TEST REPORT

Report Number.: 13603562-E2V1

Applicant	:	IKEA OF SWEDEN AB BOX 702 SE-343 81, ÄLMHULT, SWEDEN
Model	:	920-00632
Brand	:	IKEA
FCC ID	:	FHO-920-00632
ISED	:	10912A-92000632
EUT Description	:	WIRELESS RADIO MODULE 802.11 a/b/g/n
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2 ISED RSS-GEN ISSUE 5

Date of Issue:
March 10, 2021

Prepared by:
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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	3/10/2021	Initial Issue	-

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: IKEA OF SWEDEN AB
BOX 702
SE-343 81, ÄLMHULT, SWEDEN

EUT DESCRIPTION: WIRELESS RADIO MODULE 802.11 a/b/g/n

MODEL: 920-00632

BRAND: IKEA

SERIAL NUMBER: 54-2A-1B-50-0A-FC-C (RADIATED)
54-2A-1B-50-0E-D8-E (CONDUCTED)

SAMPLE RECEIPT DATE: NOVEMBER 30, 2020

DATE TESTED: DECEMBER 03, 2020 TO JANUARY 08, 2021

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 2	Complies
ISED RSS-GEN Issue 5	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW		None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power		None.
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD		None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions		None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5, and RSS-247 Issue 2.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, California, USA	US0104	2324A	208313
☐	Building 2: 47266 Benicia Street, Fremont, California, USA	US0104	22541	208313
☒	Building 4: 47658 Kato Rd, Fremont, California, USA	US0104	2324B	208313

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5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.84 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS
Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a wireless radio module 802.11 a/b/g/n

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2462	802.11b	25.32	340.41
	802.11g	25.16	328.10
	802.11n HT20 CDD	24.97	314.05

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer's are as follows:

The radio utilizes 3 antenna models, each model is two PCB dipole antennas, with a maximum gain as below. E1915 and E1922 are chosen as the worst case and radiated test is performed on both of these two antenna models only.

The directional gain of non cross polarization antenna model: E1915 is the worst compare to cross polarization antenna models: E19122 and E1913. Therefore, antenna model: E1915 is used for the output power and PSD directional gain calculation

Frequency Band	Antenna model	Antenna 1	Antenna 2
2.4G	E1915 (non cross polarization)	2.16	2.13
	E1922 (cross polarization)	2.1	2.1
	E1913 (cross polarization)	1.64	1.32

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was v13.1

The software used during testing was 20.0f1

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6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that antenna models: E1915 and E1922 Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation on these two antenna models. For all the conducted test including output power, it was based on the higher passing power of bandedge and radiated spurious emissions between antenna models: E1915 and E1922.

This EUT supports BLE and WLAN 2.4GHz simultaneous transmission, radiated emission test was performed.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
Laptop	Lenovo	X1 Carbon	R90HKAZ3	PD97265NGU
AC Adapter	Lenovo	ADLX90NLC2A	11S45N0247Z1ZS9B599814	DoC

I/O CABLES						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC Power	1	2 Prong AC	Unshielded	3	AC Mains to EUT
2	Ethernet	1	RJ45	Unshielded	10	Ethernet to Ethernet Converter
3	Ethernet to USB	1	RJ45 to USB	Unshielded	0.2	USB to Ethernet Adapter
4	DC Power	1	DC	Unshielded	1.2	AC/DC Adapter to Laptop
5	AC Power	1	AC	Unshielded	1	AC Mains to AC/DC Adapter

TEST SETUP

The EUT connected to support laptop via the ethernet cable during testing.
The test utility software on support laptop exercised the radio card.
For radiated testing, the support laptop was set up outside the chamber.

SETUP DIAGRAMS

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7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10 Section 11.6.

