Report No. 450342-01-R05

Test Report

Product	**Transportable Base Station System**	
Name and address of the applicant	**EXFO Finland** **Elektroniikkatie 2** **FI-90590 Oulu, Finland**	
Name and address of the manufacturer	**EXFO Finland** **Elektroniikkatie 2** **FI-90590 Oulu, Finland**	
Model	**FXm-C, FXm-XG, FXm-B100Lite 850/1900**	
Rating	**See clause 1.1**	
Trademark	**EXFO**	
Serial number	**See clause 1.1**	
Additional information	**GSM, WCDMA, LTE**	
Tested according to	**FCC Part 2 Subpart J** **FCC Part 22 Subpart H** **FCC Part 24 Subpart E** **FCC Part 90 Subpart S**	**ISED RSS-GEN Issue 5** **ISED RSS-119 Issue 12** **ISED RSS-132 Issue 4** **ISED RSS-133 Issue 6**
Order number	**450342**	
Tested in period	**2021-11-10 to 2022-02-07**	
Issue date	**2023-02-16**	
Name and address of the testing laboratory	Instituttveien 6 Kjeller, Norway www.nemko.com CAB Number: FCC: NO0001 ISED: NO470	

An accredited technical test executed under the Norwegian accreditation scheme

Prepared by [Frode Sveinsen]	Approved by [G.Suhanthakumar]

Template version: B

Revision history

Revision	Date	Comment	Sign
00	2022-04-05	First edition	FS
01	2022-05-11	Corrected version	FS
02	2022-08-10	Changed FCC ID to EXFO Finland	FS
03	2022-09-15	Created separate Report for B100 LITE with new FCC ID	FS
04	2023-01-24	Updated references and removed unused bands	FS
05	2023-02-16	Updated to RSS-132 Issue 4	FS

THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in “Summary of Test Data”.

CONTENTS

1 INFORMATION

1.1 Test Item

Name	**EXFO**
Model	**FXm-C** **FXm-XG** **FXm-B100Lite 850/1900**
FCC ID	**2A7IGEXCBTS100LITE**
ISED ID	**28799-EXCBTS100LT**
Power Supplies	**TDK-Lambda Model: DTM300PW240D1** **(Input 100-240V~3.3-1.4A, 50-60Hz, Output: 24.0V=12.5A, Max 300W)** **TDK-Lambda Model: DTM300PW280D1** **(Input 100-240V~3.3-1.4A, 50-60Hz, Output: 28.0V=10.71A, Max 300W)**

Model	**FXm-C**	**FXm-XG**	**FXm-B100Lite 850/1900**
Description	**Controller**	**Main Unit**	**Amplifier Unit**
Serial Number	**1353058**	**1359742**	**5676-01-010**
HW Version	**3.0**	**4.1**	**2.0**
SW Version	**BSP 01.14.04-B328**	**/**	**/**
Input Voltage	**10-32 V_{DC}**	**N/A**	**20-32 V_{DC}**
Antenna Conn.	**N/A**	**N/A**	**N-Female**
RF-Coupler	**N/A**	**N/A**	**N/A**
Power Supply	**TDK-Lambda DTM300PW280D1**	**Powered from FXm-C**	**TDK-Lambda DTM300PW240D1**

Characteristics	**Description**	
Radio System Type	**GSM, WCDMA, LTE**	
Channel Spacing	**GSM, WCDMA**	**0.2 MHz**
	LTE	**0.1 MHz**
Channel Bandwidths	**GSM**	**0.2 MHz**
	WCDMA, LTE	**5 MHz**
Type of Modulation	**GSM**	**8PSK**
	WCDMA	**QPSK**
	LTE	**QPSK**

1.2 Normal Test Conditions

Temperature:	**21 - 24 ºC**
Relative humidity:	**30 - 50 %**
Normal test voltage:	**120 V 60Hz AC**

The values are the limit registered during the test period.

All tests were performed with the listed power supplies powered from a regulated AC Power Source.

1.3 Test Engineer

Frode Sveinsen

1.4 Test Methods

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI C63.25-2015

1.5 EUT Operating Modes and Test Set-up

Description of operating modes	**A laptop computer with Remote Desktop was used to connect to the the Controller Unit. The EUT was controlled with a test software application on the Controller.** **The test software application allowed selection of operating mode, frequency band, operating channel and power level.**
Description of Test Set-up	**The Controller is latched on to the Main Unit.** **The Main Unit is connected to the amplifier unit by the supplied cable.** **The amplifier unit B100Lite is connected to FXm-XG by a cable with SMB connectors. This amplifier unit has a single N-type antenna connector that can be connected directly to the antenna.**

1.6 Comments

The measurements were done with the EUT powered by 120 V AC. It was checked that power variations between 85% and 115% did not have any influence on the measurements.

The output stages was pre-programmed with maximum power levels for each operating mode and frequency band, however for most band edge frequencies the power levels were reduced further to satisfy the emission limits.

