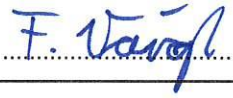
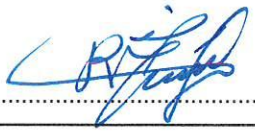
RADIO REPORT

FCC 47 CFR Part 22H, FCC 47 CFR Part 24E, FCC 47 CFR Part 27, FCC 47 CFR Part 90

ISED Canada RSS-132 Issue 4, ISED RSS-133, Issue 6 Amendment 1, ISED Canada RSS-139, Issue 4 Amendment 1, ISED Canada RSS-130, Issue 2

Report Reference No	G0M-2304-2019-TFCMOCORSE-V02
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Vaisala Oyj
Address	Vanha Nurmijärventie 21 01670 Vantaa Finland
Test Specification	47 CFR Part 22H 47 CFR Part 24E 47 CFR Part 27 47 CFR Part 90 ISED RSS-132, Issue 4: 2023-01 ISED RSS-133, Issue 6+A1: 2018-01 ISED RSS-139, Issue 4 Amendment 1: 2022-10 ISED RSS-130, Issue 2: 2019-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	TempCast FMP100
Model(s)	FMP103
Additional Model(s)	None
Brand Name(s)	Vaisala
Hardware Version(s)	F
Software Version(s)	1.0.9
FCC ID	2AO39-FMP100
IC	23830-FMP100
Test Result	**PASSED**

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 °C – 23 °C	
Test Lab Humidity	32 % – 38 %	
Date of receipt of test item	2023-05-05	
Report:		
Compiled by	Odai Qawasmeh	
Tested by (+ signature)	Godson Ekezie Offorji	
Tested by (+ signature)	Florian Voigt	
Supervised by (+ signature) (Responsible for Test)	Burkhard Pudell	
Approved by (+ signature) (Test lab engineer)	Radwan Jaafar	
Date of Issue	2023-09-21	
Total number of pages	122	
General Remarks:		
The test results presented in this report relate only to the object tested. **The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.** This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	**Description**	
1	Product Type Description	TempCast FMP100
	Model name	FMP103
	Brand name	Vaisala
	Hardware Version	F
	Software Version	1.09
2	Product Type Description	TempCast FMP100
	Model name	FMP102
	Brand name	Vaisala
	Hardware Version	F
	Software Version	1.09
Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2023-08-11	Initial Release	Florian Voigt
02	2023-09-21	Replaced document: G0M-2304-2019-TFCMOCORSE-V01 Replaced by: G0M-2304-2019-TFCMOCORSE-V02 Reason: 1. Page 26: Limits table adjusted to show ERP limits for bands below 1 GHz and EIRP limits for bands above 1 GHz. Corrected frequency range for FDD4. 2. Page 27: Calculated ERP power, margin for bands FDD5, FDD12, FDD13, FDD26. 3. Page 16: Explanation added regarding bands FDD2 and FDD4 are not separately tested.	Florian Voigt

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V_{NOM}	Nominal supply voltage

REPORT INDEX

1 Equipment (Test Item) Under Test

Description	TempCast FMP100	
Model	FMP103	
Additional Model(s)	None	
Brand Name(s)	Vaisala	
Serial Number(s)	Prototype	
Test Sample Id(s)	44032	
Hardware Version(s)	F	
Software Version(s)	1.0.9	
PMN	Tempcast FMP100	
HVIN	FMP103, FMP102	
FVIN	1.0.9	
HMN	N/A	
IC	23830-FMP100	
FCC ID	2AO39-FMP100	
Equipment type	End Product	
Radio type	Transceiver	
Radio technologies	LTE FDD NB-IoT	
NB-IoT frequency bands	FDD 2 : UL = 1850 - 1910 MHz, DL = 1930 - 1990 MHz FDD 4 : UL = 1710 - 1755 MHz, DL = 2110 - 2155 MHz FDD 5 : UL = 824 - 849 MHz, DL = 869 - 894 MHz FDD12 : UL = 699 - 716 MHz, DL = 729 - 746 MHz FDD13 : UL = 777 - 787 MHz, DL = 746 - 756 MHz FDD25 : UL = 1850 - 1915 MHz, DL = 1930 - 1995 MHz FDD26 : UL = 814 - 849 MHz, DL = 859 - 894 MHz FDD66 : UL = 1710 - 1780 MHz, DL = 2110 - 2200 MHz	
Modulations	π/2 - BPSK, π/4 - QPSK	
Number of modules	1	
Radio Module	Type	LTE Cat M1/ NB-IoT/GNSS Radio module
	Model	nRF9160
	Manufacturer	Nordic Semiconductor
	HW Version	Not specified
	SW Version	1.3.0
	FCC-ID	2ANPO00NRF9160
	IC	24529-NRF9160
Antenna	Type	Integrated
	Model	EFF692SA3S
	Manufacturer	Laird
	Gain	FDD2/FDD4/FDD25/FDD66: 3.7 dBi FDD5/FDD12/FDD13/FDD26: 1.9 dBi (Antenna gains declared by customer)
Supply Voltage	V_{NOM}	7.2 VDC (battery)
AC/DC-Adaptor	None	
Manufacturer	Vaisala Oyj Vanha Nurmijärventie 21 01670 Vantaa Finland	

1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Communication Tester	R&S	CMW500	Base Station Simulator
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

1.4.1 Test modes - Transmitter and receiver radiated emissions, Radiated power calculation

Mode	Description
NB1 FDD5 / PMAX	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 6 Duty cycle = 20 %
NB1 FDD12 / PMAX	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 6 Duty cycle = 20 %
NB1 FDD13 / PMAX	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 6 Duty cycle = 20 %
NB1 FDD25 / PMAX	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 6 Duty cycle = 20 %
NB1 FDD26 / PMAX	Channel = 26790 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11 Duty cycle = 50 %
NB1 FDD66 / PMAX	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 45 kHz Number of tones = 3 Start tone offset = 6 Duty cycle = 20 %

NB1 FDD5 / Receive	Channel = 2525 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
NB1 FDD12 / Receive	Channel = 5095 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
NB1 FDD13 / Receive	Channel = 5230 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
NB1 FDD25 / Receive	Channel = 8365 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
NB1 FDD26 / Receive	Channel = 8865 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
NB1 FDD66 / Receive	Channel = 66786 Mode = No scheduling Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 12 Start tone offset = 0 MCS, TBS = 3 #SF / #RU = 1 #Repetitions = 1
Comment: Above worst case scenarios are based on conducted output power and were found in module test reports: “NIE: 59675RRF.002” issued by “DEKRA Testing and Certification, S.A.U.” on “2019-06-03” “NIE: 59675RRF.004” issued by “DEKRA Testing and Certification, S.A.U.” on “2019-05-15” Frequency range of band FDD2 is fully included in band FDD25. Frequency range of band FDD4 is fully included in band FDD66. Upper frequency range of band FDD26 is fully included in band FDD5. Because transmitter gets also tuned to the frequency range of the included bands when the larger bands, covering the included bands, are in use, included bands FDD2, FDD4 and FDD26-upper-range are not tested separately.	

1.4.2 Test modes - Emissions at band edge

Mode	Description
NB1 FDD5 / L1	Channel = 20402 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD5 / L2	Channel = 20402 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD5 / L3	Channel = 20402 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD5 / L4	Channel = 20402 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD5 / L5	Channel = 20402 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD5 / H1	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD5 / H2	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD5 / H3	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11

NB1 FDD5 / H4	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD5 / H5	Channel = 20648 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD12 / L1	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / L2	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / L3	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / L4	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD12 / L5	Channel = 23012 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD12 / H1	Channel = 23178 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD12 / H2	Channel = 23178 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47

NB1 FDD12 / H3	Channel = 23178 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD12 / H4	Channel = 23178 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD12 / H5	Channel = 23178 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD13 / L1	Channel = 23182 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD13 / L2	Channel = 23182 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD13 / L3	Channel = 23182 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD13 / L4	Channel = 23182 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD13 / L5	Channel = 23182 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD13 / H1	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47

NB1 FDD13 / H2	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD13 / H3	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD13 / H4	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD13 / H5	Channel = 23278 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD25 / L1	Channel = 26042 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD25 / L2	Channel = 26042 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD25 / L3	Channel = 26042 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD25 / L4	Channel = 26042 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD25 / L5	Channel = 26042 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0

NB1 FDD25 / H1	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD25 / H2	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD25 / H3	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD25 / H4	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD25 / H5	Channel = 26688 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD66 / L1	Channel = 131974 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD66 / L2	Channel = 131974 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD66 / L3	Channel = 131974 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0
NB1 FDD66 / L4	Channel = 131974 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 0

NB1 FDD66 / L5	Channel = 131974 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0
NB1 FDD66 / H1	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD66 / H2	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 3.75 kHz Number of tones = 1 Start tone offset = 47
NB1 FDD66 / H3	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/2 - BPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD66 / H4	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 15 kHz Number of tones = 1 Start tone offset = 11
NB1 FDD66 / H5	Channel = 132670 Mode = RMC TPC = Max power Modulation = π/4 - QPSK Bandwidth = 180 kHz Number of tones = 12 Start tone offset = 0

1.5 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB/m) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Field strength limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Field strength limit (dBµV/m) = 20 · log (µV/m)

Example only for radiated field strength:

Reading + AF	= Net Reading	:	Net reading	- Field strength limit	= Margin
+21.5 dBµV	+ 26 dB/m	:	47.5 dBµV/m	- 57.0 dBµV/m	= -9.5

Di:

This is the measurement distance between the test sample and the measurement antenna in meter (m)

ERP:

This is the emitted power by the test sample as Effective Radiated Power (dBm)

EIRP:

This is the emitted power by the test sample as Effective Isotropic Radiated Power (dBm)

Calculation of measurement result:

ERP = Net field strength (dBµV/m) + 20 · log(Di) - 106.95
EIRP = Net field strength (dBµV/m) + 20 · log(Di) - 104.8

P_{Watt}:

This is power in Watts

P_{dBm}:

This is power in dBm. $P_{dBm} = 10 \cdot \log(P_{Watt} \cdot 1000)$

Power limit:

This is the radiated emission limit expressed in P_{dBm}. FCC limits are typically given as an attenuation of carrier power in dB by the formula $x + 10 \cdot \log(P_{Watt})$

Calculation example of emission limit:

Assuming x = 43
Power-Limit = P_{dBm} - 43 + 10 · log(P_{Watt})
Power-Limit = 30 dBm - 43 + 10 · log(1 W) = -13 dBm

Example only for radiated power:

Reading + AF	= Net Reading
+21.5 dBµV + 26 dB/m	= 47.5 dBµV/m
Net Reading + 20 · log(Di) - 104.8	= EIRP
47.5 dBµV/m + 20 · log(3 m) - 104.8	= -47.8 dBm
EIRP - Power limit	= Margin
-47.8 dBm - (-13dBm)	= -34.8 dB

2 Result Summary

Test Summary)				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
47 CFR §22.913 47 CFR §24.232 47 CFR §27.50 47 CFR §90.635 ISED RSS-132 §5.4 ISED RSS-133 §6.4 ISED RSS-139 §6.5 ISED RSS-130 §4.6	Radiated power	ANSI C63.26 KDB 971168	PASS	Calculations based on measurements in module test reports, referenced in test modes section
47 CFR §2.1047 ISED RSS-130 §4.1 ISED RSS-132 §5.2 ISED RSS-133 §6.2 ISED RSS-139 §6.2	Modulation characteristics	ANSI C63.26 KDB 971168	N/T	
47 CFR §22.355 47 CFR §24.235 47 CFR §27.54 47 CFR §90.213 ISED RSS-130 §4.3 ISED RSS-132 §5.3 ISED RSS-133 §6.3 ISED RSS-139 §6.4	Frequency stability	ANSI C63.26 KDB 971168	N/T	
47 CFR §2.1049	Occupied Bandwidth	ANSI C63.26 KDB 971168	N/T	
47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-132 §5.5 ISED RSS-133 §6.5 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter out-of-band unwanted emissions	ANSI C63.26 KDB 971168	PASS	Band FDD26 is not tested. Only tested for compliance with the rules of the RSS standards
47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-132 §5.5 ISED RSS-133 §6.5 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter conducted spurious emissions	ANSI C63.26 KDB 971168	N/T	
47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-132 §5.5 ISED RSS-133 §6.5 ISED RSS-139 §6.6 ISED RSS-130 §4.7	Transmitter radiated spurious emissions	ANSI C63.26 KDB 971168	PASS	
ISED RSS-132 §3.1 ISED RSS-133 §3.1 ISED RSS-139 §3.1 ISED RSS-130 §3.3 ISED RSS-Gen §7	Receiver radiated spurious emissions	ANSI C63.4	PASS	
Comment: The Decision Rule is applied on the basis of ETSI TR 102 273 and ETSI TR 100 028. These standards provide guidance on how to calculate and apply measurement uncertainty whilst providing maximum uncertainties allowance. In all cases due consideration will be given to ILAC-G8:09/2019. Where a result is considered conditional in respect of its proximity to the limit line, the customer would be made aware of situation so that they can make an informed decision on how to proceed.				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Radiated power

