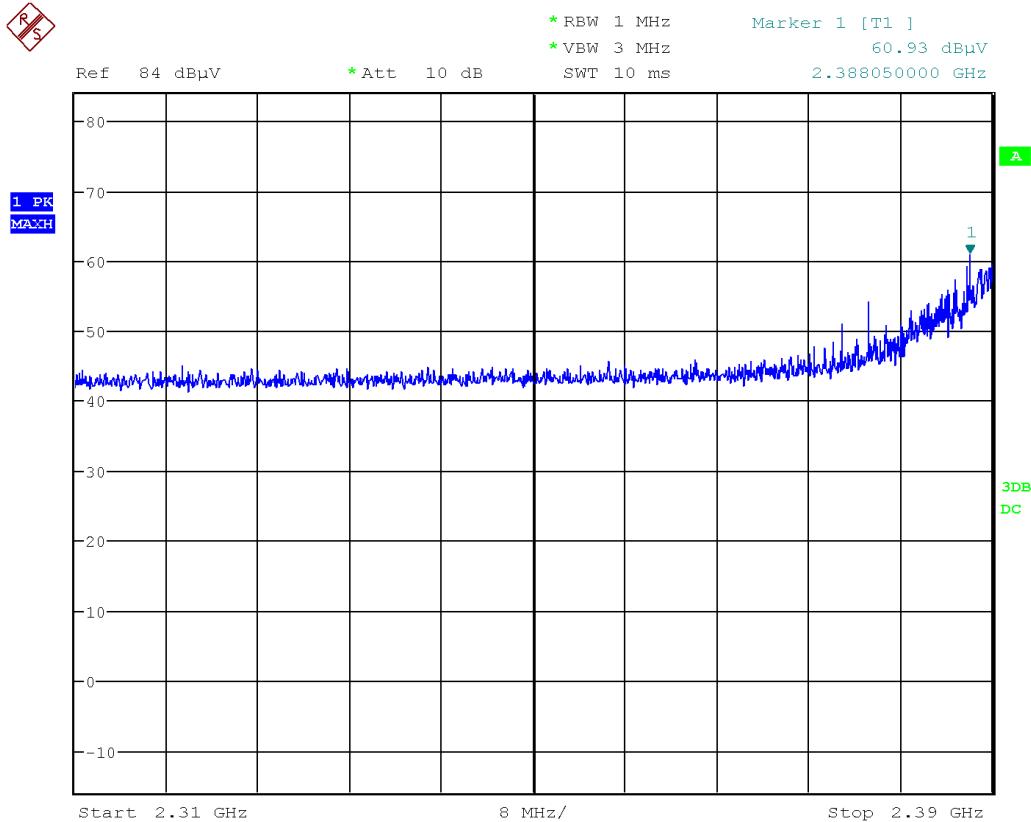
Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Band edge measurements – N-Mode

Band Edge – Low Channel (802.11n)

Horizontal - Peak Emission

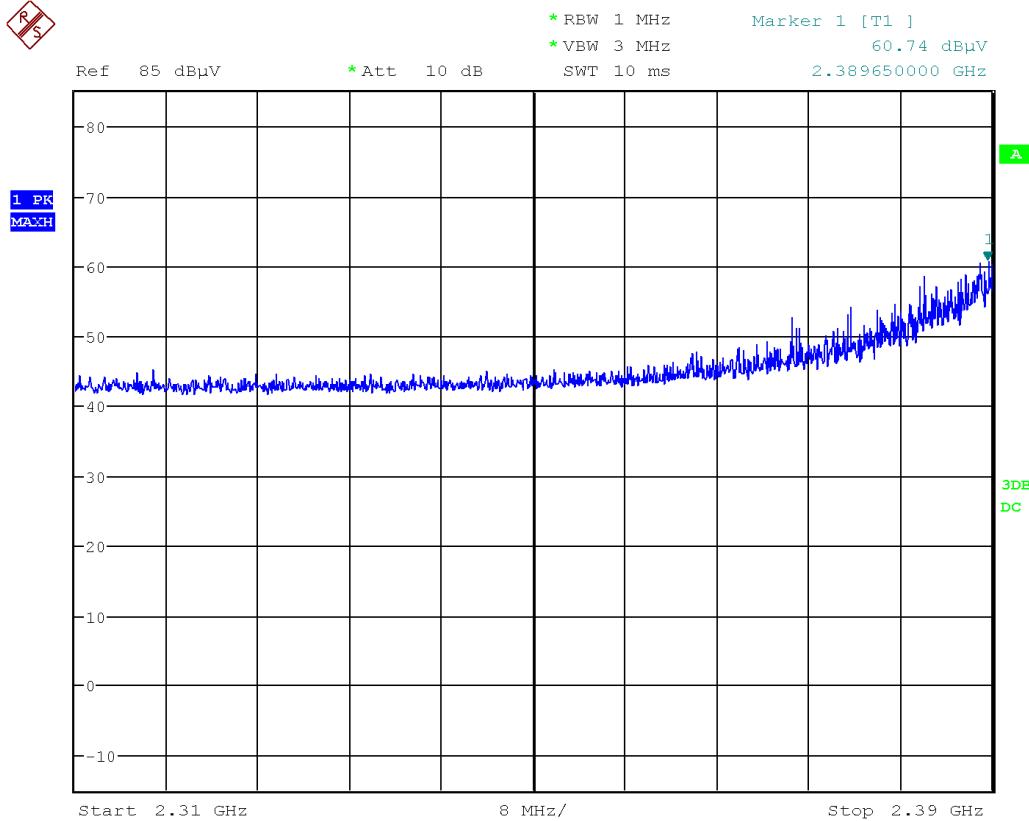


Date: 14.DEC.2021 14:19:17

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11n)  
Vertical - Peak Emission



