



DATE: 17 December 2017

**I.T.L. (PRODUCT TESTING) LTD.
FCC/IC Radio Test Report
for**

Home Skinovations Ltd.

Equipment under test:

**Muscle Tone and Firmness
Improvement Device**

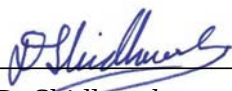
H5001, H5003*

*See customer's Declaration on page 6

Tested by:


M. Zohar

Approved by:


D. Shidlow

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This report relates only to items tested.



Measurement/Technical Report for Home Skinovations Ltd.

Muscle Tone and Firmness Improvement Device

H5001/H5003

FCC ID: XFQ-SILKNH5001

IC: 23174-SILKNH5001

This report concerns:	Original Grant: X Class I Change: Class II Change:
Equipment type:	Digital Transmission System IC: Spread Spectrum Digital Device (2400-2483.5)
Limits used:	47CFR15 Section 15.247 RSS-247, Issue 2, February 2017 RSS Gen, Issue 4, November 2014
Measurement procedure used is KDB 558074 D01 v03r05 and ANSI C63.4-2014	
Application for Certification prepared by:	Applicant for this device: (different from "prepared by")
R. Pinchuck ITL (Product Testing) Ltd. 1 Bat Sheva St. Lod 7116002 e-mail Rpinchuck@itl.co.il	Home Skinovations Ltd. Tavor Building Shaar Yokneam PO Box 533 Yokneam, 2069206, Israel Tel: +972-4-909-7470 Fax: +972-4-909-7471 email: benzil@silkn.com

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1. General Information

1.1 Administrative Information

Manufacturer:	Home Skinovations Ltd.
Manufacturer's Address:	Tavor Building, Shaar Yokneam POB 533 Yokneam, 2069206, Israel Tel: +972-4-909-7470 Fax: +972-4-909-7471
Manufacturer's Representative:	Ben Zion Levi
Equipment Under Test (E.U.T):	Muscle Tone and Firmness Improvement Device
Product Marketing Name (PMN):	H5001, H5003*
Equipment Serial No.:	Not designated
HVIN:	AS112348A
FVIN	SW113408A
Date of Receipt of E.U.T:	July 16, 2017
Start of Test:	July 16, 2017
End of Test:	July 20, 2017
Test Laboratory Location:	I.T.L (Product Testing) Ltd. 1 Batsheva St., Lod ISRAEL 7120101
Test Specifications:	FCC Part 15, Subpart C RSS-247, Issue 2, February 2017 RSS Gen Issue 4, November 2014

*See customer's Declaration on following page.

HomeSkinovations



Declaration of Identity

We, the undersigned,

Company: HomeSkinovations
Address: Tavor building, POB 533, Yokneam 2069206 ISRAEL
Country: ISRAEL
Telephone number: +972-04-9097470
Fax number: +972-04-9097471

The product Model: H5003 is electronically / programing /electrically / mechanically identical to the product Model: H5001. The difference between mentioned devices is only Laser circuit not enabled (by setting one parameter of the Software) in the Model: H5003.

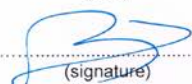
Drawn in Yokneam, Israel, on

HomeSkinovations Ltd.
513840470 .פ.ח

P.O.B 533 Yokneam 20692

(company stamp)

on27 Sep 2017.....
(date)


(signature)

.....Ben Zion Levi, VP R&D.....
(name and function)

Tavor Building Shaar Yokneam
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בנין תבור שער יקנעם
ת.ד. 533 יקנעם עילית 2069206
טל 04-9097476 פקס 04-9097471



1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation No. IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Industry Canada (Canada), IC File No.: 46405-4025; Site Nos. IC 4025A-1, IC 4025A-2.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 **Product Description**

The Model H5001/H5003 system is comprised of a treatment unit – “applicator”, a belt for placing and holding the applicator, and a cradle unit to charge the applicators battery, the cradle is model H5002.

The applicator contains laser diodes with wavelength of $658\text{nm} \pm 8\text{nm}$ (enabled only in model H5001) and electrodes for muscle stimulation. The applicator operates with rechargeable battery. The system contains Bluetooth module which may communicate with other devices for synchronization.

The laser module is enabled only in model H5001.

Model H5003 does not enable laser operation.

Working voltage	3.6VDC reachable battery operated
Mode of operation	Transceiver BLE
Modulations	GFSK
Assigned Frequency Range	2400.0-2483.5MHz
Operating Frequency Range	2402MHz-2480MHz
Transmit power	~ -13.0dBm
Antenna Gain	5.3 dBi
Modulation BW	~1MHz

1.4 **Test Methodology**

Both conducted and radiated testing was performed according to the procedures in KDB 558074 D01 v03r053, ANSI C63.4: 2014 and RSS-Gen, Issue 4: 2014. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 **Test Facility**

Emissions tests were performed at I.T.L.’s testing facility in Lod, Israel. I.T.L.’s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005.

1.6 **Measurement Uncertainty**

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site:

30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

1 GHz to 6 GHz

Expanded Uncertainty (95% Confidence, K=2):

±5.19 dB

>6 GHz

Expanded Uncertainty (95% Confidence, K=2):

±5.51 dB

2. System Test Configuration

2.1 Justification

The E.U.T contains a transceiver with 802.15.1 std. (BLE) technology.

The unit was evaluated while transmitting at the low channel (2402MHz), the mid channel (2440MHz) and the high channel (2480MHz).

The E.U.T was operated via a rechargeable battery. Transmission is disabled while the E.U.T. is in charge mode.

Final radiated emission test was performed after exploratory emission testing was performed in 3 orthogonal polarities to determine the “worst case” radiation.

The worst case was the Y axis for all channels, see *Figure 1* below.

Orientation	Frequency	Fundamental	2 nd Harmonic	3 th Harmonic	Band Edge
	(MHz)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)
X axis	2402.0	83.0	54.9	63.7	52.3
	2440.0	79.0	54.7	63.3	-
	2480.0	78.5	54.7	63.5	51.0
Y axis	2402.0	83.6	55.2	63.8	53.0
	2440.0	79.5	54.7	63.1	-
	2480.0	79.1	54.6	63.5	51.5
Z axis	2402.0	81.6	54.2	63.6	52.4
	2440.0	78.1	54.6	63.3	-
	2480.0	77.5	54.8	63.0	51.3

Figure 1. Screening Results BLE Mode

2.2 EUT Exercise Software

No special exercise software was used.

2.3 Special Accessories

No special accessories were needed to achieve compliance.

2.4 Equipment Modifications

No modifications were necessary in order to achieve compliance.

