

Report on the Radio Testing

For

Catchbox SIA

on

Catchbox Lite Transmitter

Report no. TRA-046681-45-00B

3 October 2019

RF915 7.0



Report Number: TRA-046681-45-00B
Issue: B

REPORT ON THE RADIO TESTING OF A
Catchbox SIA
Catchbox Lite Transmitter
WITH RESPECT TO SPECIFICATION
FCC 47CFR 15.247

TEST DATE: 2019-08-29 to 2019-09-09

Written by: 

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Radio Test Engineer

Approved by:

Date: 3 October 2019

J Charters
Department Manager - Radio

Disclaimers:

- [1] THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE
- [2] THE RESULTS CONTAINED IN THIS DOCUMENT RELATE ONLY TO THE ITEM(S) TESTED

1 Revision Record

<i>Issue Number</i>	<i>Issue Date</i>	<i>Revision History</i>
A	18 September 2019	Original
B	3 October 2019	Section 11 updated

2 Summary

TEST REPORT NUMBER: TRA-046681-45-00B

WORKS ORDER NUMBER: TRA-046681-01

PURPOSE OF TEST: Certification

TEST SPECIFICATION: 47CFR15.247

EQUIPMENT UNDER TEST (EUT): Catchbox Lite Transmitter

FCC IDENTIFIER: 2AP8UCB24TX002

MANUFACTURER/AGENT: Catchbox SIA

ADDRESS:
Braslas iela
29A-3
LV-1084
Riga
Latvia

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ORDER NUMBER: TRA-046681-01

TEST DATE: 2019-08-29 to 2019-09-09

TESTED BY:
A Tosif
Element

2.1 Test Summary

Test Method and Description		Requirement Clause 47CFR15	Applicable to this equipment	Result / Note
Radiated spurious emissions (restricted bands of operation and cabinet radiation)		15.205	<input checked="" type="checkbox"/>	Pass
AC power line conducted emissions		15.207	<input type="checkbox"/>	Note 1
Occupied bandwidth		15.247(a)(2)	<input checked="" type="checkbox"/>	Pass
Conducted carrier power	Peak	15.247(b)(3)	<input checked="" type="checkbox"/>	Pass
	Max.		<input type="checkbox"/>	
Out of band emissions		15.247(d)	<input checked="" type="checkbox"/>	Pass
Power spectral density		15.247(e)	<input checked="" type="checkbox"/>	Pass

Specific Note:

1. The EUT has got a rechargeable battery, but as per client's declaration, it doesn't transmit while charging.

General Notes:

The results contained in this report relate only to the items tested, in the condition at time of test, and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

The apparatus was set up and exercised using the configurations, modes of operation and arrangements defined in this report only. Any modifications made are identified in Section 8 of this report.

Particular operating modes, apparatus monitoring methods and performance criteria required by the standards tested to have been performed except where identified in Section 5.2 of this test report (Deviations from Test Standards).

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4 Introduction

This report TRA-046681-45-00B presents the results of the Radio testing on a Catchbox SIA, Catchbox Lite Transmitter to specification 47CFR15 Radio Frequency Devices.

The testing was carried out for Catchbox SIA by Element, at the address detailed below.

<input checked="" type="checkbox"/> Element Hull	<input type="checkbox"/> Element Skelmersdale
Unit E	Unit 1
South Orbital Trading Park	Pendle Place
Hedon Road	Skelmersdale
Hull	West Lancashire
HU9 1NJ	WN8 9PN
UK	UK

This report details the configuration of the equipment, the test methods used and any relevant modifications where appropriate.

All test and measurement equipment under the control of the laboratory and requiring calibration is subject to an established programme and procedures to control and maintain measurement standards. The quality management system meets the principles of ISO 9001, and has quality control procedures for monitoring the validity of tests undertaken. Records and sufficient detail are retained to establish an audit trail of calibration records relating to its test results for a defined period. Under control of the established calibration programme, key quantities or values of the test & measurement instrumentation are within specification and comply with the relevant traceable internationally recognised and appropriate standard specifications, which are UKAS calibrated as such where these properties have a significant effect on results. Participation in inter-laboratory comparisons and proficiency testing ensures satisfactory correlation of results conform to Elements own procedures, as well as statistical techniques for analysis of test data providing the appropriate confidence in measurements.

Throughout this report EUT denotes equipment under test.

FCC Site Listing:

Element is accredited for the above sites under the US-EU MRA, Designation number UK0009.

The test site requirements of ANSI C63.4-2014 are met up to 1GHz.

The test site SVSWR requirements of CISPR 16-1-4:2010 are met over the frequency range 1 GHz to 18 GHz.

5 Test Specifications

5.1 *Normative References*

- FCC 47 CFR Ch. I – Part 15 – Radio Frequency Devices.
- ANSI C63.10-2013 – American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- ANSI C63.4-2014 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

5.2 *Deviations from Test Standards*

There were no deviations from the test standard.

6 Glossary of Terms

§	denotes a section reference from the standard, not this document
AC	Alternating Current
ANSI	American National Standards Institute
BW	bandwidth
C	Celsius
CFR	Code of Federal Regulations
CW	Continuous Wave
dB	decibel
dBm	dB relative to 1 milliwatt
DC	Direct Current
DSSS	Direct Sequence Spread Spectrum
EIRP	Equivalent Isotropically Radiated Power
ERP	Effective Radiated Power
EUT	Equipment under Test
FCC	Federal Communications Commission
FHSS	Frequency Hopping Spread Spectrum
Hz	hertz
ITU	International Telecommunication Union
LBT	Listen before Talk
m	metre
max	maximum
MIMO	Multiple Input and Multiple Output
min	minimum
MRA	Mutual Recognition Agreement
N/A	Not Applicable
PCB	Printed Circuit Board
PDF	Portable Document Format
Pt-mpt	Point-to-multipoint
Pt-pt	Point-to-point
RF	Radio Frequency
RH	Relative Humidity
RMS	Root Mean Square
Rx	receiver
s	second
SVSWR	Site Voltage Standing Wave Ratio
Tx	transmitter
UKAS	United Kingdom Accreditation Service
V	volt
W	watt
Ω	ohm

7 Equipment under Test

7.1 EUT Identification

- Name: Catchbox Lite Transmitter
- Model Number: CB24TX002
- Build Level / Revision Number: Pre-production

7.2 System Equipment

Equipment listed below forms part of the overall test setup and is required for equipment functionality and/or monitoring during testing. The compliance levels achieved in this report relate only to the EUT and not items given in the following list.

Laptop with PurePath Wireless commander v1.0.0 software

7.3 EUT Mode of Operation

The EUT was set to permanent modulated transmit mode by using *PurePath Wireless commander v1.0.0* software. The power was set to 5 dBm.

7.4 EUT Radio Parameters

Frequencies of operation:	2406 MHz – 2474 MHz
Channel spacing:	4 MHz
Nominal supply voltage:	3 Vdc
Antenna type:	Integral
Antenna gain:	2.2 dBi

7.5 EUT Description

The EUT is a battery powered wireless audio transmitter.

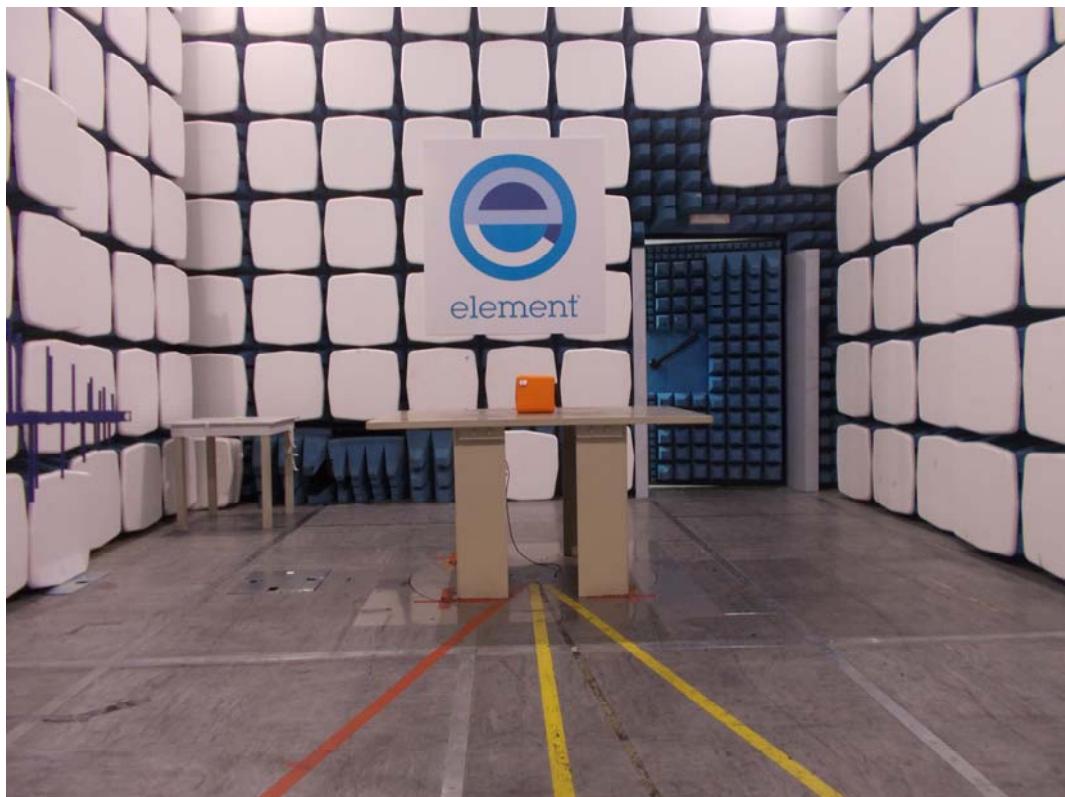
8 Modifications

No modifications were performed during this assessment.

9 EUT Test Setup

9.1 General Set-up Photograph

The following photographs show the basic radiated EUT set-up:



9.2 Measurement software

Where applicable, the following software was used to perform measurements contained within this report.

Element Emissions R5

10 General Technical Parameters

10.1 Normal Conditions

The EUT was tested under the normal environmental conditions of the test laboratory, except where otherwise stated. The normal power source applied was 3 Vdc from internal battery.

10.2 Varying Test Conditions

There are no specific frequency stability requirements for the type of device. The results contained in this report demonstrate that the occupied bandwidth is contained within the authorised band and the manufacturer has declared sufficient frequency stability (refer to section 7.4).

Variation of supply voltage is required to ensure stability of the declared output power. During carrier power testing the following variations were made:

	<i>Category</i>	<i>Nominal</i>	<i>Variation</i>
<input type="checkbox"/>	Mains	110 V ac +/-2 %	85 % and 115 %
<input checked="" type="checkbox"/>	Battery	New battery	N/A

11 Radiated emissions

11.1 Definitions

Spurious emissions

Emissions on a frequency or frequencies, which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

Restricted bands

A frequency band in which intentional radiators are permitted to radiate only spurious emissions but not fundamental signals.

11.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 2
Test Standard and Clause:	ANSI C63.10-2013, Clause 6.5 and 6.6
EUT Frequencies Measured:	2406 MHz, 2438 MHz & 2474 MHz
Deviations From Standard:	None
Measurement BW:	30 MHz to 1 GHz: 120 kHz; Above 1 GHz: 1 MHz
Measurement Detector:	Up to 1 GHz: quasi-peak; Above 1 GHz: RMS average and Peak

Environmental Conditions (Normal Environment)

Temperature: 22 °C	+15 °C to +35 °C (as declared)
Humidity: 49 % RH	20 % RH to 75 % RH (as declared)
Supply: 3 Vdc	As declared

11.3 Test Limit

Unwanted emissions that fall within the restricted frequency bands shall comply with the limits specified:

General Field Strength Limits for License-Exempt Transmitters at Frequencies above 30 MHz

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

11.4 Test Method

With the EUT setup as per section 9 of this report and connected as per Figure i, the emissions from the EUT were measured on a spectrum analyzer / EMI receiver.

Radiated electromagnetic emissions from the EUT are checked first by preview scans. Preview scans for all spectrum and modulation characteristics are checked, using a peak detector and where applicable worst-case determined for function, operation, orientation, etc. for both vertical and horizontal polarisations.

If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in ANSI C63.10 are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed, (see EUT setup photographs for more detail).

Emissions between 30 MHz and 1 GHz are measured using calibrated broadband antennas. Emissions above 1 GHz are characterized using standard gain horn antennas. Pre-amplifiers and filters are used where required. Care is taken to ensure that test receiver resolution bandwidth, video bandwidth and detector type(s) meet the regulatory requirements.