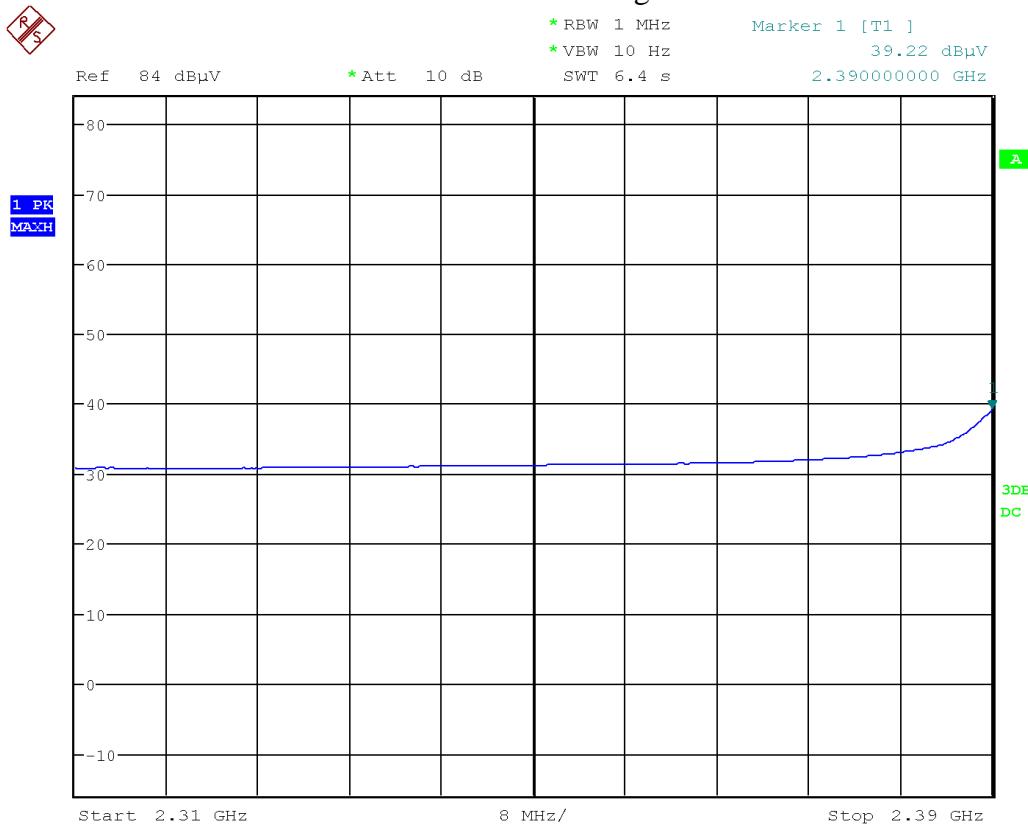
Date: 14.DEC.2021 14:05:30

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



### Band Edge – Low Channel (802.11n) Horizontal - Average Emission

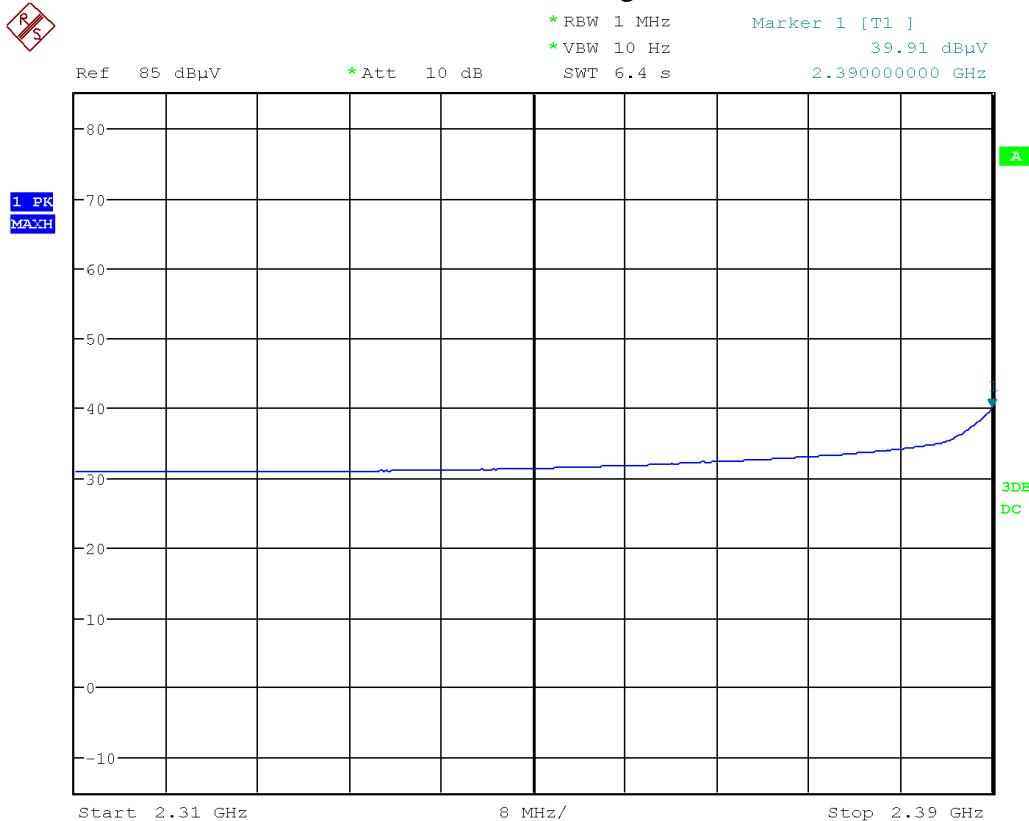


Date: 14.DEC.2021 14:19:43

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – Low Channel (802.11n)  
Vertical – Average Emission

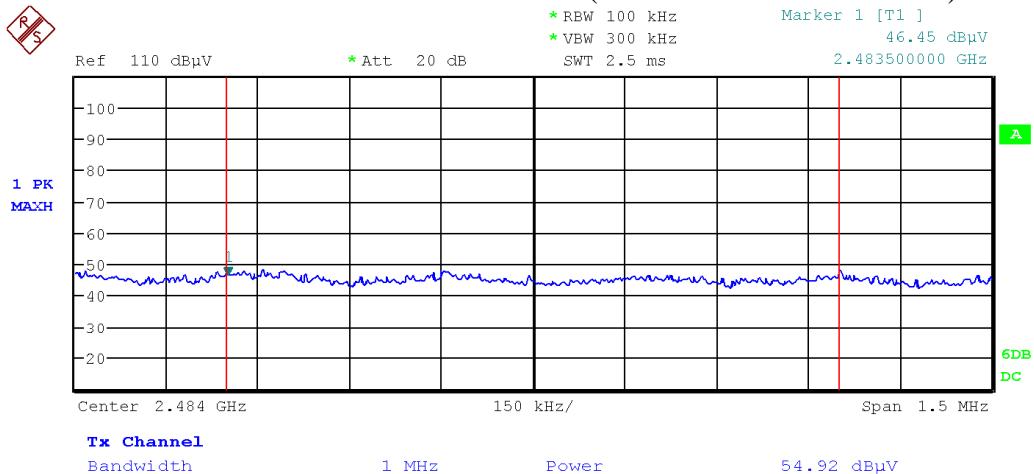


Date: 14.DEC.2021 14:05:56

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	TÜV SÜD Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11n)  
Horizontal - Peak Emission (2483.5 MHz – 2485.5 GHz)