2.5 Configuration of Tested System

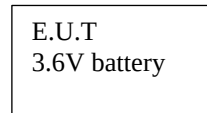


Figure 2. Configuration of Tested System

3. Radiated Measurement Test Set-Up Photos

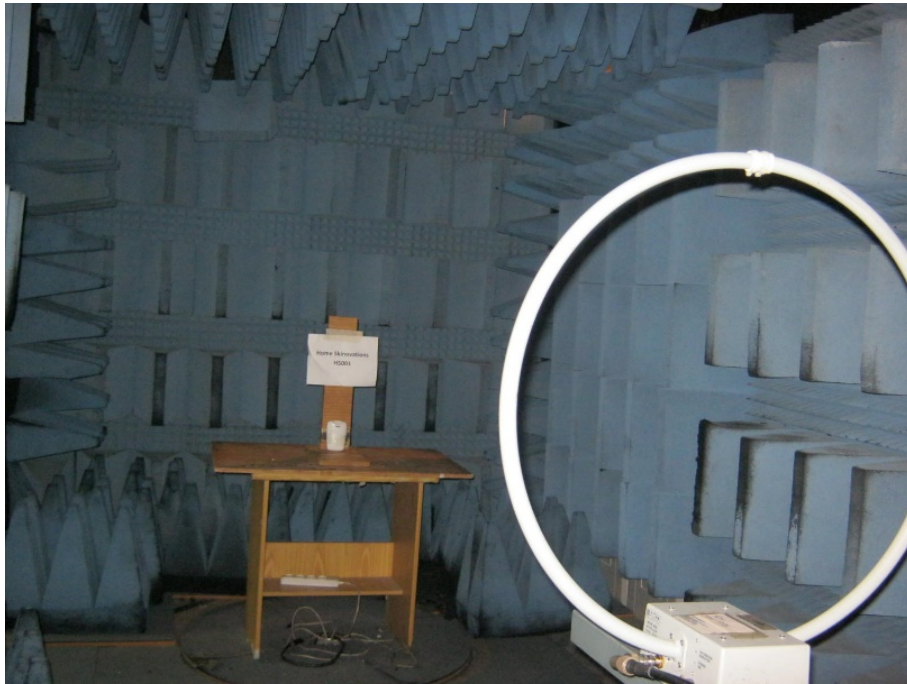


Figure 3. Radiated Emission Test 0.009-30.0MHz



Figure 4. Radiated Emission Test 30.0-200MHz



Figure 5. Radiated Emission Test 200-1000.0MHz

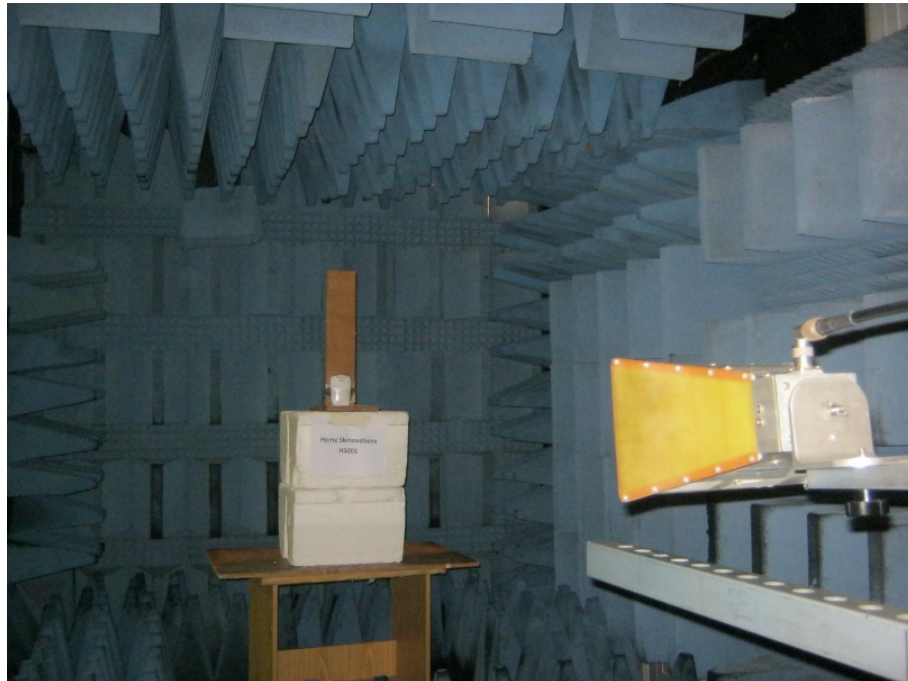


Figure 6. Radiated Emission Test 1.0-18.0GHz



Figure 7. Radiated Emission Test 18.0-25.0GHz

4. 6 dB Minimum Bandwidth

4.1 Test Specification

FCC Part 15, Subpart C, Section 247(a)(2)

RSS 247, Issue 1, 2015, Section 5.2

4.2 Test Procedure

(Temperature (24°C)/ Humidity (68%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was tested in the chamber, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters.

The spectrum bandwidth of the E.U.T. at the point of 6 dB below maximum peak power was measured and recorded. The RBW was set to 100 kHz.

4.3 Test Limit

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.

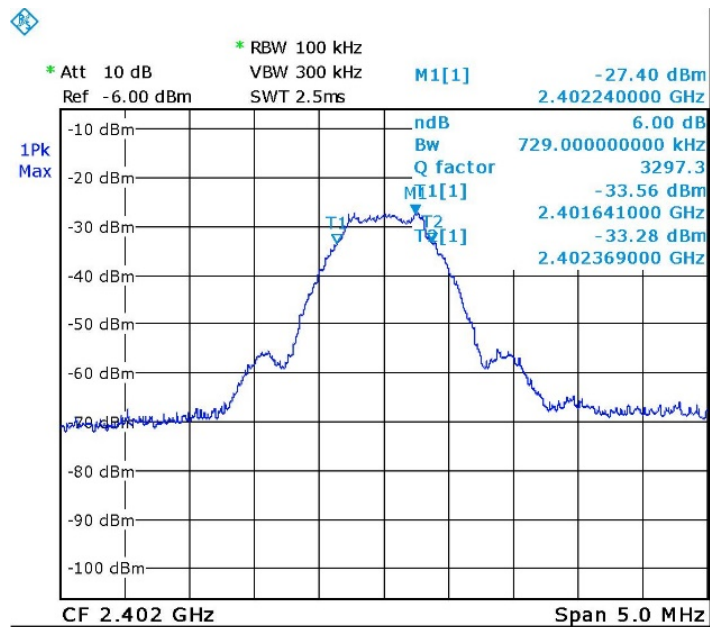
4.4 Test Results

Operation Frequency	Reading	Limit
(MHz)	(kHz)	(kHz)
2402.0	729.0	≥ 500.0
2440.0	709.0	≥ 500.0
2480.0	709.0	≥ 500.0