6 dB BW: ANSI C63.10 Subclause -11.8.1

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.3 Method AVGPSD-1
PSD: ANSI C63.10 Subclause -11.10.5 Method AVGPSD-2

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1

Conducted emissions in restricted frequency bands: ANSI C63.10 Subclause -11.12.2

Band-edge: ANSI C63.10 Subclause -11.13.3.4 Trace averaging across ON and OFF times DC correction

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

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8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179376	04/03/2021	04/03/2020
Amplifier, 100MHz-18GHz	AMPLICAL	AMP0.1G18-47-20	PRE0197319	05/04/2021	05/04/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	08/31/2021	08/31/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179372	02/25/2021	02/25/2020
Amplifier, 1 to 18GHz, 35dB	AMPLICAL	AMP1G18-35	T1571	08/20/2021	08/20/2020
Antenna, Horn Double Ridge Guide 700MHz to 18GHz	A.H. Systems, Inc.	SAS-571	T963	01/25/2021	01/25/2020
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180174	12/29/2021	12/29/2020
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T900	02/05/2021	02/05/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179522	02/20/2021	02/20/2020
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	171460	09/29/2021	09/29/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T346	07/20/2021	07/20/2020
Antenna Horn, 18 to 26GHz	ARA	SWH-28	T447	05/20/2021	05/20/2020
Rf Amplifier, 18-26.5GHz, 60dB gain	AMPLICAL	AMP18G26.5-60	171590	06/07/2021	06/07/2020
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	T1268	01/22/2021	01/22/2020
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	T413	02/26/2021	02/26/2020
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	PRE0179465	07/27/2021	07/27/2020
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	PRE0179467	07/27/2021	07/27/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	T906	07/20/2021	07/20/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179367	02/26/2021	02/26/2020
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T1568	04/14/2021	04/14/2020
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	05/26/2021	05/26/2020
AC Line Conducted					
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	PRE0186446	01/21/2021	01/21/2020
L.I.S.N	FCC INC.	FCC LISN 50/250	24	01/21/2021	01/21/2020
EMI TEST RECEIVER	Rohde & Schwarz	ESR	T1436	02/20/2021	02/20/2020
Transient Limiter	COM-POWER	LIT-930A	PRE0129246	01/23/2021	01/23/2020

TEST SOFTWARE LIST			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, April 30, 2020, Oct 21, 2019
Antenna Port Software	UL	UL RF	2020.12.23
AC Line Conducted Software	UL	UL EMC	Ver 9.5, July 7, 2020

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b	100.880	102.440	0.985	98.48%	0.00	0.010
802.11g	1.392	1.841	0.756	75.64%	1.21	0.718
802.11n HT20	1.302	1.624	0.802	80.18%	0.96	0.768

DUTY CYCLE 802.11b MODE

DUTY CYCLE 802.11g MODE

DUTY CYCLE 802.11n HT20 MODE

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9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	14.884	13.688
Mid 6	2437	15.722	13.378
High 11	2462	15.074	14.867

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.2.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	16.406	16.629
Low 2	2417	16.430	16.491
Mid 6	2437	20.050	20.719
High 10	2457	17.210	16.871
High 11	2462	16.474	16.547

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

LOW CHANNEL 2

LOW CHANNEL 2 ANTENNA 1

LOW CHANNEL 2 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

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HIGH CHANNEL 10

HIGH CHANNEL 10 ANTENNA 1

HIGH CHANNEL 10 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.2.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	17.904	17.562
Low 2	2417	17.757	17.526
Mid 6	2437	18.800	24.871
High 10	2457	18.024	17.931
High 11	2462	17.562	17.611

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

LOW CHANNEL 2

LOW CHANNEL 2 ANTENNA 1

LOW CHANNEL 2 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

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HIGH CHANNEL 10

HIGH CHANNEL 10 ANTENNA 1

HIGH CHANNEL 10 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.3.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
Low 1	2412	7.72	7.96	0.5
Mid 6	2437	10.20	9.12	0.5
High 11	2462	8.12	9.12	0.5

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.3.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
Low 1	2412	16.48	16.48	0.5
Low 2	2417	15.52	16.40	0.5
Mid 6	2437	15.52	16.40	0.5
High 10	2457	16.44	16.60	0.5
High 11	2462	16.12	16.52	0.5

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

LOW CHANNEL 2

LOW CHANNEL 2 ANTENNA 1

LOW CHANNEL 2 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

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HIGH CHANNEL 10

HIGH CHANNEL 10 ANTENNA 1

HIGH CHANNEL 10 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.3.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Channel	Frequency (MHz)	6 dB BW Antenna 1 (MHz)	6 dB BW Antenna 2 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.68	17.64	0.5
Low 2	2417	16.44	17.24	0.5
Mid 6	2437	17.80	17.68	0.5
High 10	2457	16.80	17.76	0.5
High 11	2462	17.52	17.64	0.5

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

LOW CHANNEL 2

LOW CHANNEL 2 ANTENNA 1

LOW CHANNEL 2 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

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HIGH CHANNEL 10

HIGH CHANNEL 10 ANTENNA 1

HIGH CHANNEL 10 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

DIRECTIONAL ANTENNA GAIN

For 2 TX:

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting CDD in all MIMO modes.