1.7 Supported Operating Modes and Frequency Bands

Output Stage Model B100 Lite							
Operating Mode	**Frequency Band**	**Low Channel**	**High Channel**	**Min Freq (MHz)**	**Max Freq (MHz)**	**FCC Part**	**RSS Part**
GSM (2G)	B02	538	806	1935.4	1989.0	Part 24E	RSS-133, Issue 6
	B05	154	250	874.4	893.6	Part 22H	RSS-132, Issue 4
WCDMA (3G)	B02	9662	9925	1932.4	1985.0	Part 24E	RSS-133, Issue 6
	B05	4360	4455	872.0	891.0	Part 22H	RSS-132, Issue 4
LTE (4G)	B02	630	1170	1933.0	1987.0	Part 24E	RSS-133, Issue 6
	B05	2425	2625	871.5	891.5	Part 22H	RSS-132, Issue 4
	B25	8070	8660	1933.0	1992.0	Part 24E	RSS-133, Issue 6
	B26_1	8715	8765	861.5	866.5	Part 90S	RSS-119, Issue 12
	B26_2	8815	9015	871.5	891.5	Part 22H	RSS-132, Issue 4

2 TEST REPORT SUMMARY

2.1 General

All measurements are tracable to national standards.

Radiated tests were made in a semi-anechoic chamber at measuring distance of 3m.

A description of the test facility is on file with the FCC and Industry Canada.

☒ New Submission		☒ Production Unit
☐ Class II Permissive Change		☐ Pre-production Unit
TNB	Equipment Code	☐ Family Listing

2.2 Test Summary

Name of test	FCC Reference	ISED Canada RSS Reference	Test Method ANSI C63.26-2015 Reference	Result
RF Power Output	2.1046 22.913 24.232 90.635	5.4 (RSS-119) 5.4 (RSS-132) 6.4 (RSS-133)	5.2.3.4	Complies
Peak-Average Ratio	2.1046 24.232	5.4 (RSS-132) 6.4 (RSS-133)	5.2.3.4	Complies
Modulation Characteristics	2.1047	5.2 (RSS-119) 5.2 (RSS-132) 6.2 (RSS-133)	5.3	Complies
Bandwidth	2.1049	5.5 (RSS-119) 6.7 (RSS-GEN)	5.4.3 5.4.4	Complies
Band Edge Compliance	2.1051 22.917 24.238	5.8 (RSS-119) 5.5 (RSS-132) 6.5 (RSS-133)	5.7	Complies
Emission Mask	N/A	N/A	-	N/A
Spurious Emissions at antenna terminals	2.1051 22.917 24.238 90.691	5.8 (RSS-119) 5.5 (RSS-132) 6.5 (RSS-133)	5.7	Complies
Field Strength of Spurious Radiations	2.1053, 2.1057 22.917 24.238 90.691	5.11 (RSS-119) 5.5 (RSS-132) 6.5 (RSS-133)	5.5	Complies
Frequency Stability	2.1055 22.355 24.235 90.213	5.3 (RSS-119) 5.3 (RSS-132) 6.3 (RSS-133)	5.6	Complies

3 TEST RESULTS

3.1 RF Output Power / Peak Excursion / Emission Bandwidth

Test Results: Complies

Measurement Method:

ANSI C63.26-2015 Clause 5.2 / 5.4

Output Power (dBm)	**CCDF Function of Spectrum analyzer Number of Samples: 1,000,000 Bandwidth: Same as or higher than Channel BW (5, 10 or 20 MHz) EUT was transmitting continuously with modulation**
PSD Average Power (dBm/MHz)	**Spectrum analyzer RMS Detector, Max Hold, RBW: 1MHz, VBW: 3MHz Trace was allowed to stabilize EUT was transmitting continuously with modulation**
Emission BW (20 dB)	**Spectrum Analyzer with 20dB Marker function Peak Detector, Max Hold, RBW: 1-5% of EBW, VBW: 3xRBW Trace was allowed to stabilize EUT was transmitting continuously with modulation**
Occupied BW (99%)	**Spectrum Analyzer with 99% OBW function Peak Detector, Max Hold, RBW: 1-5% of EBW, VBW: 3xRBW Trace was allowed to stabilize EUT was transmitting continuously with modulation**

Measurement data:

B100Lite 2G, GSM									
Band	**Channel**	**Tx Freq (MHz)**	**Power Level**	**Average Power (dBm)**	**Peak Power (dBm)**	**Peak-Average Ratio, 0.1% (dB)**	**Average Power (dBm/MHz)**	**EBW 26dB BW (kHz)**	**OBW 99% BW (kHz)**
B02	538	1935.4	80	39.6	40.2	0.58			
	661	1960.0	80	40.8	41.3	0.58	40.8	306.7	244.8
	784	1984.6	80	40.4	40.9	0.56			
	806	1989.0	8	31.1	31.6	0.58			
B05	154	874.4	62	37.1	37.6	0.58			
	189	881.4	62	37.5	38.1	0.58	37.9	303.7	243.4
	225	888.6	62	37.6	38.1	0.60			
	250	893.6	25	33.4	33.9	0.58			