Figure 8 6 dB Minimum Bandwidth

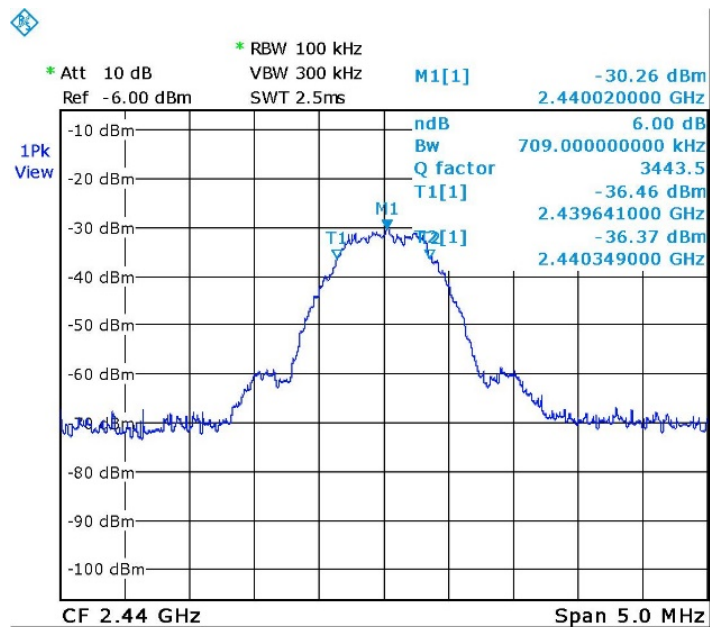
JUDGEMENT: Passed

For additional information see *Figure 9* to *Figure 11*.



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Figure 9. 2402.0 MHz- Low



Date: 16.JUL.2017 14:13:24

Figure 10. 2440.0 MHz- Mid

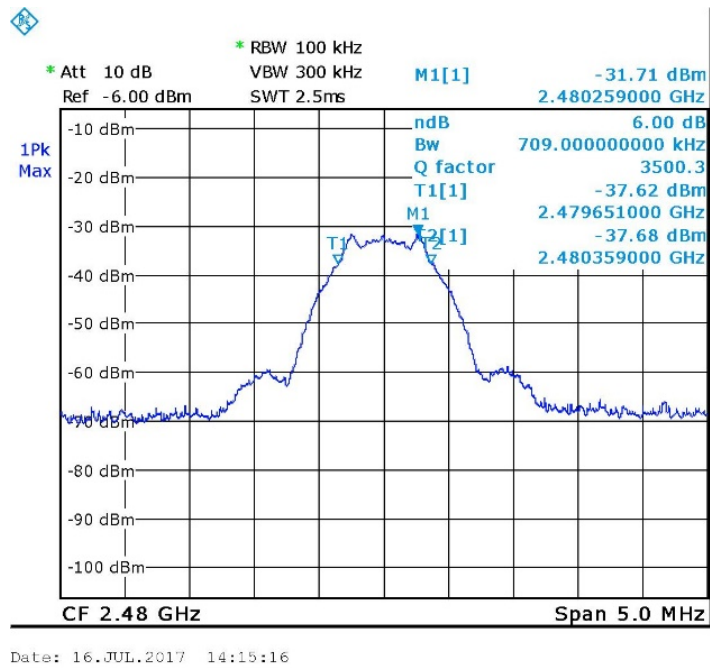


Figure 11. 2480.0 MHz- High

4.5 Test Equipment Used; 6dB Bandwidth

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
Spectrum Analyzer	R&S	FSL6	100194	March 2, 2017	March 2, 2018
Horn Antenna	ETS	3115	6142	May 19, 2015	May 19, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 12 Test Equipment Used

5. Maximum Transmitted Peak Power Output

5.1 Test Specification

FCC, Part 15, Subpart C, Section 247(b)(3)

RSS 247, Issue 1, May 2015, Section 5.4(d)

5.2 Test Procedure

(Temperature (24°C)/ Humidity (65%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was tested in the chamber, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization. The emissions were measured at a distance of 3 meters.

Radiated output power levels were measured at selected operation frequencies and the results were converted to power level according to the formula as shown below:

$$P = \frac{(E_{V/m} \times d)^2}{(30 \times G)} \quad [W]$$

E - Field Strength (V/m)

d – Distance from transmitter (m)

G – Antenna gain

P – Peak power (W)

5.3 Test Limit

The maximum peak conducted output power of the intentional radiator for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

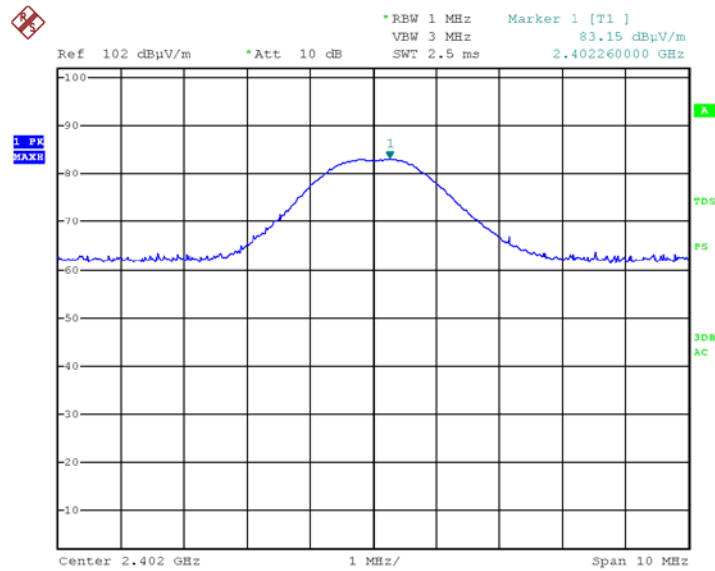
5.4 Test Results

Operation Frequency (MHz)	Polarization (V/H)	Field Strength (dBuV/m)	Power (dBm)	Power (mW)	Limit (mW)	Margin (mW)
2402.0	V	83.2	-12.0	0.063	1000.0	-999.937
	H	77.2	-18.0	0.016	1000.0	-999.984
2440.0	V	80.7	-14.5	0.035	1000.0	-999.965
	H	76.9	-18.3	0.015	1000.0	-999.985
2480.0	V	78.6	-16.6	0.022	1000.0	-999.978
	H	79.9	-15.3	0.030	1000.0	-999.970