3.1.1 Information

Test Information	
Reference	47 CFR §22.913 47 CFR §24.232 47 CFR §27.50 47 CFR §90.635 ISED RSS-132 §5.4 ISED RSS-133 §6.4 ISED RSS-139 §6.5 ISED RSS-130 §4.6
Measurement Method	Calculation based on module report conducted results referenced in test modes section
Operator	Florian Voigt
Date	2023-05-10 - 2023-09-21

3.1.2 Limits

Limits - Portable equipment					
Band	Frequency range [MHz]	Power limit [dBm ERP]	Power limit [W ERP]	Power limit [dBm EIRP]	Power limit [W EIRP]
LTE FDD 2	1850 - 1910	-	-	33	2
LTE FDD 4	1710 - 1755	-	-	30	1
LTE FDD 5	824 - 849	38.45	7	-	-
LTE FDD12	699 - 716	34.77	3	-	-
LTE FDD13	777 - 787	34.77	3	-	-
LTE FDD25	1850 - 1915	-	-	33	2
LTE FDD26	824 - 849	38.45	7	-	-
LTE FDD66	1710 - 1780	-	-	30	1

Limits - Mobile equipment			
Band	Frequency range [MHz]	Power limit [dBm]	Power limit [W]
LTE FDD26	814 - 824	50	100

3.1.3 Procedure

Test Procedure - Calculation
1. The highest conducted output power for each radio band is determined from the modular approval report 2. The antenna gain for the corresponding transmission frequency is added to the conducted output power 3. The calculated radiated power is compared to the transmitter output power limit

3.1.4 Results

Test Results - FDD5						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
NB1 FDD5 / PMAX	23.34	-0.25	23.09	38.45	-15.36	PASS

Test Results - FDD12						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
NB1 FDD12 / PMAX	23.19	-0.25	22.94	34.77	-11.83	PASS

Test Results - FDD13						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
NB1 FDD13 / PMAX	23.26	-0.25	23.01	34.77	-11.76	PASS

Test Results - FDD25						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
NB1 FDD25 / PMAX	23.89	3.7	27.59	33	-05.41	PASS

Test Results - FDD26 (824 - 849 MHz)						
Mode	Power [dBm]	Antenna gain [dBd]	Radiated power [dBm ERP]	Limit [dBm ERP]	Margin [dB]	Result
NB1 FDD26 / PMAX	23.17	-0.25	22.92	38.45	-15.53	PASS

Test Results - FDD26 (814 - 824 MHz)				
Mode	Power [dBm]	Limit [dBm]	Margin [dB]	Result
NB1 FDD26 / PMAX	23.17	50	-26.83	PASS

Test Results - FDD66						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
NB1 FDD66 / PMAX	23.39	3.7	27.09	30	-02.91	PASS

3.2 Test Conditions and Results - Transmitter radiated emissions

3.2.1 Information

Test Information	
Reference	47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691 ISED RSS-132 §5.5 ISED RSS-133 §6.5 ISED RSS-139 §6.6 ISED RSS-130 §4.7
Measurement Method	FCC KDB 971168 D01 Section 7 ANSI C63.26-2015 5.5
Measurement Uncertainty	± 5.95 dB
Operator	Godson Ekezie Offorji + Florian Voigt
Date	2023-05-09 + 2023-05-10

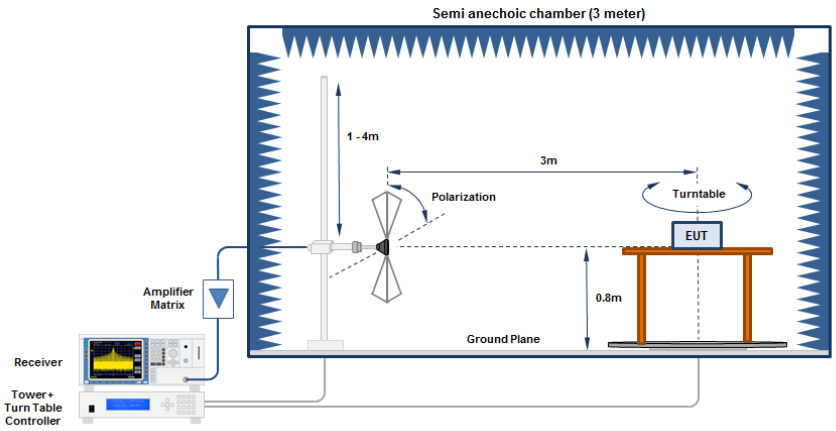
3.2.2 Limits

Limits FCC				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm]
LTE FDD 2	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 4	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 5	-	100 kHz / 1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD12	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	763-775	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	793-805	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	1559-1610	700 Hz	-	-50
LTE FDD13	1559-1610	1 MHz	-	-40
LTE FDD25	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD26	-	100 kHz / 1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD66	-	1 MHz	$43+Log_{10}(P[W])$	-13

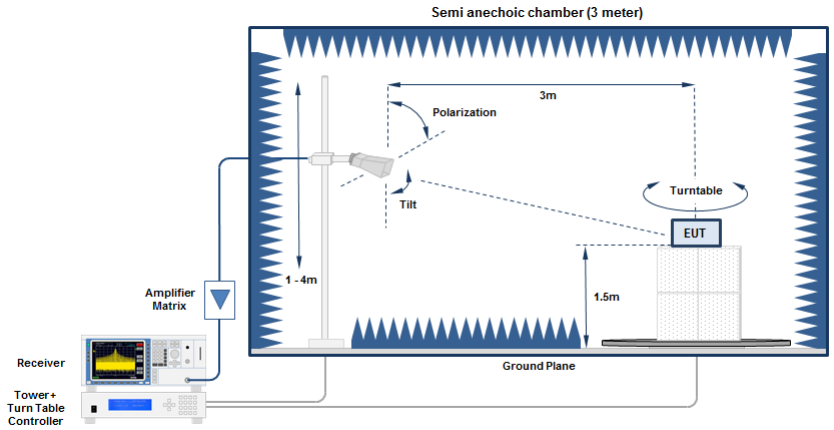
Limits ISED				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm]
LTE FDD 2	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 4	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 5	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD12	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	763-775	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	793-806	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	1559-1610	700 Hz	-	-50
LTE FDD13	1559-1610	1 MHz	-	-40
LTE FDD25	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD66	-	1 MHz	$43+Log_{10}(P[W])$	-13

3.2.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz



3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2022-11	2025-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	EF01824	2022-10	2023-10

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC 2	EF01616	2022-10	2023-10
Spectrum analyzer	R&S	FSW43	EF00896	2022-08	2023-08
Antenna	Schwarzbeck	BBHA 9120B	EF01678	2021-03	2024-03
Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2024-03
Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06

3.2.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

3.2.6 Results

Test Results - FDD5						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 5	280.45	-57.90	hor	-13.00	-44.85	PASS
LTE FDD 5	8842	-32.80	ver	-13.00	-19.75	PASS

Test Results - FDD12						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD12	1398	-33.40	hor	-13.00	-20.38	PASS

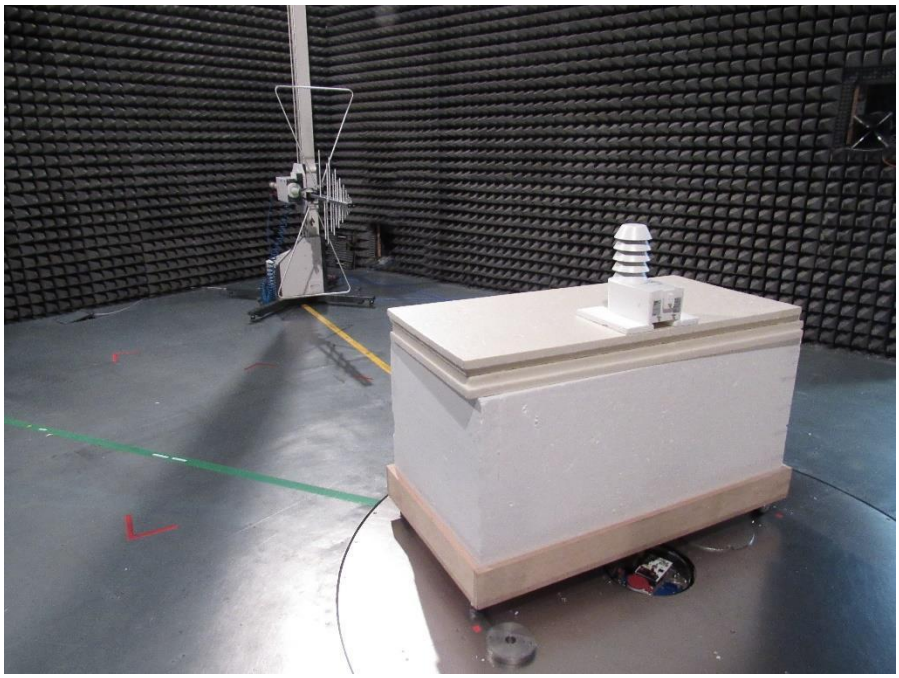
Test Results - FDD13						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD13	1574	-68.80	hor	-50.00	-18.78	PASS
LTE FDD13	1574	-49.80	hor	-40.00	-09.82	PASS
LTE FDD13	1574	-50.00	ver	-40.00	-09.98	PASS

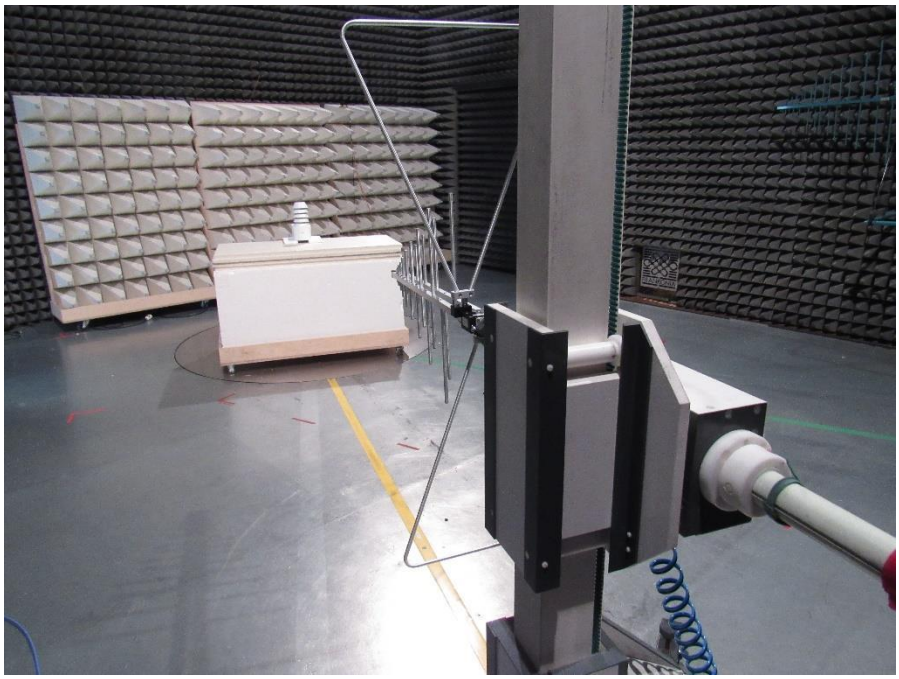
Test Results - FDD25						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD25	11489	-47.50	ver	-13.00	-34.47	PASS

Test Results - FDD26						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD26	8760	-32.00	ver	-13.00	-18.99	PASS

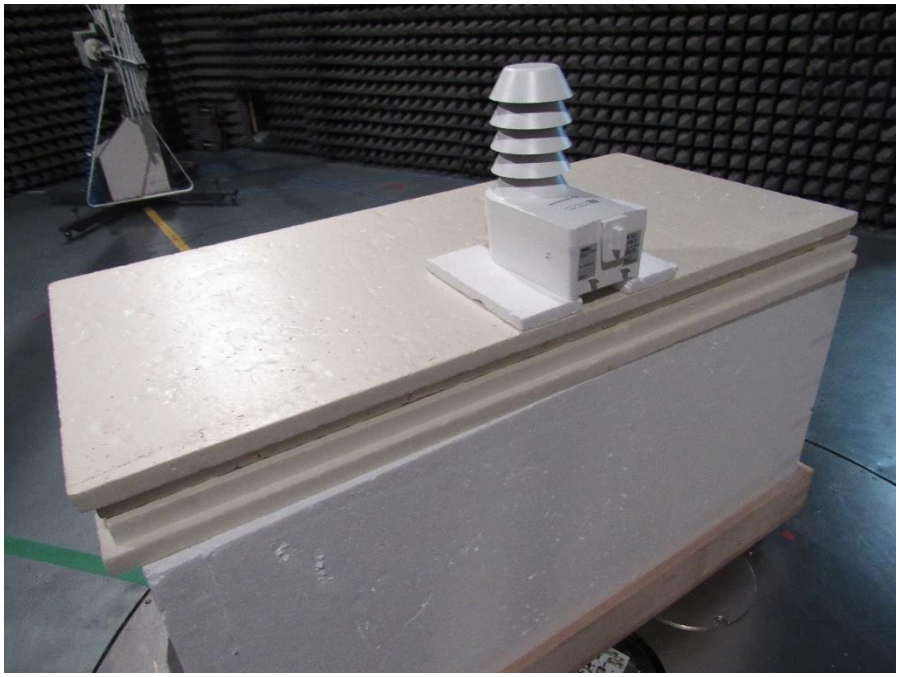
Test Results - FDD66						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD66	11489	-48.50	ver	-13.00	-35.50	PASS