For both horizontal and vertical polarizations, the EUT is then rotated through 360 degrees in azimuth until the highest emission is detected. At the previously determined azimuth the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected, this maximum value is recorded.

Power values measured on the test receiver / analyzer are converted to field strength, FS, in $\text{dB}\mu\text{V}/\text{m}$ at the regulatory distance, using:

$$FS = PR + CL + AF - PA + DC + CF$$

Where,

PR is the power recorded on the receiver / spectrum analyzer in $\text{dB}\mu\text{V}$;

CL is the cable loss in dB;

AF is the test antenna factor in dB/m ;

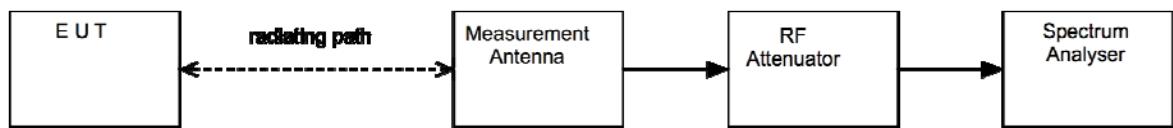
PA is the pre-amplifier gain in dB (where used);

DC is the duty correction factor in dB (where used, e.g. harmonics of pulsed fundamental);

CF is the distance factor in dB (where measurement distance different to limit distance);

This field strength value is then compared with the regulatory limit.

Figure i Test Setup

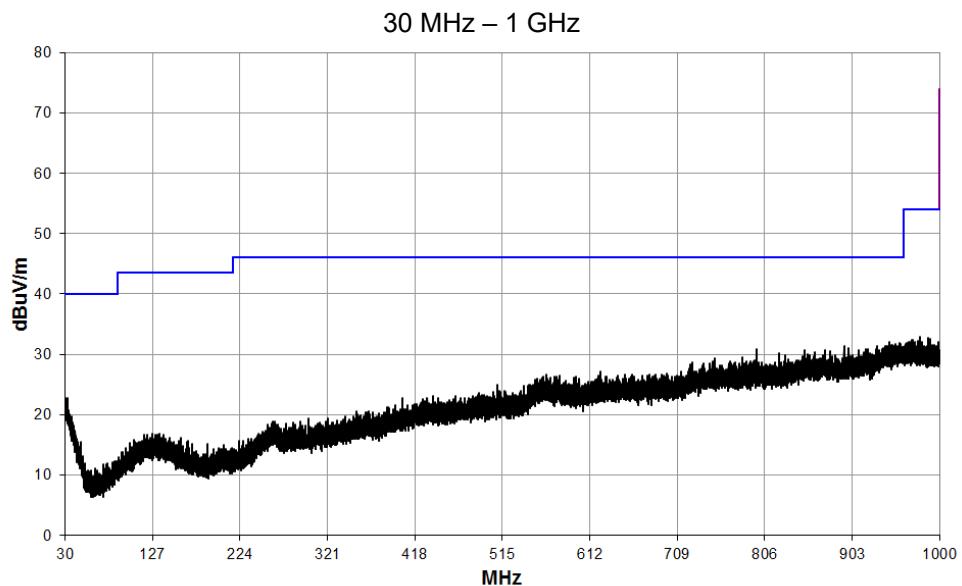
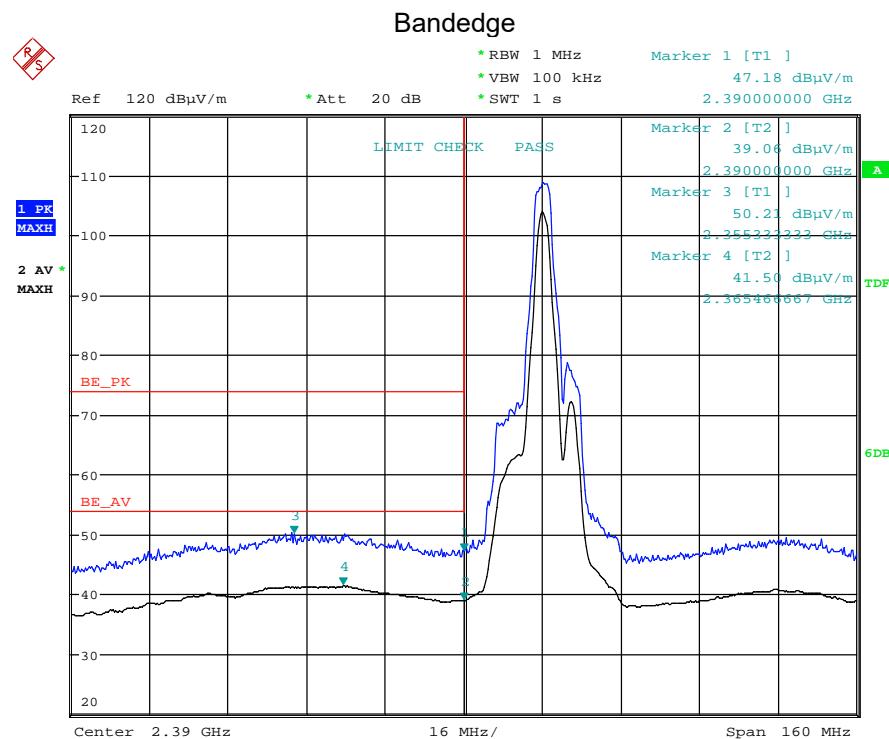


11.5 Test Equipment

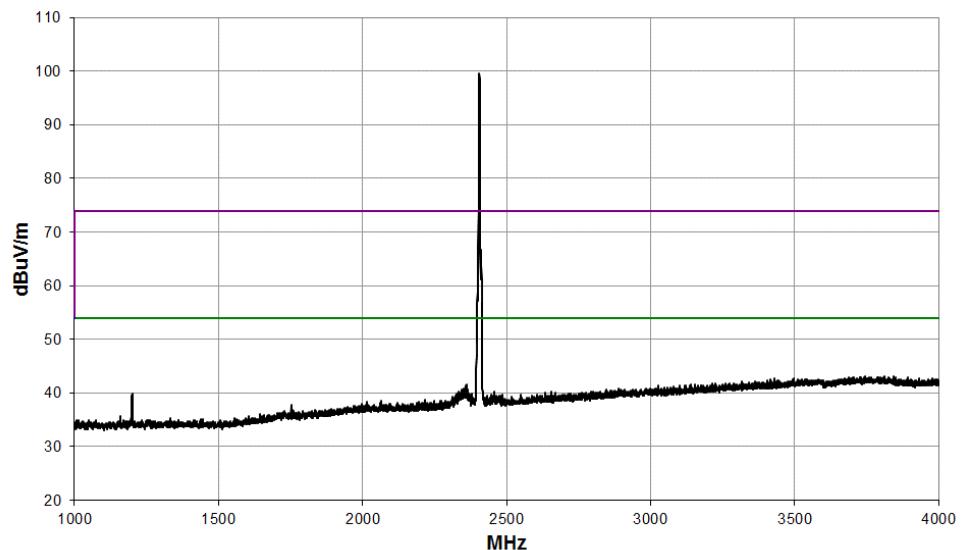
Equipment Type	Manufacturer	Equipment Description	Element No	Due For Calibration
ATS	Rainford	Ferrite Lined Chamber	REF886	2020-07-29
FSU26	R&S	Spectrum Analyser	U405	2019-09-21
CBL6111B	Chase	Bilog Antenna	REF2233	2020-08-17
3115	EMCO	Horn Antenna	RFG129	2020-02-12
QSH20S20S	Q-Par	Horn Antenna	RFG629	2019-09-26
310	Sonoma	Pre-Amp (9 kHz - 1 GHz)	REF927	2020-05-29
8449B	Agilent	Pre-Amp (1 - 26.5 GHz)	REF913	2020-02-06
7002-006	ETS Lindgren	Power Meter	REF2286	2020-03-29
Emissions R5	Element	Radiated Test Software	REF9000	N/A

11.6 Test Results

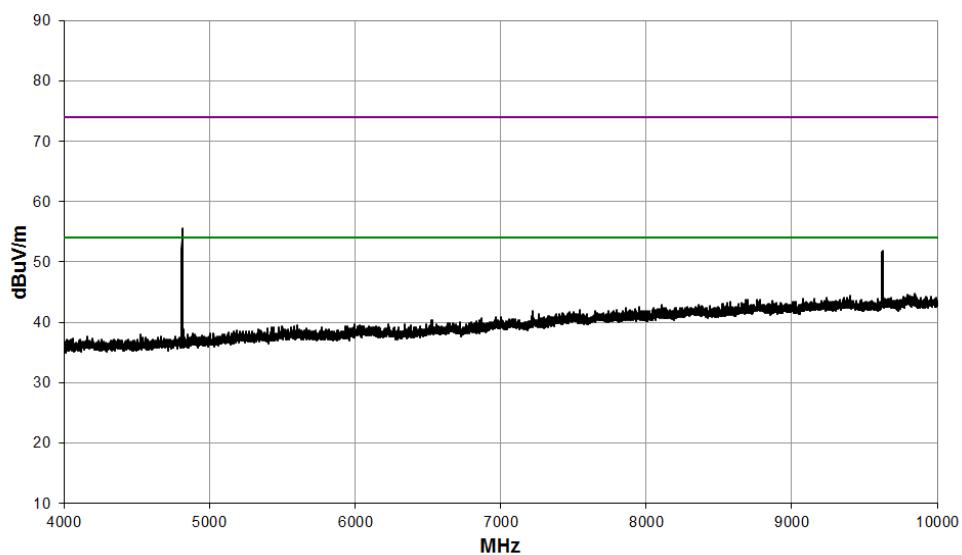
Frequency: 2406 MHz										
Detector	Freq. (MHz)	Meas'd Emission (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Filter Loss (dB)	Distance Extrap'n Factor (dB)	Field Strength (dB μ V/m)	Field Strength (μ V/m)	Limit (μ V/m)
AV	1200.0	42.7	35.7	26.3	2.2	0.0	0.0	35.5	59.6	500.0
PK	1200.0	55.0	35.7	26.3	2.2	0.0	0.0	47.8	245.5	5000.0
AV	4812.1	50.7	35.4	32.9	4.7	0.5	0.0	53.4	467.7	500.0
PK	4813.0	60.6	35.4	32.9	4.7	0.5	0.0	63.3	1462.2	5000.0