Figure 13 Maximum Peak Power Output

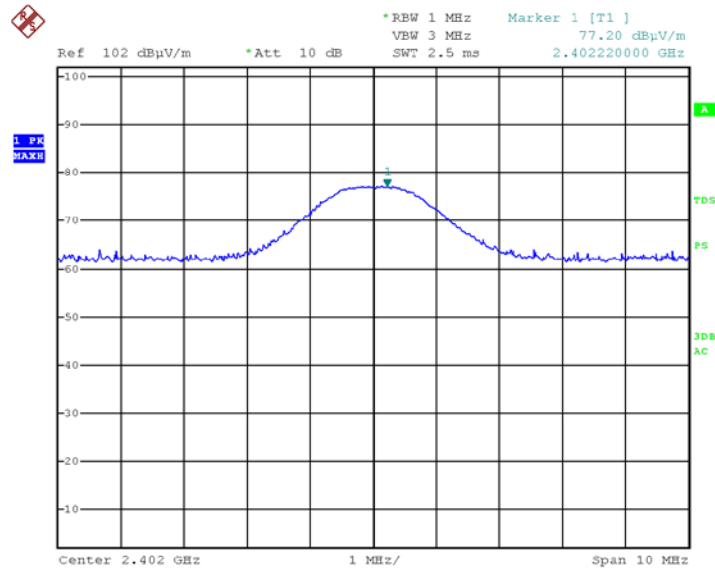
JUDGEMENT: Passed by 999.937 mW

For additional information see Figure 14 to Figure 19.



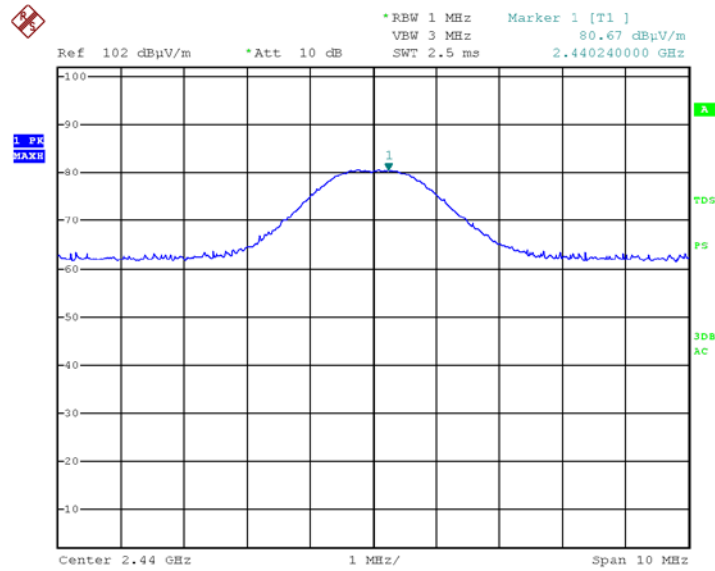
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Figure 14 2402.0 MHz – Vertical



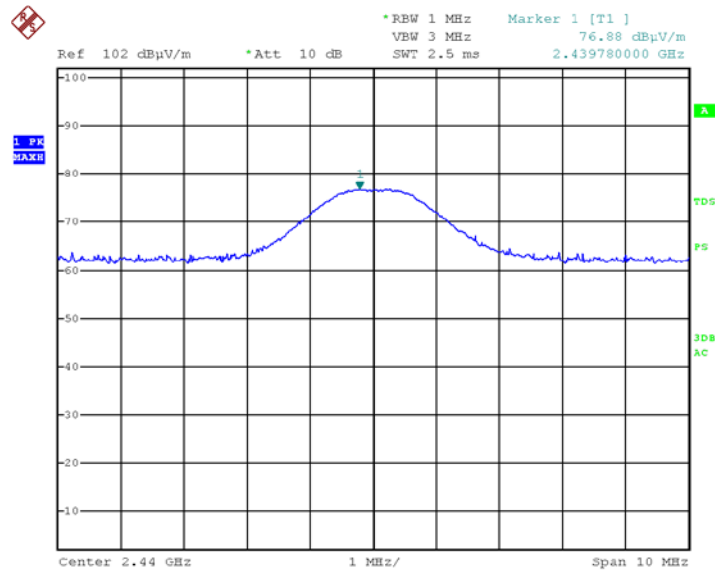
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Figure 15 2402.0 MHz – Horizontal



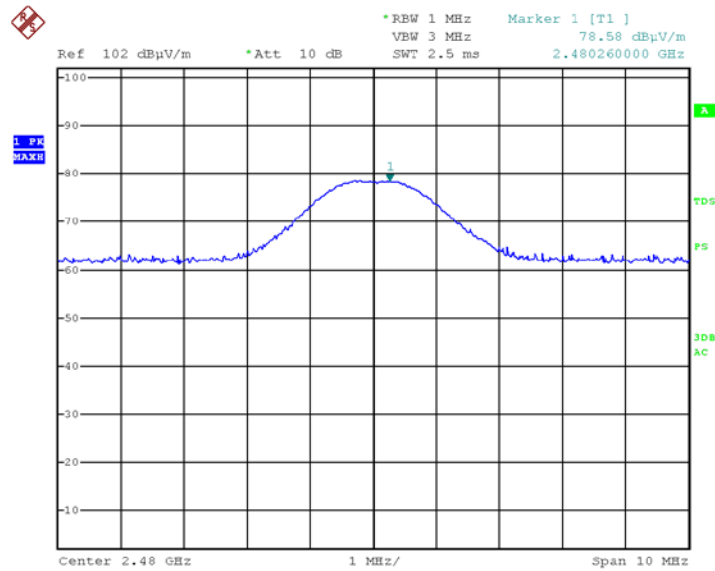
Date: 16.JUL.2017 15:30:34

Figure 16 2440.0 MHz – Vertical



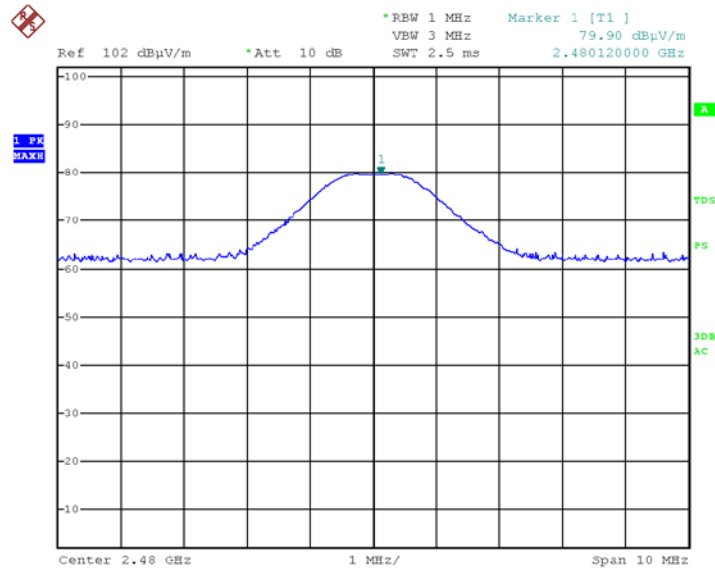
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Figure 17 2440.0 MHz – Horizontal