3.2.7 Setup Photos

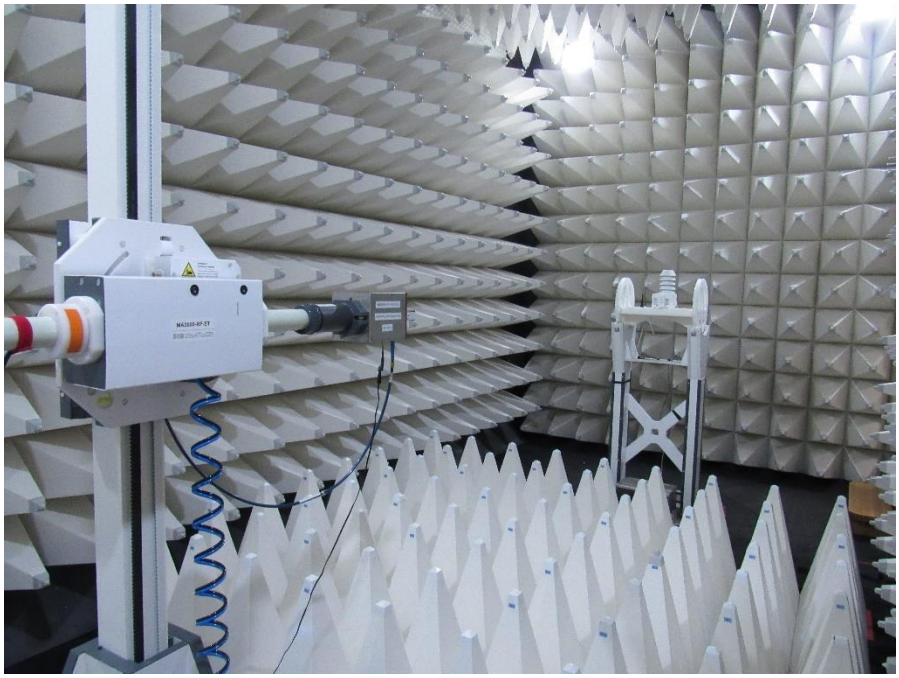
Setup for measurements below 1 GHz


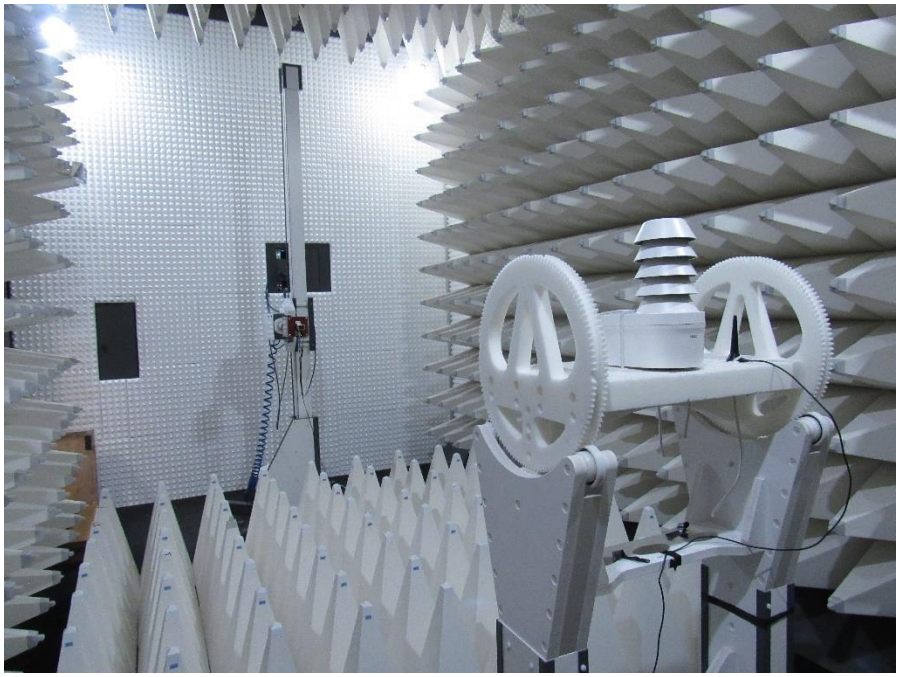
Setup for measurements below 1 GHz


EUT Test Setup



Setup for measurements above 1 GHz



Setup for measurements above 1 GHz


3.3 Test Conditions and Results - Receiver radiated emissions

3.3.1 Information

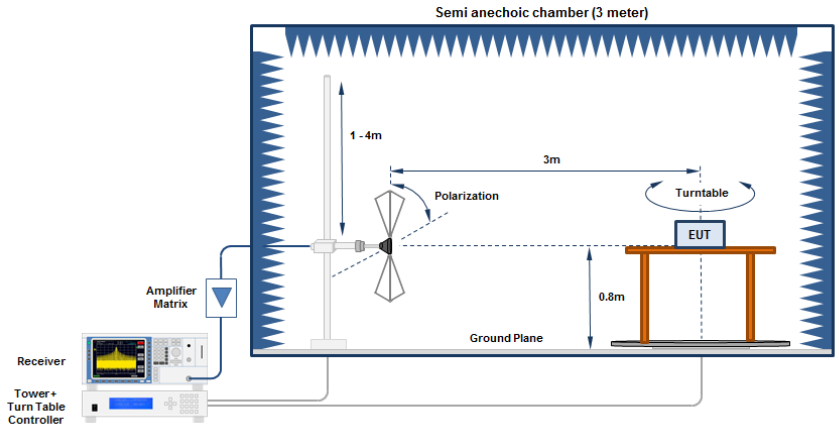
Test Information	
Reference	ISED RSS-133 §3.1, ISED RSS-132 §3.2, ISED RSS-130 §3.3, ISED RSS-139 §3.4, ISED RSS-Gen §7.4
Measurement Method	ANSI C63.4-2014 8.1-8.3
Measurement Uncertainty	± 5.95 dB
Operator	Odai Qawasmeh
Date	2023-05-10

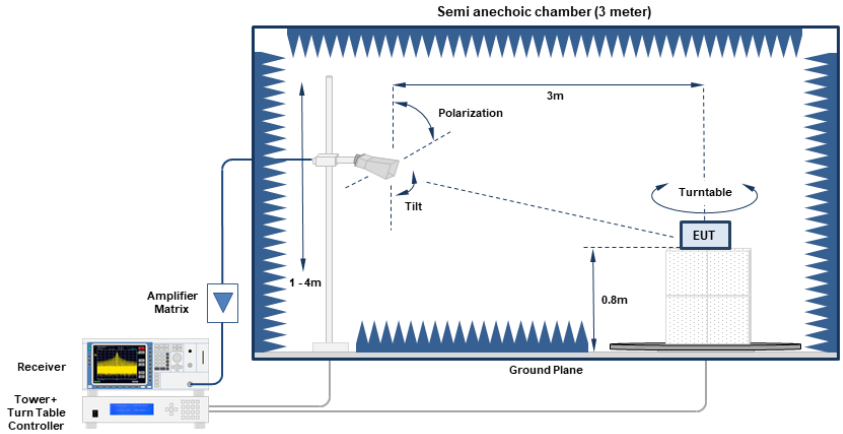
3.3.2 Limits

Limits			
Frequency range [MHz]	Bandwidth	Detector	Limit [dBµV/m @ 3 m]
30 - 88	100 kHz	Quasi-peak	40
88 - 216	100 kHz	Quasi-peak	43.5
216 - 960	100 kHz	Quasi-peak	46
960 - 1000	100 kHz	Quasi-peak	54
> 1000	1 MHz	Average	54

3.3.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.3.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2022-11	2025-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	EF01824	2022-10	2023-10

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	2022-11	2023-11
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2023-02	2024-02
Horn Antenna	Schwarzbeck	BBHA 9120D	EF01561	2021-11	2024-11
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2024-03

3.3.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

3.3.6 Results

Test Results - LTE FDD5							
Mode	Frequency [MHz]	Level [dBµV/m]	Detector	Polarization	Limit [dBµV/m]	Margin [dB]	Result
LTE FDD 5	245.7037	29.70	pk	hor	46.00	-16.33	PASS
LTE FDD 5	277.1658	29.40	qpk	hor	46.00	-16.62	PASS
LTE FDD 5	6373	50.05	pk	hor	74.00	-23.95	PASS

Test Results - LTE FDD12							
Mode	Frequency [MHz]	Level [dBµV/m]	Detector	Polarization	Limit [dBµV/m]	Margin [dB]	Result
LTE FDD12	223.0057	30.30	pk	hor	46.00	-15.67	PASS
LTE FDD12	276.7394	30.60	qpk	hor	46.00	-15.43	PASS
LTE FDD12	6440	50.49	pk	hor	74.00	-23.51	PASS

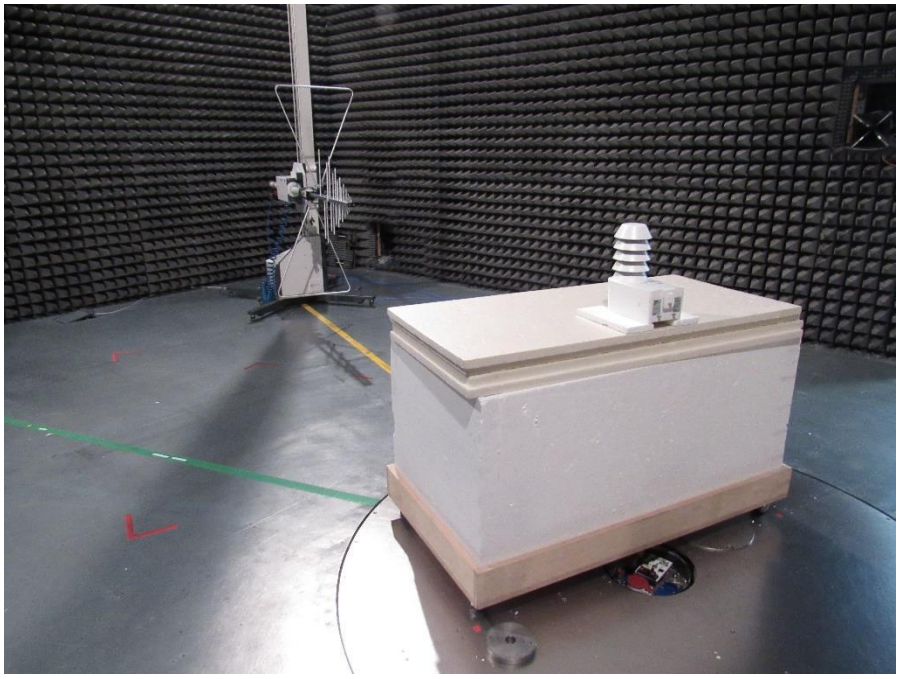
Test Results - LTE FDD13							
Mode	Frequency [MHz]	Level [dBµV/m]	Detector	Polarization	Limit [dBµV/m]	Margin [dB]	Result
LTE FDD13	264.74	35.10	pk	hor	46.00	-10.92	PASS
LTE FDD13	275.3029	32.30	qpk	hor	46.00	-13.65	PASS
LTE FDD13	6489	48.90	pk	hor	74.00	-25.10	PASS

Test Results - LTE FDD25							
Mode	Frequency [MHz]	Level [dBµV/m]	Detector	Polarization	Limit [dBµV/m]	Margin [dB]	Result
LTE FDD25	250.6265	28.90	pk	hor	46.00	-17.12	PASS
LTE FDD25	278.3831	30.90	qpk	hor	46.00	-15.14	PASS
LTE FDD25	16411	42.22	pk	hor	74.00	-31.78	PASS

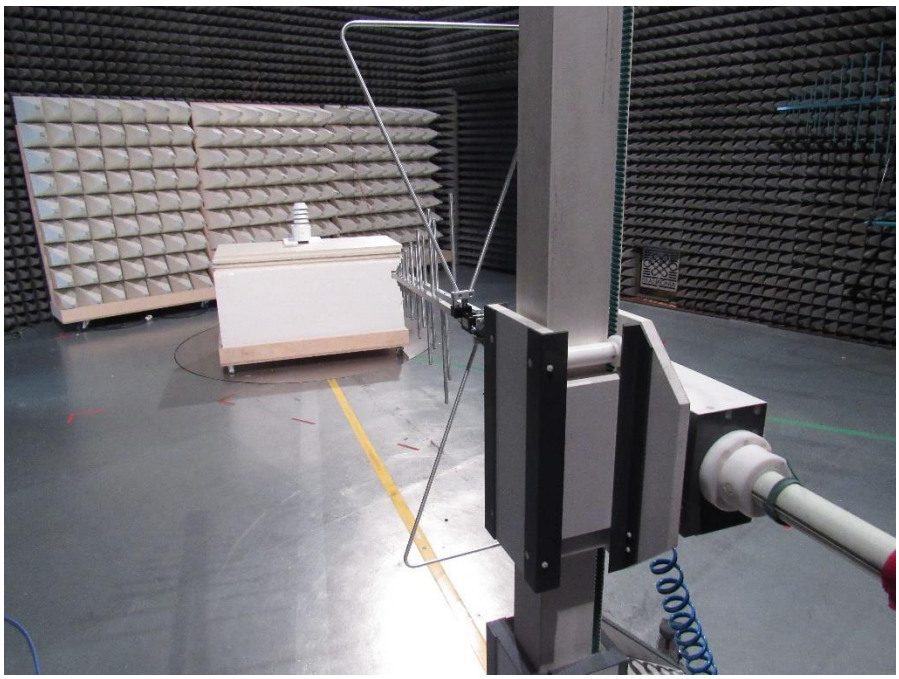
Test Results - LTE FDD66							
Mode	Frequency [MHz]	Level [dBµV/m]	Detector	Polarization	Limit [dBµV/m]	Margin [dB]	Result
LTE FDD66	225.2367	30.90	pk	hor	46.00	-15.14	PASS
LTE FDD66	243.1575	32.20	pk	hor	46.00	-13.79	PASS
LTE FDD66	280.1288	31.60	qpk	hor	46.00	-14.36	PASS

