

Report Number: TRA-064783-47-24C
Issue: C

Report on the Radio Testing of a
Magicard Ltd
Magicard 600
With Respect to Selected Parts of Specification
FCC 47CFR 15.247

TEST DATE: 2025-12-21 to 2025-12-23

S Garwell
Tested by: Radio Test Engineer

Written by:



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Date: 2026-09-09 11:36+01:00

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Lab Manager

Date: 2026-09-09

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

RF915 Rev. 18



0026

1 Revision Record

<i>Issue Number</i>	<i>Issue Date</i>	<i>Revision History</i>
A	2026-03-24	Original
B	2026-03-24	Correction to Wi-Fi dongle model number
C	2026-09-09	Update Address Details

2 Summary

Test Report Number:	TRA-064783-47-24C
Works Order Number:	TRA-064783-08
Purpose of Test:	Modular Integration
Test Specification:	47CFR15.247
Equipment Under Test (EUT):	Magicard 600
Contains FCC ID:	KA2AN3UA1
EUT Serial Number:	75995801
Manufacturer:	Magicard Ltd
Address:	Waverley House Hampshire Road Weymouth Dorset DT4 9XD United Kingdom
Client Contact:	William Macer ☎ 07775491564 ✉ will.macer@bradycorp.com
Order Number:	15770
Test Date:	2025-12-21 to 2025-12-23
Tested By:	S Garwell Element

2.1 Test Summary

Test Method and Description		Requirement Clause FCC 47 CFR	Applicable to this equipment	Result / Note
Radiated spurious emissions (restricted bands of operation and cabinet radiation)		15.205	☒	Pass
AC power line conducted emissions		15.207	☐	Note 1
6 dB bandwidth		15.247 (a) (2)	☐	Note 1
Occupied bandwidth (99% bandwidth)		N/A	☐	Note 1
Conducted output power	Peak	15.247 (b) (3)	☒	Information Only
	Maximum		☐	
Undesirable / unwanted emissions		15.247 (d)	☐	Note 1
Power spectral density		15.247 (e)	☐	Note 1
Pulsed operation correction		15.35 (c)	☐	Note 1

Specific notes:

Note 1:

The client declares this is a modular radio with existing compliance evidence for FCC and has requested limited tests only in order to support their claim that the module performance is comparable to the end product performance, and therefore the end product does not require further testing.

Limited testing was carried out to spurious emissions and output power only to satisfy the modular integration requirements of KDB996369 D04 v02.

General notes:

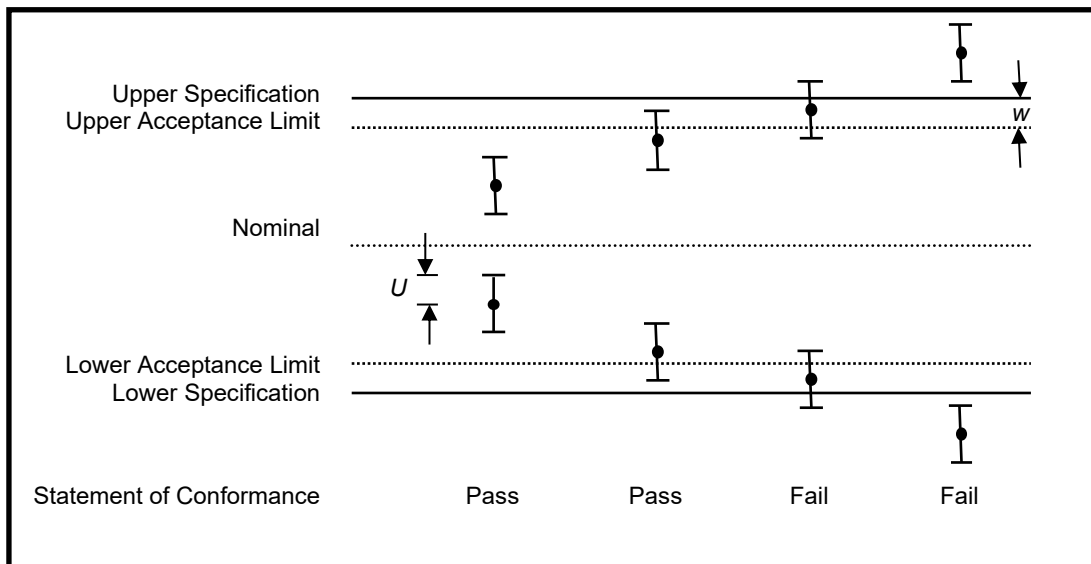
The results contained in this report relate only to the items tested, in the condition at time of test, and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

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).

The decision rule for compliance is not inherent within this specification and compliance is based on the customer requesting an acceptance rule based on applying a guard band equal to the laboratories 95 % expanded measurement uncertainty for each test.

Graphical Representation of a Pass / Fail Binary Statement When Applying a Guard Band



● = Measured value

U = 95 % expanded measurement uncertainty

w = guard band equal to the laboratories 95 % expanded measurement uncertainty for each test

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4 Introduction

This report TRA-064783-47-24C presents the results of the Radio testing on a Magicard Ltd, Magicard 600 to selected parts of specification 47CFR15 Radio Frequency Devices.

The testing was carried out for Magicard Ltd by Element, at the address detailed below.

☒	Element Skelmersdale Unit 1 Pendle Place Skelmersdale West Lancashire WN8 9PN UK	☐	Element Surrey Hills Unit 15 B Henley Business Park Pirbright Road Normandy Guildford GU3 2DX UK
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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 ISO/IEC 17025:2017 accredited 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:

The test laboratory is accredited for the above sites under the following US-UK MRA, Designation numbers.

Element Surrey Hills	UK2027
Element Skelmersdale	UK2020

The test site requirements of ANSI C63.4-2014 + C63.4a-2017 are met up to 1 GHz.

The test site S_{VSWR} requirements of CISPR 16-1-4:2019 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 C63.10-2020 – American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024 – 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

ANSI C63.10-2020 / Cor. 1-2023+C63.10a-2024 / Errata to C63.10a-2024 are ISO/IEC 17025:2017 accredited under Element's flexible scope of accreditation.