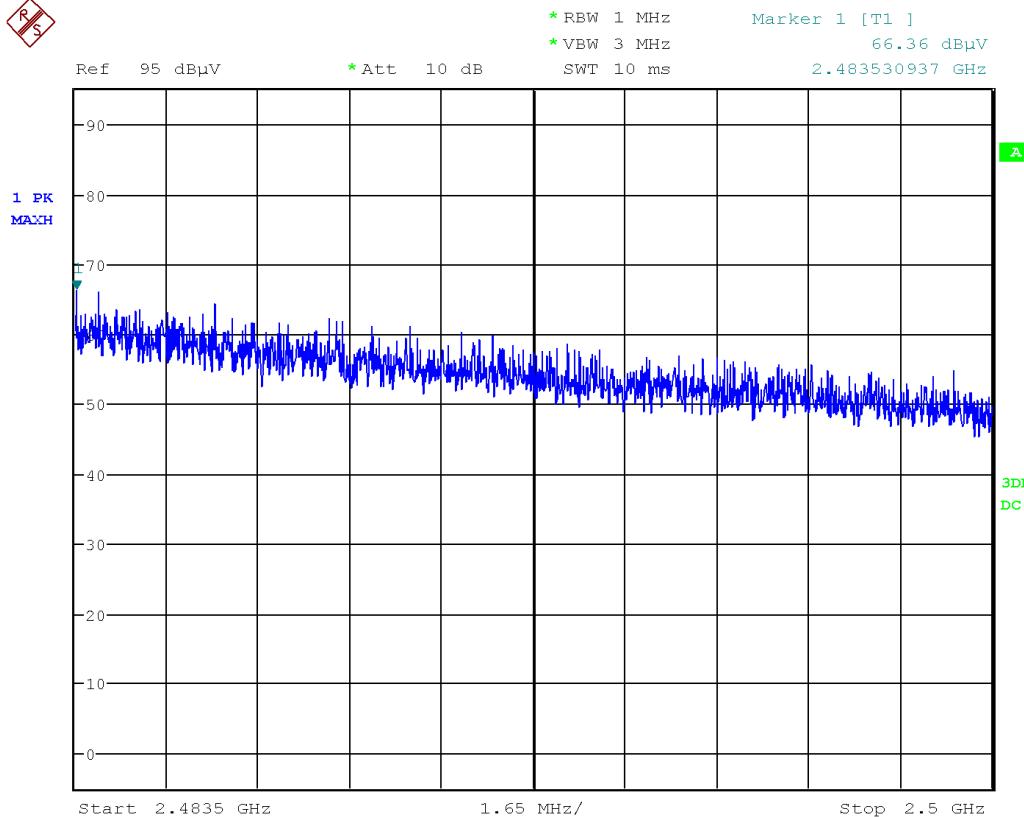


Date: 14.DEC.2021 15:46:27

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11n)  
Horizontal - Peak Emission (2.4855 GHz – 2.5 GHz)

RS



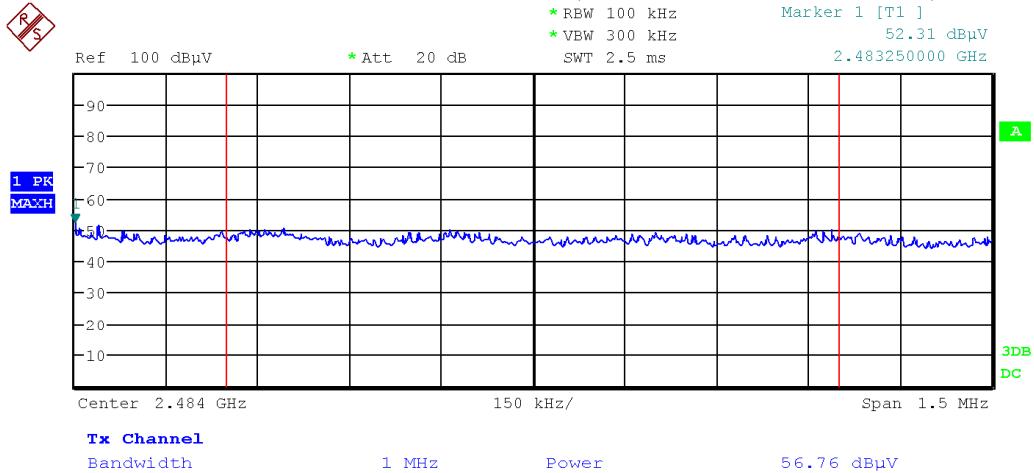
Date: 14.DEC.2021 14:29:58

Note: Restricted band Band Edge plot was taken at a 3m measurement distance.

For peak emission appearing with in 2 MHz of the Band Edge (2483.5 MHz – 2485.5 MHz), the Integration method was used to perform peak measurement. For peak emission above 2485.5 MHz, the standard method was used. The marker and integration plots show the raw value. See the Final Measurements and Results section below for correct values. Although the marker is located at 2483.5 MHz, the results table recorded the highest peak emission between 2.4855 GHz – 2.5 GHz

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11n)  
 Vertical - Peak Emission (2483.5 MHz – 2485.5 GHz)

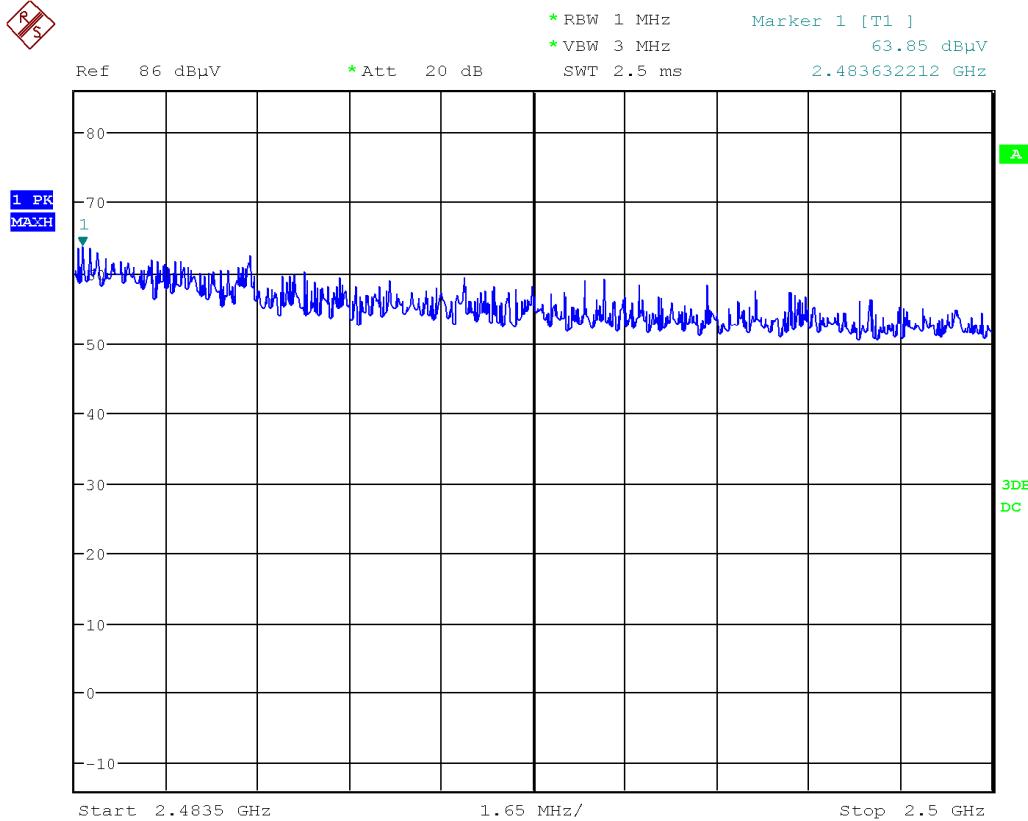


Date: 14.DEC.2021 15:54:27

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11n)  
Vertical - Peak Emission (2.4855 GHz – 2.5 GHz)

RF  
S



Date: 14.DEC.2021 16:08:34

Note: Restricted band Band Edge plot was taken at a 3m measurement distance.