B100Lite 3G, WCDMA									
Band	**Channel**	**Tx Freq (MHz)**	**Power Level**	**Average Power (dBm)**	**Peak Power (dBm)**	**Peak-Average Ratio, 0.1% (dB)**	**Average Power (dBm/MHz)**	**EBW 26dB BW (MHz)**	**OBW 99% BW (MHz)**
B02	9670	1934.0	4	32.8	41.9	8.00		4.71	
	9680	1936.0	40	39.2	44.9	5.36		9.66	4.41
	9700	1940.0	58	42.0	45.6	3.42		11.8	8.48

B100Lite 3G, WCDMA									
Band	Channel	Tx Freq (MHz)	Power Level	Average Power (dBm)	Peak Power (dBm)	Peak-Average Ratio, 0.1% (dB)	Average Power (dBm/ MHz)	EBW 26dB BW (MHz)	OBW 99% BW (MHz)
	9720	1944.0	74	43.2	45.8	2.42		12.4	10.6
	9740	1948.0	80	43.5	46.0	2.24		12.5	10.9
	9800	1960.0	80	44.0	46.4	2.18	45.2	12.6	11.0
	9860	1972.0	80	43.5	45.9	2.18		12.3	10.9
	9880	1976.0	67	42.6	45.6	2.78		12.0	9.39
	9900	1980.0	55	41.5	45.3	3.58		11.8	8.09
	9920	1984.0	32	38.6	44.7	5.72		7.99	4.31
	9925	1985.0	14	35.7	44.3	7.54		4.75	4.20
B05	4360	872.0	6	34.6	43.3	7.72		4.74	
	4370	874.0	22	37.1	45.2	7.26		4.78	4.22
	4380	876.0	27	38.1	45.7	6.96		4.79	4.23
	4390	878.0	67	43.3	47.1	3.78		11.7	5.22
	4408	881.6	67	43.4	47.2	3.76	46.7	11.7	5.23
	4425	885.0	67	43.4	47.2	3.74		11.7	5.33
	4430	886.0	62	42.9	47.1	4.10		11.6	4.77
	4440	888.0	27	38.4	46.1	7.00		4.82	
	4450	890.0	16	36.6	44.9	7.50			
	4455	891.0	8	35.2	43.9	7.68			

B100Lite 4G, LTE									
Band	Channel	Tx Freq (MHz)	Power Level	Average Power (dBm)	Peak Power (dBm)	Peak-Average Ratio, 0.1% (dB)	Average Power (dBm/ MHz)	EBW 26dB BW (MHz)	OBW 99% BW (MHz)
B02	630	1933.0	17	29.7	38.1	7.48		5.01	
	640	1934.0	32	33.3	41.3	7.36		5.00	
	650	1935.0	43	36.2	44.1	7.00		5.01	4.53
	660	1936.0	60	39.5	45.2	5.32		8.82	4.61
	670	1937.0	64	40.4	45.6	4.84		10.4	4.72
	680	1938.0	70	41.4	45.9	4.20		11.2	5.16
	900	1960.0	70	42.1	46.1	3.78	44.0	12.5	7.30
	1110	1981.0	70	41.4	45.6	3.98		12.0	5.55
	1120	1982.0	66	40.9	45.5	4.36		11.1	4.89
	1140	1984.0	55	39.1	44.9	5.48		7.50	4.58
	1160	1986.0	26	33.1	41.2	7.38		5.00	4.52
	1170	1987.0	12	30.0	38.4	7.50		5.00	4.52