5.2 Deviations from Test Standards

The client declares this is a modular radio with existing compliance evidence for FCC and has requested limited tests only in order to support their claim that the module performance is comparable to the end product performance, and therefore the end product does not require further testing.

Limited testing was carried out to spurious emissions and output power only to satisfy the modular integration requirements of KDB996369 D04 v02.

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
IC	Industry Canada
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: Magicard 600
- Serial Number: 75995801
- Model Number: Magicard 600
- Software Revision: Dev 0.13
- Build Level / Revision Number: Production issue 1

7.2 Module Information

- Manufacturer: D-Link Corporation
- Model Number: AN3U
- FCC ID: KA2AN3UA1

7.3 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.

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Serial / Asset No(s)</i>
CMW500	R&S	U749
Laptop	Dell Latitude 5340	-
TL-R470T+	Tp-link	2238OC1001266

7.4 EUT Mode of Operation

The EUT was connected to the CMW500 acting as a router to control the EUT to transmit on the required frequencies.

7.5 EUT Radio Parameters

7.5.1 General

<i>Frequencies of operation:</i>	2412 MHz to 2462 MHz
<i>Channel Bandwidth:</i>	20 MHz
<i>Channel Spacing:</i>	5 MHz
<i>Nominal Supply Voltage:</i>	110 Vac

7.6 EUT Description

The EUT is an ID Card Printer that makes use of a 13.56 MHz Inductive loop system. It also contains a pre-approved 2.4 GHz WLAN module.

This report covers the integration testing of the 2.4 GHz WAN module only.

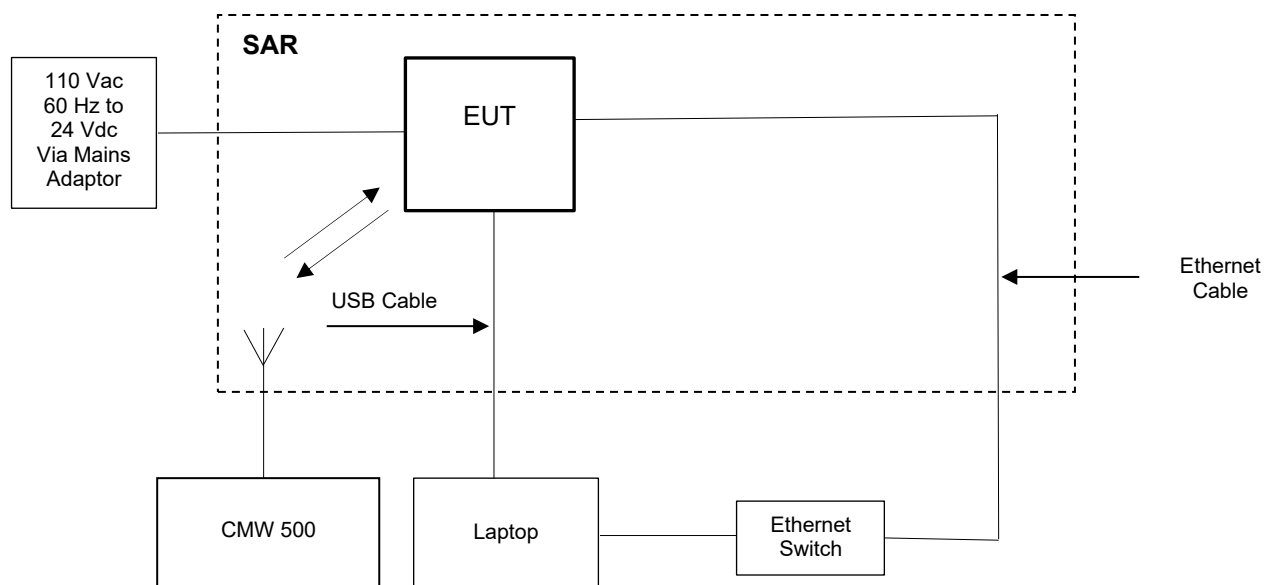
8 Modifications

No modifications were performed during this assessment.

9 EUT Test Setup

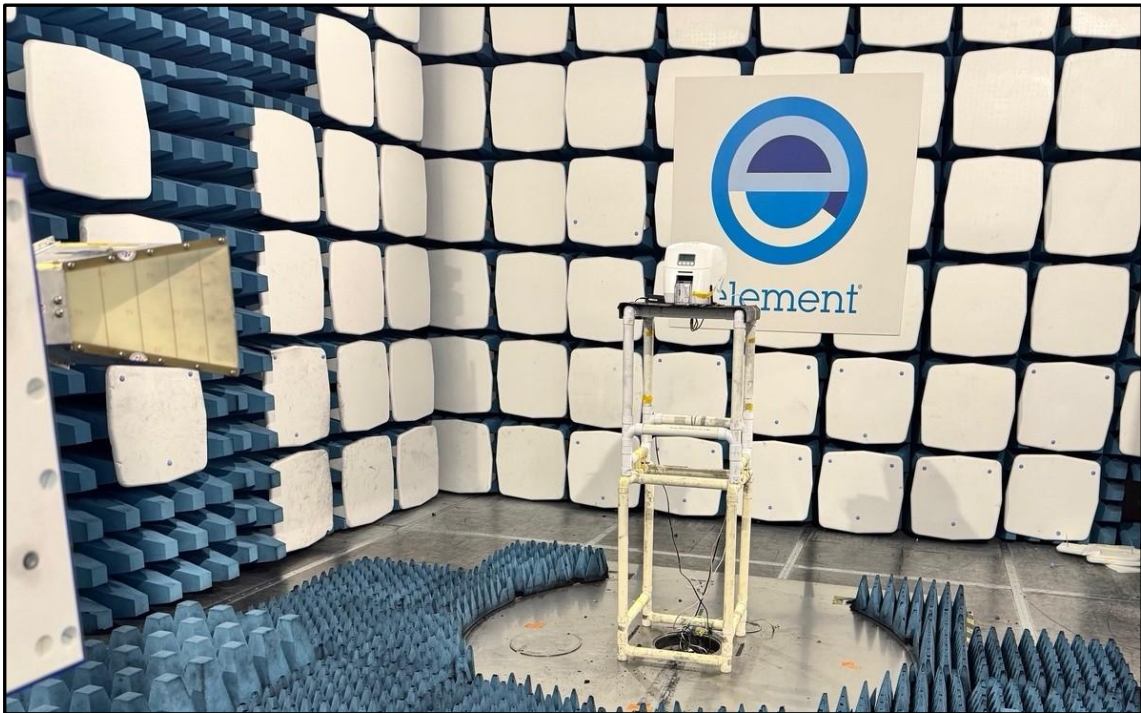
9.1 Block Diagram

The following diagram shows basic EUT interconnections:



9.2 General Set-up Photographs

The following photographs show basic EUT set-up:



Measurement software

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

Element Emissions R5 2025.04.30.2

Note:

The version of the Element software used is recorded in the results sheets contained within this report.

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 110 Vac 60 Hz to 24 Vdc via mains adaptor.

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.

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>
☒	Mains	110 Vac +/-2 %	85 % and 115 %
☐	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 Skelmersdale
Test Chamber:	REF940
Test Standard and Clause:	ANSI C63.10-2020, Clause 6.5 and 6.6 (inc. Cor 1-2023 + C63.10a-2024)
EUT Frequencies Measured:	2412 MHz, 2437 MHz & 2462 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: 17 °C	+15 °C to +35 °C (as declared)
Humidity: 47 % RH	20 %RH to 75 %RH (as declared)
Supply: 110 Vac	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

<i>Frequency (MHz)</i>	<i>Field Strength ($\mu\text{V/m}$ at 3 m)</i>	<i>Field Strength (dB$\mu\text{V/m}$ at 3 m)</i>
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

On frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function. On frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit.

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. Pre-scan plots are shown with a peak detector and 100 kHz RBW.

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 dB μ V/m at the regulatory distance, using:

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

$$\text{Factor} = CL + AF - PA$$

Where,

PR is the power recorded on the receiver / spectrum analyzer in dB μ V;

CL is the cable loss in dB;

AF is the test antenna factor in dB/m;

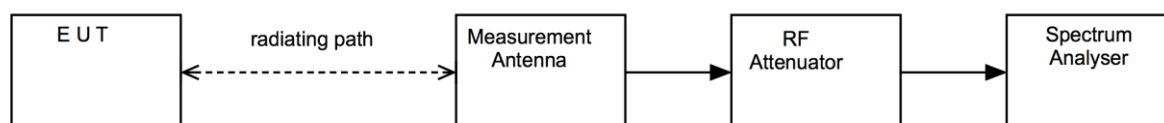
PA is the pre-amplifier gain in dB (where used);

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

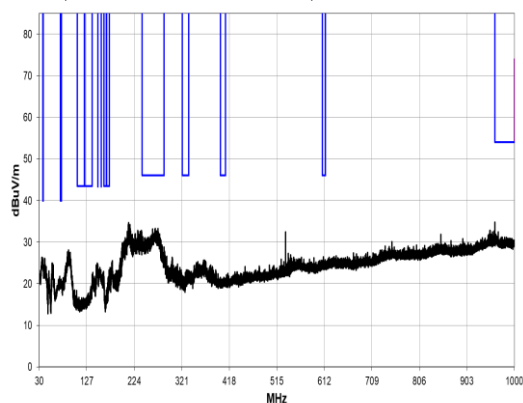
Equipment Type	Manufacturer	Equipment Description	Element No	Due For Calibration
EMI Receiver	R&S	ESR26	U489	2026-11-19
Communications Analyser	R&S	CMW500	U749	2026-05-19
Horn Antenna	EMCO	3115	L138	2026-06-11
Pre Amp	Agilent	8449B	L572	2026-11-24
Horn Antenna	A Info Inc	LB-180400-25-C-KF	REF2246	2026-10-08
Bilog	Chase	CBL611/B	U573	2026-11-04
PreAmp	Watkins Johnson	6201-69	U372	2026-03-17
3.1 GHz High Pass Filter	MiniCircuits	VHF-3100+	U718	2026-02-19
High Pass Filter	Atlantic Microwave	AFH-07000	U558	2026-02-17
Radio Chamber - PP	Rainford EMC	ATS	REF940	2026-01-29
Radiated Test Software	Element	Emissions R5	REF9000	Cal Not Required

11.6 Test Results

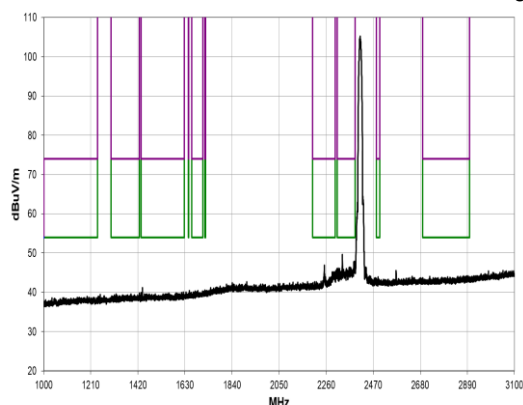
Common Emissions (emissions common to all modes of operation)

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
272.628	36.6	-8.1	1.0	167.0	3.0	0.0	Vert	QP	0.0	28.5	46.0	-17.5
263.302	35.6	-7.9	1.0	197.1	3.0	0.0	Vert	QP	0.0	27.7	46.0	-18.3
274.002	35.4	-8.1	1.0	177.1	3.0	0.0	Vert	QP	0.0	27.3	46.0	-18.7
266.877	35.1	-8.0	1.0	162.0	3.0	0.0	Horz	QP	0.0	27.1	46.0	-18.9
272.580	34.7	-8.1	1.0	319.1	3.0	0.0	Horz	QP	0.0	26.6	46.0	-19.4
264.378	33.4	-7.9	1.0	191.9	3.0	0.0	Vert	QP	0.0	25.5	46.0	-20.5
263.406	33.3	-7.9	1.0	327.0	3.0	0.0	Horz	QP	0.0	25.4	46.0	-20.6
267.455	32.9	-8.0	1.38	310.9	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1