Date: 16.JUL.2017 15:34:17

Figure 18 2480.0 MHz – Vertical



Date: 16.JUL.2017 15:38:08

Figure 19 2480.0 MHz – Horizontal



5.5 Test Equipment Used; Maximum Peak Power Output

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100724	February 28, 2017	February 28, 2018
Horn Antenna	ETS	3115	6142	May 19, 2015	May 19, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 20 Test Equipment Used

6. Band Edge Spectrum

6.1 Test Specification

FCC, Part 15, Subpart C, Section 247(d)
RSS-247, Issue 2, February, 2017, Section 5.5

6.2 Test Procedure

(Temperature (24°C)/ Humidity (65%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was tested in the chamber, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters

The RBW was set to 100 kHz.

6.3 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

6.4 Test Results

Operation Frequency (MHz)	Band Edge Frequency (MHz)	Spectrum Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	2400.0	33.3	57.4	-24.1
High	2483.5	32.1	56.1	-24.0

Figure 21 Band Edge Spectrum

JUDGEMENT: Passed by 24.0 dB

For additional information see *Figure 22* and *Figure 23*.

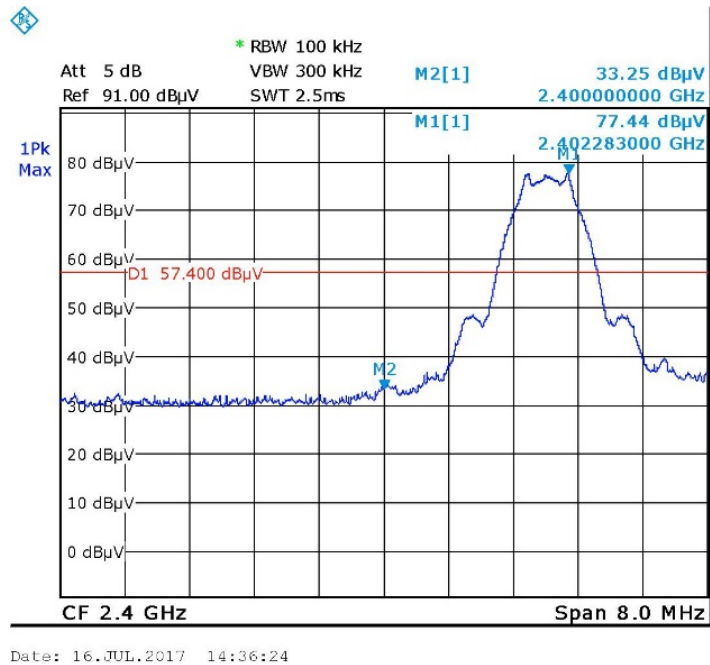


Figure 22 —Lower Band Edge

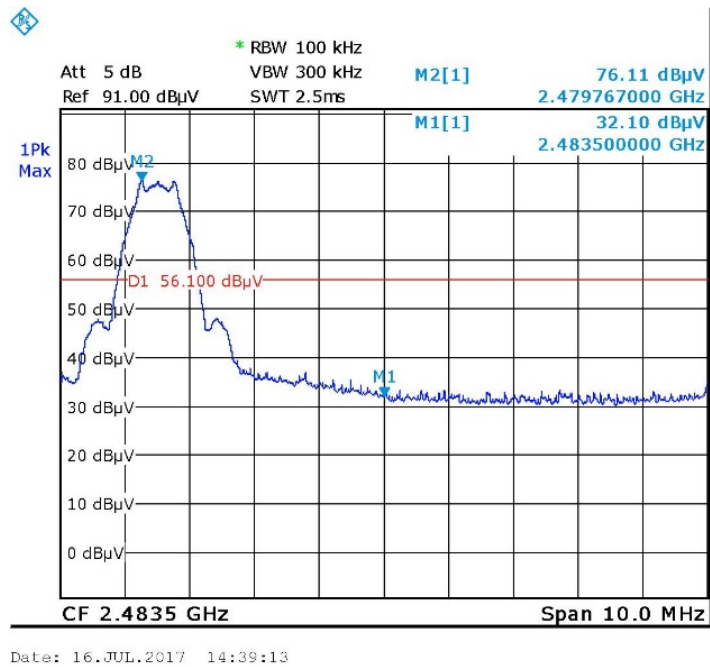


Figure 23 —Upper Band Edge



6.5 Test Equipment Used; Band Edge Spectrum

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	FSL6	100194	March 2, 2017	March 2, 2018
Horn Antenna	ETS	3115	6142	May 19, 2015	May 19, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 24 Test Equipment Used

7. Emissions in Non-Restricted Frequency Bands

7.1 Test Specification

FCC, Part 15, Subpart C, Section 247(d)

RSS 247 Issue 1, May 2015, Clause 5.5

7.2 Test Procedure

(Temperature (24°C)/ Humidity (65%RH))

The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

For measurements between 0.009MHz-30MHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 0.009MHz-30MHz was scanned.

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.

For measurements between 1.0GHz-25.0GHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 1.0GHz -25.0GHz was scanned.

RBW was set to 100kHz, detector set to max peak and trace to “max hold”

The E.U.T. was operated at the low, mid and high channels (2402.0 MHz, 2440 MHz and 2480.0 MHz).

7.3 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power



7.4 Test Results

JUDGEMENT: Passed

All detected emissions were greater than 20dBc below the fundamental level.

The EUT met the requirements of the F.C.C. Part 15, Subpart C, Section 247(d) and RSS 247 Issue 1 May 2015, Clause 5.5 specification.