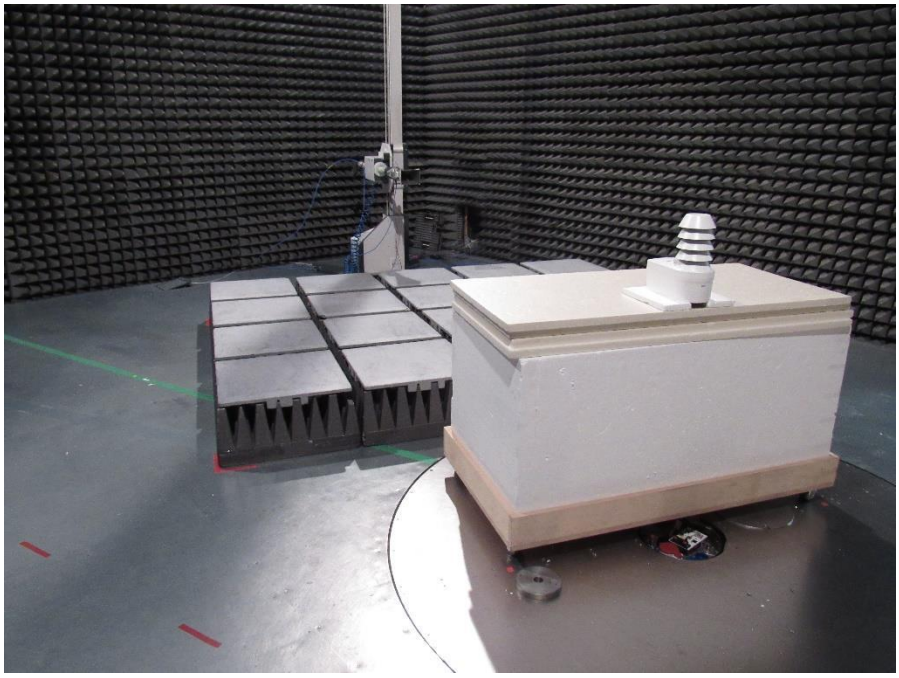
3.3.7 Setup Photos

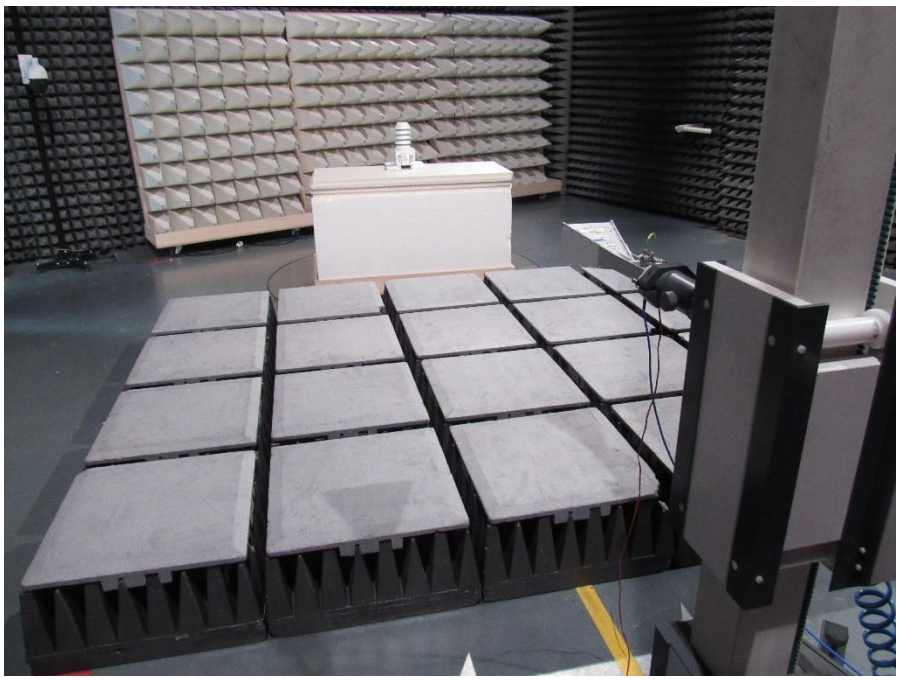
Setup for measurements below 1 GHz

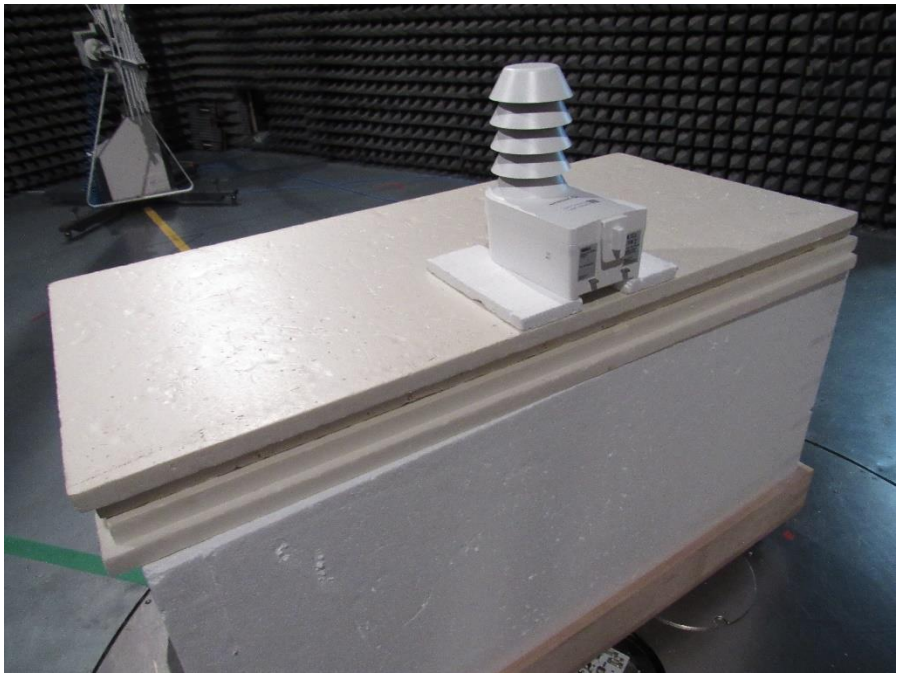


Setup for measurements below 1 GHz



Setup for measurements above 1 GHz


Setup for measurements above 1 GHz


EUT Test Setup


3.4 Test Conditions and Results - Out-of-band unwanted emissions

3.4.1 Information

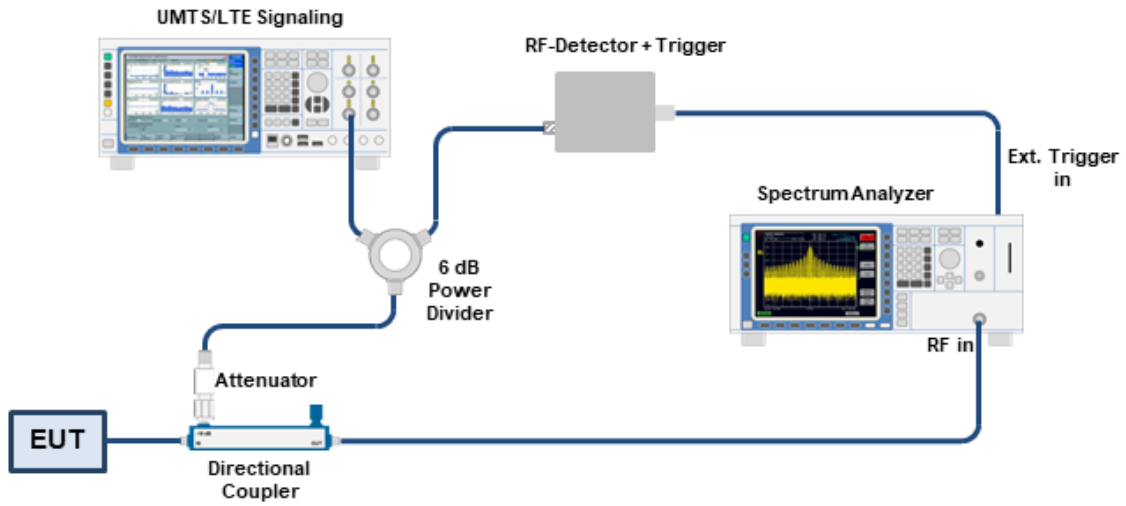
Test Information	
Reference	ISED RSS-132 §5.5, ISED RSS-133 §6.5 ISED RSS-139 §6.6, ISED RSS-130 §4.7
Measurement Method	ANSI C63.4-2014 5.7.3
Measurement Uncertainty	± 0.662 dB
Operator	Florian Voigt
Date	2023-06-16

3.4.2 Limits

Limits ISED				
Band	Frequency range [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm]
LTE FDD 2	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 4	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD 5	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD12	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	-	100 kHz	$43+Log_{10}(P[W])$	-13
LTE FDD13	763-775	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	793-806	6.25 kHz	$65+Log_{10}(P[W])$	-35
LTE FDD13	1559-1610	700 Hz	-	-50
LTE FDD13	1559-1610	1 MHz	-	-40
LTE FDD25	-	1 MHz	$43+Log_{10}(P[W])$	-13
LTE FDD66	-	1 MHz	$43+Log_{10}(P[W])$	-13

3.4.3 Setup

Test Setup



3.4.4 Equipment

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU3	EF00241	2021-07	2023-07
Cable	Gigalane	SMS111B-GL200sC-SMS111B-0.3M	EF00779	2023-03	2024-03
Cable	Gigalane	SMS111B-GL200sC-SMS111B-1.0M	EF00779	2023-03	2024-03
Cable	Gigalane	SMS111B-GL200sC-SMS111B-0.3M	EF00779	2023-03	2024-03
Cable	Gigalane	SMS111B-GL200sC-SMS111B-1.5M	EF00779	2023-03	2024-03
Cable	Gigalane	SMS111B-GL200sC-SMS111B-1.5M	EF00779	2023-03	2024-03
Dual directional coupler 0,5 - 18,5 GHz	Alltest Instruments, Inc.	SMA, 1850 Krytar	EF01539	2023-06	2024-06
Attenuator *1	Narda	Micropad, 10 dB, DC-18GHz	---	---	---
6 dB coupler *1	Huber + Suhner	4901.19.A	---	---	---
RF detector + trigger *1	Eurofins Product Service GmbH - Reichenwalde	---	EF01747	---	---
Vector Network Analyzer	R&S	ZNB40	EF01065	2022-08	2023-08
Calibration unit	R&S	ZV-Z54	EF01120	2022-09	2024-09
Comment: *1: Input impedance at attenuator of network including Attenuator + 6 dB Coupler + RF-detector + CMW500 was verified with VNA before measurement. Reflection coefficient is better than 20 dB. These components will not affect the measurement result as they are for signaling and power burst detection only. Correct operation of power burst detection was verified before the measurements.					

3.4.5 Procedure

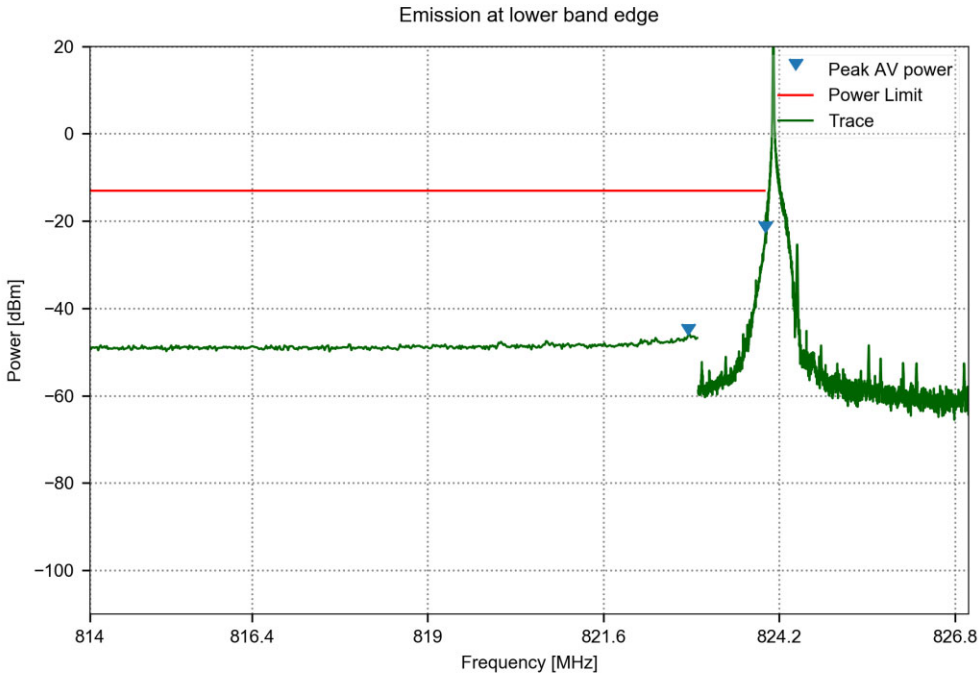
Test Procedure
1. EUT is connected to test equipment as shown in figure 3.4.3 Setup.
2. Base station simulator is setup with the test specific parameters to signal a mobile network cell
3. The spectrum analyzer is set to RMS detection and its test/band specific bandwidths. Spectrum analyzer is set to external triggering and a gated level trigger is enabled.
4. EUT has connected to base station simulator and a single sweep per measured segment is taken with spectrum analyzer. For some measurements spectrum analyzer is set up to use the channel power measurement function (integration).
5. All measurements are recorded and merged into a graphic.