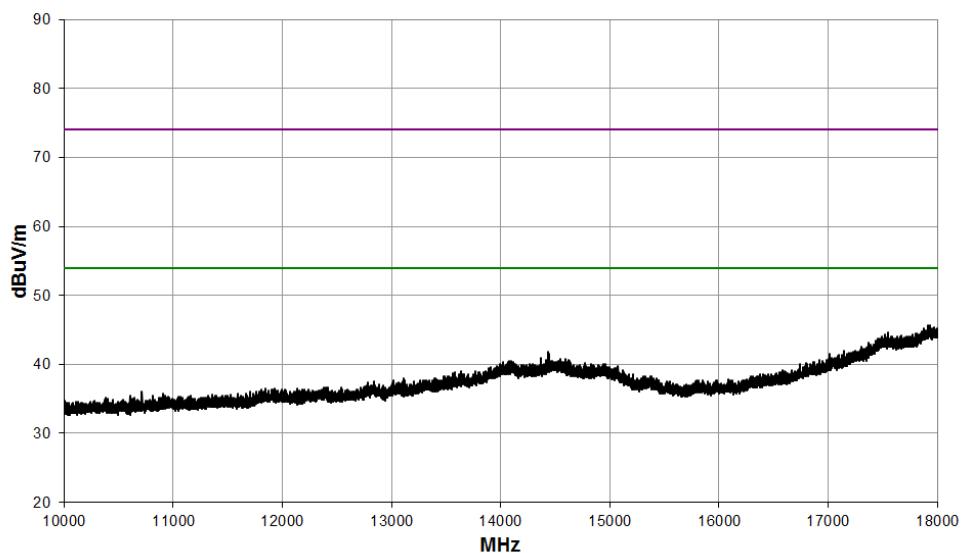
1 GHz – 4 GHz



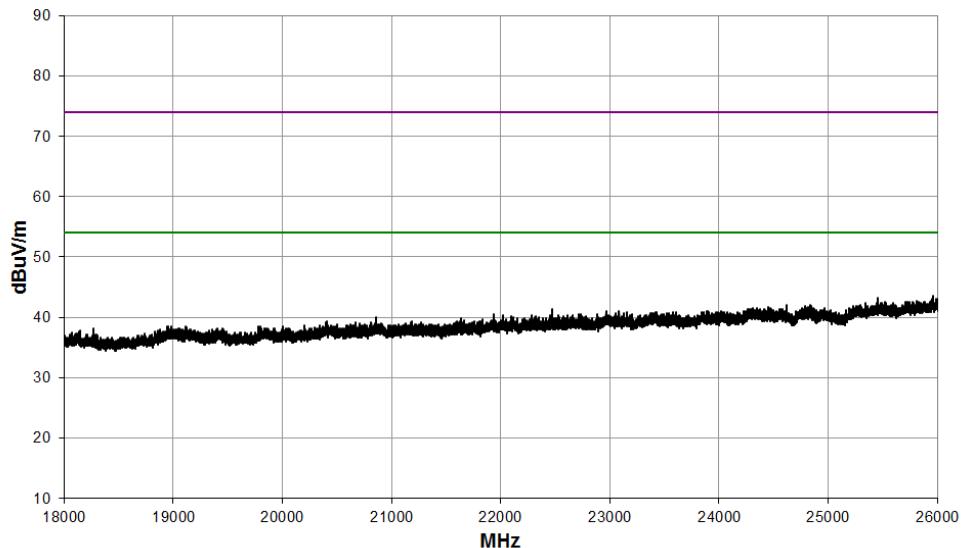
4 GHz – 10 GHz



10 GHz – 18 GHz



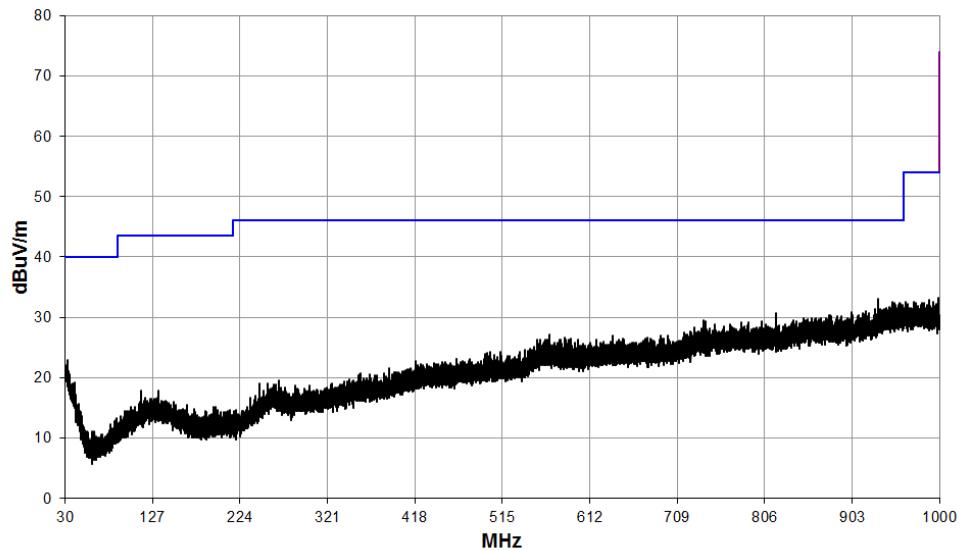
18 GHz – 26 GHz



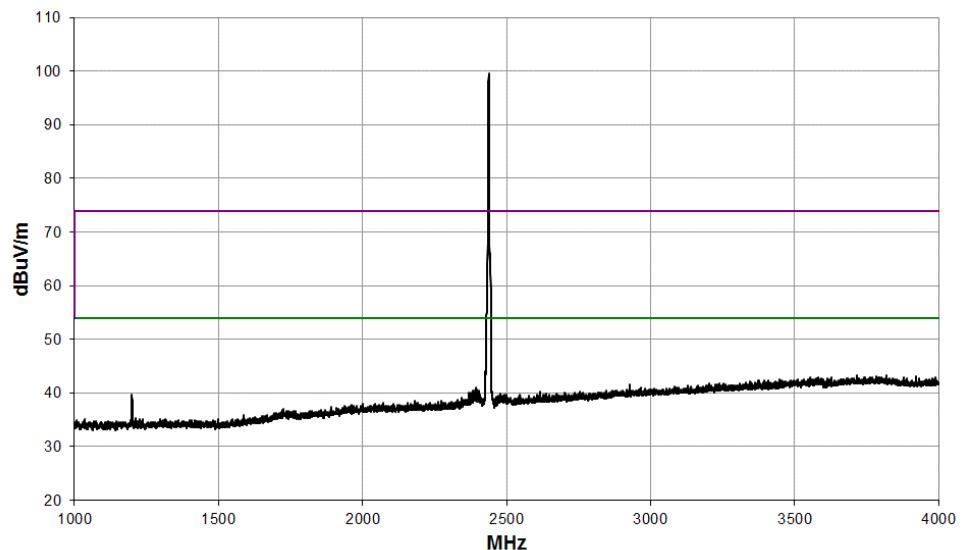
Frequency: 2438 MHz

Detector	Freq. (MHz)	Meas'd Emission (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Filter Loss (dB)	Distance Extrapol'n Factor (dB)	Field Strength (dB μ V/m)	Field Strength (μ V/m)	Limit (μ V/m)
AV	1200.0	42.7	35.7	26.3	2.2	0.0	0.0	35.5	59.6	500.0
PK	1200.0	55.0	35.7	26.3	2.2	0.0	0.0	47.8	245.5	5000.0
AV	4876.1	49.0	35.4	33.0	4.8	0.5	0.0	51.9	339.6	500.0
PK	4878.2	59.3	35.4	33.0	4.8	0.5	0.0	62.2	1288.3	5000.0