7.5 *Test Instrumentation Used, Emission in Non Restricted Frequency Bands*

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100724	February 28, 2017	February 28, 2018
Spectrum Analyzer	HP	8592L	3826A01204	March 1, 2017	March 1, 2018
EMI Receiver	HP	8542E	3906A00276	March 1, 2017	March 1, 2018
RF Filter Section	HP	85420E	3705A00248	March 1, 2017	March 1, 2018
Spectrum Analyzer	HP	8564E	3442A00275	March 19, 2017	March 19, 2018
Biconical Antenna	EMCO	3110B	9912-3337	May 15, 2017	May 15, 2018
Active Loop Antenna	EMCO	6502	9506-2950	September 12, 2016	September 12, 2017
Log Periodic Antenna	EMCO	3146	9505-4081	May 15, 2017	May 15, 2018
Horn Antenna	ETS	3115	29845	May 19, 2015	May 19, 2018
Horn Antenna	ARA	SWH-28	1007	March 30, 2014	December 31, 2017
Low Noise Amplifier	Narda	DBS-0411N313	13	August 8, 2016	August 8, 2017
Low Noise Amplifier	Sophia Wireless	LNA28-B	232	August 8, 2016	August 8, 2017
Spectrum Analyzer	HP	8593EM	3536A00120ADI	February 28, 2017	February 28, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 25 Test Equipment Used

7.6 **Field Strength Calculation**

The field strength is calculated directly by the EMI Receiver software, and a "Correction Factors", using the following equation:

$$FS = RA + AF + CF$$

FS:	Field Strength [dB μ v/m]
RA:	Receiver Amplitude [dB μ v]
AF:	Receiving Antenna Correction Factor [dB/m]
CF:	Cable Attenuation Factor [dB]

Example: $FS = 30.7 \text{ dB}\mu\text{V (RA)} + 14.0 \text{ dB (AF)} + 0.9 \text{ dB (CF)} = 45.6 \text{ dB}\mu\text{V}$

No external pre-amplifiers are used.

8. Emissions in Restricted Frequency Bands

8.1 Test Specification

FCC Part 15, Subpart C, Sections 15.209, 15.205, 15.247(d)

RSS GEN, Issue 4: 2014, Clause 8.9

8.2 Test Procedure

(Temperature (24°C)/ Humidity (65%RH))

The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

For measurements between 0.009MHz-30MHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 0.009MHz-30MHz was scanned.

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.

For measurements between 1.0GHz-25.0GHz:

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 1.0GHz -25.0GHz was scanned.

The E.U.T. was operated at the low, mid and high channels (2402, 2440, 2480 MHz).

The levels of the emissions within the frequency ranges of the restricted bands (Section 15.205 of FCC Part 15) were compared to the limits of the table in Section 15.209 (a), General Requirements.

8.3 Test Limit

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	Field strength (dBµV/m)	Field strength* (dBµV/m)@3m
0.009-0.490	2400/F(kHz)	300	48.5-13.8	128.5-73.8
0.490-1.705	24000/F(kHz)	30	33.8-23.0	73.8-63.0
1.705-30.0	30	30	29.5	69.5
30-88	100	3	40.0	40.0
88-216	150	3	43.5	43.5
216-960	200	3	46.0	46.0
Above 960	500	3	54.0	54.0

*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 26 Table of Limits

8.4 Test Results

JUDGEMENT: Passed by 11.0dB

For the operation frequency of 2402 MHz, the margin between the emission level and the specification limit is in the worst case 11.9dB at the frequency of 2390.0 MHz, vertical polarization.

For the operation frequency of 2440 MHz, the margin between the emission level and the specification limit is in the worst case 21.9dB at the frequency of 4880.0 MHz, vertical polarization.

For the operation frequency of 2480 MHz, the margin between the emission level and the specification limit is in the worst case 11.0dB at the frequency of 2483.5 MHz, vertical polarization.

The EUT met the requirements of the F.C.C. Part 15, Subpart C and RSS GEN, Issue 4: 2014, Clause 8.9 specification.

The details of the highest emissions are given in *Figure 27* to *Figure 28*.

Radiated Emission

E.U.T Description Muscle Tone
and Firmness
Improvement
Device
Type H5001
Serial Number: Not designated

Specification: FCC, Part 15, Subpart C and RSS GEN, clause 8.9

Antenna Polarization: Horizontal/Vertical
Test Distance: 3 meters

Frequency range: 0.009MHz to 25.0 GHz
Detector: Peak

Operation Frequency (MHz)	Freq. (MHz)	Polarity (H/V)	Peak Reading (dB μ V/m)	Peak Limit (dB μ V/m)	Peak Margin (dB)
2402.0	2390.0	H	52.7	74.0	-21.3
	2390.0	V	53.8	74.0	-20.2
	4804.0	H	51.4	74.0	-22.6
	4804.0	V	50.8	74.0	-23.2
2440.0	4880.0	H	51.0	74.0	-23.0
	4880.0	V	52.1	74.0	-21.9
	7320.0	H	48.0	74.0	-26.0
	7320.0	V	52.0	74.0	-22.0
2480.0	4960.0	H	51.6	74.0	-22.4
	4960.0	V	51.9	74.0	-22.1
	7440.0	H	48.0	74.0	-26.0
	7440.0	V	51.7	74.0	-22.3
	2483.5	H	54.1	74.0	-19.9
	2483.5	V	53.9	74.0	-20.1

Figure 27. Radiated Emission Results, Detector: Peak

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Peak Reading” includes correction factor.

* “Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain



Radiated Emission

E.U.T Description Muscle Tone and Firmness Improvement Device
Type H5001
Serial Number: Not designated

Specification: FCC, Part 15, Subpart C , RSS GEN, clause 8.9

Antenna Polarization: Horizontal/Vertical
Test Distance: 3 meters

Frequency range: 0.009MHz to 25.0 GHz
Detector: Average

Operation Frequency	Freq.	Polarity	Average Reading	Average Limit	Average Margin
(MHz)	(MHz)	(H/V)	(dBμV/m)	(dBμV/m)	(dB)
2402.0	2390.0	H	41.1	54.0	-12.9
	2390.0	V	42.1	54.0	-11.9
	4804.0	H	-	54.0	-
	4804.0	V	-	54.0	-
2440.0	4880.0	H	-	54.0	-
	4880.0	V	-	54.0	-
	7320.0	H	-	54.0	-
	7320.0	V	-	54.0	-
2480.0	4960.0	H	-	54.0	-
	4960.0	V	-	54.0	-
	7440.0	H	-	54.0	-
	7440.0	V	-	54.0	-
	2483.5	H	43.0	54.0	-11.0
	2483.5	V	42.8	54.0	-11.2

Figure 28. Radiated Emission Results, Detector: Average

Notes:

Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.

“Average Reading” includes correction factor.