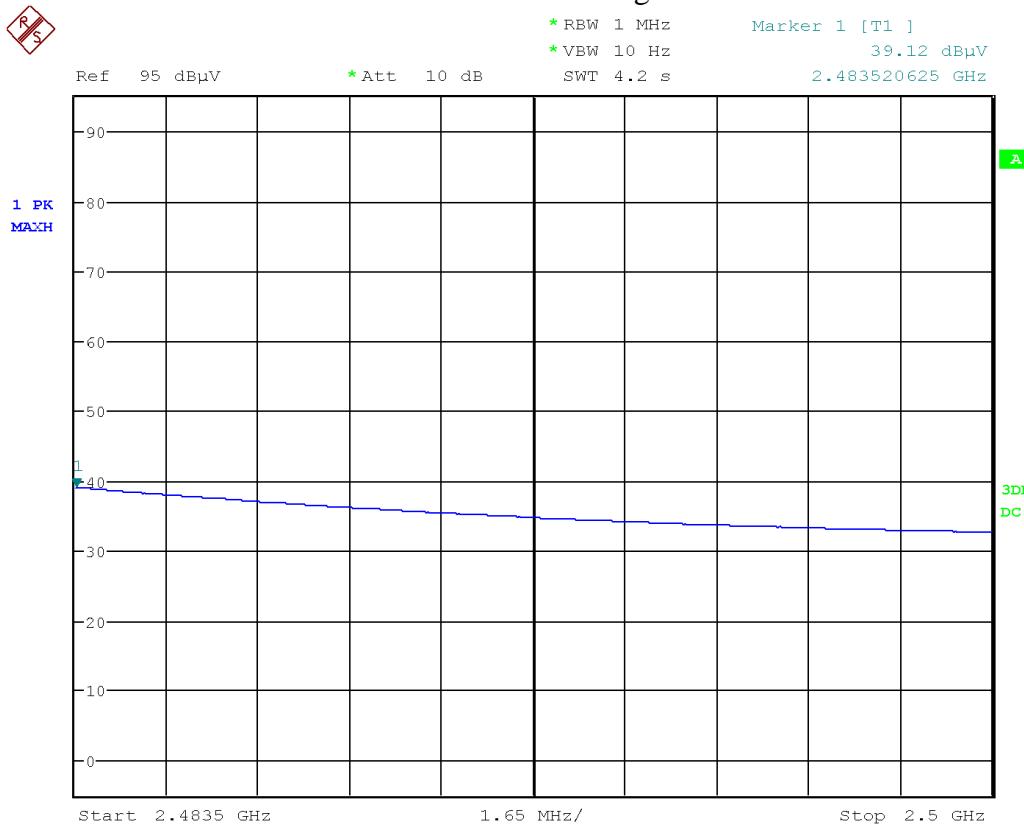
For peak emission appearing with in 2 MHz of the Band Edge (2483.5 MHz – 2485.5 MHz), the Integration method was used to perform peak measurement. For peak emission above 2485.5 MHz, the standard method was used. The marker and integration plots show the raw value. See the Final Measurements and Results section below for correct values. Although the marker is located at 2483.5 MHz, the results table recorded the highest peak emission between 2.4855 GHz – 2.5 GHz

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Band Edge – High Channel (802.11n)  
Horizontal - Average Emission

RS



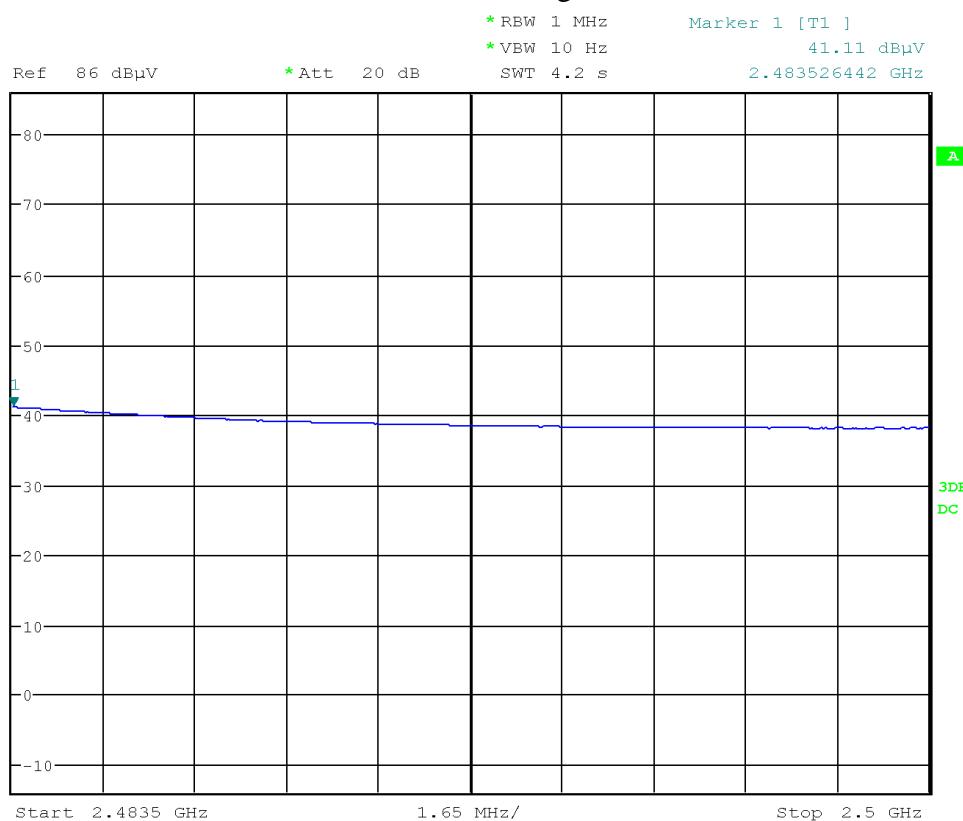
Date: 14.DEC.2021 14:30:16

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Band Edge – High Channel (802.11n)  
Vertical – Average Emission

RS



Date: 14.DEC.2021 16:08:52

Note: Restricted band Band Edge plot was taken at a 3m measurement distance. The marker shows the raw value. See the Final Measurements and Results section below for correct values.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Final Measurements and Results

The EUT passed. Low, middle, and high bands were measured for each modulation and the worst case were presented below.

In accordance with 15.247(d), only frequencies exceeding the 15.209 limit that occur within the bands listed in 15.205 need to be verified with a final detector. Emissions outside the restricted bands were measured for informational purposes.

The measurements were maximized by rotating the turn table over a full 0-360 rotation and the antenna height was varied from 1 m to 4 m.

EUT Name		EB-STATE3LT02				
Limit		FCC 15.209, Spurious				
Power Supply		24VAC				
Frequency (Hz)	Detector	Correction Factor (dB)	Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dB)	Test Result
<b>Horizontal</b>						
173.4M	QP	-13.7	36.1	43.5	7.4	Pass
172.23M	PEAK	-13.8	36.3	43.5	7.2	Pass
170.64M	PEAK	-13.9	36.1	43.5	7.4	Pass
325.44M	PEAK	-8.0	37.1	46.0	8.9	Pass
512.07M	PEAK	-2.3	37.0	46.0	9.0	Pass
165.42M	PEAK	-14.4	34.4	43.5	9.1	Pass
<b>Vertical</b>						
130.53M	QP	-17.5	38.5	43.5	5.0	Pass
133.41M	QP	-17.2	39.3	43.5	4.2	Pass
125.49M	QP	-17.5	39.7	43.5	3.8	Pass
101.4M	QP	-16.4	37.6	43.5	5.9	Pass
98.64M	PEAK	-16.5	37.0	43.5	6.5	Pass
69.48M	PEAK	-18.4	34.0	40.0	6.0	Pass