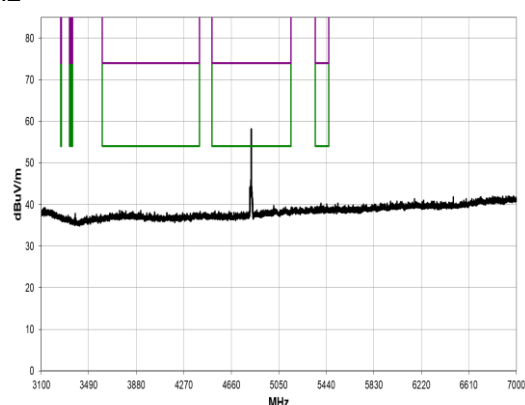
802.11b; Frequency: 2412 MHz; Bandwidth: 20 MHz; Data Rate: 11 Mbps; Power Setting: Default



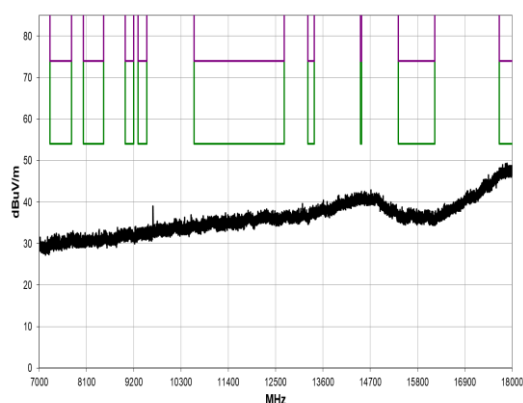
30 MHz to 1 GHz



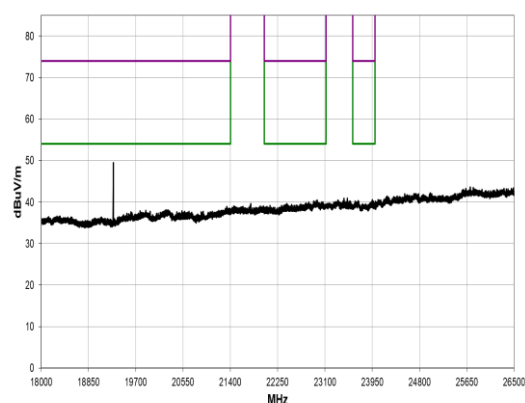
1 GHz to 3.1 GHz



3.1 GHz to 7 GHz



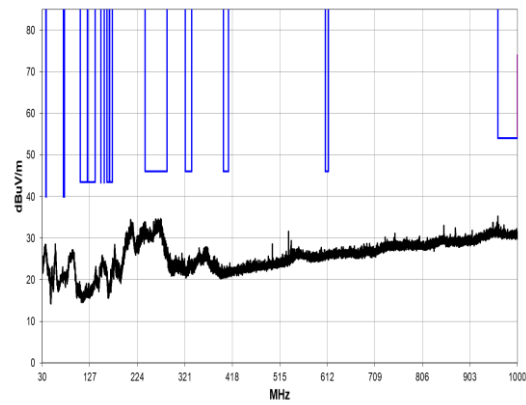
7 GHz to 18 GHz



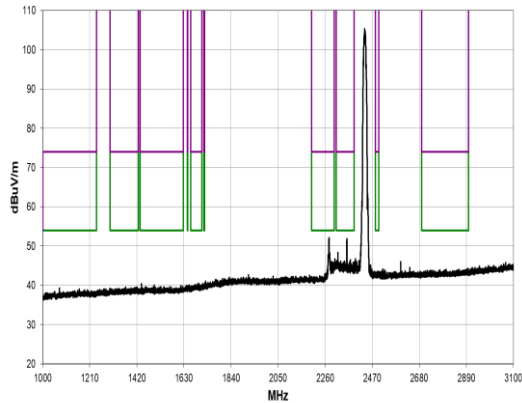
18 GHz to 26.5 GHz

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2332.083	36.9	-5.0	1.5	252.0	3.0	10.0	Vert	AV	0.0	41.9	54.0	-12.1
2332.291	35.2	-5.0	1.5	230.0	3.0	10.0	Horz	AV	0.0	40.2	54.0	-13.8
2252.125	33.3	-5.3	1.5	245.1	3.0	10.0	Vert	AV	0.0	38.0	54.0	-16.0
2251.792	33.0	-5.3	1.5	217.0	3.0	10.0	Horz	AV	0.0	37.7	54.0	-16.3
2332.208	52.0	-5.0	1.5	252.0	3.0	10.0	Vert	PK	0.0	57.0	74.0	-17.0
2332.042	49.0	-5.0	1.5	230.0	3.0	10.0	Horz	PK	0.0	54.0	74.0	-20.0
2252.042	49.1	-5.3	1.5	245.1	3.0	10.0	Vert	PK	0.0	53.8	74.0	-20.2
2251.875	47.8	-5.3	1.5	217.0	3.0	10.0	Horz	PK	0.0	52.5	74.0	-21.5
4824.141	42.2	2.1	1.5	330.1	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7
4823.992	59.2	2.1	1.5	330.1	3.0	0.0	Horz	PK	0.0	61.3	74.0	-12.7
4824.050	39.1	2.1	1.5	17.0	3.0	0.0	Vert	AV	0.0	41.2	54.0	-12.8
4823.967	56.4	2.1	1.5	17.0	3.0	0.0	Vert	PK	0.0	58.5	74.0	-15.5
19296.080	51.9	7.9	1.51	269.0	1.0	0.0	Vert	AV	-9.5	50.3	54.0	-3.7
19296.040	48.7	7.9	1.5	284.0	1.0	0.0	Horz	AV	-9.5	47.1	54.0	-6.9
19295.870	55.0	7.9	1.51	269.0	1.0	0.0	Vert	PK	-9.5	53.4	74.0	-20.6
19295.790	52.8	7.9	1.5	284.0	1.0	0.0	Horz	PK	-9.5	51.2	74.0	-22.8

