RF TEST REPORT

Applicant	UAB TELTONIKA TELEMATICS
FCC ID	2A3HUTAT141
Product	Asset Tracker
Brand	TELTONIKA TELEMATICS
Model	TAT141-Q3IB0
Report No.	R2306A0734-R2V1
Issue Date	November 22, 2023

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2022)/ FCC CFR 47 Part 24E (2022)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

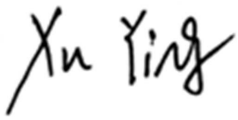

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TABLE OF CONTENT

Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	November 9, 2023
Rev.1	Update information.	November 22, 2023
Note: This revised report (Report No.: R2306A0734-R2V1) supersedes and replaces the previously issued report (Report No.: R2306A0734-R2). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output and Effective Isotropic Radiated Power	2.1046 24.232(c)	PASS
2	Radiated Spurious Emission	2.1053 / 24.238(a)	PASS
Date of Testing: July 21, 2023 ~ August 7, 2023 Date of Sample Received: June 27, 2023			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

This report only tests Radiated Spurious Emission, and because of the change of antenna gain, Effective Isotropic Radiated Power also re evaluated.
For other test items, please refer to Module Report (Report No: R2003A0152-R2 for GSM 1900 and LTE-M Band 2; R2003A0152-R5 for NB-IoT Band 2, FCC ID: XMR201910BG95M3).

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	UAB TELTONIKA TELEMATICS
Applicant address	Saltoniskiu st. 9B-1, LT-08105, Vilnius, Lithuania
Manufacturer	UAB TELTONIKA TELEMATICS
Manufacturer address	Saltoniskiu st. 9B-1, LT-08105, Vilnius, Lithuania
Factory	UAB TELTONIKA EMS
Factory address	Ditvos st. 6, LT-02121, Vilnius, Lithuania

2.2. General information

EUT Description			
Model	TAT141-Q3IB0		
SN	MPH22LH02033088		
Hardware Version	TAT141-20		
Software Version	FMB.Ver.55.00.16		
Power Supply	Battery		
Antenna Type	Internal Antenna		
Antenna Gain	Mode	Gain	
	GSM1900	-1.5 dBi	
	LTE-M/ NB-IoT Band 2	1.1 dBi	
Test Mode(s)	GSM1900; LTE-M Band 2; NB-IoT Band 2		
Test Modulation	(GSM)GMSK, (EGPRS) GMSK/ 8PSK; (LTE-M) QPSK, 16QAM (NB-IoT) BPSK, QPSK		
GPRS Multislot Class	33		
EGPRS Multislot Class	33		
LTE-M Category	M1		
NB-IoT Category	NB2		
NB-IoT Deployment	stand-alone		
NB-IoT Sub-carrier spacing	3.75KHz, 15KHz		
NB-IoT Ntones	single-tone, multi-tone		
Maximum E.I.R.P	GSM1900	30.93 dBm	
	LTE-M Band 2	22.02 dBm	
	NB-IoT Band 2	21.47 dBm	
Rated Power Supply Voltage	7.2V		
Operating Voltage	Minimum: 6.12V Maximum: 8.28V		
Operating Temperature	Lowest: -20°C Highest: +60°C		
Testing Temperature	Lowest: -30°C Highest: +50°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)

	GSM1900	1850 ~ 1910	1930 ~ 1990
	LTE-M Band 2	1850 ~ 1910	1930 ~ 1990
	NB-IoT Band 2	1850 ~ 1910	1930 ~ 1990
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:
FCC CFR 47 Part 24E (2022)

FCC CFR47 Part 2 (2022)

Reference standard:
ANSI C63.26-2015

KDB 971168 D01 Power Meas License Digital Systems v03r01

4. Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization for GSM/ NB-IoT Band; Y axis, horizontal polarization for LTE-M Band) and the worst case was recorded.
For LTE-M, all mode and data rates and positions and RB size and modulations were investigated.
For NB-IoT, all modes as Subcarrier Spacing, modulations, Channel were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in GSM / LTE-M / NB-IoT is set based on the maximum RF Output Power.
Test modes are chosen as the worst case configuration below for GSM 1900.

Test items	Modes/Modulation
	GSM 1900
RF Power Output and Effective Isotropic Radiated Power	GSM/GPRS/EGPRS
Radiated Spurious Emission	GSM

Test modes are chosen to be reported as the worst case configuration below for LTE-M Band 2:

Test items	Bandwidth (MHz)						Modulation		RB			Test Channel		
	1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF Power Output and Effective Isotropic Radiated Power	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Radiated Spurious Emission	O	-	O	O	-	O	O	-	O	-	-	-	O	-

Note
1. The mark “O” means that this configuration is chosen for testing.
2. The mark “-” means that this configuration is not testing.