Client	Ecobee Inc.	Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	



Test Frequency (MHz)	Detection Mode	Antenna Polarity (Horz/Vert)	Received Signal (dBµV)	Antenna Factor (dB/m)	Cable Factor (dB)	Attenuator (dB)	Pre-Amp Gain (dB)	Level (dBµV/m)	Emission Limit (dBµV/m)	Margin (dB)	Result
WIFI_B - Low Channel											
20 MHz											
2412	Peak	Horz	93.4	32.1	3.2	10.0	-34.0	104.7			PASS
2412	Avg	Horz	89.1	32.1	3.2	10.0	-34.0	100.3			PASS
2412	Peak	Vert	96.5	32.1	3.2	10.0	-34.0	107.8			PASS
2412	Avg	Vert	92.0	32.1	3.2	10.0	-34.0	103.3			PASS
2384.6	Peak	Horz	47.0	32.0	3.2	10.0	-34.1	58.1	74.0	15.9	PASS
2383.7	Avg	Horz	35.7	32.0	3.2	10.0	-34.1	46.7	54.0	7.3	PASS
2383.8	Peak	Vert	48.3	32.0	3.2	10.0	-34.1	59.4	74.0	14.6	PASS
2383.7	Avg	Vert	37.9	32.0	3.2	10.0	-34.1	49.0	54.0	5.0	PASS
4824	Peak	Horz	42.5	34.2	4.3	0.0	-32.5	48.4	74.0	25.6	PASS
4824	Avg	Horz	28.5	34.2	4.3	0.0	-32.5	34.5	54.0	19.5	PASS
4824	Peak	Vert	42.2	34.2	4.3	0.0	-32.5	48.1	74.0	25.9	PASS
4824	Avg	Vert	27.6	34.2	4.3	0.0	-32.5	33.6	54.0	20.4	PASS
7236	Peak	Horz	42.8	35.7	6.0	0.0	-32.9	51.6	74.0	22.4	PASS
7236	Avg	Horz	27.2	35.7	6.0	0.0	-32.9	36.0	54.0	18.0	PASS
7236	Peak	Vert	42.0	35.7	6.0	0.0	-32.9	50.7	74.0	23.3	PASS
7236	Avg	Vert	27.3	35.7	6.0	0.0	-32.9	36.1	54.0	17.9	PASS
WIFI_B - Mid Channel											
20 MHz											
2437	Peak	Horz	93.6	32.2	3.2	10.0	-33.9	105.1			PASS
2437	Avg	Horz	89.1	32.2	3.2	10.0	-33.9	100.6			PASS
2437	Peak	Vert	96.0	32.2	3.2	10.0	-33.9	107.5			PASS
2437	Avg	Vert	91.7	32.2	3.2	10.0	-33.9	103.2			PASS
4874	Peak	Horz	42.4	34.2	4.4	0.0	-32.6	48.3	74.0	25.7	PASS
4874	Avg	Horz	28.7	34.2	4.4	0.0	-32.6	34.6	54.0	19.4	PASS
4874	Peak	Vert	42.5	34.2	4.4	0.0	-32.6	48.4	74.0	25.6	PASS
4874	Avg	Vert	29.1	34.2	4.4	0.0	-32.6	35.1	54.0	18.9	PASS
7311	Peak	Horz	42.2	35.7	6.0	0.0	-33.0	50.8	74.0	23.2	PASS
7311	Avg	Horz	27.6	35.7	6.0	0.0	-33.0	36.3	54.0	17.7	PASS
7311	Peak	Vert	42.9	35.7	6.0	0.0	-33.0	51.6	74.0	22.4	PASS
7311	Avg	Vert	27.6	35.7	6.0	0.0	-33.0	36.3	54.0	17.7	PASS
9748	Peak	Horz	40.8	36.8	6.9	0.0	-32.2	52.4	74.0	21.6	PASS
9748	Avg	Horz	26.3	36.8	6.9	0.0	-32.2	37.9	54.0	16.1	PASS
9748	Peak	Vert	40.8	36.8	6.9	0.0	-32.2	52.4	74.0	21.6	PASS
9748	Avg	Vert	26.3	36.8	6.9	0.0	-32.2	37.9	54.0	16.1	PASS
WIFI_B - High Channel											
20 MHz											
2462	Peak	Horz	93.7	32.3	3.2	10.0	-33.8	105.3			PASS
2462	Avg	Horz	89.2	32.3	3.2	10.0	-33.8	100.9			PASS
2462	Peak	Vert	97.5	32.3	3.2	10.0	-33.8	109.1			PASS
2462	Avg	Vert	92.9	32.3	3.2	10.0	-33.8	104.6			PASS
2484.3	Peak	Horz	48.2	32.2	3.2	10.0	-33.8	59.9	74.0	14.1	PASS
2491.3	Avg	Horz	33.5	32.2	3.2	10.0	-33.7	45.2	54.0	8.8	PASS
2484.3	Peak	Vert	47.7	32.2	3.2	10.0	-33.8	59.4	74.0	14.6	PASS
2498	Avg	Vert	33.8	32.2	3.2	10.0	-33.7	45.5	54.0	8.5	PASS
4924	Peak	Horz	42.9	34.1	4.4	0.0	-32.6	48.9	74.0	25.1	PASS
4924	Avg	Horz	28.6	34.1	4.4	0.0	-32.6	34.6	54.0	19.4	PASS
4924	Peak	Vert	42.5	34.1	4.4	0.0	-32.6	48.5	74.0	25.5	PASS
4924	Avg	Vert	28.2	34.1	4.4	0.0	-32.6	34.2	54.0	19.8	PASS
7386	Peak	Horz	36.6	35.7	5.9	0.0	-33.1	45.1	74.0	28.9	PASS
7386	Avg	Horz	27.6	35.7	5.9	0.0	-33.1	36.2	54.0	17.8	PASS
7386	Peak	Vert	42.8	35.7	5.9	0.0	-33.1	51.4	74.0	22.6	PASS
7386	Avg	Vert	27.7	35.7	5.9	0.0	-33.1	36.2	54.0	17.8	PASS