* Correction Factor = Antenna Factor + Cable Loss- Low Noise Amplifier Gain

8.5 Test Instrumentation Used; Emissions in Restricted Frequency Bands

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100724	February 28, 2017	February 28, 2018
Spectrum Analyzer	HP	8592L	3826A01204	March 1, 2017	March 1, 2018
EMI Receiver	HP	8542E	3906A00276	March 1, 2017	March 1, 2018
RF Filter Section	HP	85420E	3705A00248	March 1, 2017	March 1, 2018
Spectrum Analyzer	HP	8564E	3442A00275	March 19, 2017	March 19, 2018
Biconical Antenna	EMCO	3110B	9912-3337	May 15, 2017	May 15, 2018
Active Loop Antenna	EMCO	6502	9506-2950	September 12, 2016	September 12, 2017
Log Periodic Antenna	EMCO	3146	9505-4081	May 15, 2017	May 15, 2018
Horn Antenna	ETS	3115	29845	May 19, 2015	May 19, 2018
Horn Antenna	ARA	SWH-28	1007	March 30, 2014	December 31, 2017
Low Noise Amplifier	Narda	DBS-0411N313	13	August 8, 2016	August 8, 2017
Low Noise Amplifier	Sophia Wireless	LNA28-B	232	August 8, 2016	August 8, 2017
Spectrum Analyzer	HP	8593EM	3536A00120ADI	February 28, 2017	February 28, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 29 Test Equipment Used

9. Transmitted Power Density

9.1 Test Specification

FCC Part 15, Subpart C, Section 247(e)

RSS-247, Issue 2: 2017, Clause 5.2 (b)

9.2 Test Procedure

(Temperature (24°C)/ Humidity (65%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T was tested in the chamber, and placed on a remote-controlled turntable.

The E.U.T was placed on a non-metallic table, 1.5 meters above the ground.

The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization. The emissions were measured at a distance of 3 meters.

The spectrum analyzer was set to 3 kHz RBW and VBW to 10 kHz.

Radiated output power levels were measured at selected operation frequencies and the results were converted to power level according to the formula as shown below:

$$P = \frac{(E_{V/m} \times d)^2}{(30 \times G)} \quad [W]$$

E - Field Strength (V/m)

d – Distance from transmitter (m)

G – Antenna gain

P – Peak power (W)

9.3 Test Limit

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.

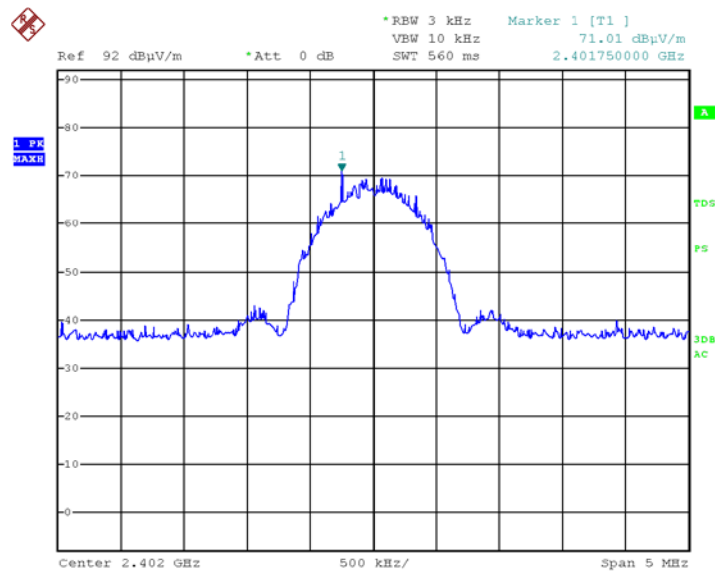
9.4 Test Results

Operation Frequency (MHz)	Reading Spectrum Analyzer (dBμV/m)	Reading Spectrum Analyzer (dBm)	Limit (dBm)	Margin (dB)
2402.0	71.0	-24.2	8.0	-32.2
2440.0	68.0	-27.2	8.0	-35.2
2480.0	66.0	-29.2	8.0	-37.2

Figure 30 Test Results

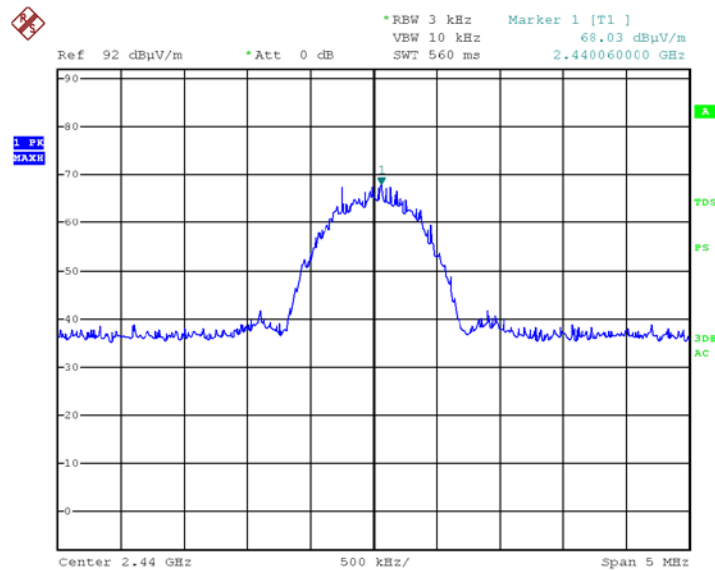
JUDGEMENT: Passed by 32.2dB

For additional information see *Figure 31 to Figure 33*.



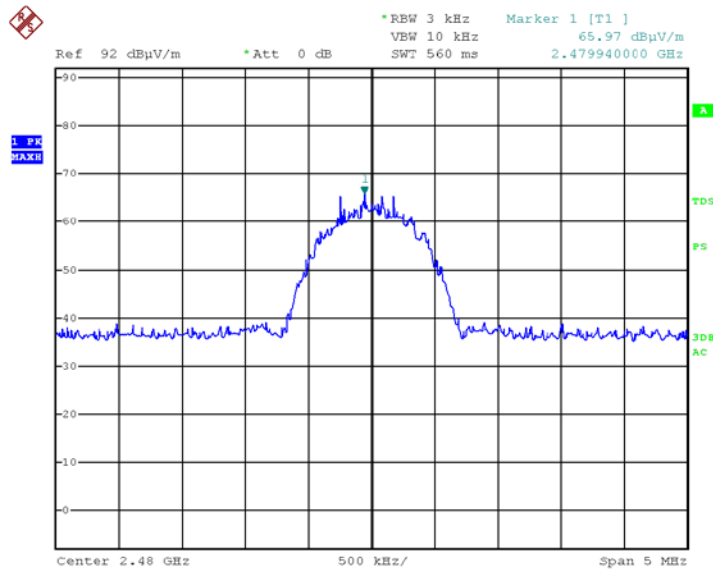
Date: 16.JUL.2017 16:13:27

Figure 31 — 2402.0 MHz



Date: 16.JUL.2017 16:16:28

Figure 32 — 2440.0 MHz



Date: 16.JUL.2017 16:09:13

Figure 33 — 2480.0 MHz

9.5 Test Equipment Used; Transmitted Power Density

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100120	March 2, 2017	March 2, 2018
Horn Antenna	ETS	3115	29845	May 19, 2015	May 19, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 34 Test Equipment Used

10. 99% Occupied Bandwidth

10.1 Test Specification

FCC, Part 2, Sub part J, Section 2.1049

RSS-Gen, Issue 4: 2014, Section 6.6

10.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T. operation mode and test set-up are as described in Section 2 of this report. The E.U.T. was placed in the chamber on a non-conductive table, 0.8 meters above the ground.