B100Lite 4G, LTE									
Band	Channel	Tx Freq (MHz)	Power Level	Average Power (dBm)	Peak Power (dBm)	Peak-Average Ratio, 0.1% (dB)	Average Power (dBm/ MHz)	EBW 26dB BW (MHz)	OBW 99% BW (MHz)
B05	2425	871.5	20	31.5	39.8	7.46		5.00	
	2430	872.0	48	36.5	44.8	7.24		5.00	
	2450	874.0	60	38.6	46.0	6.78		5.03	
	2460	875.0	72	40.3	46.3	5.64		7.08	
	2470	876.0	75	40.9	46.6	5.40		7.46	
	2525	881.5	75	41.1	46.9	5.38	44.6	8.31	4.60
	2580	887.0	75	41.1	46.8	5.40		7.87	
	2590	888.0	72	40.6	46.7	6.10		5.92	
	2600	889.0	60	38.8	46.5	6.82		5.01	
	2610	890.0	54	37.7	45.4	7.06		5.01	
	2620	891.0	49	36.9	44.9	7.22		5.00	
	2625	891.5	26	32.9	41.3	7.48			
B25	8070	1933.0	17	29.5	38.1	7.46		5.00	
	8090	1935.0	45	36.2	43.9	6.96		5.01	4.53
	8110	1937.0	66	40.4	45.6	4.82		10.5	4.73
	8130	1939.0	74	41.7	46.2	4.00		11.7	5.44
	8365	1962.5	74	42.0	46.0	3.80	44.0	12.2	7.26
	8600	1986.0	74	41.8	45.8	3.74		12.4	5.82
	8620	1988.0	62	40.2	45.3	4.86		9.85	4.66
	8640	1990.0	41	36.1	43.7	6.98		5.01	4.53
	8660	1992.0	12	29.7	38.2	7.46		5.00	
B26_1	8715	861.5	0	27.2	35.9	7.50			
	8720	862.0	21	30.6	38.9	7.40		5.00	
	8730	863.0	32	32.6	41.2	7.38		5.00	
	8740	864.0	50	35.7	44.0	7.22	39.4	5.00	4.52
	8750	865.0	35	33.4	41.7	7.40			
	8760	866.0	17	30.3	38.7	7.42			
	8765	866.5	0	27.6	35.9	7.46			
B26_2	8815	871.5	33	33.3	41.6	7.40			
	8820	872.0	52	36.2	44.1	6.30			
	8830	873.0	56	37.0	44.8	7.08		5.00	
	8850	875.0	76	40.1	47.1	6.30		5.32	
	8860	876.0	80	40.7	46.6	5.46		7.69	
	8914	881.4	80	41.0	46.8	5.44	44.2	7.66	4.59
	8970	887.0	80	40.8	46.7	5.56		7.22	

B100Lite 4G, LTE									
Band	Channel	Tx Freq (MHz)	Power Level	Average Power (dBm)	Peak Power (dBm)	Peak-Average Ratio, 0.1% (dB)	Average Power (dBm/ MHz)	EBW 26dB BW (MHz)	OBW 99% BW (MHz)
	8980	888.0	76	40.5	46.6	5.72		6.49	
	9000	890.0	58	37.6	45.7	7.08		5.00	
	9010	891.0	52	36.8	44.8	7.24		5.00	
	9015	891.5	24	32.1	40.5	7.52			

Requirements:

FCC Part	Maximum Average Power (dBm)	Maximum Peak-Average Ratio, 0.1% (dB)
22.913(a)(1)	Base stations and Repeaters: 500 Watts (57 dBm) per emissions Mobile and Portable Stations: 2 Watts (33 dBm)	Must not exceed 13 dB
24.232	Base Stations: 1640 Watts/MHz Mobile and Portable Stations: 2 Watts (33 dBm)	Must not exceed 13 dB
90.635	Mobile Stations: 100 Watts	Must not exceed 13 dB

ISED Part	Maximum Average Power (dBm)	Maximum Peak-Average Ratio, 0.1% (dB)
RSS-132	Base stations and Repeaters: 820 Watts/5 MHz e.i.r.p. Mobile Equipment: 7 Watts Portable Equipment: 3 Watts	Must not exceed 13 dB
RSS-133	Base Stations: 1640 Watts/MHz Mobile and Portable Stations: 2 Watts (33 dBm)	Must not exceed 13 dB
RSS-119	Base Fixed Equipment: 110 W Mobile Equipment: 30 W	

3.2 Band Edge Compliance

Test Results: Complies

Measurement Method:

ANSI C63.26-2015 Clause 5.7

Spurious Emissions at Antenna Terminals	**Measured with Spectrum Analyzer RMS Detector, Trace Averaging over 500 sweeps Below 1GHz: RBW/VBW: 100kHz/300kHz Above 1GHz: RBW/VBW: 1MHz/3MHz EUT was transmitting continuously with modulation Power levels were reduced to the noted levels**
Band Edge	**Same as above, but with reduced RBW/VBW at less than 1MHz from Band Edge**

Measurement Data:

B100Lite 2G, GSM								
Band	**Channel**	**Tx Freq (MHz)**	**Band Edge (MHz)**	**Power Level**	**Band Edge Emissions (dBm)**	**Limit (dBm)**	**Margin (dB)**	**Verdict**
B02	516	1931.0	1930	27	-16.5	-13	3.5	Pass
	538	1935.4	1930	80	-30.9	-13	17.9	Pass
	784	1984.6	1990	80	-30.2	-13	17.2	Pass
	806	1989.0	1990	8	-16.7	-13	3.7	Pass
B05	129	869.4	869	25	-24.9	-13	11.9	Pass
	154	874.4	869	62	-42.1	-13	29.1	Pass
	225	888.6	894	62	-42.1	-13	29.1	Pass
	250	893.6	894	25	-22.9	-13	9.9	Pass