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Test Frequency (MHz)	Detection Mode	Antenna Polarity (Horz/Vert)	Received Signal (dB $\mu$ V)	Antenna Factor (dB/m)	Cable Factor (dB)	Attenuator (dB)	Pre-Amp Gain (dB)	Level (dB $\mu$ V/m)	Emission Limit (dB $\mu$ V/m)	Margin (dB)	Result
WIFI_G - Low Channel											
20 MHz											
2412	Peak	Horz	95.1	32.1	3.2	10.0	-34.0	106.4			PASS
2412	Avg	Horz	83.3	32.1	3.2	10.0	-34.0	94.6			PASS
2412	Peak	Vert	97.6	32.1	3.2	10.0	-34.0	108.9			PASS
2412	Avg	Vert	86.0	32.1	3.2	10.0	-34.0	97.3			PASS
2499	Peak	Horz	52.1	32.2	3.2	10.0	-33.7	63.8	74.0	10.2	PASS
2499	Avg	Horz	37.4	32.2	3.2	10.0	-33.7	49.1	54.0	4.9	PASS
2489.5	Peak	Vert	51.9	32.2	3.2	10.0	-33.8	63.6	74.0	10.4	PASS
2497	Avg	Vert	37.4	32.2	3.2	10.0	-33.7	49.1	54.0	4.9	PASS
4824	Peak	Horz	38.3	34.2	4.3	0.0	-32.5	44.3	74.0	29.7	PASS
4824	Avg	Horz	22.9	34.2	4.3	0.0	-32.5	28.9	54.0	25.1	PASS
4824	Peak	Vert	37.2	34.2	4.3	0.0	-32.5	43.1	74.0	30.9	PASS
4824	Avg	Vert	22.9	34.2	4.3	0.0	-32.5	28.9	54.0	25.1	PASS
7236	Peak	Horz	36.4	35.7	6.0	0.0	-32.9	45.2	74.0	28.8	PASS
7236	Avg	Horz	22.2	35.7	6.0	0.0	-32.9	31.0	54.0	23.0	PASS
7236	Peak	Vert	36.3	35.7	6.0	0.0	-32.9	45.1	74.0	28.9	PASS
7236	Avg	Vert	23.1	35.7	6.0	0.0	-32.9	31.9	54.0	22.1	PASS
WIFI_G - Mid Channel											
20 MHz											
2437	Peak	Horz	96.6	32.2	3.2	10.0	-33.9	108.2			PASS
2437	Avg	Horz	84.7	32.2	3.2	10.0	-33.9	96.3			PASS
2437	Peak	Vert	98.3	32.2	3.2	10.0	-33.9	109.8			PASS
2437	Avg	Vert	86.2	32.2	3.2	0.0	-33.9	87.7			PASS
4874	Peak	Horz	37.7	34.2	4.4	0.0	-32.6	43.6	74.0	30.4	PASS
4874	Avg	Horz	23.0	34.2	4.4	0.0	-32.6	29.0	54.0	25.0	PASS
4874	Peak	Vert	38.0	34.2	4.4	0.0	-32.6	43.9	74.0	30.1	PASS
4874	Avg	Vert	23.1	34.2	4.4	0.0	-32.6	29.0	54.0	25.0	PASS
7311	Peak	Horz	37.5	35.7	6.0	0.0	-33.0	46.2	74.0	27.8	PASS
7311	Avg	Horz	22.5	35.7	6.0	0.0	-33.0	31.1	54.0	22.9	PASS
7311	Peak	Vert	37.5	35.7	6.0	0.0	-33.0	46.2	74.0	27.8	PASS
7311	Avg	Vert	22.5	35.7	6.0	0.0	-33.0	31.1	54.0	22.9	PASS
WIFI_G - High Channel											
20 MHz											
2462	Peak	Horz	95.1	32.3	3.2	10.0	-33.8	106.7			PASS
2462	Avg	Horz	83.3	32.3	3.2	10.0	-33.8	95.0			PASS
2462	Peak	Vert	98.5	32.3	3.2	10.0	-33.8	110.2			PASS
2462	Avg	Vert	86.8	32.3	3.2	10.0	-33.8	98.5			PASS
2483.5	Peak	Horz	54.1	32.2	3.2	10.0	-33.8	65.8	74.0	8.2	PASS
2483.5	Avg	Horz	40.0	32.2	3.2	10.0	-33.8	51.7	54.0	2.3	PASS
2483.5	Peak	Vert	54.0	32.2	3.2	10.0	-33.8	65.6	74.0	8.4	PASS
2483.5	Avg	Vert	41.3	32.2	3.2	10.0	-33.8	53.0	54.0	1.0	PASS
2487	Peak	Horz	60.8	32.2	3.2	10.0	-33.8	72.5	74.0	1.5	PASS
2485.5	Avg	Horz	39.0	32.2	3.2	10.0	-33.8	50.7	54.0	3.3	PASS
2488.6	Peak	Vert	60.5	32.2	3.2	10.0	-33.8	72.2	74.0	1.8	PASS
2485.5	Avg	Vert	40.1	32.2	3.2	10.0	-33.8	51.8	54.0	2.2	PASS

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

Test Frequency (MHz)	Detection Mode	Antenna Polarity (Horz/Vert)	Received Signal (dB $\mu$ V)	Antenna Factor (dB/m)	Cable Factor (dB)	Attenuator (dB)	Pre-Amp Gain (dB)	Level (dB $\mu$ V/m)	Emission Limit (dB $\mu$ V/m)	Margin (dB)	Result
WIFI_N - Low Channel 20 MHz											
2412	Peak	Horz	95.0	32.1	3.2	10.0	-34.0	106.3			PASS
2412	Avg	Horz	82.6	32.1	3.2	10.0	-34.0	93.9			PASS
2412	Peak	Vert	97.6	32.1	3.2	10.0	-34.0	108.9			PASS
2412	Avg	Vert	85.9	32.1	3.2	10.0	-34.0	97.2			PASS
2388.1	Peak	Horz	60.9	32.0	3.2	10.0	-34.1	72.0	74.0	2.0	PASS
2390	Avg	Horz	39.2	32.0	3.2	10.0	-34.1	50.3	54.0	3.7	PASS
2389.7	Peak	Vert	60.7	32.0	3.2	10.0	-34.1	71.9	74.0	2.1	PASS
2390	Avg	Vert	39.9	32.0	3.2	10.0	-34.1	51.0	54.0	3.0	PASS
4824	Peak	Horz	37.7	34.2	4.3	0.0	-32.5	43.7	74.0	30.3	PASS
4824	Avg	Horz	22.9	34.2	4.3	0.0	-32.5	28.9	54.0	25.1	PASS
4824	Peak	Vert	37.2	34.2	4.3	0.0	-32.5	43.2	74.0	30.8	PASS
4824	Avg	Vert	22.9	34.2	4.3	0.0	-32.5	28.9	54.0	25.1	PASS
7236	Peak	Horz	37.1	35.7	6.0	0.0	-32.9	45.9	74.0	28.1	PASS
7236	Avg	Horz	22.2	35.7	6.0	0.0	-32.9	31.0	54.0	23.0	PASS
7236	Peak	Vert	37.3	35.7	6.0	0.0	-32.9	46.0	74.0	28.0	PASS
7236	Avg	Vert	22.2	35.7	6.0	0.0	-32.9	31.0	54.0	23.0	PASS
WIFI_N - Mid Channel 20 MHz											
2437	Peak	Horz	94.7	32.2	3.2	10.0	-33.9	106.2			PASS
2437	Avg	Horz	83.1	32.2	3.2	10.0	-33.9	94.6			PASS
2437	Peak	Vert	96.5	32.2	3.2	10.0	-33.9	108.0			PASS
2437	Avg	Vert	84.8	32.2	3.2	0.0	-33.9	86.4			PASS
WIFI_N - High Channel 20 MHz											
2462	Peak	Horz	95.0	32.3	3.2	10.0	-33.8	106.6			PASS
2462	Avg	Horz	83.1	32.3	3.2	10.0	-33.8	94.8			PASS
2462	Peak	Vert	97.7	32.3	3.2	10.0	-33.8	109.4			PASS
2462	Avg	Vert	86.2	32.3	3.2	10.0	-33.8	97.9			PASS
2483.5	Peak	Horz	54.9	32.2	3.2	10.0	-33.8	66.6	74.0	7.4	PASS
2483.5	Avg	Horz	39.1	32.2	3.2	10.0	-33.8	50.8	54.0	3.2	PASS
2483.6	Peak	Vert	56.8	32.2	3.2	10.0	-33.8	68.5	74.0	5.5	PASS
2483.5	Avg	Vert	41.1	32.2	3.2	10.0	-33.8	52.8	54.0	1.2	PASS
2485.5	Peak	Horz	61.3	32.2	3.2	10.0	-33.8	73.0	74.0	1.0	PASS
2485.5	Avg	Horz	40.7	32.2	3.2	10.0	-33.8	52.4	54.0	1.6	PASS
2485.5	Peak	Vert	61.8	32.2	3.2	10.0	-33.8	73.5	74.0	0.5	PASS
2485.5	Avg	Vert	40.7	32.2	3.2	10.0	-33.8	52.4	54.0	1.6	PASS