The directional gain of non cross polarization antenna model: E1915 is the worst compare to cross polarization antenna models: E19122 and E1913.The worst antenna model: E1915 directional gains are as follows:

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	2.16	2.13	2.15	5.16

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RESULTS

9.4.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Test Engineer:	23653 DC & 16080 ZS
Test Date:	12/29/2020 & 1/7/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.15	30.00	36	30.00
Mid 6	2437	2.15	30.00	36	30.00
High 11	2462	2.15	30.00	36	30.00

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.54	22.00	24.79	30.00	-5.21
Mid 6	2437	22.22	22.40	25.32	30.00	-4.68
High 11	2462	21.93	21.92	24.94	30.00	-5.06

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9.4.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Test Engineer:	23653 DC & 16080 ZS
Test Date:	12/29/2020 & 1/7/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.15	30.00	36	30.00
Low 2	2417	2.15	30.00	36	30.00
Mid 6	2437	2.15	30.00	36	30.00
High 10	2457	2.15	30.00	36	30.00
High 11	2462	2.15	30.00	36	30.00

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	18.10	19.16	21.67	30.00	-8.33
Low 2	2417	20.21	20.51	23.37	30.00	-6.63
Mid 6	2437	22.05	22.25	25.16	30.00	-4.84
High 10	2457	20.18	20.58	23.39	30.00	-6.61
High 11	2462	17.35	17.70	20.54	30.00	-9.46

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9.4.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Test Engineer:	23653 DC & 16080 ZS
Test Date:	12/29/2020 & 1/7/2021

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	2.15	30.00	36	30.00
Low 2	2417	2.15	30.00	36	30.00
Mid 6	2437	2.15	30.00	36	30.00
High 10	2457	2.15	30.00	36	30.00
High 11	2462	2.15	30.00	36	30.00

Results

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low 1	2412	17.64	17.79	20.73	30.00	-9.27
Low 2	2417	20.05	20.42	23.25	30.00	-6.75
Mid 6	2437	21.98	21.94	24.97	30.00	-5.03
High 10	2457	19.35	20.13	22.77	30.00	-7.23
High 11	2462	17.36	17.59	20.49	30.00	-9.51

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9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

9.5.1. 802.11b MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 2 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-0.73	-0.26	2.52	8.0	-5.5
Mid 6	2437	-0.33	-0.47	2.61	8.0	-5.4
High 11	2462	0.03	-0.22	2.92	8.0	-5.1

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.5.2. 802.11g MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Duty Cycle CF (dB)	1.21	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 2 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-6.55	-6.09	-2.09	8.0	-10.1
Low 2	2417	-4.68	-3.90	-0.05	8.0	-8.0
Mid 6	2437	-2.29	-2.86	1.65	8.0	-6.3
High 10	2457	-5.77	-4.83	-1.05	8.0	-9.1
High 11	2462	-6.77	-7.67	-2.98	8.0	-11.0

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LOW CHANNEL 1

LOW CHANNEL 1 ANTENNA 1

LOW CHANNEL 1 ANTENNA 2

LOW CHANNEL 2

LOW CHANNEL 2 ANTENNA 1

LOW CHANNEL 2 ANTENNA 2

MID CHANNEL 6

MID CHANNEL 6 ANTENNA 1

MID CHANNEL 6 ANTENNA 2

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HIGH CHANNEL 10

HIGH CHANNEL 10 ANTENNA 1

HIGH CHANNEL 10 ANTENNA 2

HIGH CHANNEL 11

HIGH CHANNEL 11 ANTENNA 1

HIGH CHANNEL 11 ANTENNA 2

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9.5.3. 802.11n HT20 MODE

2TX Antenna 1 + Antenna 2 CDD MODE

Duty Cycle CF (dB)	0.96	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 2 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.58	-7.90	-4.69	8.0	-12.7
Low 2	2417	-5.88	-5.32	-1.62	8.0	-9.6
Mid 6	2437	-2.44	-2.54	1.48	8.0	-6.5
High 10	2457	-6.81	-5.31	-2.03	8.0	-10.0
High 11	2462	-6.91	-6.84	-2.90	8.0	-10.9

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