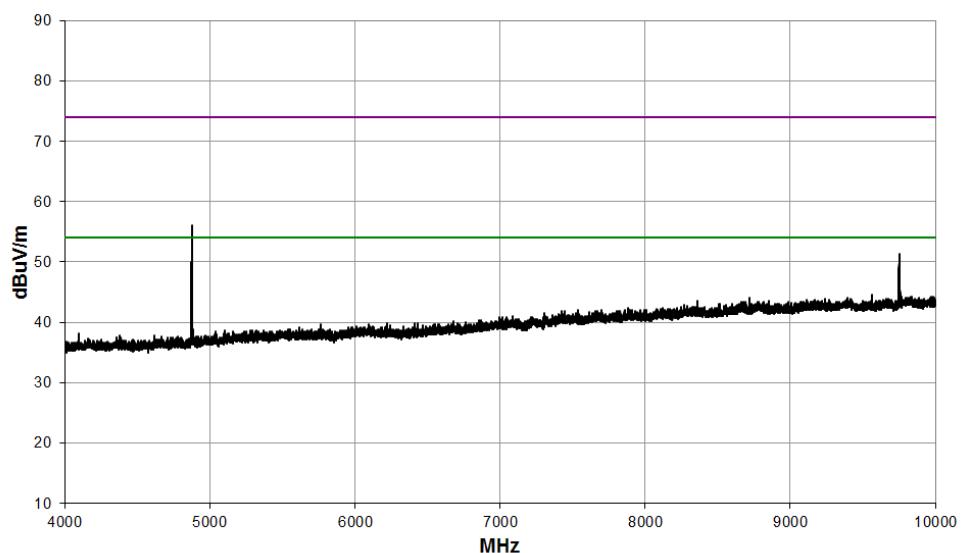
30 MHz – 1 GHz



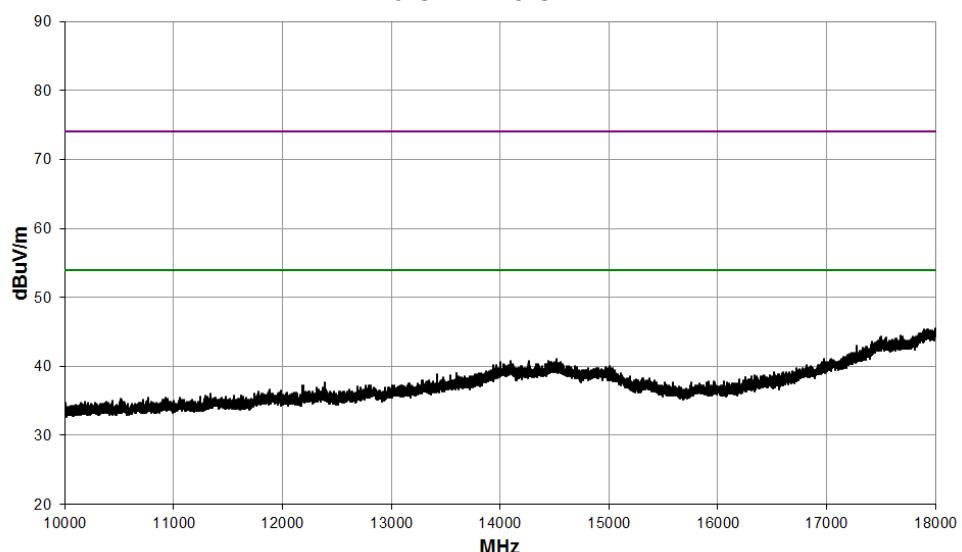
1 GHz – 4 GHz



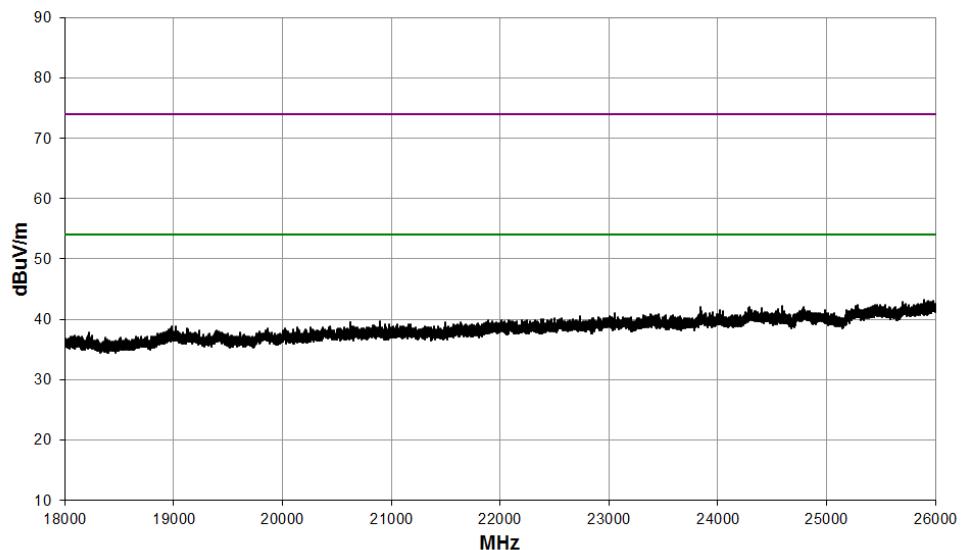
4 GHz – 10 GHz



10 GHz – 18 GHz



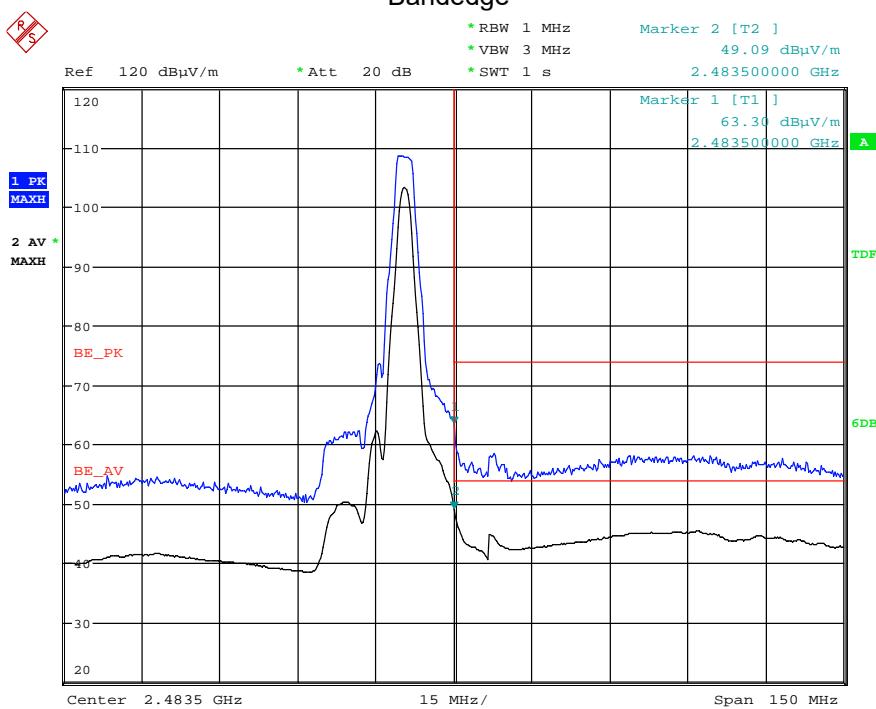
18 GHz – 26 GHz

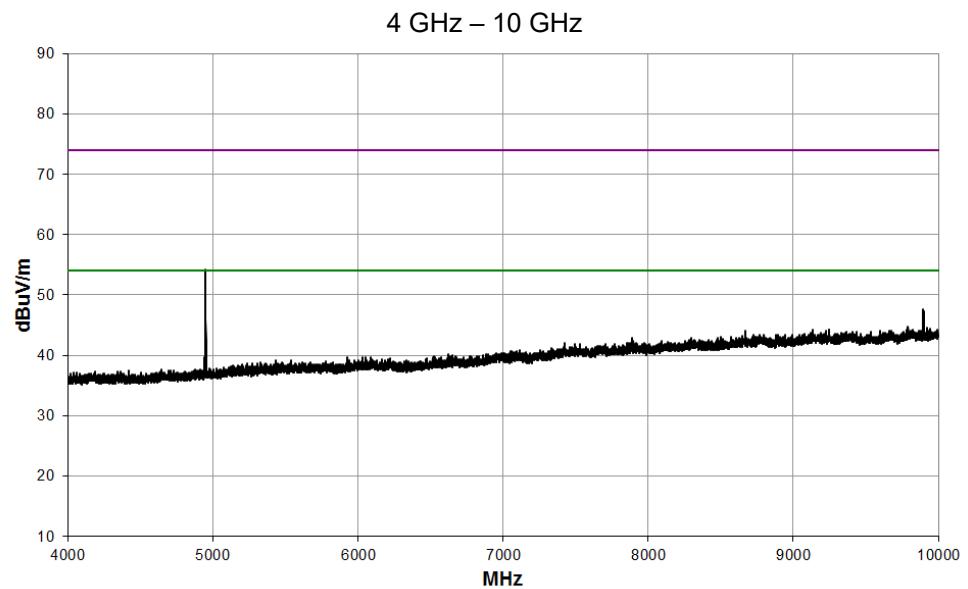
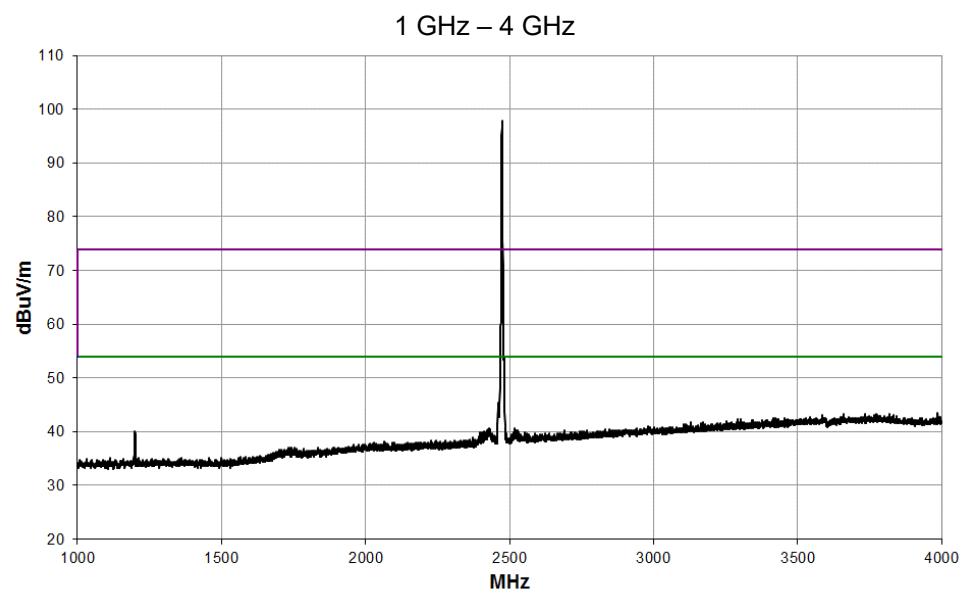
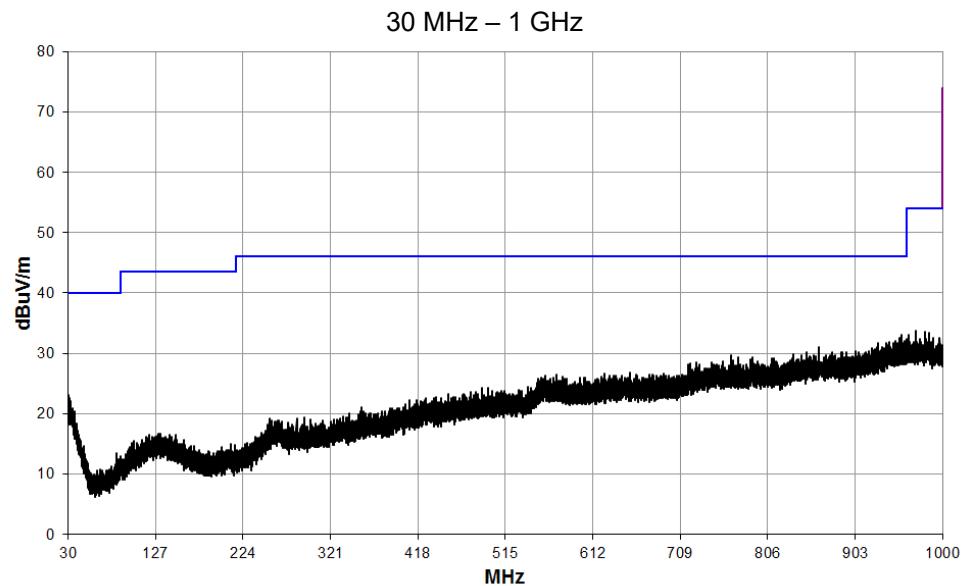


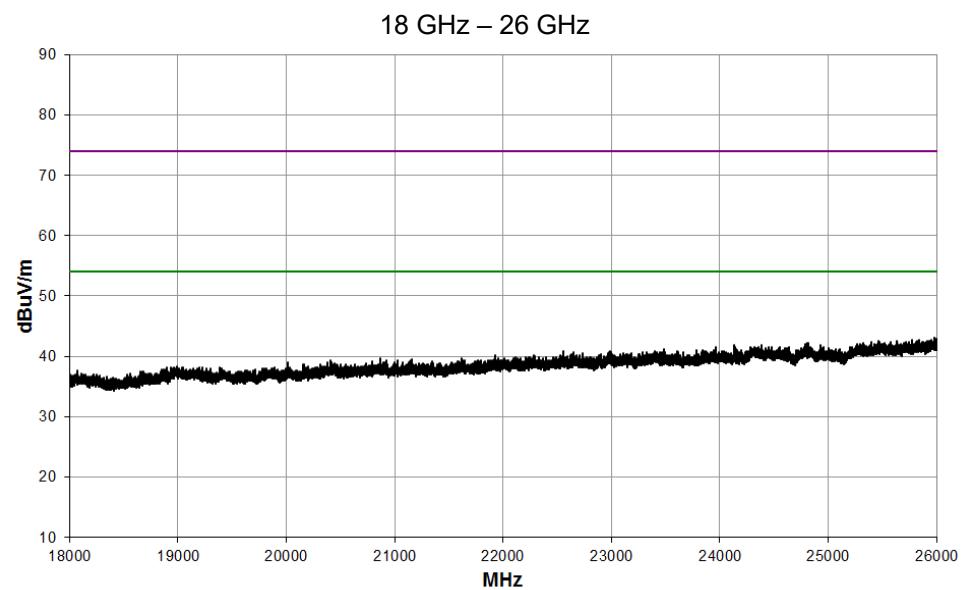
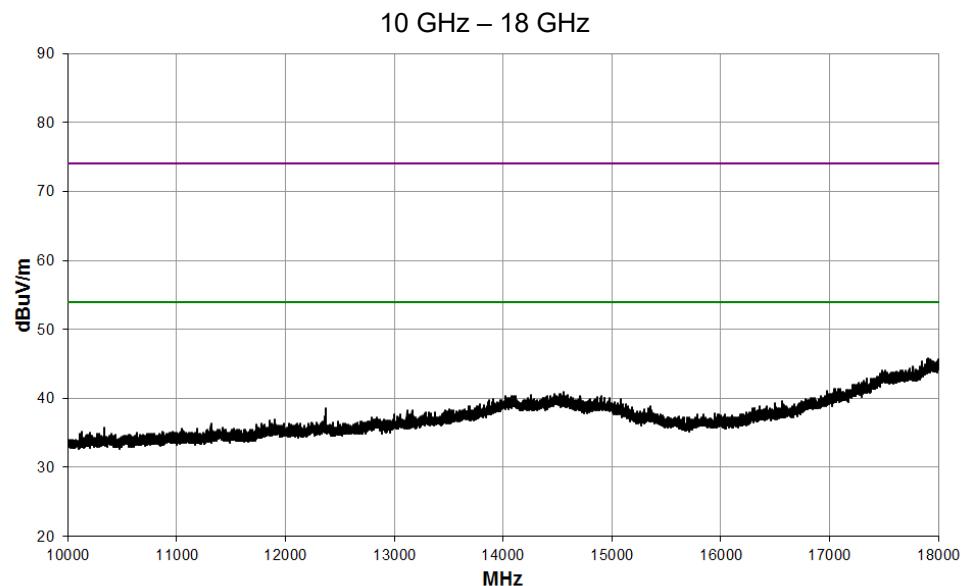
Frequency: 2474 MHz

Detector	Freq. (MHz)	Meas'd Emission (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Cable Loss (dB)	Filter Loss (dB)	Distance Extrapol'n Factor (dB)	Field Strength (dBμV/m)	Field Strength (μV/m)	Limit (μV/m)
AV	1200.0	42.7	35.7	26.3	2.2	0.0	0.0	35.5	59.6	500.0
PK	1200.0	55.0	35.7	26.3	2.2	0.0	0.0	47.8	245.5	5000.0
AV	4947.8	49.6	35.4	33.2	4.8	0.5	0.0	52.7	431.5	500.0
PK	4946.4	59.8	35.4	33.2	4.8	0.5	0.0	62.9	1396.4	5000.0
AV	12370.4	34.7	35.4	38.7	6.9	0.3	-9.5	35.7	61.0	500.0
PK	12369.1	50.1	35.4	38.7	6.9	0.3	-9.5	51.1	358.9	5000.0

Bandedge







12 Occupied Bandwidth

12.1 Definition

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal.

12.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clauses:	ANSI C63.10-2013, Clause 11.8
EUT Frequencies Measured:	2406 MHz, 2438 MHz & 2474 MHz
Deviations From Standard:	None
Measurement Detector:	Peak

Environmental Conditions (Normal Environment)

Temperature: 21 °C	+15 °C to +35 °C (as declared)
Humidity: 50 % RH	20 % RH to 75 % RH (as declared)
Supply: 3 Vdc	As declared

12.3 Test Limit

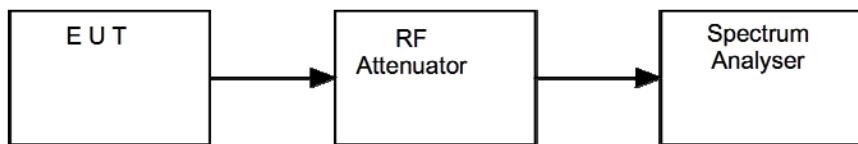
The minimum -6 dB bandwidth shall be at least 500 kHz.

12.4 Test Method

With the EUT connected as per Figure iii, the bandwidth of the EUT was measured on a spectrum analyser.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst-case configuration in each bandwidth.