The distance between the E.U.T. and test antenna was 3 meters.

The transmitter unit was operated with normal modulation. The RBW set to the range of 1% to 5% of the OBW. The span was set to ~ 3 times the OBW.

99% occupied bandwidth function was set on.

10.3 Test Limit

N/A

10.4 Test Results

FREQUENCY (MHz)	READING (MHz)
2402.0	1.08
2440.0	1.08
2480.0	1.09

Figure 35. Bandwidth Test Results

JUDGEMENT:

N/A

10.5 Test Equipment Used; Occupied Bandwidth

Instrument	Manufacturer	Model	Serial No.	Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100120	March 2, 2017	March 2, 2018
Horn Antenna	ETS	3115	29845	May 19, 2015	May 19, 2018
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Figure 36 Test Equipment Used



11. Antenna Gain/Information

The antenna gain is 5.3 dBi, integral.

12. R.F Exposure/Safety

Typical use of the E.U.T. is as a fat reduction device.

The typical placement of the E.U.T. is on a belt.

The typical distance between the E.U.T. antenna and the user is 0.5 cm.

SAR Testing Exclusion

For FCC

Based on Section 4.3.1 and Appendix A of KDB 447498 D01 V05 Requirements which were used as guidance as follows:

Peak power output = 83.2 dBuV/m (Peak) = -12.0dBm=0.063mW.

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}]$

=0.063/5 * 1.55=0.019 this value is less than 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR.

The SAR measurement is not necessary.

For IC

SAR Testing Exclusion Based on RSS 102, Issue 5, Table 1 and Section 2.5.2 Requirements

Per Table 1 of RSS 102, Issue 5, SAR exemption based on IC exemption limit of 4mW at a separation distance of $\leq 5\text{mm}$ (in this case .5cm) at 2450MHz.

EUT Maximum Transmitted Peak Power = 83.2 dBuV/m = -12.0dBm=0.063mW

This value 0.063mW is below the 4mW SAR exemption limits.

The SAR measurement is not necessary.

13. APPENDIX A - CORRECTION FACTORS

13.1 Correction factors for #1879

RF OATS Cable 35m ITL

Frequency (MHz)	Cable loss (dB)
30.0	1.1
50.0	1.1
100.0	1.7
150.0	2.1
200.0	2.5
250.0	2.7
300.0	2.9
350.0	3.1
400.0	3.5
450.0	3.7
500.0	3.9
550.0	4.0
600.0	4.2
650.0	4.4
700.0	4.9
750.0	5.0
800.0	5.0
850.0	4.9
900.0	5.0
950.0	5.1
1000.0	5.4



13.2 Correction factors for biconical antenna – ITL # 1356

Model: EMCO 3110B

Serial No.:9912-3337

Frequency [MHz]	ITL 1356 AF [dB/m]
30	13.00
35	10.89
40	10.59
45	10.63
50	10.12
60	9.26
70	7.74
80	6.63
90	8.23
100	11.12
120	13.16
140	13.07
160	14.80
180	16.95
200	17.17



13.3 Correction factors for log periodic antenna – ITL # 1349

Model: EMCO 3146

Serial No.:9505-4081

Frequency	ITL 1349 AF
[MHz]	[dB/m]
200	11.58
250	12.04
300	14.76
400	15.55
500	17.85
600	18.66
700	20.87
800	21.15
900	22.32
1000	24.22



13.4 Correction factors for Active Loop Antenna
Model 6502 S/N 9506-2950
ITL # 1075:

f(MHz)	MAF(dBs/m)	AF(dB/m)
0.01	-33.1	18.4
0.02	-37.2	14.3
0.03	-38.2	13.3
0.05	-39.8	11.7
0.1	-40.1	11.4
0.2	-40.3	11.2
0.3	-40.3	11.2
0.5	-40.3	11.2
0.7	-40.3	11.2
1	-40.1	11.4
2	-40	11.5
3	-40	11.5
4	-40.1	11.4
5	-40.2	11.3
6	-40.4	11.1
7	-40.4	11.1
8	-40.4	11.1
9	-40.5	11
10	-40.5	11
20	-41.5	10
30	-43.5	8

13.5 Correction factors for Horn ANTENNA

Model: 3115

Serial number: 6142

3 meter range; ITL # 1352

f(GHz)	AF(dB/m)	GA(dB)
0.75	25	3
1G	23.5	7
1.5G	26	8
2G	29	7
2.5G	27.5	10
3G	30	10
3.5G	31.5	10
4G	32.5	9.5
4.5G	32.5	10.5
5G	33	10.5
5.5G	35	10.5
6G	36.5	9.5
6.5G	36.5	10
7G	37.5	10
7.5G	37.5	10
8G	37.5	11
8.5G	38	11
9G	37.5	11.5
9.5G	38	11.5
10G	38.5	11.5
10.5G	38.5	12
11G	38.5	12.5
11.5G	38.5	13
12G	38	13.5
12.5G	38.5	13
13G	40	12
13.5G	41	12
14G	40	13
14.5G	39	14
15G	38	15.5
15.5G	37.5	16
16G	37.5	16
16.5G	39	15
17G	40	15
17.5G	42	13.5
18G	42.5	13



13.6 Correction factors for

**Horn Antenna
Model: SWH-28
at 1 meter range.
ITL #:1353**

Frequency, MHz	Measured antenna factor, dB/m ¹⁾
18000	33.0
18500	32.9
19000	33.1
19500	33.3
20000	33.6
20500	33.6
21000	33.4
21500	33.8
22000	33.7
22500	33.9
23000	34.8
23500	34.5
24000	34.2
24500	34.8
25000	34.4
25500	35.2
26000	35.9
26500	36.0

13.7 Correction factor for RF CABLE for Semi Anechoic Chamber

ITL # 1841

FREQ (MHz)	LOSS (dB)
1000.0	1.5
2000.0	2.1
3000.0	2.7
4000.0	3.1
5000.0	3.5
6000.0	4.1
7000.0	4.6
8000.0	4.9
9000.0	5.7
10000.0	5.7
11000.0	6.1
12000.0	6.1
13000.0	6.2
14000.0	6.7
15000.0	7.4
16000.0	7.5
17000.0	7.9
18000.0	8.1
19000.0	8.8
20000.0	9.1

NOTES:

1. The cable is manufactured by Commscope
2. The cable type is 0623 WBC-400, serial # G020132 and 10m long