B100Lite 3G, WCDMA								
Band	**Channel**	**Tx Freq (MHz)**	**Band Edge (MHz)**	**Power Level**	**Band Edge Emissions (dBm)**	**Limit (dBm)**	**Margin (dB)**	**Verdict**
B02	9670	1934.0	1930	4	-13.6	-13	0.6	Pass
	9680	1936.0	1930	40	-14.1	-13	1.1	Pass
	9700	1940.0	1930	58	-13.7	-13	0.7	Pass
	9720	1944.0	1930	74	-13.6	-13	0.6	Pass
	9740	1948.0	1930	80	-17.3	-13	4.3	Pass
	9860	1972.0	1990	80	-13.4	-13	0.4	Pass
	9880	1976.0	1990	67	-13.4	-13	0.4	Pass
	9900	1980.0	1990	55	-13.6	-13	0.6	Pass
	9920	1984.0	1990	32	-16.4	-13	3.4	Pass
	9925	1985.0	1990	14	-13.9	-13	0.9	Pass
B05	4360	872.0	869	6	-13.2	-13	0.2	Pass
	4370	874.0	869	22	-13.8	-13	0.8	Pass

B100Lite 3G, WCDMA								
Band	Channel	Tx Freq (MHz)	Band Edge (MHz)	Power Level	Band Edge Emissions (dBm)	Limit (dBm)	Margin (dB)	Verdict
	4380	876.0	869	27	-32.8	-13	19.8	Pass
	4390	878.0	869	67	-14.5	-13	1.5	Pass
	4425	885.0	894	67	-13.6	-13	0.6	Pass
	4430	886.0	894	62	-13.1	-13	0.1	Pass
	4440	888.0	894	27	-26.0	-13	13.0	Pass
	4450	890.0	894	16	-13.4	-13	0.4	Pass
	4455	891.0	894	8	-13.3	-13	0.3	Pass

B100Lite 4G, LTE								
Band	Channel	Tx Freq (MHz)	Band Edge (MHz)	Power Level	Band Edge Emissions (dBm)	Limit (dBm)	Margin (dB)	Verdict
B02	630	1933.0	1930	17	-13.6	-13	0.6	Pass
	640	1934.0	1930	32	-13.4	-13	0.4	Pass
	650	1935.0	1930	43	-13.5	-13	0.5	Pass
	660	1936.0	1930	60	-13.4	-13	0.4	Pass
	670	1937.0	1930	64	-13.1	-13	0.1	Pass
	680	1938.0	1930	70	-13.4	-13	0.4	Pass
	1110	1981.0	1990	70	-15.3	-13	2.3	Pass
	1120	1982.0	1990	66	-13.7	-13	0.7	Pass
	1140	1984.0	1990	55	-14.5	-13	1.5	Pass
	1160	1986.0	1990	26	-13.1	-13	0.1	Pass
	1170	1987.0	1990	12	-13.4	-13	0.4	Pass
B05	2425	871.5	869	20	-16.2	-13	3.2	Pass
	2430	872.0	869	48	-14.1	-13	1.1	Pass
	2450	874.0	869	60	-13.3	-13	0.3	Pass
	2460	875.0	869	72	-13.3	-13	0.3	Pass
	2470	876.0	869	75	-22.1	-13	9.1	Pass
	2580	887.0	894	75	-20.5	-13	7.5	Pass
	2590	888.0	894	72	-13.3	-13	0.3	Pass
	2600	889.0	894	60	-13.2	-13	0.2	Pass
	2610	890.0	894	54	-13.4	-13	0.4	Pass
	2620	891.0	894	49	-13.4	-13	0.4	Pass
	2625	891.5	894	26	-13.4	-13	0.4	Pass
B25	8070	1933.0	1930	17	-13.5	-13	0.5	Pass
	8090	1935.0	1930	45	-13.4	-13	0.4	Pass

B100Lite 4G, LTE								
Band	Channel	Tx Freq (MHz)	Band Edge (MHz)	Power Level	Band Edge Emissions (dBm)	Limit (dBm)	Margin (dB)	Verdict
	8110	1937.0	1930	66	-13.7	-13	0.7	Pass
	8130	1939.0	1930	74	-16.3	-13	3.3	Pass
	8600	1986.0	1995	74	-14.1	-13	1.1	Pass
	8620	1988.0	1995	62	-13.8	-13	0.8	Pass
	8640	1990.0	1995	41	-13.3	-13	0.3	Pass
	8660	1992.0	1995	12	-13.9	-13	0.9	Pass
B26_1	8715	861.5	859	0	-21.1	-13	8.1	Pass
	8720	862.0	859	21	-20.4	-13	7.4	Pass
	8730	863.0	859	32	-19.9	-13	6.9	Pass
	8740	864.0	859	50	-20.6	-13	7.6	Pass
	8740	864.0	869	50	-20.6	-13	7.6	Pass
	8750	865.0	869	35	-20.2	-13	7.2	Pass
	8760	866.0	869	17	-20.5	-13	7.5	Pass
	8765	866.5	869	0	-20.0	-13	7.0	Pass
B26_2	8815	871.5	869	33	-13.1	-13	0.1	Pass
	8820	872.0	869	52	-13.2	-13	0.2	Pass
	8830	873.0	869	56	-13.7	-13	0.7	Pass
	8850	875.0	869	76	-13.8	-13	0.8	Pass
	8860	876.0	869	80	-22.4	-13	9.4	Pass
	8970	887.0	894	80	-21.6	-13	8.6	Pass
	8980	888.0	894	76	-14.0	-13	1.0	Pass
	9000	890.0	894	58	-13.3	-13	0.3	Pass
	9010	891.0	894	52	-14.0	-13	1.0	Pass
	9015	891.5	894	24	-15.1	-13	2.1	Pass