Figure iii Test Setup

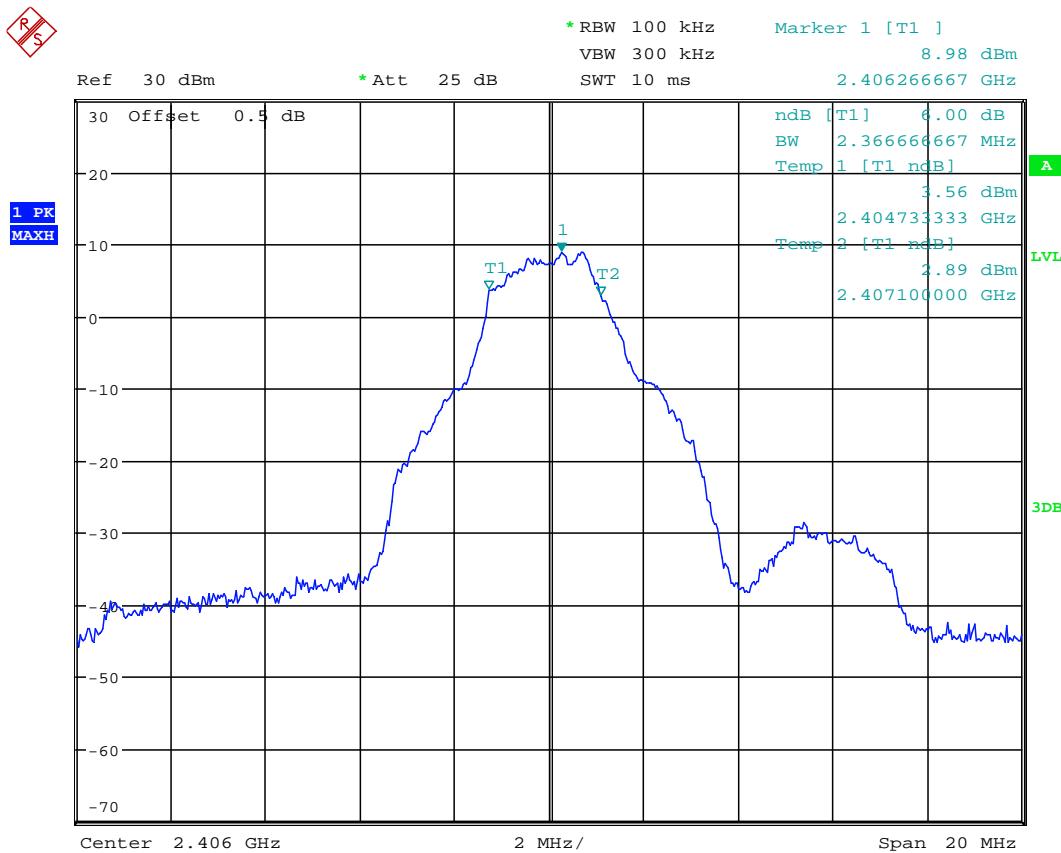


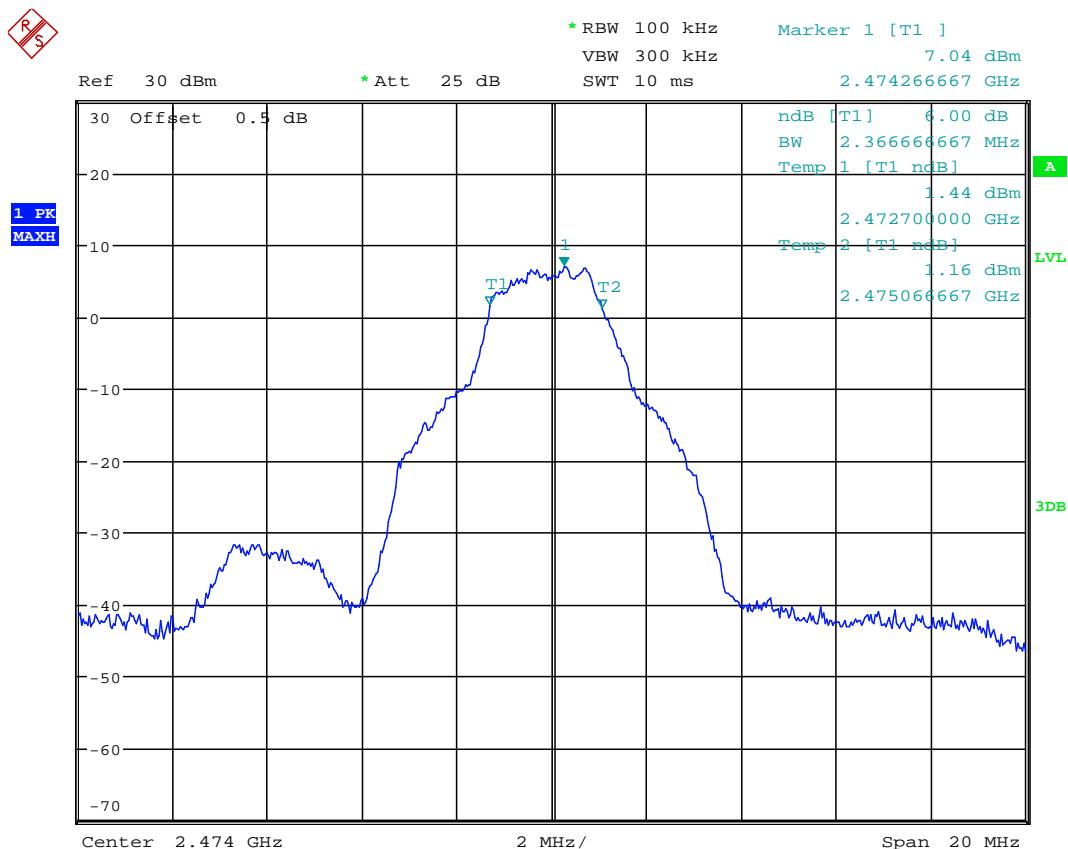
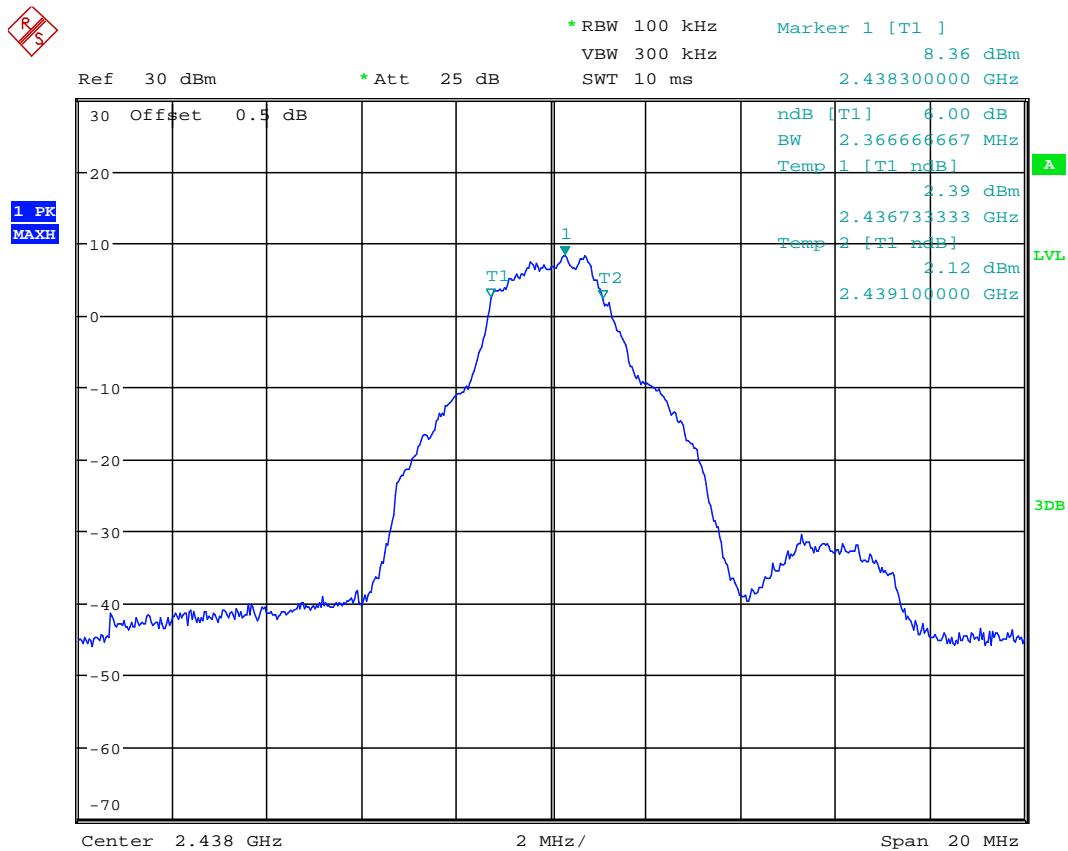
12.5 Test Equipment

Equipment Description	Manufacturer	Equipment Type	Element No	Due For Calibration
Spectrum Analyser	R&S	FSU50	U544	2020-06-05

12.6 Test Results

6 dB Bandwidth				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	6 dB Bandwidth (MHz)	Result
2406	2404.733	2407.100	2.367	PASS
2438	2436.733	2439.100	2.367	PASS
2474	2472.700	2475.067	2.367	PASS





13 Maximum peak conducted output power

13.1 Definition

The maximum peak conducted output power is defined as the maximum power level measured with a peak detector using a filter with width and shape of which is sufficient to accept the signal bandwidth.

The maximum conducted output power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.

13.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 11.9
EUT Frequencies Measured:	2406 MHz, 2438 MHz & 2474 MHz
Deviations From Standard:	None

Environmental Conditions (Normal Environment)

Temperature: 21 °C	+15 °C to +35 °C (as declared)
Humidity: 50 % RH	20 % RH to 75 % RH (as declared)
Supply: 3 Vdc	As declared

13.3 Test Limit

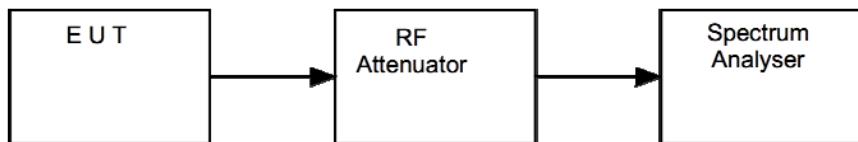
For systems employing digital modulation techniques operating in the bands 902 to 928 MHz, 2400 to 2483.5 MHz and 5725 to 5850 MHz, the maximum peak conducted output power shall not exceed 1 W.

13.4 Test Method

With the EUT connected as per Figure iv, the resolution bandwidth of the spectrum analyser was increased above the EUT occupied bandwidth and the peak emission data noted.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst-case configuration in each bandwidth.