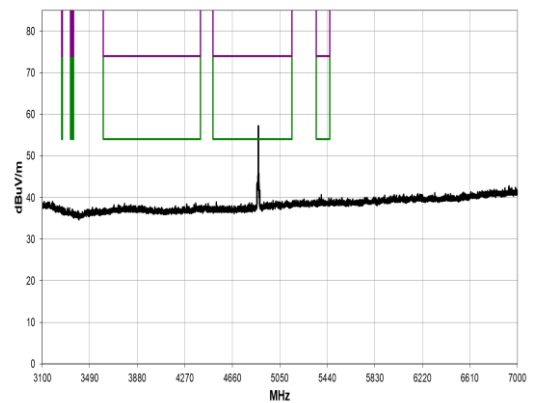
802.11b; Frequency: 2437 MHz; Bandwidth: 20 MHz; Data Rate: 11 Mbps; Power Setting: Default



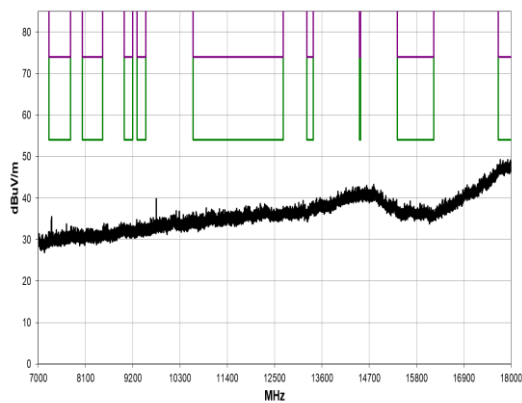
30 MHz to 1 GHz



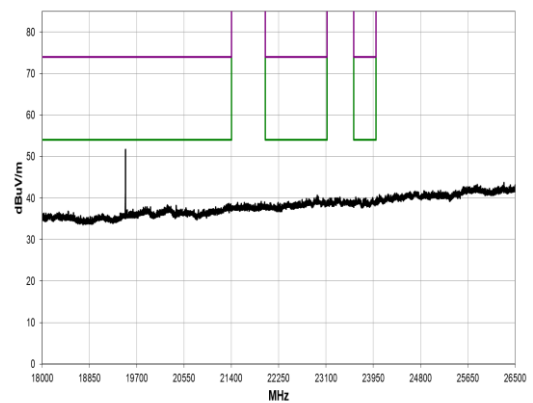
1 GHz to 3.1 GHz



3.1 GHz to 7 GHz



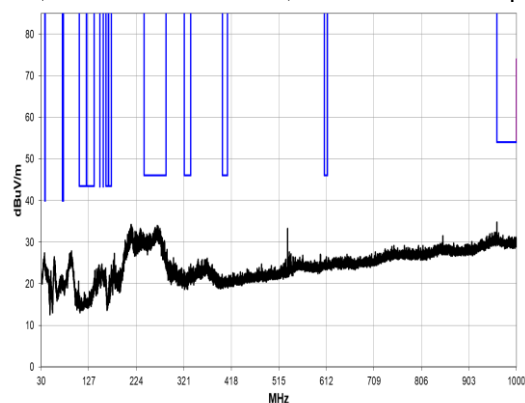
7 GHz to 18 GHz



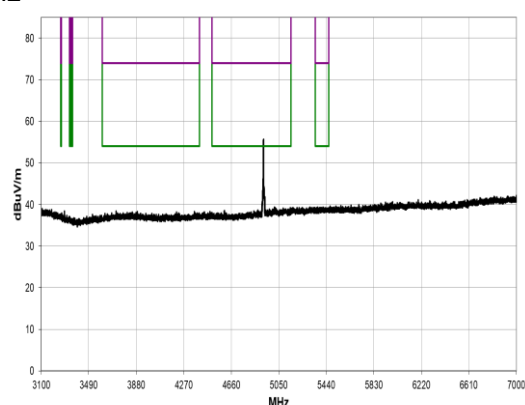
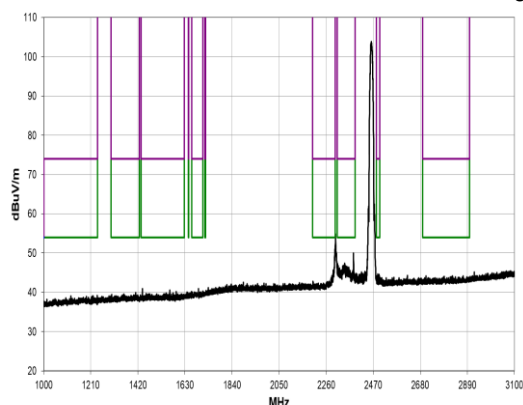
18 GHz to 26.5 GHz