Test modes are chosen to be reported as the worst case configuration below for NB-IOT Band 2

Test items	Deployment mode	Subcarrier Spacing (kHz)		Modulation		Test Channel		
	Stand-alone	3.75	15	BPSK	QPSK	L	M	H
RF Power Output and Effective Isotropic Radiated Power	O	O	O	O	O	O	O	O
Radiated Spurious Emission	O	-	O	-	O	O	O	O

Note
1. The mark “O” means that this configuration is chosen for testing.
2. The mark “-” means that this configuration is not testing.

5. Test Case

5.1. RF Power Output and Effective Isotropic Radiated Power

Ambient condition

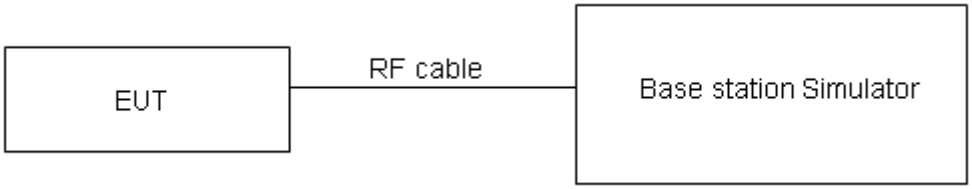
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the Base Station Simulator with a known loss. The EUT is controlled by the Base Station Simulator test set to ensure max power transmission with proper modulation.

ERP can then be calculated as follows:
EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)
EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

Test Setup



Limits

No specific RF power output requirements in part 2.1046.

Rule Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP.
Rule Part 24.232(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Limit	≤ 2 W (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.4 dB for RF power output, k = 2, U= 1.19 dB for EIRP.

Test Results

Refer to the section 6.1 of this report for test data.

5.2. Radiated Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

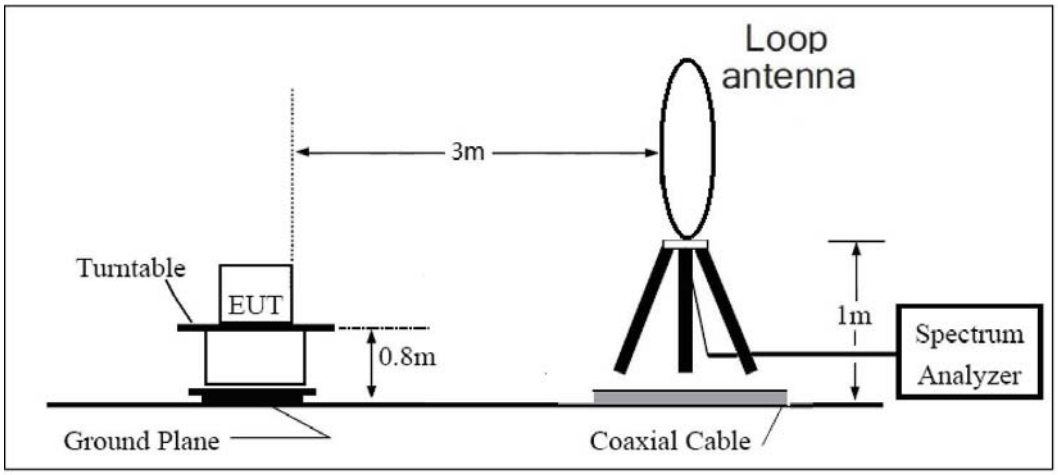
1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26-2015.
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

= EIRP-2.15dB.

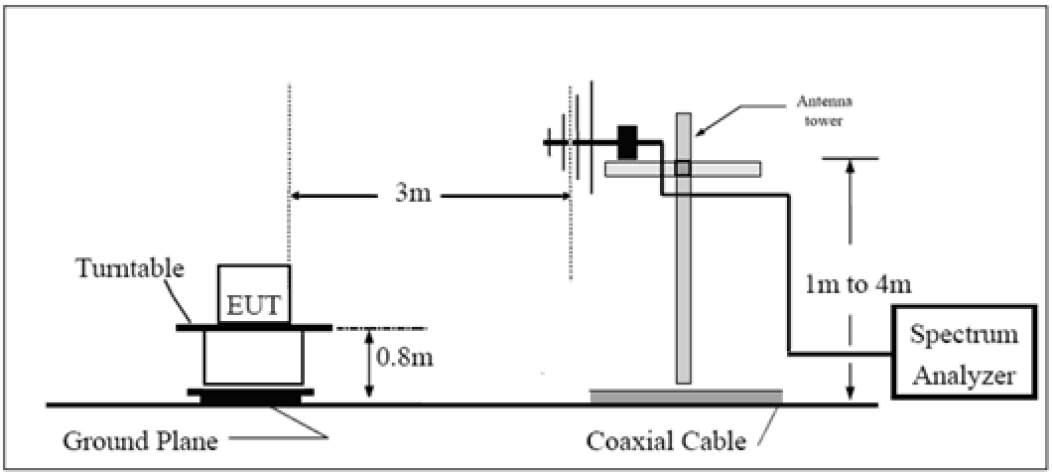
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