Figure iv Test Setup

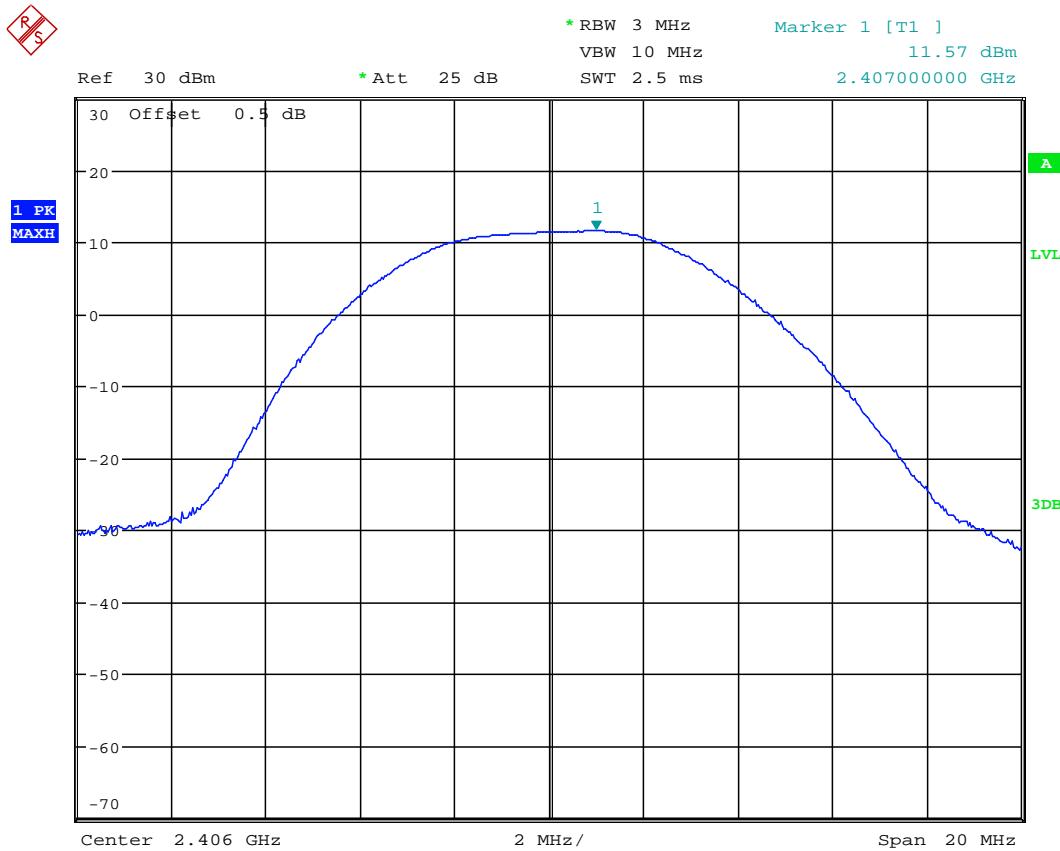


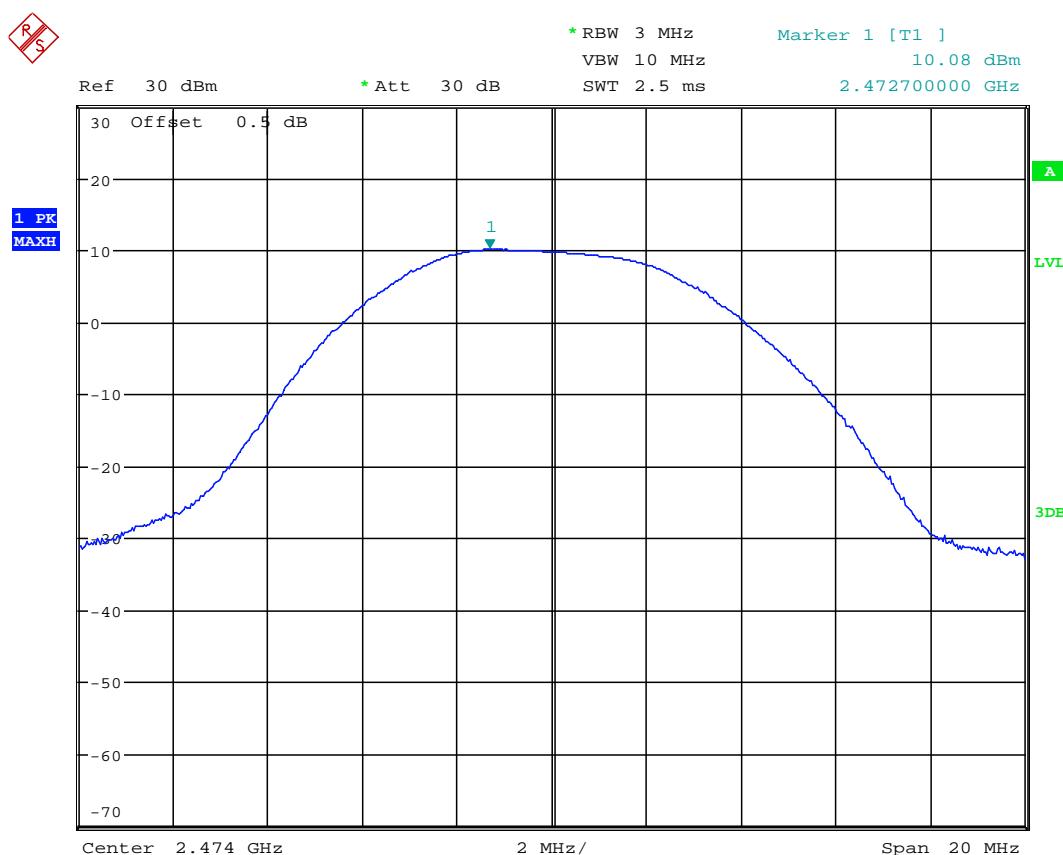
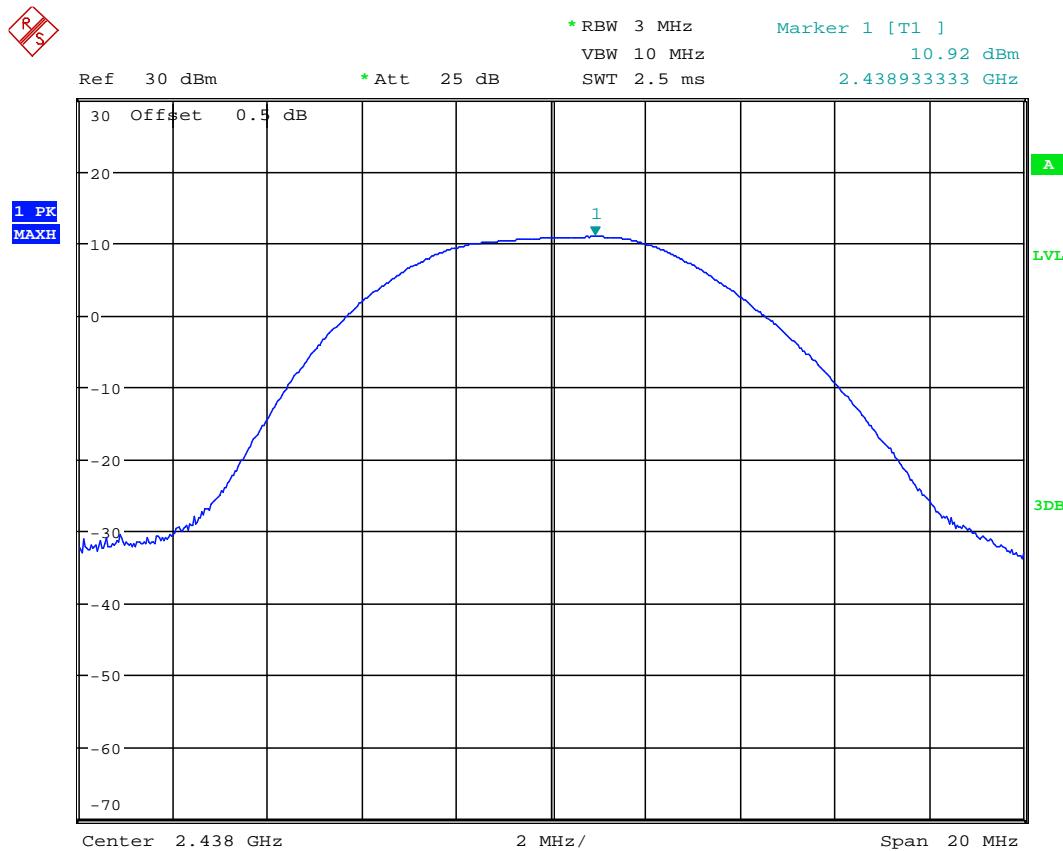
13.5 Test Equipment

Equipment Description	Manufacturer	Equipment Type	Element No	Due For Calibration
Spectrum Analyser	R&S	FSU50	U544	2020-06-05

13.6 Test Results

Channel Frequency (MHz)	Maximum peak conducted output power		Antenna gain (dBi)	E.I.R.P.		Result
	(dBm)	(W)		(dBm)	(W)	
2406	11.57	0.0144	2.20	13.77	0.0238	PASS
2438	10.92	0.0124	2.20	13.12	0.0205	PASS
2474	10.08	0.0102	2.20	12.28	0.0169	PASS





14 Out-of-band and conducted spurious emissions

14.1 Definition

Out-of-band emission

Emission on a frequency or frequencies immediately outside the necessary bandwidth that results from the modulation process but excluding spurious emissions.

Spurious emission

Emission on a frequency or frequencies that are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products, and frequency conversion products, but exclude out-of-band emissions.

14.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 11.11
EUT Frequencies Measured:	2406 MHz, 2438 MHz & 2474 MHz
Deviations From Standard:	None
Measurement Bandwidth:	100 kHz
Video Bandwidth:	300 kHz
Measurement Detector:	Peak
Measurement Range:	9 kHz to 25 GHz

Environmental Conditions (Normal Environment)

Temperature: 21 °C	+15 °C to +35 °C (as declared)
Humidity: 50 % RH	20 % RH to 75 % RH (as declared)
Supply: 3 Vdc	As declared

14.3 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

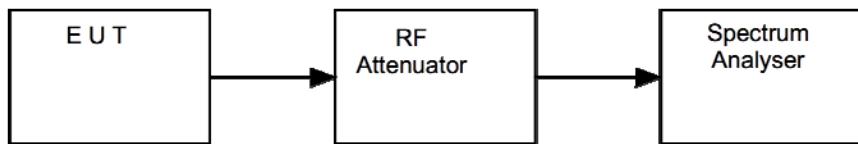
Attenuation below the general field strength limits specified in FCC 47CFR15.209 (a) is not required.

14.4 Test Method

With the EUT connected as per Figure v, the emissions from the EUT were measured on a spectrum analyser.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst case configuration in each bandwidth.