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2276.958	35.6	-5.1	1.5	333.1	3.0	10.0	Horz	AV	0.0	40.5	54.0	-13.5
2277.166	35.5	-5.1	1.72	308.1	3.0	10.0	Vert	AV	0.0	40.4	54.0	-13.6
2357.208	35.0	-4.9	1.5	304.0	3.0	10.0	Horz	AV	0.0	40.1	54.0	-13.9
2318.290	35.0	-5.0	1.08	276.1	3.0	10.0	Vert	AV	0.0	40.0	54.0	-14.0
2357.208	34.8	-4.9	1.5	281.0	3.0	10.0	Vert	AV	0.0	39.9	54.0	-14.1
2316.750	33.3	-5.0	1.5	333.1	3.0	10.0	Horz	AV	0.0	38.3	54.0	-15.7
2324.404	53.3	-5.0	1.08	276.1	3.0	10.0	Vert	PK	0.0	58.3	74.0	-15.7
2276.958	52.9	-5.1	1.72	308.1	3.0	10.0	Vert	PK	0.0	57.8	74.0	-16.2
2356.875	51.1	-4.9	1.5	281.0	3.0	10.0	Vert	PK	0.0	56.2	74.0	-17.8
2277.333	50.8	-5.1	1.5	333.1	3.0	10.0	Horz	PK	0.0	55.7	74.0	-18.3
2357.000	49.4	-4.9	1.5	304.0	3.0	10.0	Horz	PK	0.0	54.5	74.0	-19.5
2318.123	48.9	-5.0	1.5	333.1	3.0	10.0	Horz	PK	0.0	53.9	74.0	-20.1
4874.125	41.7	2.3	1.5	246.0	3.0	0.0	Vert	AV	0.0	44.0	54.0	-10.0
4874.333	40.5	2.3	1.5	18.0	3.0	0.0	Horz	AV	0.0	42.8	54.0	-11.2
4874.000	57.1	2.3	1.5	246.0	3.0	0.0	Vert	PK	0.0	59.4	74.0	-14.6
4873.958	56.6	2.3	1.5	18.0	3.0	0.0	Horz	PK	0.0	58.9	74.0	-15.1
19496.080	54.1	7.7	1.57	269.0	1.0	0.0	Vert	AV	-9.5	52.3	54.0	-1.7
19496.080	51.3	7.7	1.5	286.1	1.0	0.0	Horz	AV	-9.5	49.5	54.0	-4.5
19495.920	57.2	7.7	1.57	269.0	1.0	0.0	Vert	PK	-9.5	55.4	74.0	-18.6
19495.920	55.0	7.7	1.5	286.1	1.0	0.0	Horz	PK	-9.5	53.2	74.0	-20.8

802.11b; Frequency: 2462 MHz; Bandwidth: 20 MHz; Data Rate: 11 Mbps; Power Setting: Default

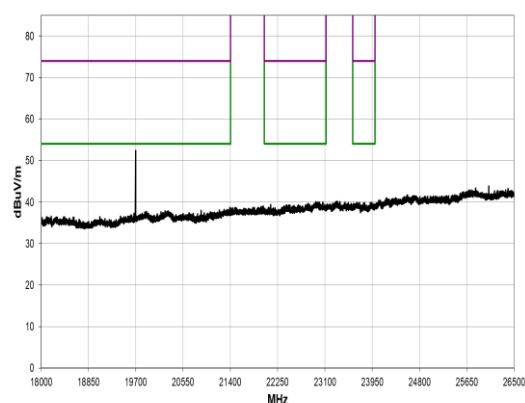
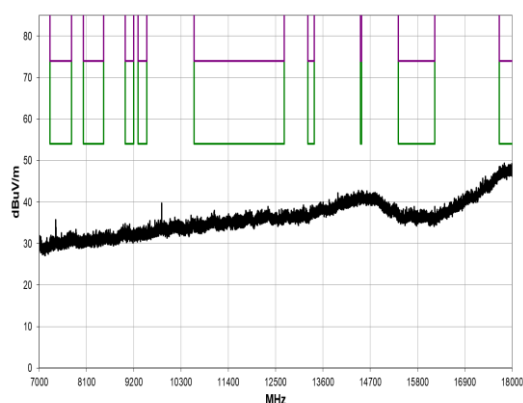