3.3 Emissions at Antenna Terminals

Test Results: Complies

Measurement Method:

ANSI C63.26-2015 Clause 5.7

Spurious Emissions at Antenna Terminals	**Measured with Spectrum Analyzer** **RMS Detector, Trace Averaging over 500 sweeps** **Below 1GHz: RBW/VBW: 100kHz/300kHz** **Above 1GHz: RBW/VBW: 1MHz/3MHz** **EUT was transmitting continuously with modulation** **Power level was set to maximum supported in the EUT**

Measurement Data:

B100Lite								
Tech/ Band	**Channel**	**Tx Freq (MHz)**	**Measured Freq. (MHz)**	**Power Level**	**Emissions (dBm)**	**Limit (dBm)**	**Margin (dB)**	**Verdict**
2G B05	154	874.4	2623	62	-28.4	-13	15.4	Pass
	189	881.4	2644	62	-27.3	-13	14.3	Pass
	225	888.6	2666	62	-29.8	-13	16.8	Pass
3G B05	4390	878.0	2634	67	-31.4	-13	18.4	Pass
	4408	881.6	2645	67	-31.4	-13	18.4	Pass
	4425	885.0	2655	67	-32.8	-13	19.8	Pass
4G B05	2470	876.0	2628	75	-35.9	-13	22.9	Pass
	2525	881.5	2644	75	-35.2	-13	22.2	Pass
	2580	887.0	2661	75	-36.9	-13	23.9	Pass
Any	Any	Any	Any	Any	<-23	-13	>10	Pass

3.4 Cabinet Radiations

Test Results: Complies

Measurement Method:

ANSI C63.26-2015 Clause 5.5

Cabinet Radiations	**Field Strength was measured using the Spectrum Analyzer** **Power Levels were calculated using the methods in KDB 412172 D01 v01r01** **RMS Detector, Trace Averaging over 500 sweeps** **Below 1GHz: RBW/VBW: 100kHz/300kHz** **Above 1GHz: RBW/VBW: 1MHz/3MHz** **EUT was transmitting continuously with modulation** **Power level was set to maximum supported in the EUT** **Antenna connector was terminated into a 50 Ohm load**

Measurement Data:

B100Lite								
Tech/ Band	Channel	Tx Freq (MHz)	Measured Freq. (MHz)	Emissions (dBµV/m @3m)	Emissions (dBm)	Limit (dBm)	Margin (dB)	Verdict
2G B02	661	1960.0	3920	62.2	-33.0	-13	20.0	Pass
			5880	61.0	-34.2	-13	21.2	Pass
			7840	45.9	-49.3	-13	36.3	Pass
2G B05	189	881.4	2644	81.6	-13.6	-13	0.6	Pass
			4407	59.6	-35.6	-13	22.6	Pass
			6170	59.8	-35.4	-13	22.4	Pass
3G B02	9800	1960.0	3920	78.8	-16.6	-13	3.4	Pass
			5880	72.6	-22.6	-13	9.6	Pass
			7840	67.6	-27.6	-13	14.6	Pass
3G B05	4408	881.6	2645	74.9	-20.3	-13	7.3	Pass
			4408	70.7	-24.5	-13	11.5	Pass
			6171	60.5	-34.7	-13	21.7	Pass
4G B02	900	1960.0	3920	72.3	-22.9	-13	9.9	Pass
			5880	67.3	-27.9	-13	14.9	Pass
			7840	55.4	-39.8	-13	26.8	Pass
4G B05	2525	881.5	2644.6	72.1	-23.1	-13	10.1	Pass
			4408	62.5	-32.7	-13	19.7	Pass
4G B26	8914	881.4	2644.2	72.0	-23.2	-13	10.2	Pass
			4407	62.7	-32.5	-13	19.5	Pass
Any	Any	Any	Any	<62	<-33	-13	>20	Pass

3.5 Frequency Stability

Test Results: Complies

Measurement Method:

ANSI C63.26-2015 Clause 5.6

EUT State	**EUT was transmitting continuously a modulated signal on a channel in the middle of the band. It was not possible to get the EUT to transmit without modulation.**
Measurement Method	**The measurement was performed using the OBW Function (99%) of the analyzer. RBW/VBW = 1 kHz for 2G and 10 kHz for 3G and 4G. Span was 500 kHz for 2G and 10 MHz for 3G and 4G.**
Comment	**For 3G the spectrum is rounded off at the edges, this causes the frequency reading to be very strongly affected by random noise. 2G and 4G spectrum have sharper edges, these frequency readings are therefore more consistent.**

Measurement Data:

B100Lite								
Band	**Nom. Freq.**	**Parameter**	**+50 °C**	**+40 °C**	**+30 °C**	**+20 °C**	**+10 °C**	**0 °C**
2G Band 02	1960.0 MHz	Deviation (Hz)	115.9	-307.4	-50.9	55.6	-225	-316.6
		Deviation (ppm)	0.031	-0.185	-0.054	0	-0.143	-0.190
2G Band 05	881.4 MHz	Deviation (Hz)	843.5	1119	27.6	77.6	768.1	436.9
		Deviation (ppm)	0.869	1.182	-0.057	0	0.804	0.408
3G Band 02	1960.0 MHz	Deviation (Hz)	7357	12308	2743	-664.8	4016	5033
		Deviation (ppm)	4.093	6.619	1.739	0	2.388	2.907
3G Band 05	881.6 MHz	Deviation (Hz)	-3616	-5093	-4687	-4056	-5937	-4681
		Deviation (ppm)	0.499	-1.176	-0.716	0	-2.134	-0.709
4G Band 02	1960.0 MHz	Deviation (Hz)	-827.2	-922.9	-869.6	-830.9	1081	-927.8
		Deviation (ppm)	0.002	-0.047	-0.015	0	0.975	-0.049
4G Band 05	881.5 MHz	Deviation (Hz)	-385.9	-501.1	-735.7	-562.8	-722.1	-681.3
		Deviation (ppm)	0.201	0.070	-0.196	0	-0.181	-0.134
4G Band 25	1962.5 MHz	Deviation (Hz)	-635.0	-694.9	-744.2	-626.2	1014	-620.9
		Deviation (ppm)	-0.004	-0.035	-0.060	0	0.836	0.003
4G Band 26_1	864.0 MHz	Deviation (Hz)	1169	706.7	555.9	351.4	259.4	104.3
		Deviation (ppm)	0.946	0.411	0.237	0	-0.106	-0.286
4G Band 26_2	881.4 MHz	Deviation (Hz)	-331.1	-616.8	-540.1	-721.7	-910.8	-650.0
		Deviation (ppm)	0.443	0.119	0.206	0	-0.215	0.081

B100Lite					
Band	**Nom. Freq.**	**Parameter**	**120V 60Hz**	**98V 60Hz**	**138V 60Hz**
2G Band 02	1960.0 MHz	Deviation (Hz)	55.6	-571.6	334.7
		Deviation (ppm)	0	-0.320	0.142
2G Band 05	881.4 MHz	Deviation (Hz)	77.6	174.0	890.0

B100Lite					
Band	**Nom. Freq.**	**Parameter**	**120V 60Hz**	**98V 60Hz**	**138V 60Hz**
		Deviation (ppm)	0	0.109	0.922
3G Band 02	1960.0 MHz	Deviation (Hz)	-664.8	113.1	618.9
		Deviation (ppm)	0	0.397	0.655
3G Band 05	881.6 MHz	Deviation (Hz)	-4056	-4077	-4301
		Deviation (ppm)	0	-0.024	-0.278
4G Band 02	1960.0 MHz	Deviation (Hz)	-830.9	-660.0	-837.4
		Deviation (ppm)	0	0.087	-0.003
4G Band 05	881.5 MHz	Deviation (Hz)	-562.8	-540.6	-525.1
		Deviation (ppm)	0	0.025	0.043
4G Band 25	1962.5 MHz	Deviation (Hz)	-626.2	-605.0	-433.6
		Deviation (ppm)	0	0.011	0.098
4G Band 26_1	864.0 MHz	Deviation (Hz)	351.4	397.5	260.5
		Deviation (ppm)	0	0.053	-0.105
4G Band 26_2	881.4 MHz	Deviation (Hz)	-721.7	-763.5	-742.9
		Deviation (ppm)	0	-0.047	-0.024

Requirements:

	FCC	ISED
Band 02	stays within AFB	1.0 ppm, or stays within AFB
Band 05	1.5 ppm	stays within AFB
Band 25	stays within AFB	1.0 ppm, or stays within AFB
Band 26_1	stays within AFB	1.5 ppm, or stays within AFB
Band 26_2	1.5 ppm	stays within AFB

AFB = Authorized Frequency Block

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		**Uncertainty**
Output Power		**±0.5 dB**
Power Spectral Density		**±0.5 dB**
Out of Band Emissions, Conducted (RBW < 100 kHz)	**< 3.6 GHz**	**±0.6 dB**
	> 3.6 GHz	**±0.9 dB**
Spurious Emissions, Radiated	**< 1 GHz**	**±2.5 dB**
	> 1 GHz	**±2.2 dB**
Emission Bandwidth		**±4 %**
Power Line Conducted Emissions		**+2.9 / -4.1 dB**
Spectrum Mask Measurements	**Frequency**	**±5 %**
	Amplitude	**±1.0 dB**
Frequency Error		**±0.6 ppm**
Temperature Uncertainty		**±1 °C**