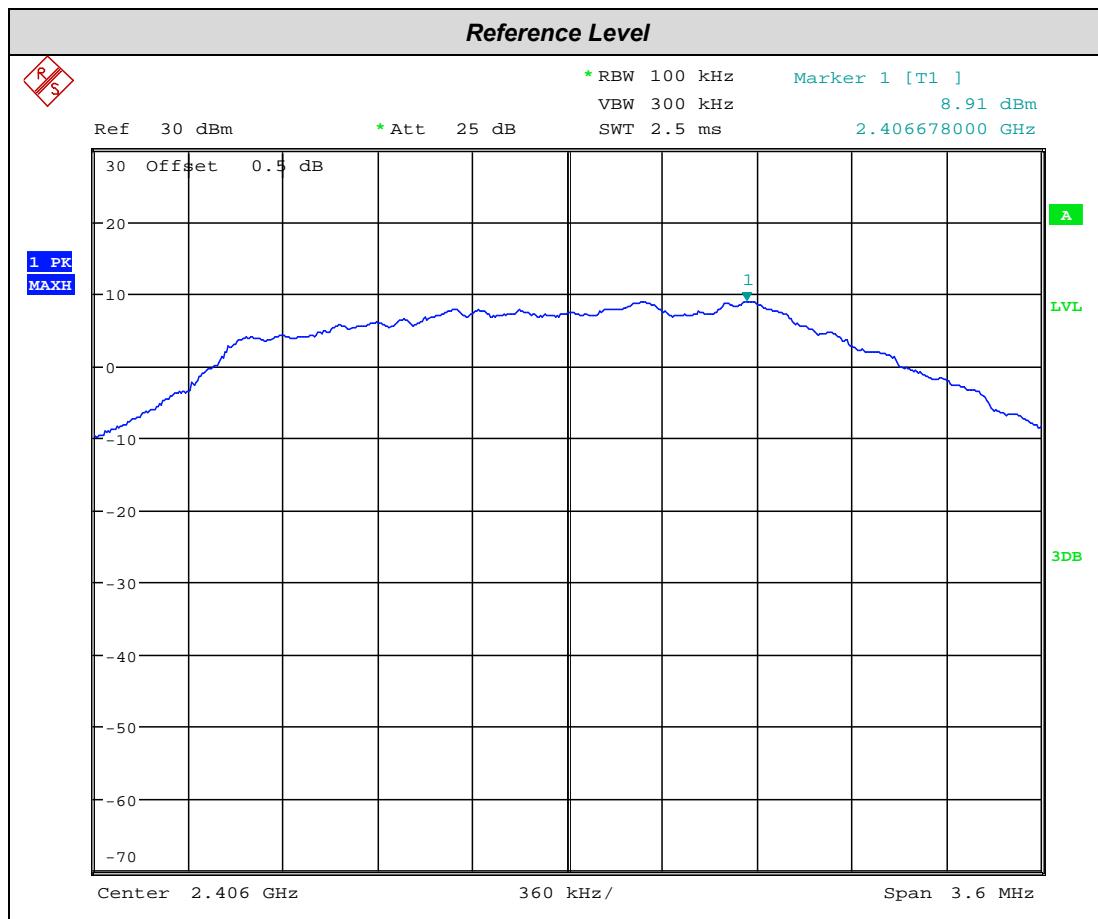
Figure v Test Setup

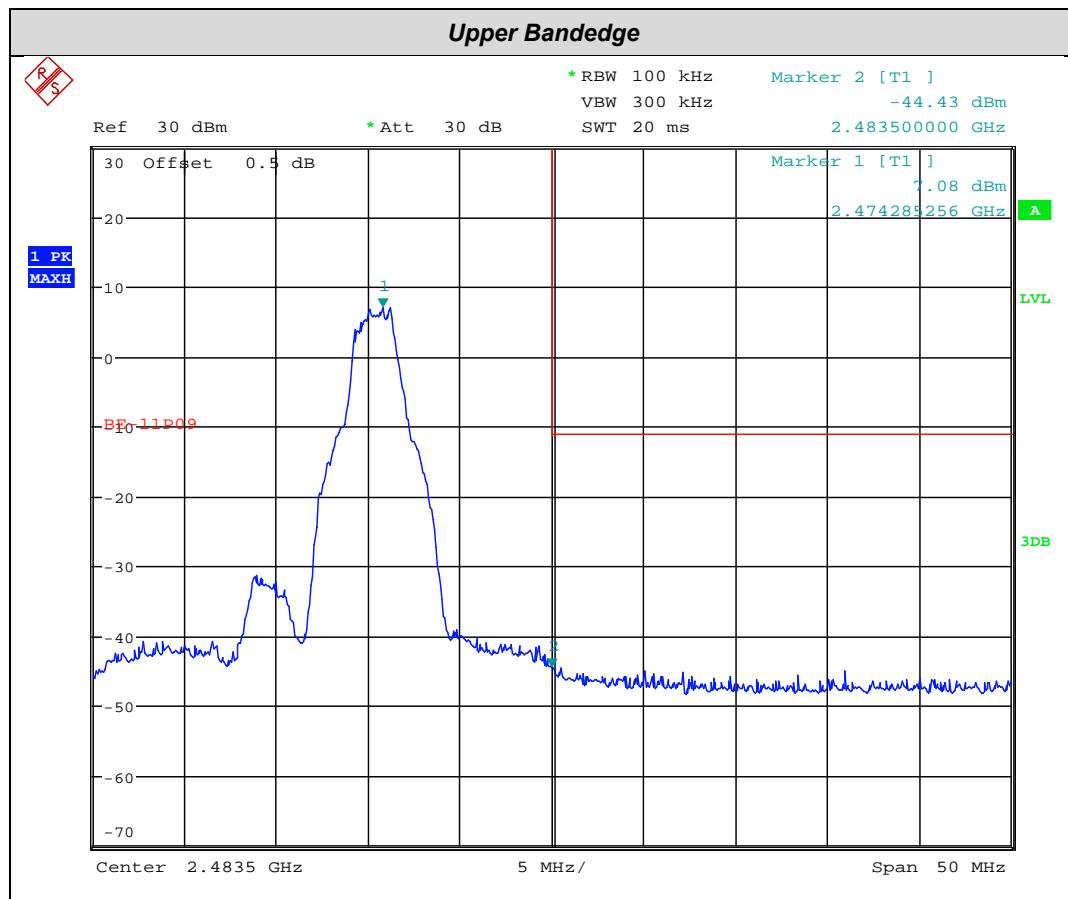
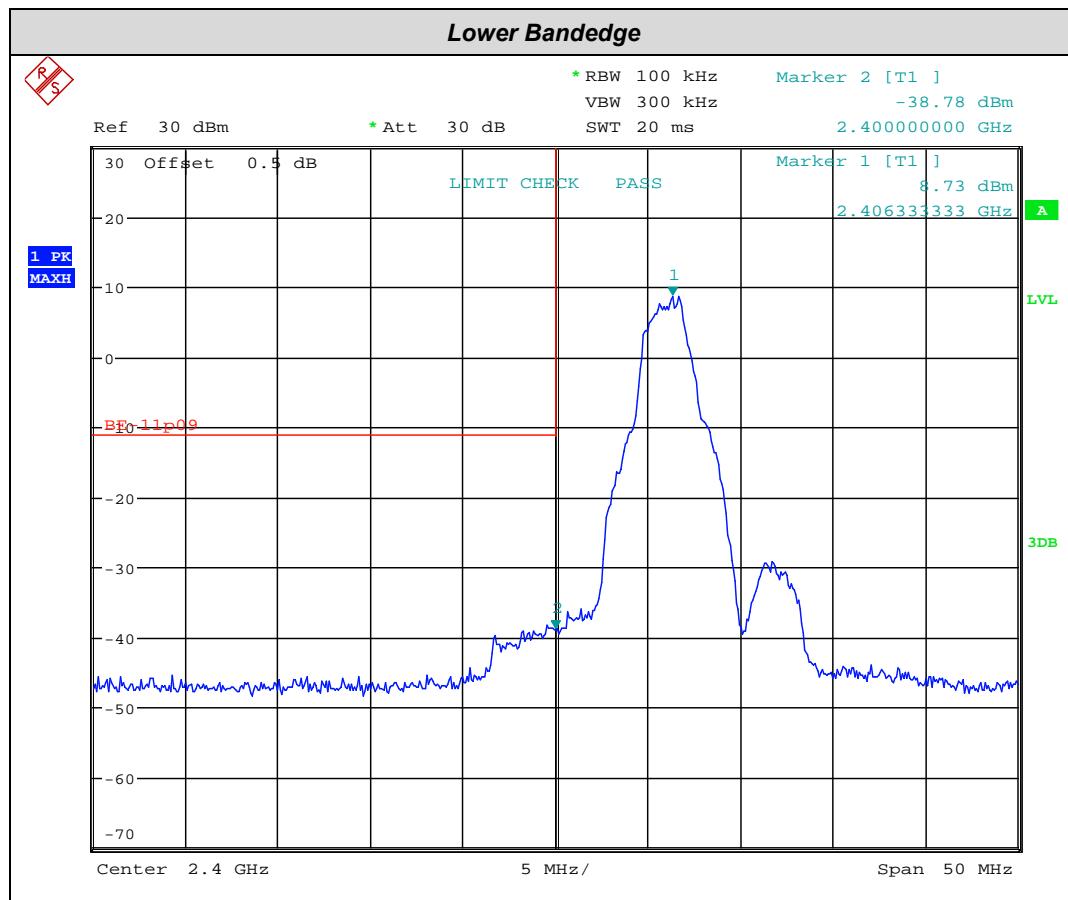


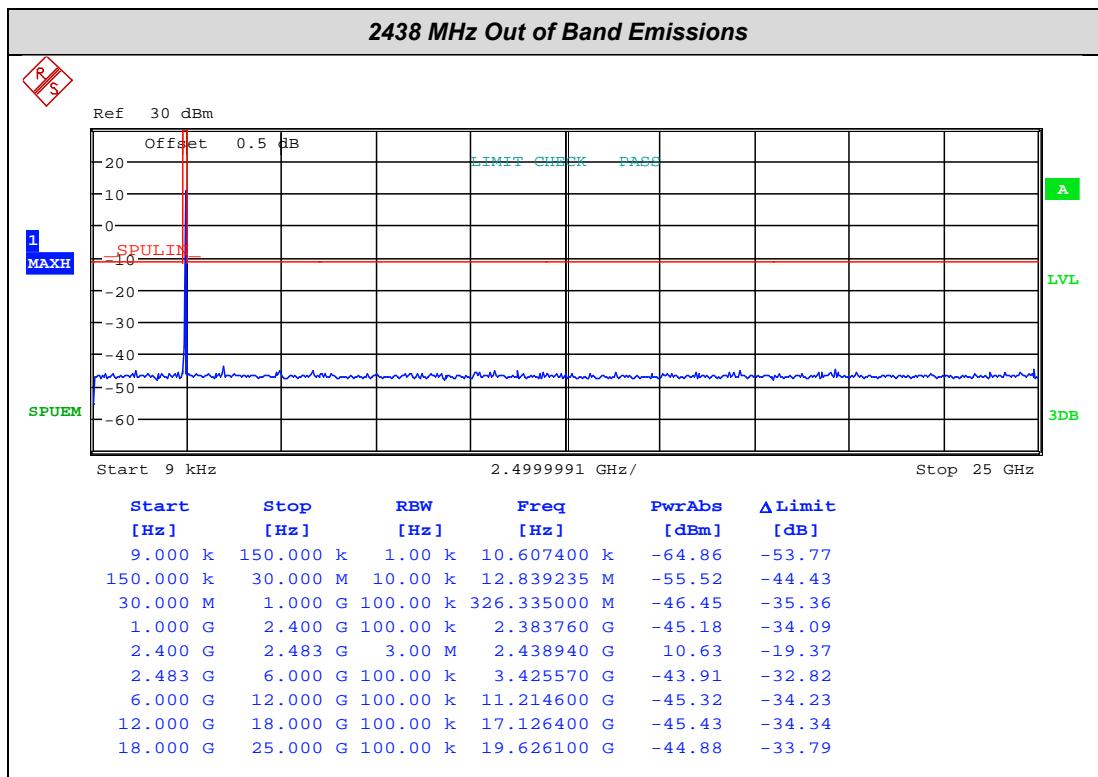
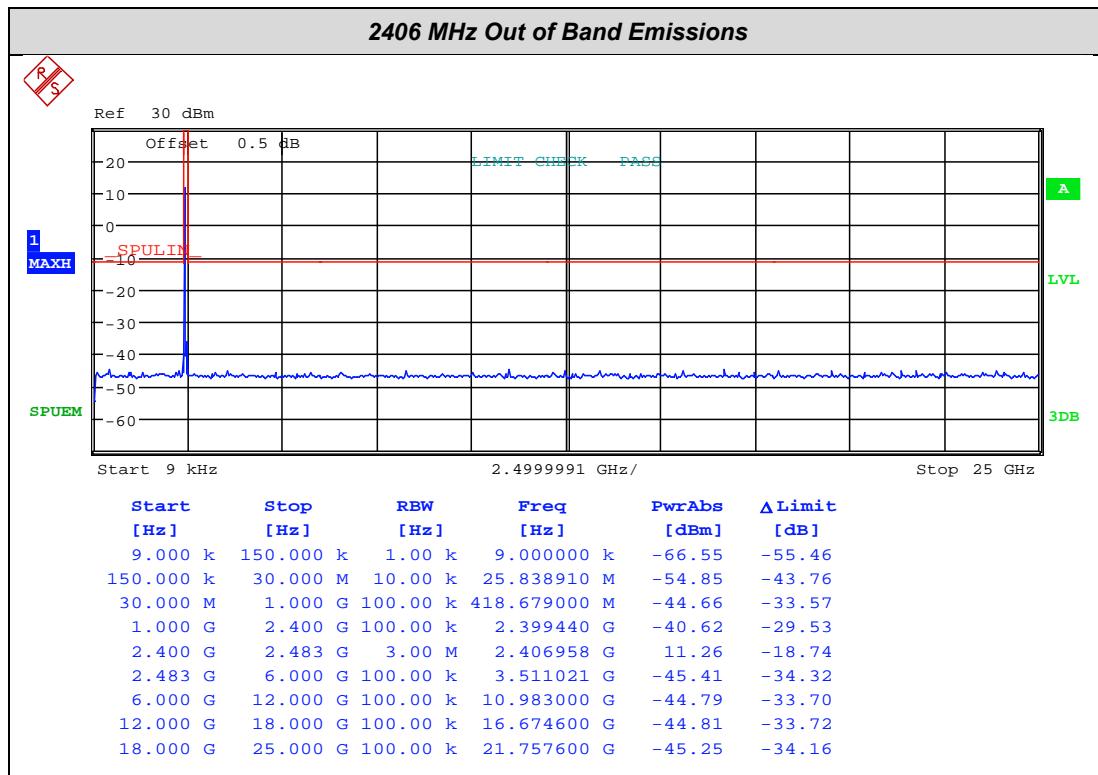
14.5 Test Equipment

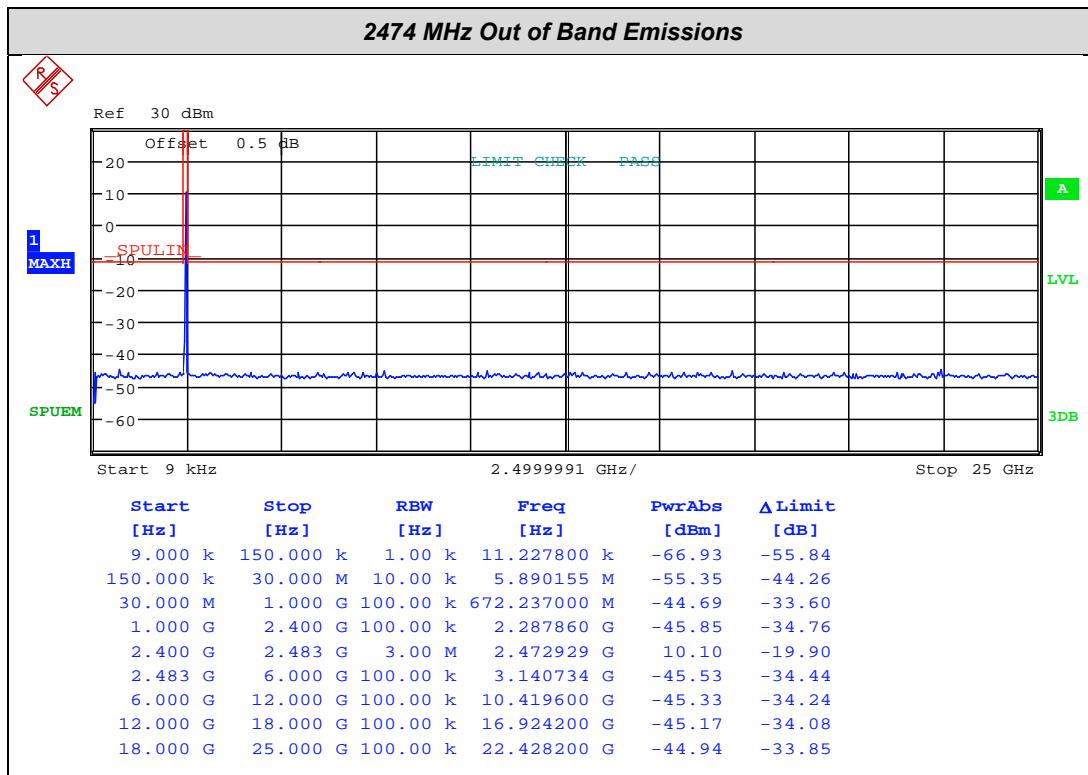
Equipment Description	Manufacturer	Equipment Type	Element No	Due For Calibration
Spectrum Analyser	R&S	FSU50	U544	2020-06-05

14.6 Test Results









15 Power spectral density

15.1 Definition

The power per unit bandwidth.