30 MHz to 1 GHz



1 GHz to 3.1 GHz

3.1 GHz to 7 GHz

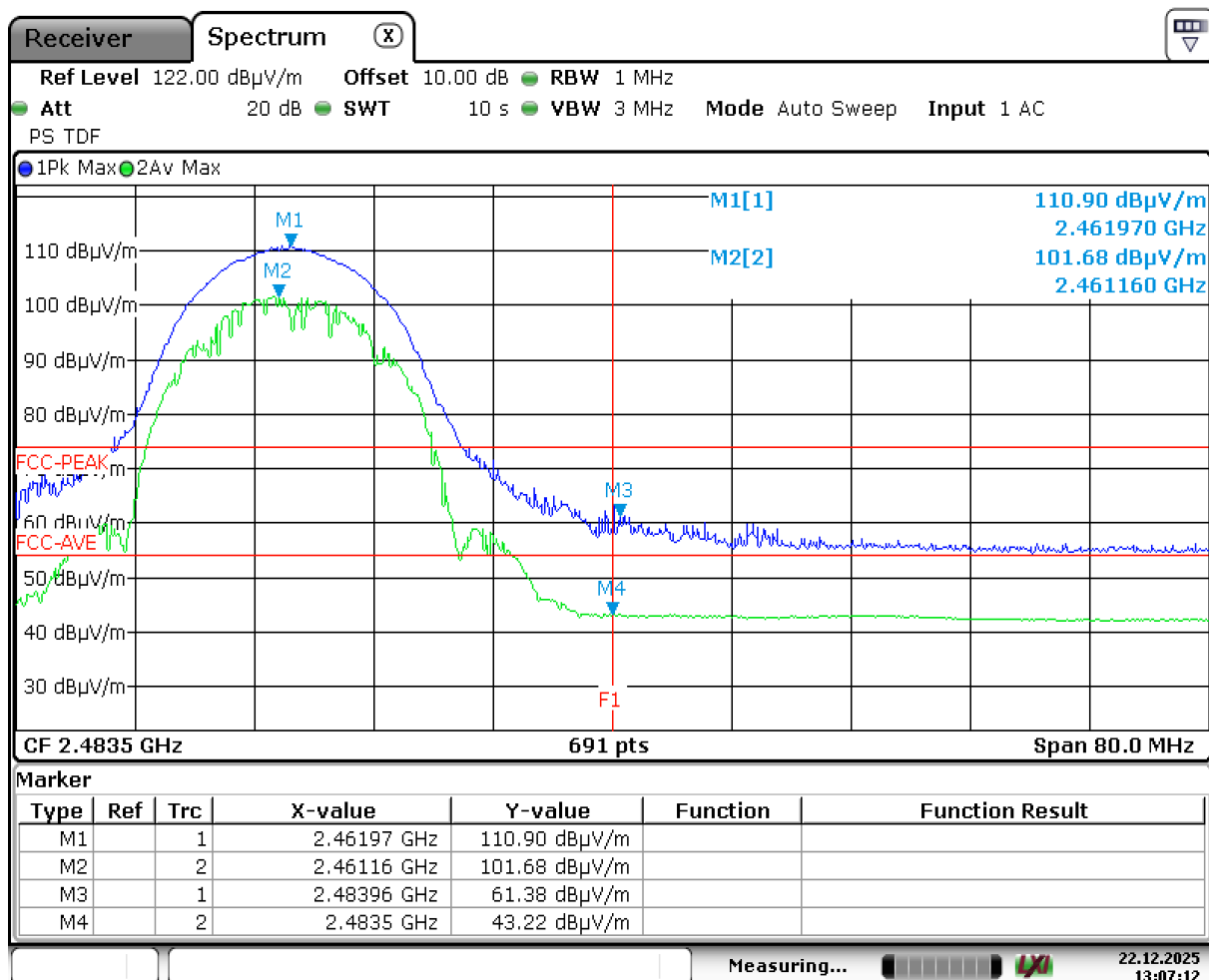


7 GHz to 18 GHz

18 GHz to 26.5 GHz

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2382.208	35.0	-4.8	1.38	264.0	3.0	10.0	Vert	AV	0.0	40.2	54.0	-13.8
2382.250	33.3	-4.8	1.5	22.1	3.0	10.0	Horz	AV	0.0	38.5	54.0	-15.5
2382.083	51.6	-4.8	1.38	264.0	3.0	10.0	Vert	PK	0.0	56.8	74.0	-17.2
2382.083	48.4	-4.8	1.5	22.1	3.0	10.0	Horz	PK	0.0	53.6	74.0	-20.4
4924.000	40.0	2.5	1.5	242.9	3.0	0.0	Vert	AV	0.0	42.5	54.0	-11.5
4924.000	38.7	2.5	1.5	0.0	3.0	0.0	Horz	AV	0.0	41.2	54.0	-12.8
4923.792	56.4	2.5	1.5	242.9	3.0	0.0	Vert	PK	0.0	58.9	74.0	-15.1
4923.917	55.2	2.5	1.5	0.0	3.0	0.0	Horz	PK	0.0	57.7	74.0	-16.3
19696.080	55.1	7.5	1.54	270.0	1.0	0.0	Vert	AV	-9.5	53.1	54.0	-0.9
19696.080	52.2	7.5	1.5	285.0	1.0	0.0	Horz	AV	-9.5	50.2	54.0	-3.8
19695.920	57.7	7.5	1.54	270.0	1.0	0.0	Vert	PK	-9.5	55.7	74.0	-18.3
19695.830	55.8	7.5	1.5	285.0	1.0	0.0	Horz	PK	-9.5	53.8	74.0	-20.2

Upper Radiated Band Edge Peak / Average



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12 Maximum peak conducted output power

12.1 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.

12.2 Test Parameters

Test Location:	Element Skelmersdale
Test Chamber:	REF940
Test Standard and Clause:	ANSI C63.10-2020, Clause 11.9.1
EUT Frequencies Measured:	2412 MHz, 2437 MHz & 2462 MHz
EUT Channel Bandwidths:	20 MHz
Deviations From Standard:	None
Measurement BW:	20 MHz
Spectrum Analyzer Video BW: (requirement at least 3x RBW)	30 MHz
Measurement Detector:	Peak

Environmental Conditions (Normal Environment)

Temperature: 23 °C	+15 °C to +35 °C (as declared)
Humidity: 40 % RH	20 % RH to 75 % RH (as declared)

12.3 Test Limit

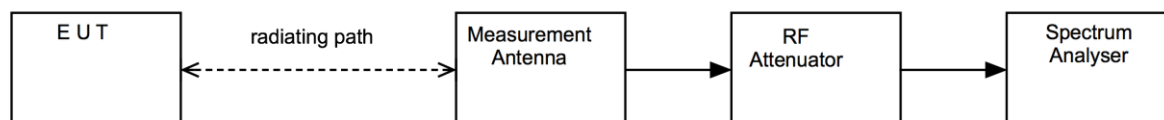
No Limit, results for information only.

12.4 Test Method

With the EUT setup as per section 9 of this report and 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



12.5 Test Equipment

Equipment Type	Manufacturer	Equipment Description	Element No	Due For Calibration
EMI Receiver	R&S	ESR26	U489	2026-11-19
Communications Analyser	R&S	CMW500	U749	2026-05-19
Horn Antenna	EMCO	3115	L138	2026-06-11
Pre Amp	Agilent	8449B	L572	2026-11-24
Radio Chamber - PP	Rainford EMC	ATS	REF940	2026-01-29
Radiated Test Software	Element	Emissions R5	REF9000	Cal Not Required

12.6 Test Results

The following formula was used to convert field strength (E) in volts/metre to conducted output power in watts:

$$\text{Conducted Output Power} = (E \times d)^2 / (30 \times G)$$

Where,

E is the electric field strength in V/m

d is the measurement distance in meters (m)

G is the antenna numerical gain referenced to isotropic gain

802.11b; Bandwidth: 20 MHz; Data Rate: 11 Mbps; Power Setting: Default						
Frequency (MHz)	Peak Field Strength (dBμV/m)	Peak Field Strength (V/m)	Distance (m)	Numeric Gain	Maximum peak conducted output power (W)	Result
2412	116.5	0.66834	3	1.00	0.13401	Information Only
2437	115.8	0.61660	3	1.00	0.11406	
2462	114.8	0.54954	3	1.00	0.09060	

13 Measurement Uncertainty

Radio Testing – General Uncertainty Schedule

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95 % confidence where no required test level exists.