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	FSW26	Spectrum Analyzer	Rohde & Schwarz	LR 1640	2020-10 2022-01	2022-10 2024.01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2021-02 2022-01	2022-02 2023-01
3	770-20	Attenuator	Narda	LR 1777	COU	
4	6810.17B	Attenuator	Suhner	LR 1669	COU	
5	JB3	BiLog Antenna	Sunol Sciences	N-4525	2020-03	2023-03
6	3115	Horn Antenna	EMCO	LR 1330	2016-10	2026-10
7	Model 310	Pre-amplifier	Sonoma	LR 1686	2021-08	2022-08
8	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2021-08	2022-08
9	3117-PA	Horn Antenna w.PreAmp	EMCO	LR 1717	2021-08	2022-08
10	6812A	Power Source	Agilent	LR 1515	2020-04	2022-04

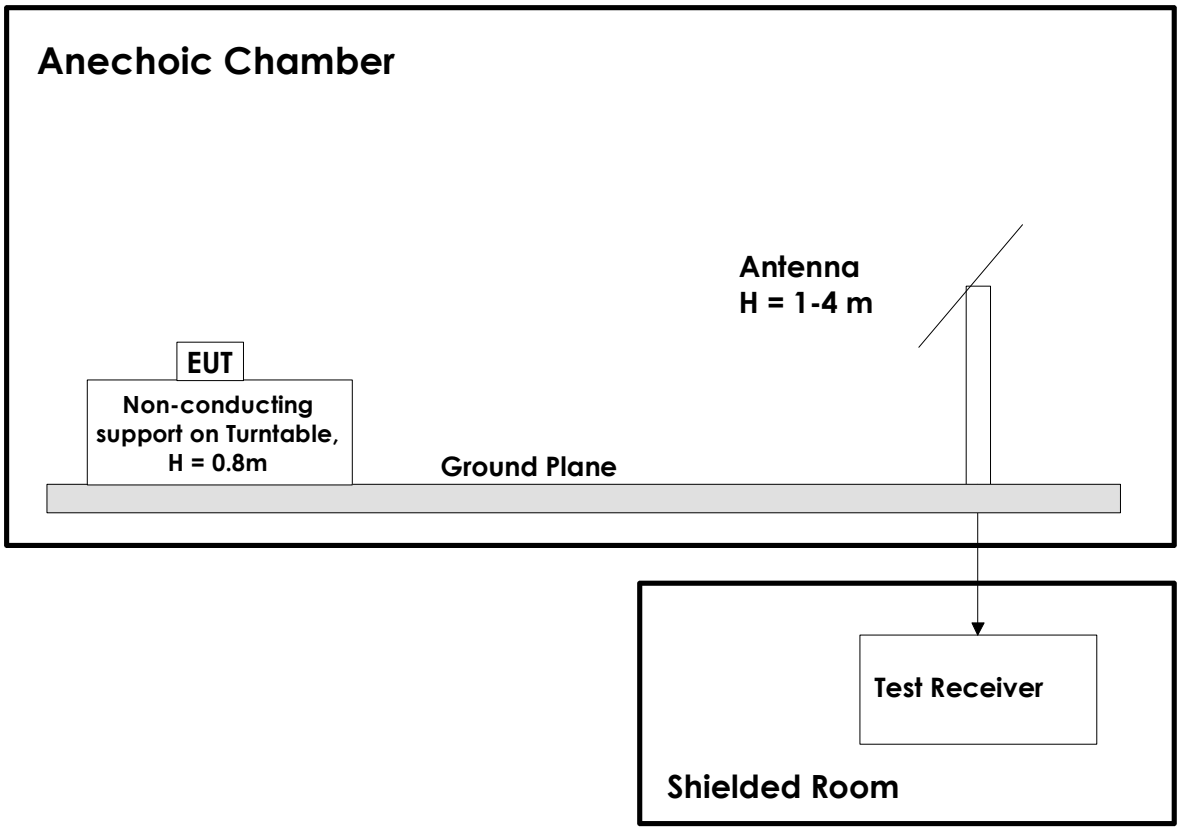
COU = Calibrate on Use

The software listed below has been used for one or more tests in this report.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.50.40	EMC test software
2	Nemko AS	RSPlot	1.0.8.0	Captures screenshots from R&S Analyzers

6 BLOCK DIAGRAM

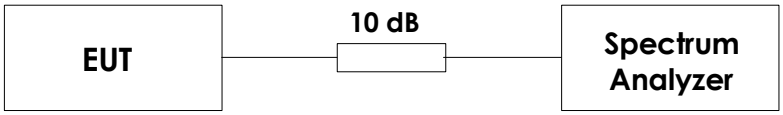
6.1 Test Site Radiated Emission



For measurements above 1 GHz the ground plane is covered by absorbers.

Below 30 MHz, measuring distance of 10m is used for spurious emissions measuremnts.

6.2 Conducted Test



This setup is used for all conducted tests where a spectrum analyser is used.
The actual value of the attenuator will depend on the output power of the EUT.