Client	Ecobee Inc.	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	 Canada
Product	EB-STATE3LT02		
Standard(s)			

## Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Loop Antenna	EM 6871	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 70
Loop Antenna	EM 6872	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 71
BiLog Antenna	3142-C	ETS-Lindgren	Mar. 26, 2021	Mar. 26, 2023	GEMC 137
Horn Antenna 1 – 6 GHz	3117	ETS-Lindgren	Feb. 17, 2020	Feb. 17, 2022	GEMC 340
Horn Antenna 6 – 18 GHz	WBH218HN	Q-par	Apr. 1, 2020	Apr. 1, 2022	GEMC 6375
Horn Antenna 18 - 25 GHz	SAS-572	A.H. Systems	Dec. 1, 2020	Dec. 1, 2022	GEMC 6371
Attenuator 6 dB	612-6-1	Meca Electronics, Inc	NCR	NCR	GEMC 287
Pre-Amp 9 kHz – 1 GHz	LNA 6901	Teseq	Feb. 12, 2021	Feb. 12, 2023	GEMC 168
Pre-Amp 1 – 26.5 GHz	HP 8449B	HP	Aug. 4, 2020	Aug. 4, 2022	GEMC 312
Pre-Amp 18 – 40 GHz	PAM-840A	Com-Power Corporation	May 13, 2021	May 13, 2023	GEMC 252
2.4GHz-2.5GHz Notch Filter	BRM50702	Micro-Tronics	NCR	NCR	GEMC 230
RF Cable <1GHz	LMR-400	LexTec	NCR	NCR	GEMC 27
RF Cable <1GHz	HP305S	Semflex	NCR	NCR	GEMC 310
RF Cable >1GHz	EMC2	MegaPhase	NCR	NCR	GEMC 370
Emissions Software	V2.1.0	TUV SUD Canada, Inc.	NCR	NCR	GEMC 361

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Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Power Line Conducted Emissions

### Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard and measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio, maritime radio, CB radio, and so on, from unwanted interference.

### Limits & Method

The method is as defined in ANSI C63.10. The limits are as defined in FCC Part 15 Section 15.107 and ICES-003 Section 6.1:

Average Limits		Quasi-Peak Limits	
150 kHz – 500 kHz	56 to 46* dB $\mu$ V	150 kHz – 500 kHz	66 to 56* dB $\mu$ V
500 kHz – 5 MHz	46 dB $\mu$ V	500 kHz – 5 MHz	56 dB $\mu$ V
5 MHz – 30 MHz	50 dB $\mu$ V	5 MHz – 30 MHz	60 dB $\mu$ V

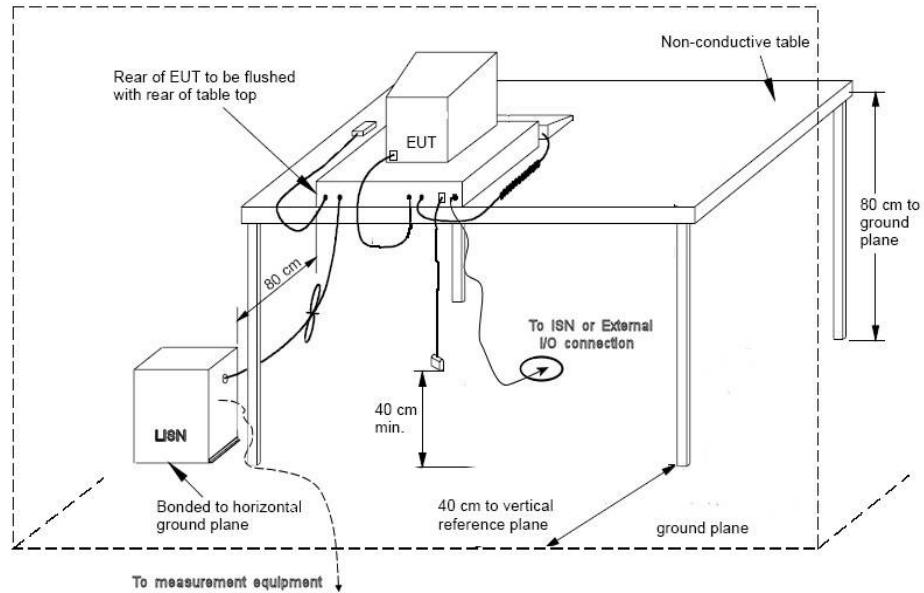
\* Decreases linearly with the logarithm of the frequency

Both Quasi-Peak and Average limits are applicable, and each is specified as being measured with a resolution bandwidth of 9 kHz. For Quasi-Peak, a video bandwidth at least three times greater than the resolution bandwidth is used.

If the Peak or Quasi-Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
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### Typical Setup Diagram



### Measurement Uncertainty

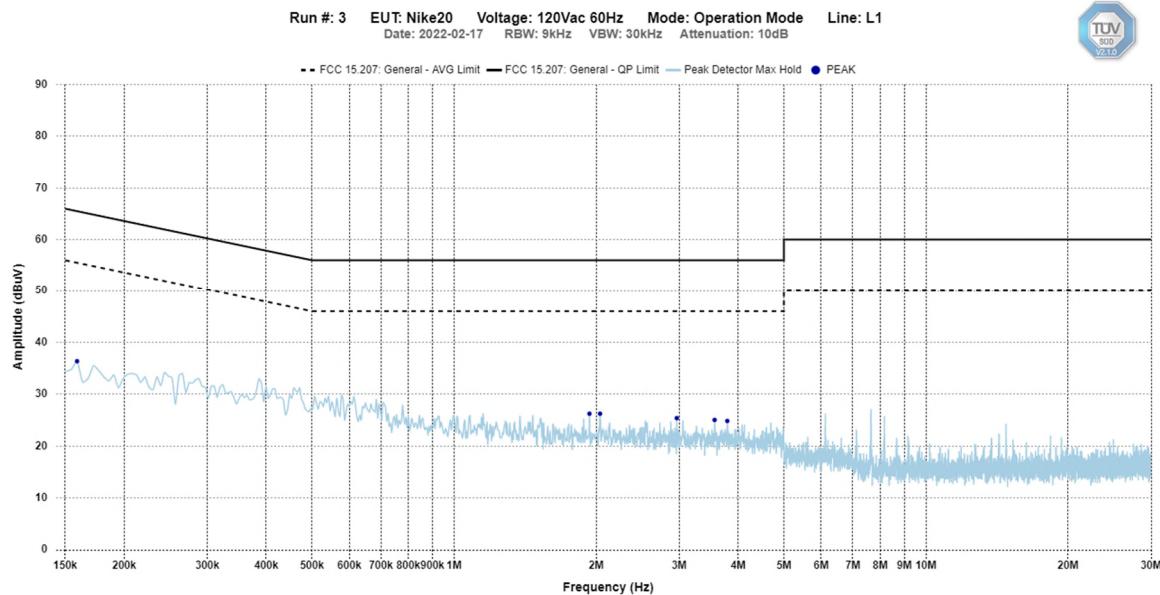
The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is  $\pm 2.27\text{dB}$  with a 'k=2' coverage factor and a 95% confidence level.