Test/Measurement	Budget Number	MU
Conducted RF Power, Power Spectral Density, Adjacent Channel Power and Spurious emissions		
Absolute RF power (via antenna connector) Sampling Power Meter to 8 GHz	MU4001	0.9 dB
Carrier Power and PSD - Spectrum Analysers	MU4004	1.7 dB
Adjacent Channel Power	MU4002	1.9 dB
Transmitter conducted spurious emissions (Including emissions due to intermodulation)	MU4041	0.9 dB
Conducted power and spurious emissions 40 GHz to 50 GHz	MU4042	2.4 dB
Conducted power and spurious emissions 50 GHz to 75 GHz	MU4043	2.5 dB
Conducted power and spurious emissions 75 GHz to 110 GHz	MU4044	2.4 dB
Radiated RF Power and Spurious emissions ERP and EIRP		
Effective Radiated Power Reverb Chamber	MU4020	3.7 dB
Effective Radiated Power	MU4021	4.7 dB
TRP Emissions 30 MHz to 1 GHz using CBL6111 or CBL6112 Bilog Antenna	MU4046	5.3 dB
TRP Emissions 1 GHz to 18 GHz using HL050 Log Periodic Antenna	MU4047	5.1 dB
TRP Emissions 18 GHz to 26.5 GHz using Standard Gain Horn	MU4048	2.7 dB
TRP Emissions 26.5 GHz to 40 GHz using Standard Gain Horn	MU4049	2.7 dB
In-band (3450-3980 MHz) TRP using CATR_ASH_B2	MU4051	4.1 dB
Cellular Radiated Spurious Emissions in a SAC 30 MHz to 180 MHz	MU4052	6.3 dB
Cellular Radiated Spurious Emissions in a SAC 180 MHz to 18 GHz	MU4052	3.6 dB
Cellular Radiated Spurious Emissions in a FAR 30 MHz to 180 MHz	MU4052	5.4 dB
Cellular Radiated Spurious Emissions in a FAR 180 MHz to 18 GHz	MU4052	3.0 dB
Spurious Emissions Electric and Magnetic Field		
Radiated Spurious Emissions 30 MHz to 1 GHz (Including emissions due to intermodulation)	MU4037	4.7 dB
Radiated Spurious Emissions 1-18 GHz (Including emissions due to intermodulation)	MU4032	4.5 dB
E Field Emissions 18 GHz to 26 GHz	MU4024	3.2 dB
E Field Emissions 26 GHz to 40 GHz	MU4025	3.3 dB
E Field Emissions 40 GHz to 50 GHz	MU4026	3.5 dB
E Field Emissions 50 GHz to 75 GHz	MU4027	3.6 dB
E Field Emissions 75 GHz to 110 GHz	MU4028	3.6 dB
Radiated Magnetic Field Emissions	MU4031	2.3 dB

Test/Measurement	Budget Number	MU
Frequency Measurements		
Frequency Deviation	MU4022	3.7 kHz
Frequency error using CMTA test set	MU4023	113.441 Hz
Frequency error using GPS locked frequency source	MU4045	0.0413 ppm
Bandwidth/Spectral Mask Measurements		
Channel Bandwidth	MU4005	3.87%
Transmitter Mask Amplitude	MU4039	1.3 dB
Transmitter Mask Frequency	MU4040	2.59%
Time Domain Measurements		
Transmission Time	MU4038	4.40%
Dynamic Frequency Selection (DFS) Parameters		
DFS Analyser - Measurement Time	MU4006	678.984 μ s
DFS Generator - Frequency Error	MU4007	91.650 Hz
DFS Threshold Conducted	MU4008	1.3 dB
DFS Threshold Radiated	MU4009	3.2 dB
Receiver Parameters		
EN 300 328 Receiver Blocking	MU4010	1.1 dB
EN 301 893 Receiver Blocking	MU4011	1.1 dB
EN 303 340 Adjacent Channel Selectivity	MU4012	1.1 dB
EN 303 340 Overloading	MU4013	1.1 dB
EN 303 340 Receiver Blocking	MU4014	1.1 dB
EN 303 340 Receiver Sensitivity	MU4015	0.9 dB
EN 303 372-1 Image Rejection	MU4016	1.4 dB
EN 303 372-1 Receiver Blocking	MU4017	1.1 dB
EN 303 372-2 Adjacent Channel Selectivity	MU4018	1.1 dB
EN 303 372-2 Dynamic Range	MU4019	0.9 dB
Receiver Blocking Talk Mode Conducted	MU4033	1.2 dB
Receiver Blocking Talk Mode- radiated	MU4034	3.4 dB
Rx Blocking, listen mode, blocking level	MU4035	3.2 dB
Rx Blocking, listen mode, radiated Threshold Measurement	MU4036	3.4 dB
Adjacent Sub Band Selectivity	MU4003	4.2 dB

Test/Measurement	Budget Number	MU
Rohde & Schwarz TS8997		
Carrier frequency	MU4050	5.2 ppm
RF Output Power	MU4050	1.0 dB
Peak Power	MU4050	0.8 dB
Power Spectral Density	MU4050	1.0 dB
Occupied Channel Bandwidth	MU4050	2.08 %
Transmitter unwanted emissions in-band	MU4050	0.9 dB
Transmitter unwanted emissions in the spurious domain 30 MHz to 1 GHz	MU4050	0.6 dB
Transmitter unwanted emissions in the spurious domain 1 GHz to 12.75 GHz	MU4050	1.8 dB
Receiver Spurious emission 30 MHz to 1 GHz	MU4050	0.6 dB
Receiver Spurious emission 1 GHz to 12.75 GHz	MU4050	1.8 dB
Duty Cycle	MU4050	0.02 %
Tx Sequence	MU4050	0.02 %
Tx Gap	MU4050	0.02 %
Medium Utilisation	MU4050	0.1 %
Accumulated Transmit Time	MU4050	0.01 %
Minimum Frequency Occupation Time	MU4050	0.01 %
Hopping Frequency Separation	MU4050	0.6 %
Receiver blocking (for bit streams)	MU4050	3.0 dB
Channel Access Mechanism / Adaptivity / DFS / Contention Based Protocol	MU4050	1.8 dB