3.4.6 Results

Test Results			
Band	Channel	Environmental Conditions	Result
FDD 5	EARFCN 20402	V_{NOM} / T_{NOM}	PASS
FDD 5	EARFCN 20648	V_{NOM} / T_{NOM}	PASS
FDD12	EARFCN 23012	V_{NOM} / T_{NOM}	PASS
FDD12	EARFCN 23178	V_{NOM} / T_{NOM}	PASS
FDD13	EARFCN 23182	V_{NOM} / T_{NOM}	PASS
FDD13	EARFCN 23278	V_{NOM} / T_{NOM}	PASS
FDD25	EARFCN 26042	V_{NOM} / T_{NOM}	PASS
FDD25	EARFCN 26688	V_{NOM} / T_{NOM}	PASS
FDD66	EARFCN 131974	V_{NOM} / T_{NOM}	PASS
FDD66	EARFCN 132670	V_{NOM} / T_{NOM}	PASS

Band edge compliance

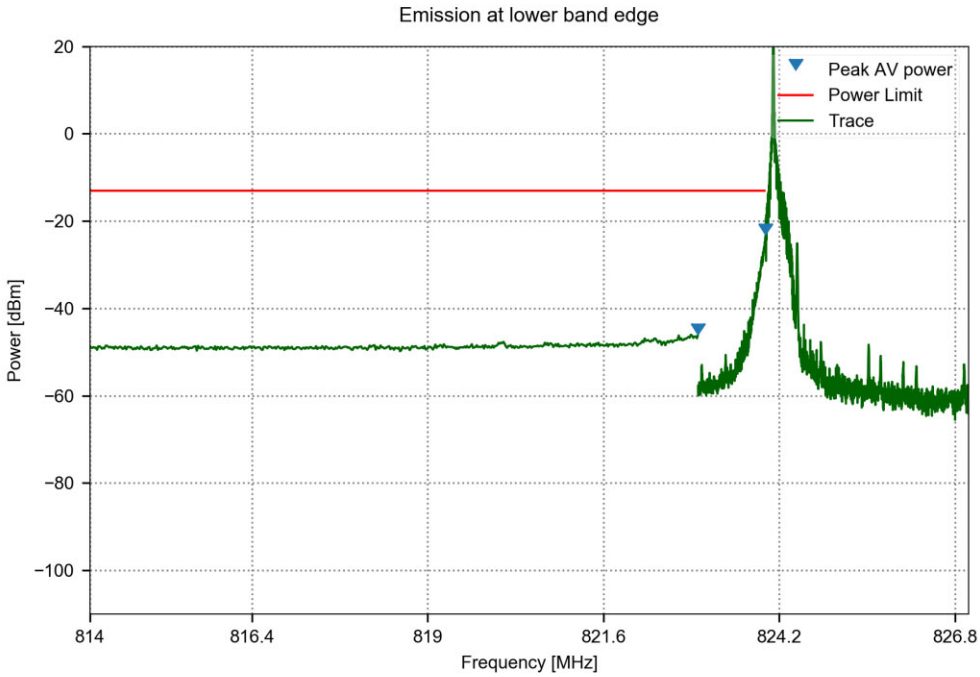
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20402, π/2 - BPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-9.41 dB, 824.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
814.0 - 823.0	822.86	-45.94	100.0	-13	-32.94	501	1.0	RMS
823.0 - 824.0	824.0	-22.41	10.0	-13	-9.41	501	1.0	RMS

Band edge compliance

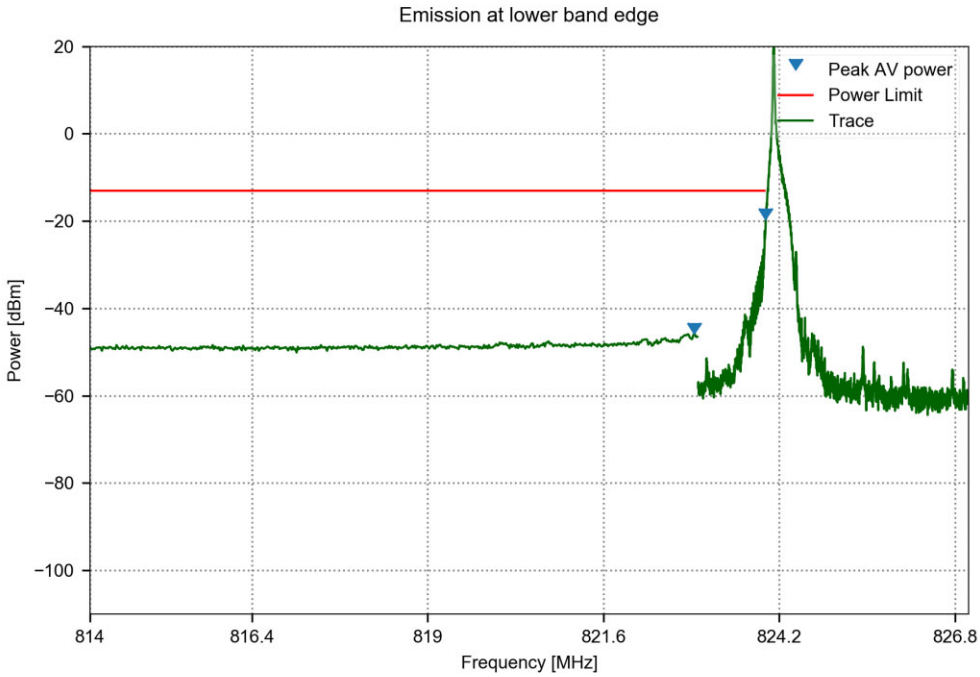
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20402, π/4 - QPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-9.96 dB, 824.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
814.0 - 823.0	823.0	-45.87	100.0	-13	-32.87	501	1.0	RMS
823.0 - 824.0	824.0	-22.96	10.0	-13	-9.96	501	1.0	RMS

Band edge compliance

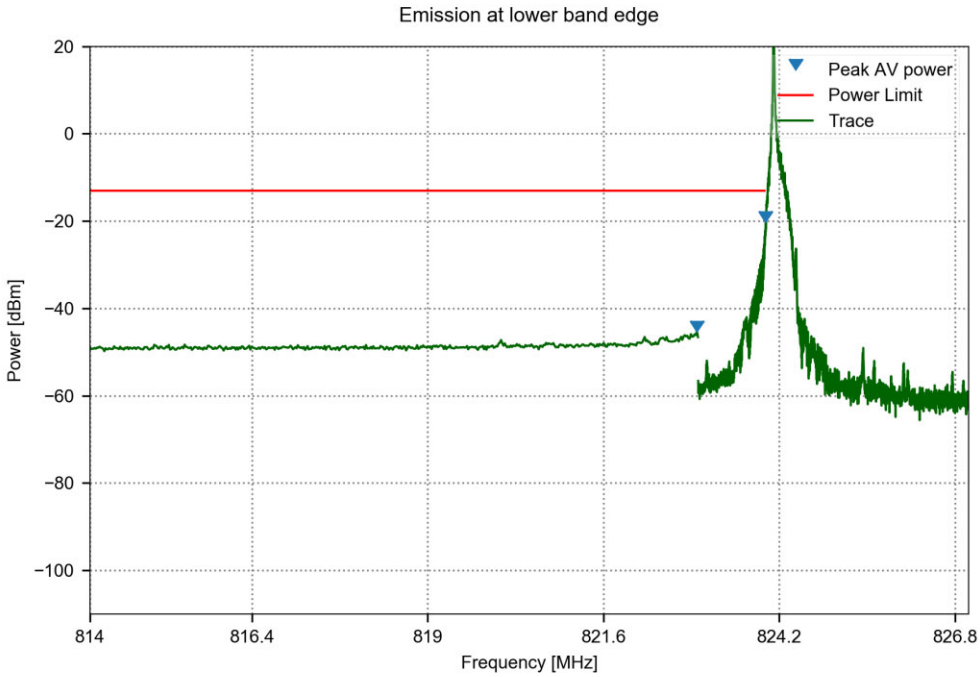
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20402, π/2 - BPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-6.45 dB, 824.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
814.0 - 823.0	822.95	-45.69	100.0	-13	-32.69	501	1.0	RMS
823.0 - 824.0	824.0	-19.45	10.0	-13	-6.45	501	1.0	RMS

Band edge compliance

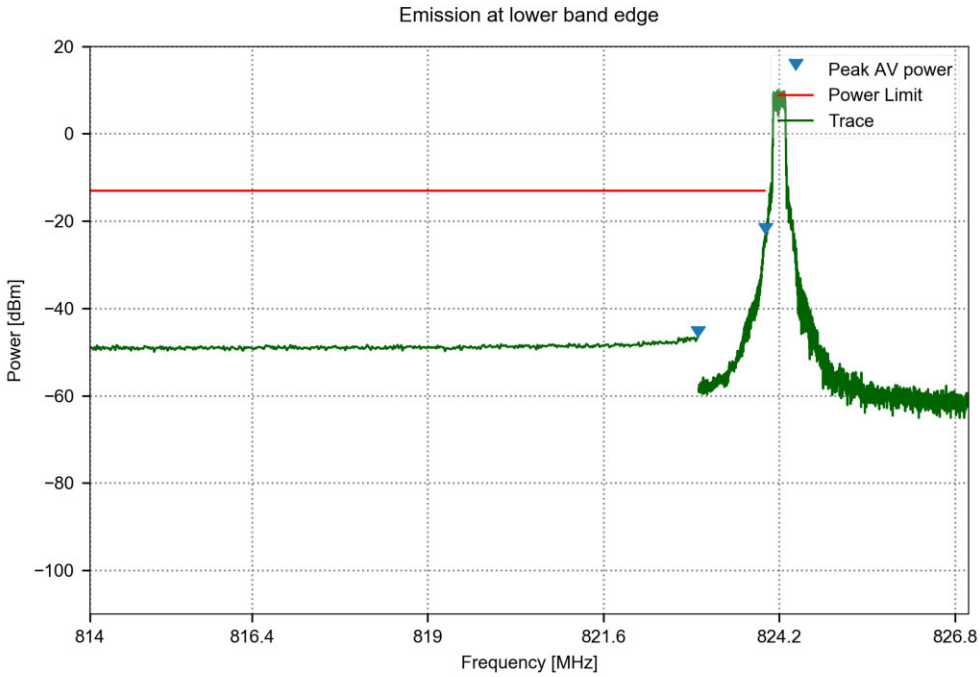
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20402, π/4 - QPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-7.11 dB, 824.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
814.0 - 823.0	822.98	-45.2	100.0	-13	-32.2	501	1.0	RMS
823.0 - 824.0	824.0	-20.11	10.0	-13	-7.11	501	1.0	RMS

Band edge compliance

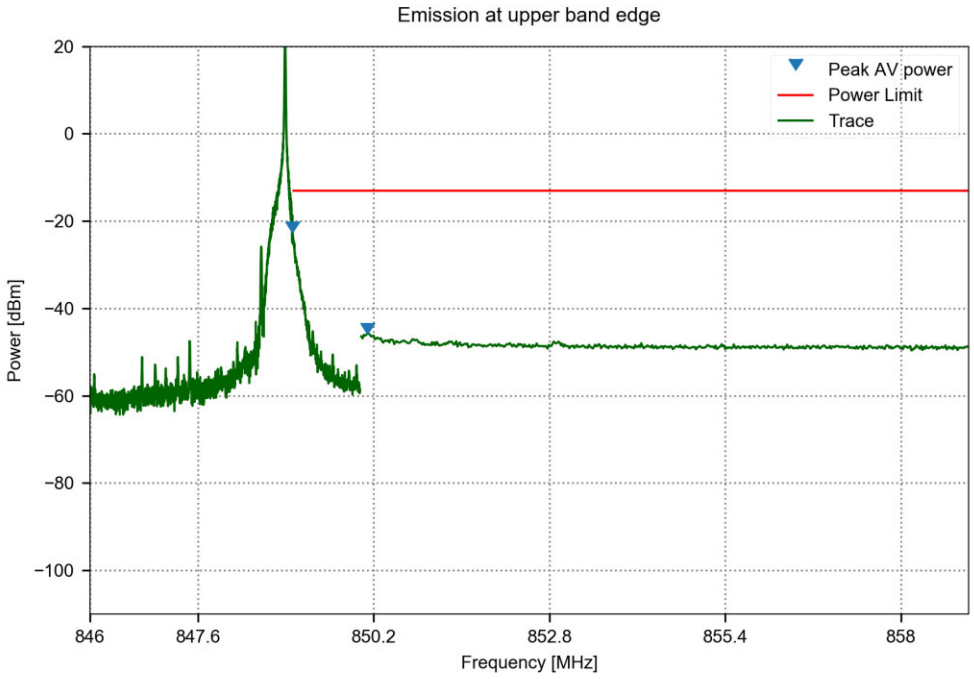
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20402, π/4 - QPSK
Emission bandwidth:	180.0 kHz
Tone configuration:	12 Tones, Offset=0
Min. out of band margin:	-9.77 dB, 824.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
814.0 - 823.0	823.0	-46.49	100.0	-13	-33.49	501	1.0	RMS
823.0 - 824.0	824.0	-22.77	10.0	-13	-9.77	501	1.0	RMS