### Preliminary Graphs

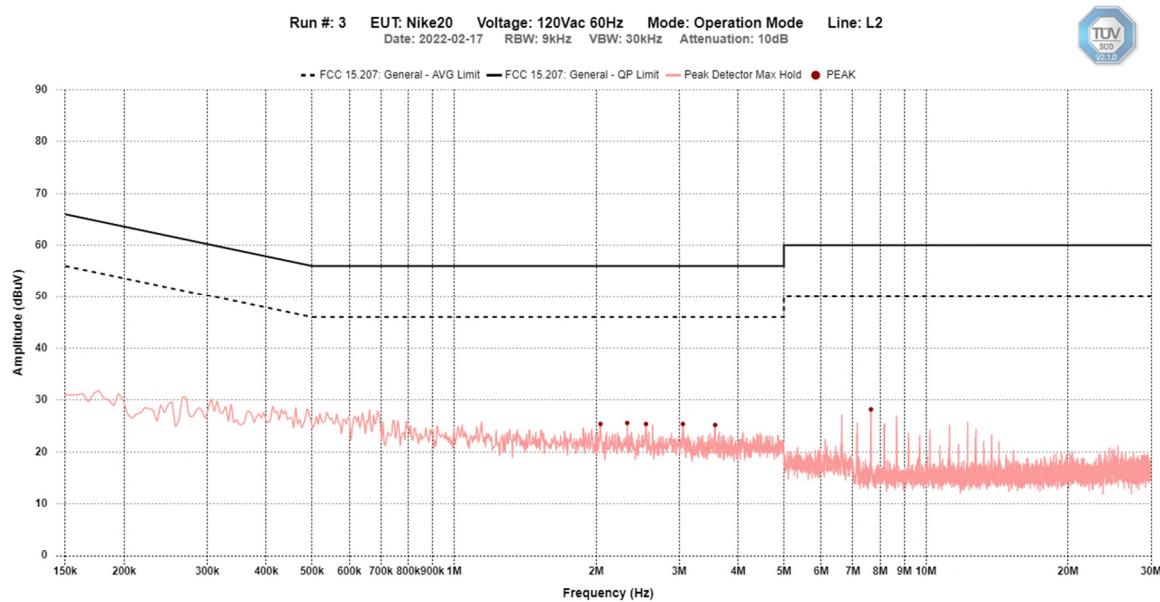
The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

Client	Ecobee Inc.	 Canada
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Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

### Line (L) – 120Vac 60Hz



### Neutral (N) – 120Vac 60Hz



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Product	EB-STATE3LT02	
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## Final Measurements

Note a step-down transformer was used to provide 24Vac to the EUT.

Average and Quasi-Peak Emissions Table

EUT Name		EB-STATE3LT02						
Limit		FCC 15.207, General						
Power Supply		120Vac 60Hz						
Frequency (Hz)	Detector	Correction Factor (dB)	Level (dBuV)	QP Limit (dBuV)	AVG Limit (dBuV)	QP Margin (dB)	AVG Margin (dB)	Test Result
<b>Line 1</b>								
158.9104k	PEAK	10.1	36.4	65.7	55.7	29.4	19.4	Pass
2.039M	PEAK	10.2	26.2	56.0	46.0	29.8	19.8	Pass
1.9365M	PEAK	10.2	26.2	56.0	46.0	29.8	19.8	Pass
2.9657M	PEAK	10.2	25.4	56.0	46.0	30.6	20.6	Pass
3.5672M	PEAK	10.2	25.0	56.0	46.0	31.0	21.0	Pass
3.7944M	PEAK	10.2	24.8	56.0	46.0	31.2	21.2	Pass
<b>Line 2</b>								
2.3286M	PEAK	10.2	25.6	56.0	46.0	30.4	20.4	Pass
2.0435M	PEAK	10.2	25.4	56.0	46.0	30.6	20.6	Pass
2.5514M	PEAK	10.2	25.4	56.0	46.0	30.6	20.6	Pass
3.0548M	PEAK	10.2	25.4	56.0	46.0	30.6	20.6	Pass
3.5761M	PEAK	10.2	25.2	56.0	46.0	30.8	20.8	Pass
7.6481M	PEAK	10.2	28.2	60.0	50.0	31.8	21.8	Pass

Note:

Peak = Peak measurement

AVG = Average measurement

QP = Quasi-Peak measurement

See 'Appendix B – EUT, Peripherals and Test Setup Photos' for photos showing the test set-up for the highest line conducted emission

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

## Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Feb. 12, 2021	Feb. 12, 2023	GEMC 160
LISN	FCC-LISN-50/250-16-2-01	FCC	Feb. 10, 2021	Feb. 10, 2023	GEMC 303
RF Cable 3m	LMR-400-3M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 276
Attenuator 10 dB	6N10W-10	Inmet	NCR	NCR	GEMC 348
Emissions Software	V2.1.0	TUV SUD Canada, Inc.	NCR	NCR	GEMC 361

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## Appendix A – EUT Summary

Client	Ecobee Inc.	 Canada
Product	EB-STATE3LT02	
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247	

For further details for filing purposes, refer to filing package.

## General EUT Description

Client	
Organization / Address	Ecobee Inc. 25 Dockside Drive. Suite 700 Toronto, ON. M5A 0B5, Canada
Contact	John Russomanno
Phone	416-987-1058
Email	johnr@ecobee.com
EUT Details	
EUT Name	EB-STATE3LT02
FCC ID	WR9EBSTAT3LT02
IC	7981A- EBSTAT3LT02
Equipment Category	Unlicensed transmitter
Basic EUT Functionality	EUT is a smart thermostat that have a 2400 – 2483.5 MHz DTS (802.11 b/g/n) transmitter and a 902 – 928 MHz FHSS/Hybrid transmitter.
Input Voltage and Frequency	24 Vac 60 Hz
Connectors available on EUT	1 (terminals for HVAC control)
Peripherals Required for Test	120 Vac – 24 Vac step down transformer.
Release type	Final
Intentional Radiator Frequency Range	2400 – 2483.5 MHz for 802.11 b/g/n DTS 902 – 928 MHz FHSS/Hybrid
Antenna	PCB antennas
Type of Transmitter	Hybrid, Frequency Hopping and Digitally Modulated
Modulation	FSK for Sub Gig Various for 2.4 GHz 802.11 b/g/n
EUT Configuration	Test software was configured to transmit continuously at 100% duty cycle and to control hopping through its pseudo random sequence or single channel. Channels tested: Lowest and Highest

Client	<b>Ecobee Inc.</b>
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Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated. For a close-up picture of the EUT, see 'Appendix B – EUT and Test Setup Photos'.

Client	<b>Ecobee Inc.</b>
Product	<b>EB-STATE3LT02</b>
Standard(s)	RSS 247 Issue 2:2017 FCC Part 15 Subpart 15.247

  
Canada

## **Appendix B – EUT and Test Setup Photos**

Refer to the files separate from this test report