15.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 11.10
EUT Frequencies Measured:	2406 MHz, 2438 MHz & 2474 MHz
Deviations From Standard:	None
Measurement Detector:	RMS

Environmental Conditions (Normal Environment)

Temperature: 21 °C	+15 °C to +35 °C (as declared)
Humidity: 50 % RH	20 % RH to 75 % RH (as declared)
Supply: 3 Vdc	As declared

15.3 Test Limit

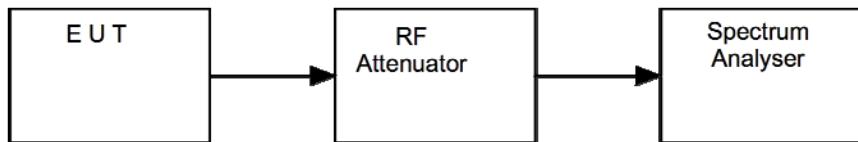
The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

15.4 Test Method

With the EUT connected as per Figure vi, the peak emission of the EUT was measured on a spectrum analyser, with path losses taken into account.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst case configuration in each bandwidth.

Figure vi Test Setup

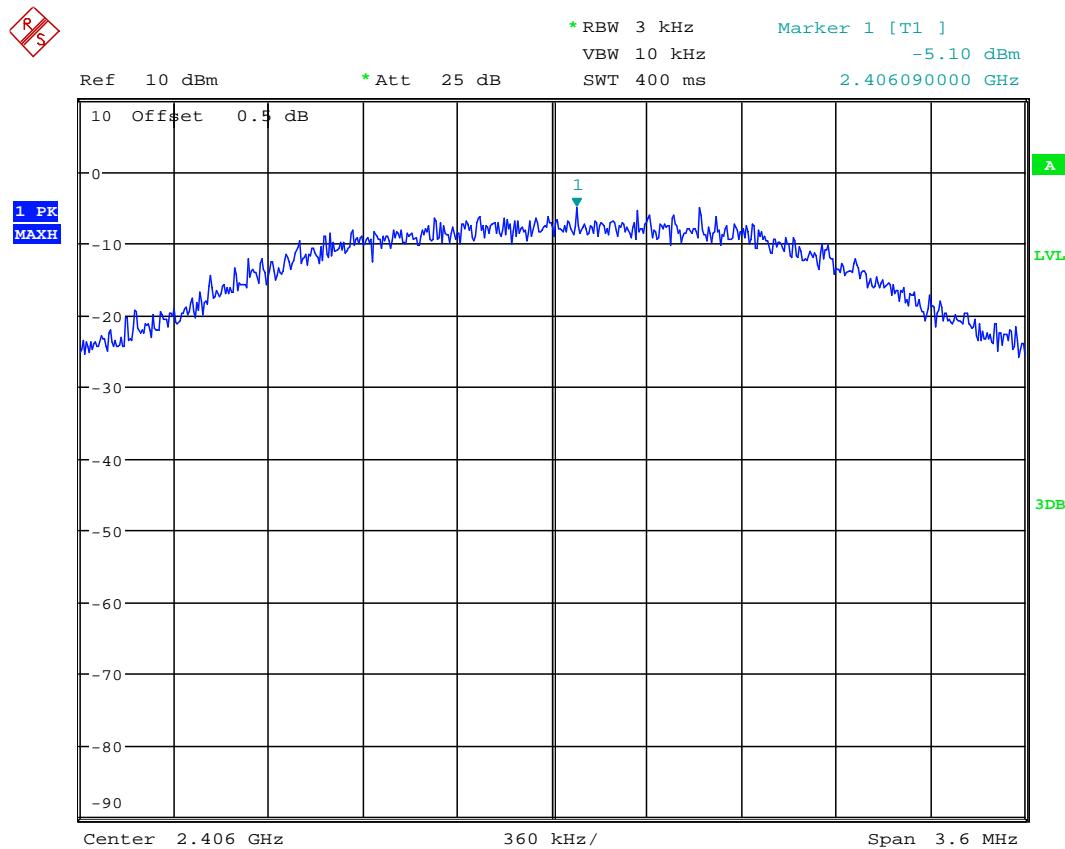


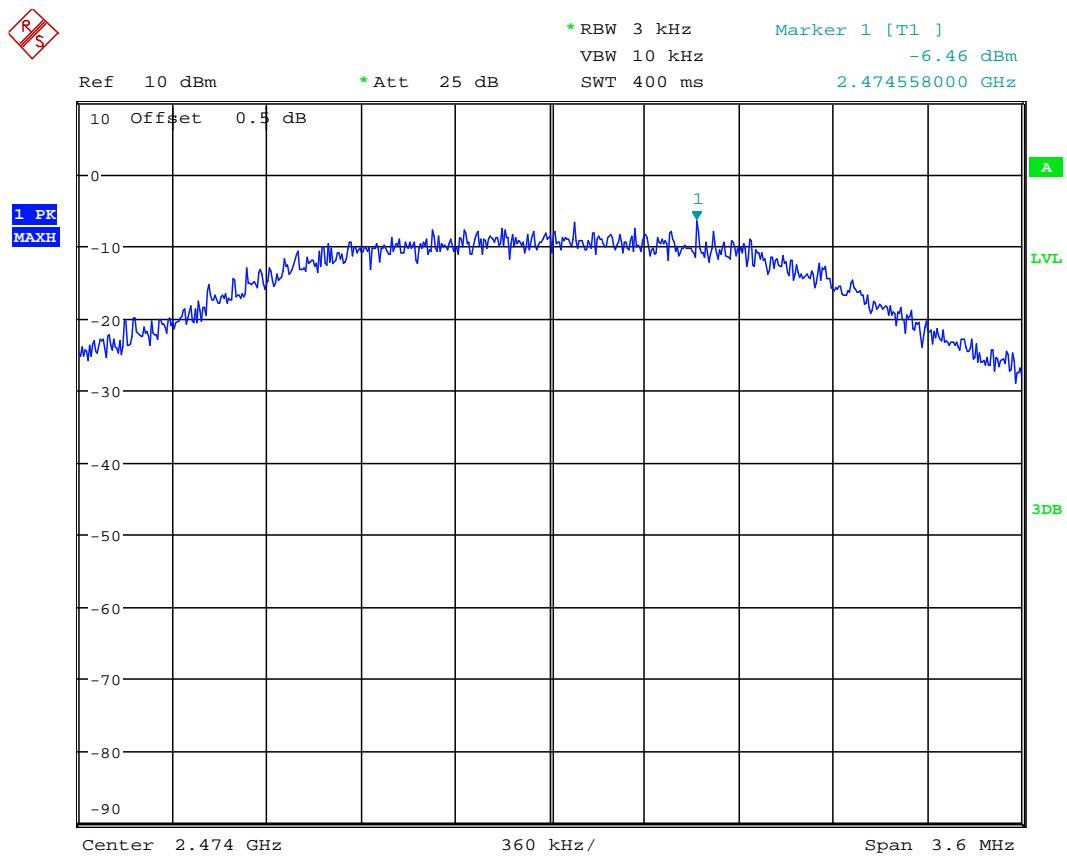
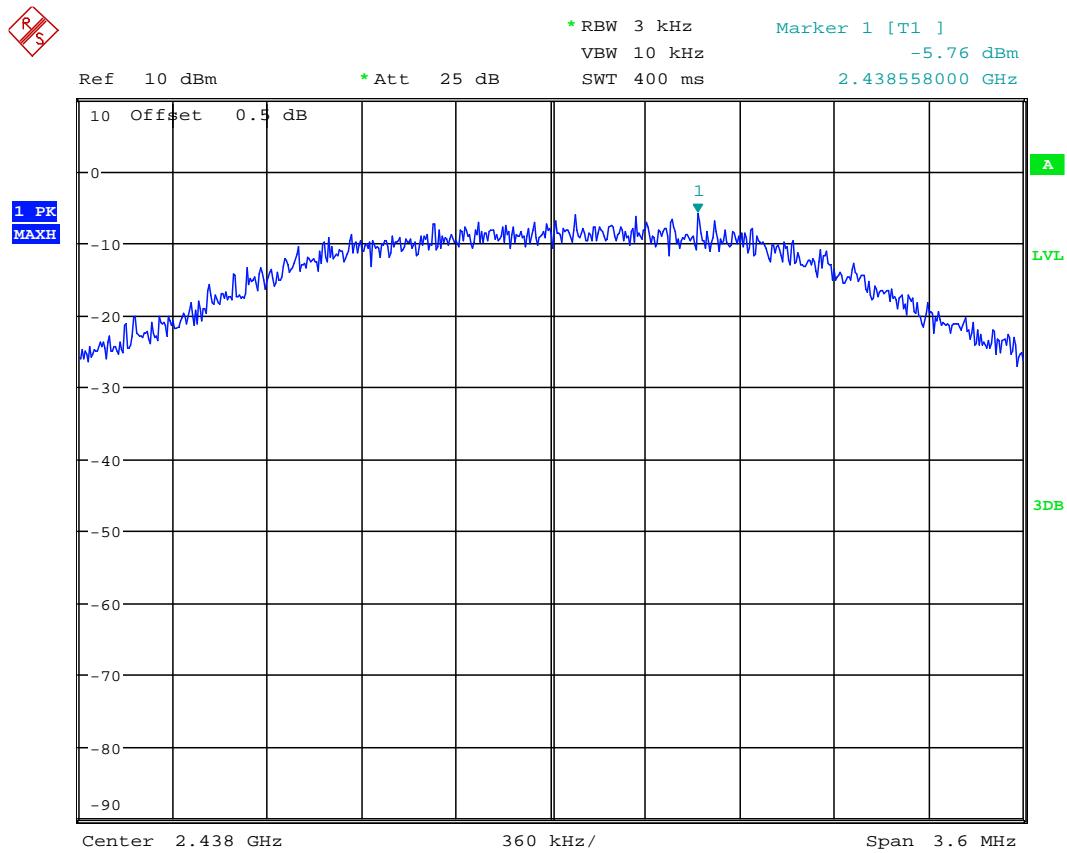
15.5 Test Equipment

Equipment Description	Manufacturer	Equipment Type	Element No	Due For Calibration
Spectrum Analyser	R&S	FSU50	U544	2020-06-05

15.6 Test Results

Channel Frequency (MHz)	Power Spectral Density (dBm)	Result
2406	-5.10	PASS
2438	-5.76	PASS
2474	-6.46	PASS





16 Measurement Uncertainty

Calculated Measurement Uncertainties

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95 % confidence:

[1] Radiated spurious emissions

Uncertainty in test result (30 MHz to 1 GHz) = **4.75 dB**
Uncertainty in test result (1 GHz to 18 GHz) = **4.46 dB**

[2] AC power line conducted emissions

Uncertainty in test result = **3.2 dB**

[3] Occupied bandwidth

Uncertainty in test result = **15.58 %**

[4] Conducted carrier power

Uncertainty in test result (Power Meter) = **0.93 dB**

[5] Conducted RF power out-of-band

Uncertainty in test result – up to 8.1 GHz = **3.31 dB**
Uncertainty in test result – 8.1 GHz to 15.3 GHz = **4.43 dB**

[6] Radiated RF power out-of-band

Uncertainty in test result (30 MHz to 1 GHz) = **4.75 dB**
Uncertainty in test result (1 GHz to 18 GHz) = **4.46 dB**

[7] Power spectral density

Uncertainty in test result (Spectrum Analyser) = **3.11 dB**

[8] ERP / EIRP

Uncertainty in test result (Laboratory) = **4.71 dB**
Uncertainty in test result (Pershore OATS) = **4.26 dB**