Band edge compliance

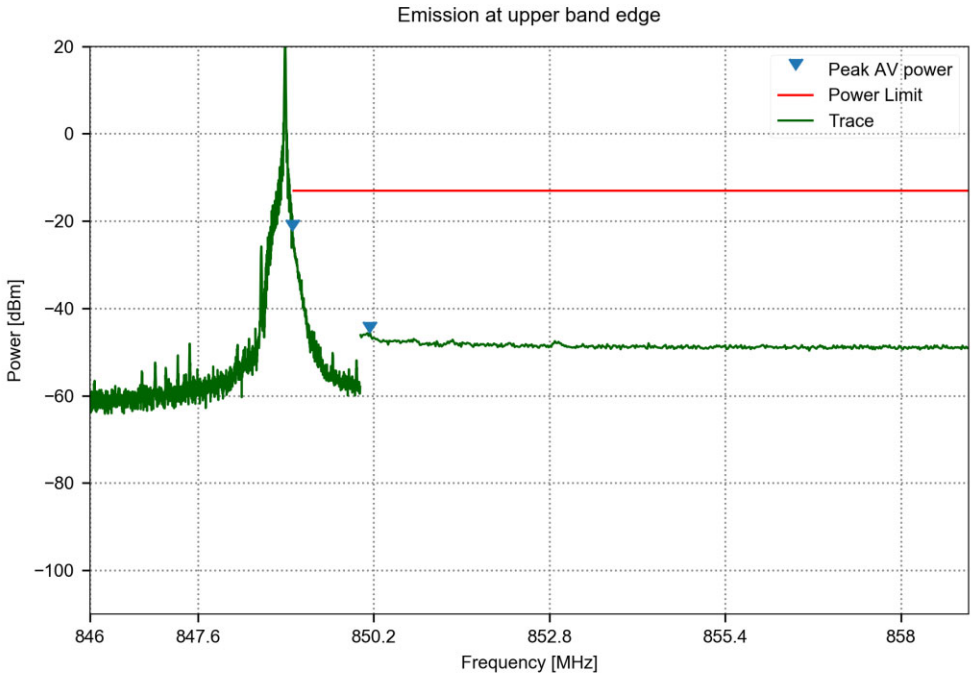
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20648, π/2 - BPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=47
Min. out of band margin:	-9.48 dB, 849.002 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
849.0 - 850.0	849.0	-22.48	10.0	-13	-9.48	501	1.0	RMS
850.0 - 859.0	850.11	-45.76	100.0	-13	-32.76	501	1.0	RMS

Band edge compliance

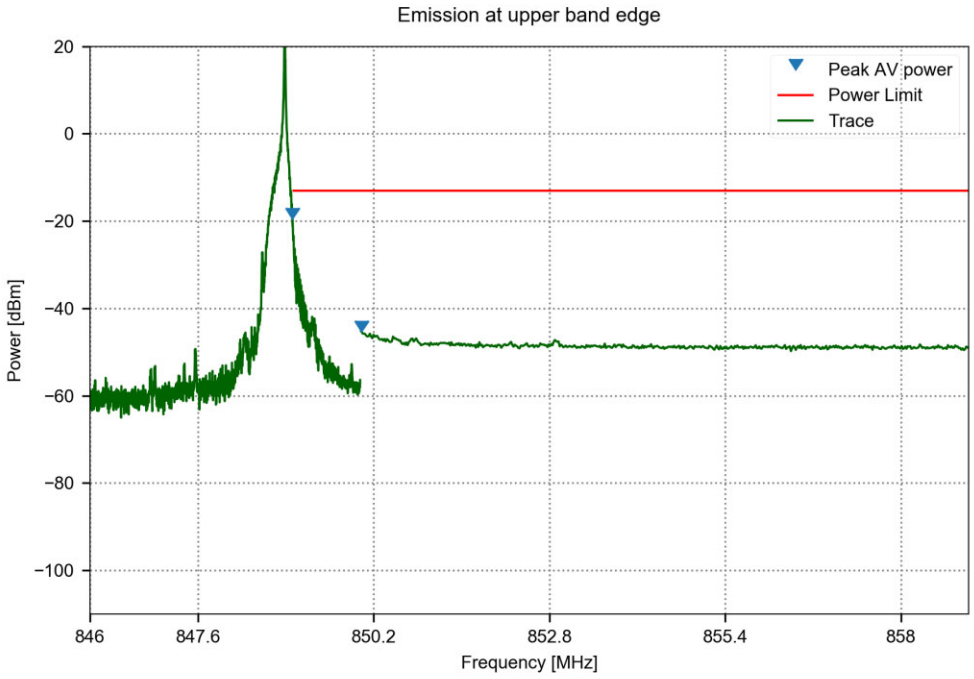
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20648, π/4 - QPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=47
Min. out of band margin:	-9.02 dB, 849.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
849.0 - 850.0	849.0	-22.02	10.0	-13	-9.02	501	1.0	RMS
850.0 - 859.0	850.14	-45.5	100.0	-13	-32.5	501	1.0	RMS

Band edge compliance

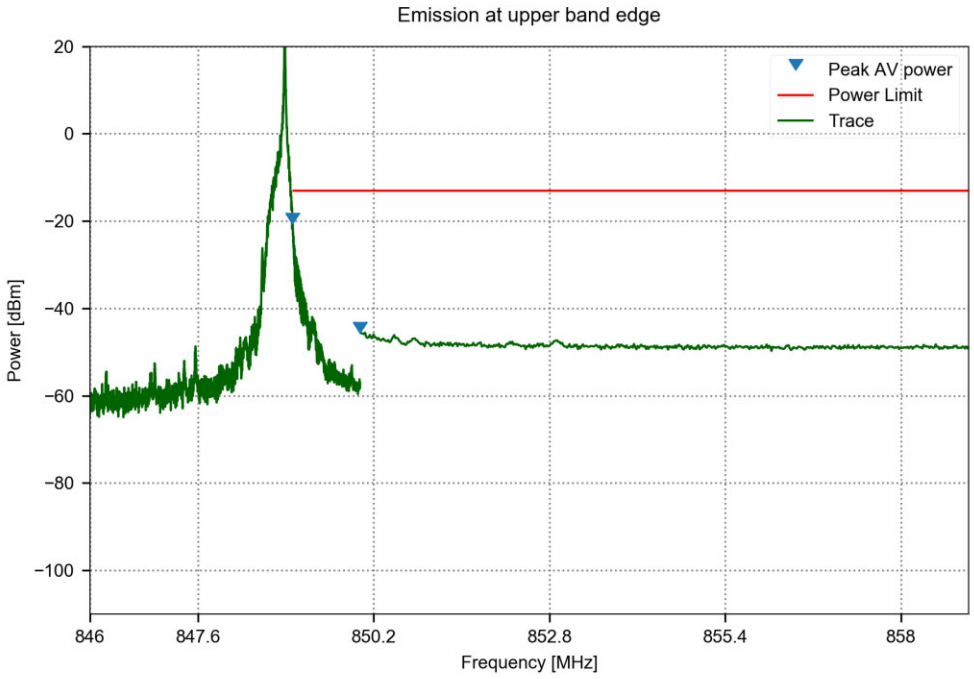
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20648, π/2 - BPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=11
Min. out of band margin:	-6.38 dB, 849.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
849.0 - 850.0	849.0	-19.38	10.0	-13	-6.38	501	1.0	RMS
850.0 - 859.0	850.02	-45.17	100.0	-13	-32.17	501	1.0	RMS

Band edge compliance

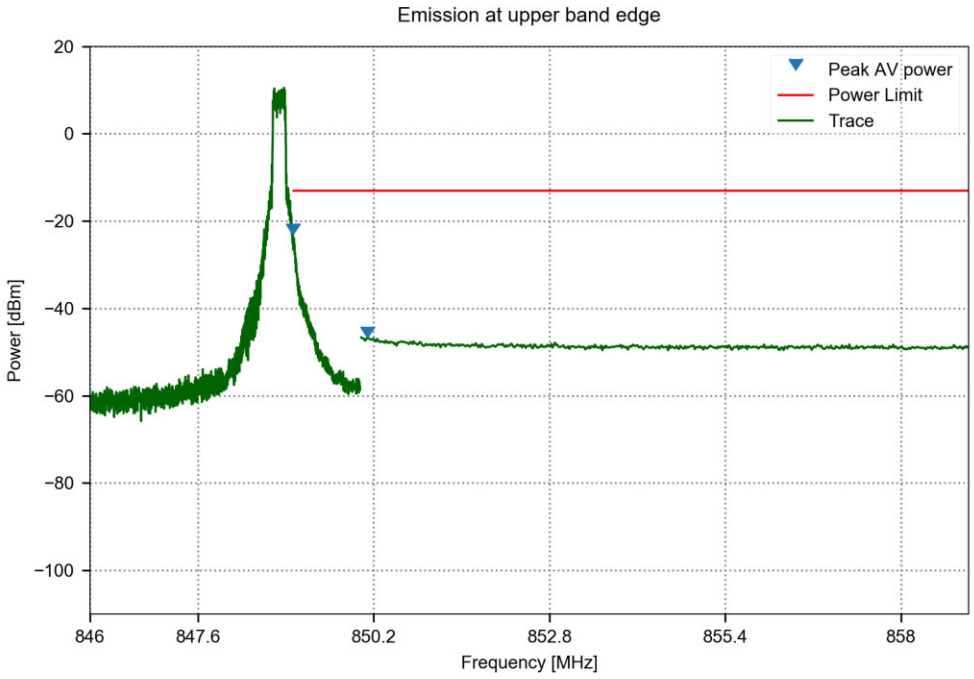
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20648, π/4 - QPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=11
Min. out of band margin:	-7.48 dB, 849.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
849.0 - 850.0	849.0	-20.48	10.0	-13	-7.48	501	1.0	RMS
850.0 - 859.0	850.0	-45.46	100.0	-13	-32.46	501	1.0	RMS

Band edge compliance

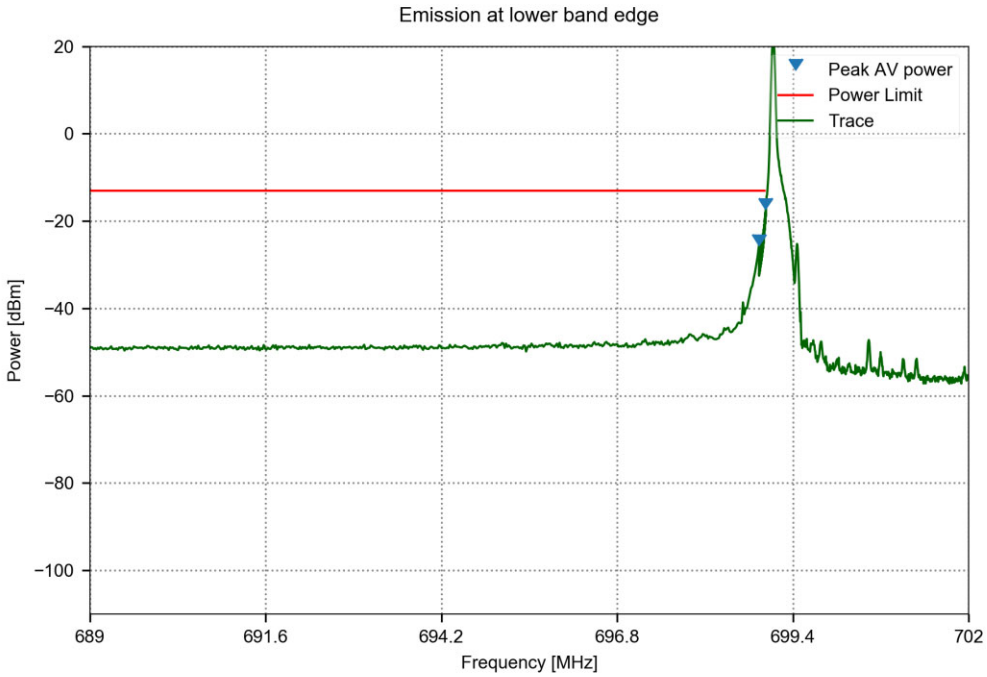
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	RSS-132, Issue 4
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD5, 20648, π/4 - QPSK
Emission bandwidth:	180.0 kHz
Tone configuration:	12 Tones, Offset=0
Min. out of band margin:	-9.9 dB, 849.004 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
849.0 - 850.0	849.0	-22.9	10.0	-13	-9.9	501	1.0	RMS
850.0 - 859.0	850.11	-46.55	100.0	-13	-33.55	501	1.0	RMS

Band edge compliance

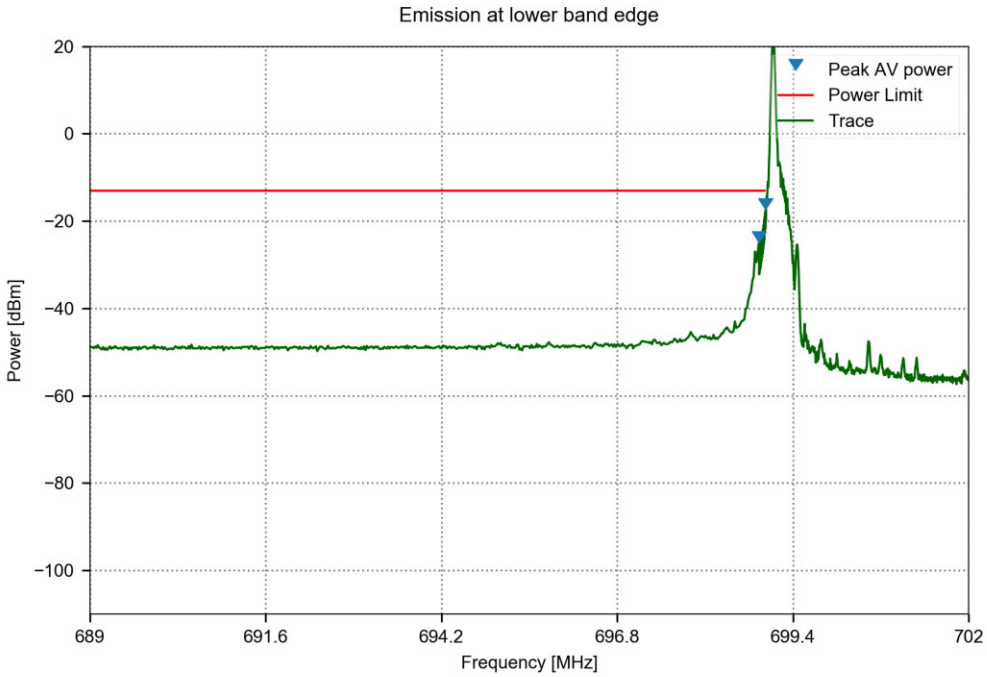
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23012, π/2 - BPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-4.13 dB, 699.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
689.0 - 698.9	698.9	-25.37	100.0	-13	-12.37	501	1.0	RMS
698.9 - 699.0	699.0	-17.13	30.0	-13	-4.13	501	1.0	RMS

Band edge compliance

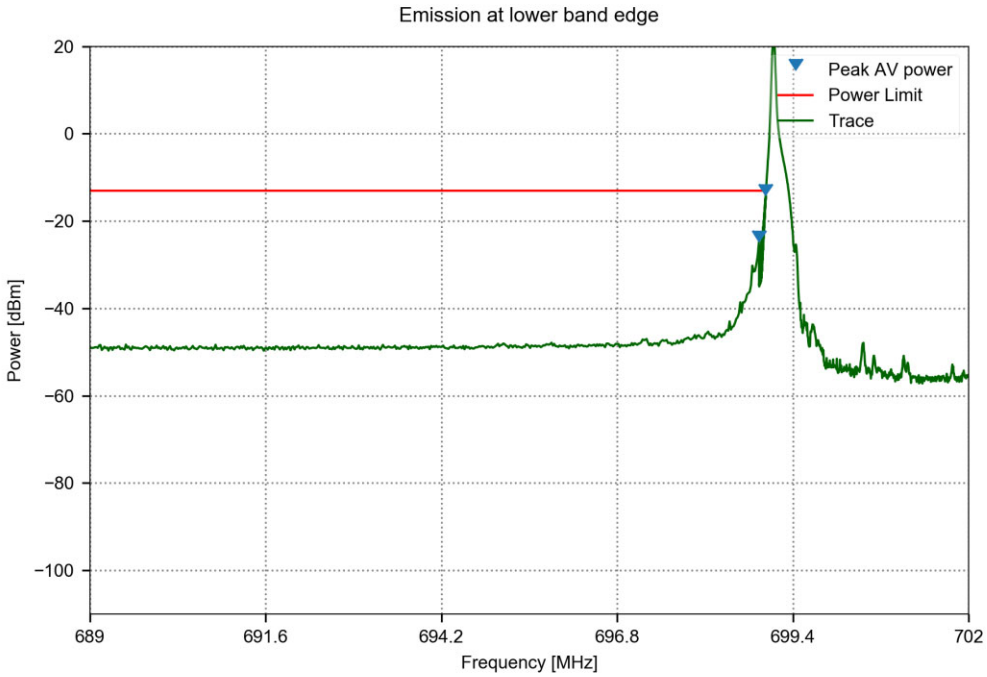
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23012, π/4 - QPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-4.11 dB, 699.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
689.0 - 698.9	698.9	-24.71	100.0	-13	-11.71	501	1.0	RMS
698.9 - 699.0	699.0	-17.11	30.0	-13	-4.11	501	1.0	RMS

Band edge compliance

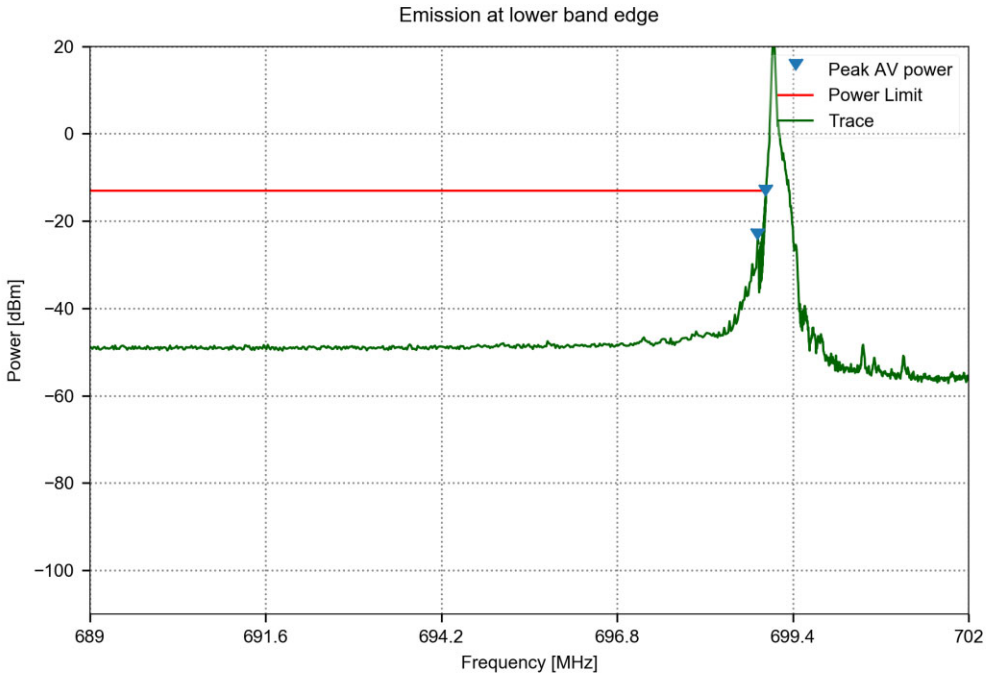
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23012, π/2 - BPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-0.98 dB, 698.999 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
689.0 - 698.9	698.9	-24.61	100.0	-13	-11.61	501	1.0	RMS
698.9 - 699.0	699.0	-13.98	30.0	-13	-0.98	501	1.0	RMS

Band edge compliance

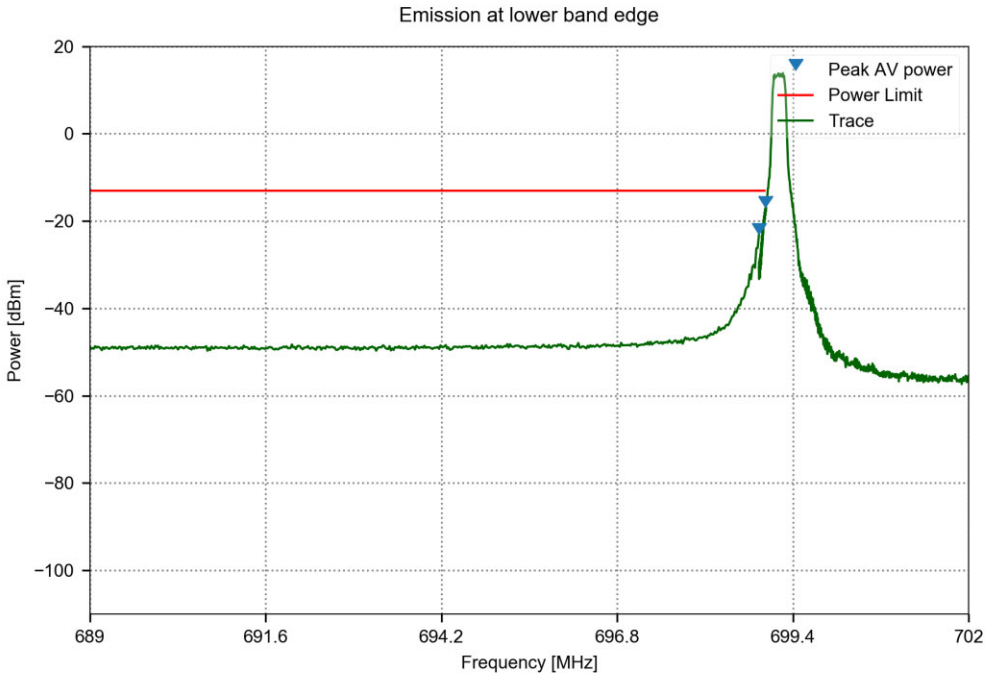
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23012, π/4 - QPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-1.1 dB, 698.997 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
689.0 - 698.9	698.88	-24.01	100.0	-13	-11.01	501	1.0	RMS
698.9 - 699.0	699.0	-14.1	30.0	-13	-1.1	501	1.0	RMS

Band edge compliance

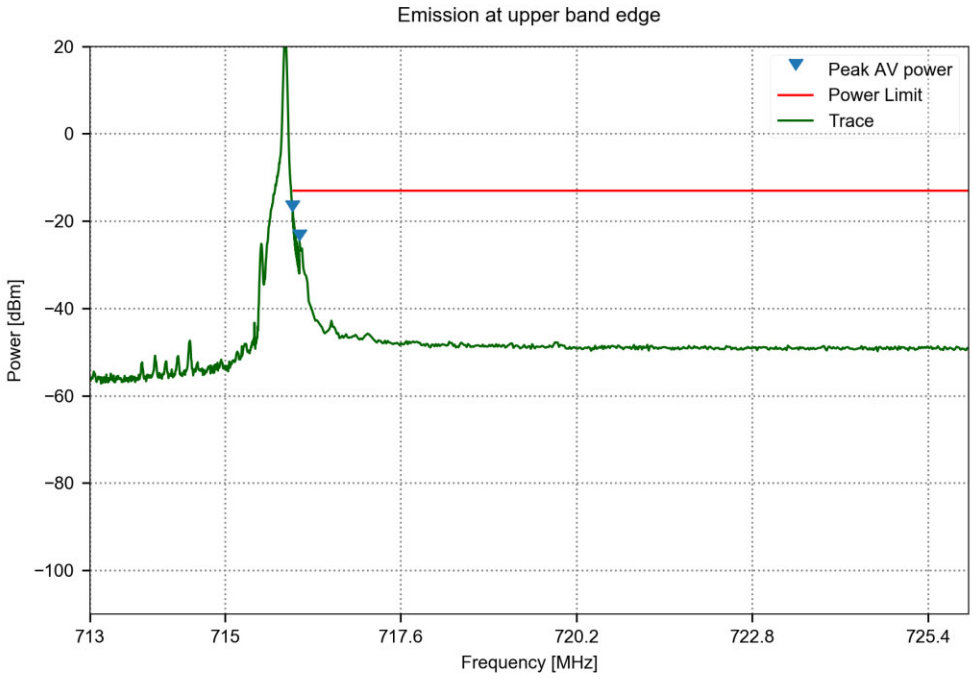
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23012, π/4 - QPSK
Emission bandwidth:	180.0 kHz
Tone configuration:	12 Tones, Offset=0
Min. out of band margin:	-3.66 dB, 698.998 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
689.0 - 698.9	698.9	-22.87	100.0	-13	-9.87	501	1.0	RMS
698.9 - 699.0	699.0	-16.66	30.0	-13	-3.66	501	1.0	RMS

Band edge compliance

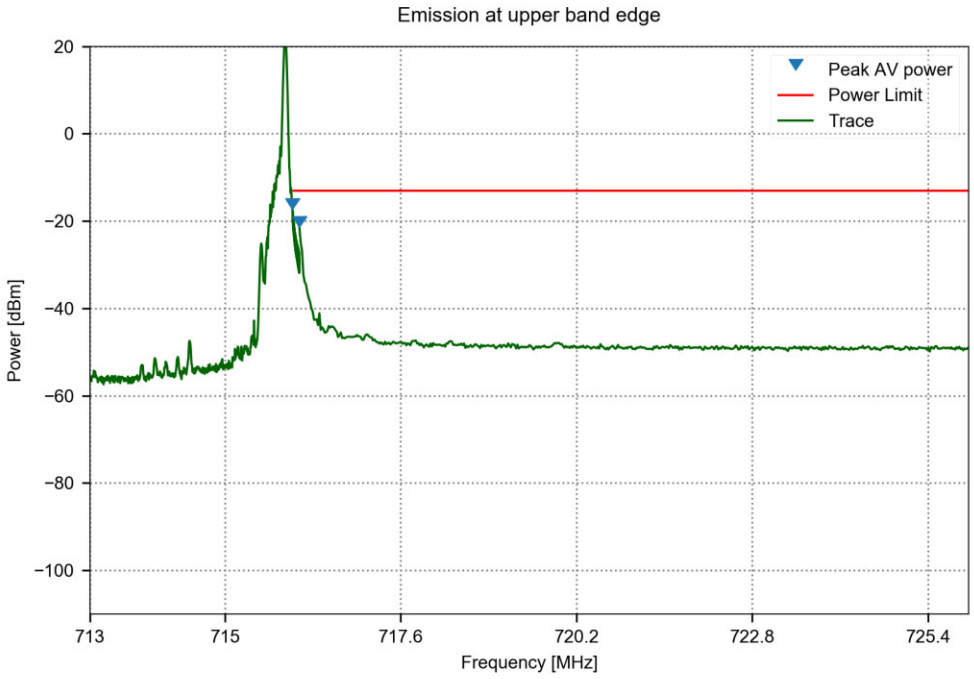
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23178, π/2 - BPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=47
Min. out of band margin:	-4.68 dB, 716.003 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
716.0 - 716.1	716.0	-17.68	30.0	-13	-4.68	501	1.0	RMS
716.1 - 726.0	716.1	-24.36	100.0	-13	-11.36	501	1.0	RMS

Band edge compliance

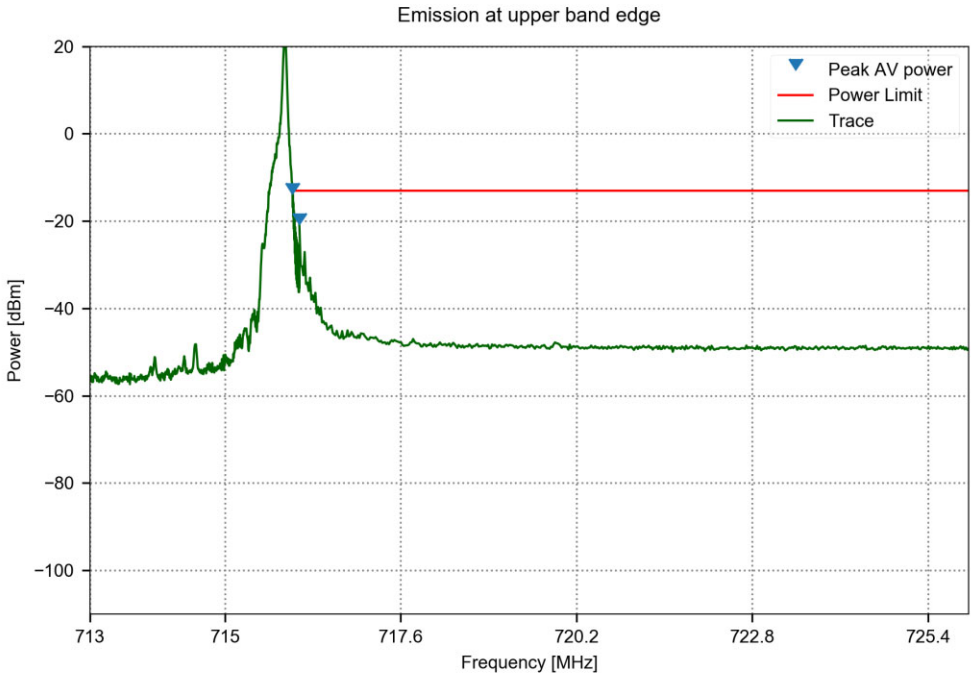
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23178, π/4 - QPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=47
Min. out of band margin:	-4.09 dB, 716.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
716.0 - 716.1	716.0	-17.09	30.0	-13	-4.09	501	1.0	RMS
716.1 - 726.0	716.1	-21.17	100.0	-13	-8.17	501	1.0	RMS

Band edge compliance

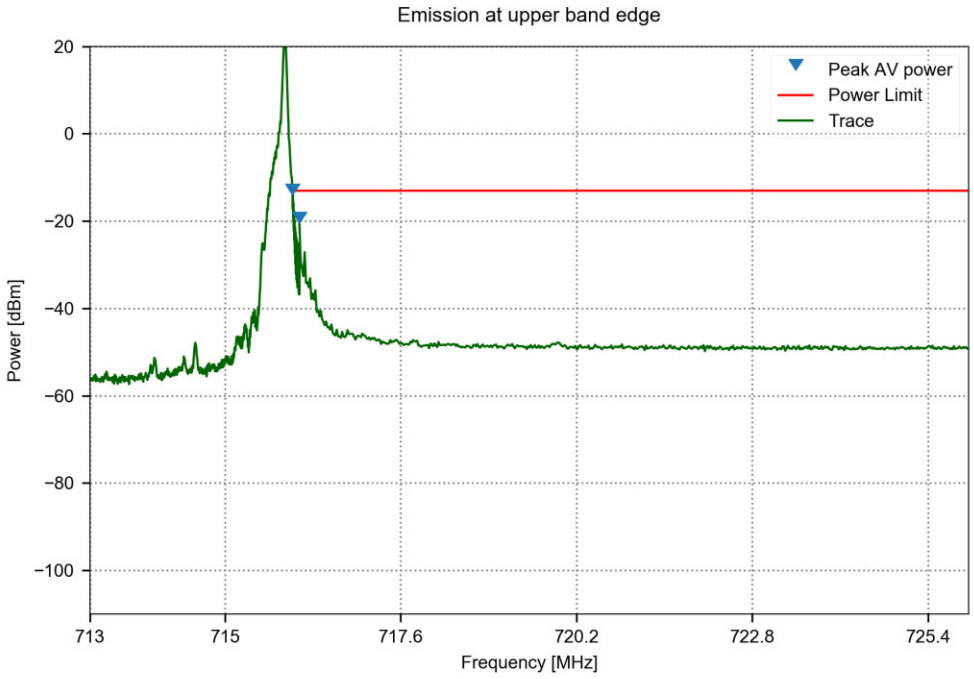
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23178, π/2 - BPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=11
Min. out of band margin:	-0.77 dB, 716.001 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
716.0 - 716.1	716.0	-13.77	30.0	-13	-0.77	501	1.0	RMS
716.1 - 726.0	716.1	-20.33	100.0	-13	-7.33	501	1.0	RMS

Band edge compliance

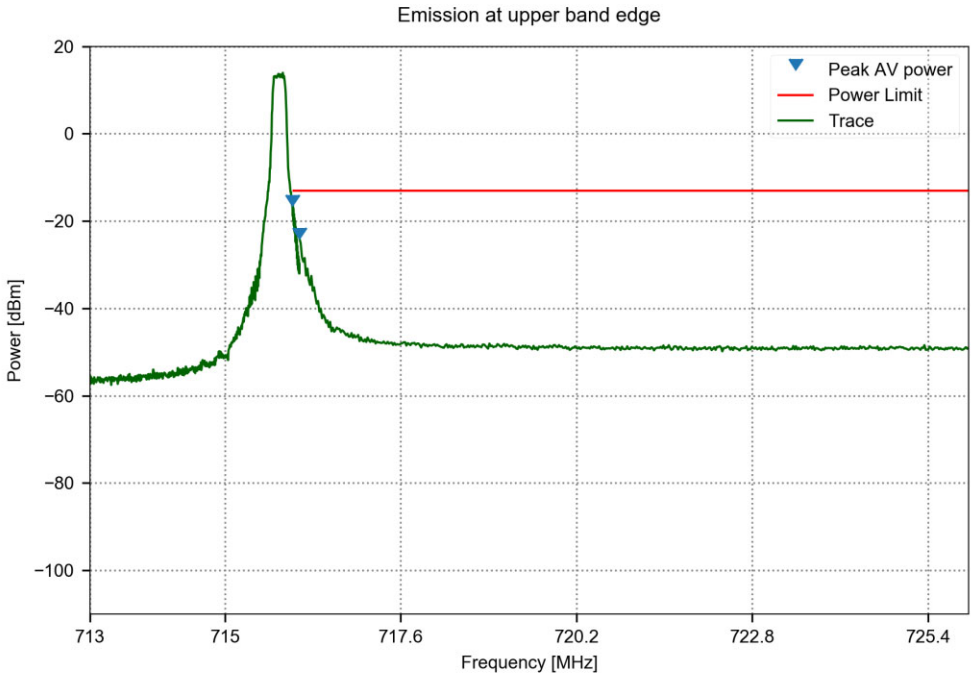
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23178, π/4 - QPSK
Emission bandwidth:	15.0 kHz
Tone configuration:	1 Tones, Offset=11
Min. out of band margin:	-0.85 dB, 716.002 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
716.0 - 716.1	716.0	-13.85	30.0	-13	-0.85	501	1.0	RMS
716.1 - 726.0	716.1	-20.16	100.0	-13	-7.16	501	1.0	RMS

Band edge compliance

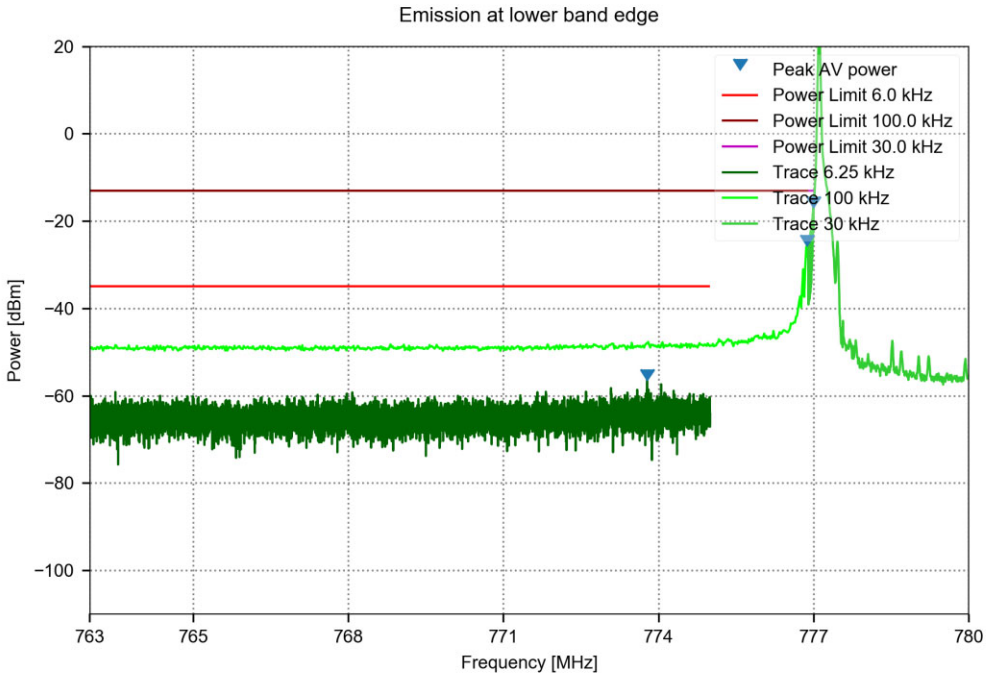
Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD12, 23178, π/4 - QPSK
Emission bandwidth:	180.0 kHz
Tone configuration:	12 Tones, Offset=0
Min. out of band margin:	-3.41 dB, 716.002 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
716.0 - 716.1	716.0	-16.41	30.0	-13	-3.41	501	1.0	RMS
716.1 - 726.0	716.1	-23.89	100.0	-13	-10.89	501	1.0	RMS

Band edge compliance

Project Number:	G0M-2304-2019
Applicant:	Vaisala Oyj
Model Description:	TempCast FMP100
Model:	FMP103
Test Sample ID:	44032
Reference Standards:	ISED RSS-130, Issue 2
Reference Method:	ANSI C63.26:2015, Section 5.7
Operator:	Florian Voigt
Test Date:	2023-06-16
Test Site:	Eurofins Product Service GmbH
Band, Channel, Modulation:	FDD13, 23182, π/2 - BPSK
Emission bandwidth:	3.75 kHz
Tone configuration:	1 Tones, Offset=0
Min. out of band margin:	-3.8 dB, 777.0 MHz
Verdict:	PASS



Frequency Range [MHz]	Highest Emission Frequency [MHz]	Highest Emission [dBm]	Measurement Bandwidth [kHz]	Limit [dBm]	Margin [dB]	Sweep points	Sweep time [s]	Detector
763.0 - 775.0	773.78	-56.39	6.25	-35	-21.39	9601	4.7	RMS
763.0 - 776.9	776.88	-25.55	100.0	-13	-12.55	701	1.0	RMS
776.9 - 777.0	777.0	-16.8	30.0	-13	-3.8	701	1.0	RMS