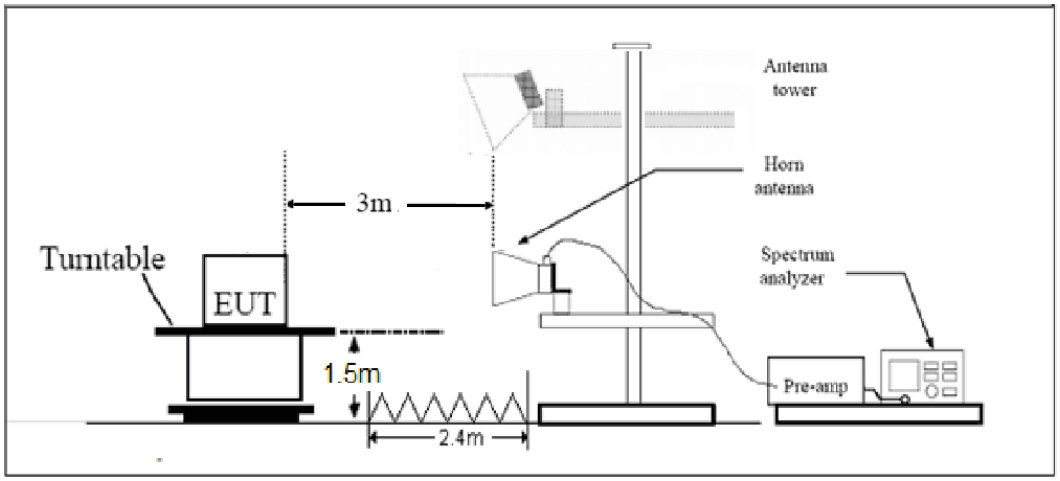
9KHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for the normal distribution is with the coverage factor *k* = 1.96, *U*= 3.55 dB.

Test Results

Refer to the section 6.2 of this report for test data.

6. Test Results

6.1. RF Power Output and Effective Isotropic Radiated Power

GSM 1900		Output Power (dBm)			EIRP(dBm)		
		Channel 512	Channel 661	Channel 810	Channel 512	Channel 661	Channel 810
		1850.2 (MHz)	1880 (MHz)	1909.8 (MHz)	1850.2 (MHz)	1880 (MHz)	1909.8 (MHz)
GSM	Results	29.83	29.74	29.71	30.93	30.84	30.81
GPRS/EGPRS (GMSK)	1TXslot	29.80	29.66	29.59	30.90	30.76	30.69
	2TXslots	28.56	28.71	28.50	29.66	29.81	29.60
	3TXslots	27.90	27.53	27.22	29.00	28.63	28.32
	4TXslots	26.26	25.87	25.56	27.36	26.97	26.66
EGPRS (8PSK)	1TXslot	25.23	25.17	24.78	26.33	26.27	25.88
	2TXslots	24.20	24.04	24.01	25.30	25.14	25.11
	3TXslots	22.45	22.01	21.94	23.55	23.11	23.04
	4TXslots	21.23	21.02	20.74	22.33	22.12	21.84

LTE-M Band 2	Channel/ Frequency(MHz)	Index	RB# RBstart	Output Power (dBm)		EIRP(dBm)	
				QPSK	16QAM	QPSK	16QAM
1.4MHz	18607/1850.7	0	1#0	20.92	19.64	22.02	20.74
		0	6#0	18.71	19.02	19.81	20.12
	18900/1880	0	1#0	19.87	19.61	20.97	20.71
		0	6#0	18.38	18.19	19.48	19.29
	19193/1909.3	0	1#5	20.17	19.08	21.27	20.18
		0	6#0	18.35	18.68	19.45	19.78
3MHz	18615/1851.5	0	1#0	20.38	19.68	21.48	20.78
		0	6#0	18.78	18.91	19.88	20.01
	18900/1880	0	1#0	20.21	19.27	21.31	20.37
		0	6#0	18.45	18.73	19.55	19.83
	19185/1908.5	1	1#5	20.02	19.11	21.12	20.21
		1	6#0	18.41	18.74	19.51	19.84
5MHz	18625/1852.5	0	1#0	20.08	20.29	21.18	21.39
		0	6#0	19.47	19.66	20.57	20.76
	18900/1880	0	1#0	20.05	19.71	21.15	20.81
		0	6#0	19.24	19.38	20.34	20.48
	19175/1907.5	0	1#5	19.68	20.02	20.78	21.12
		3	6#0	19.28	19.40	20.38	20.50
10MHz	18650/1855	3	1#0	19.92	20.19	21.02	21.29
		0	4#0	20.07	19.83	21.17	20.93
	18900/1880	0	1#0	19.96	19.53	21.06	20.63
		0	4#0	19.78	20.11	20.88	21.21
	19150/1905	4	1#5	19.88	19.51	20.98	20.61
		7	4#2	20.01	20.14	21.11	21.24
15MHz	18675/1857.5	3	1#0	20.22	20.11	21.32	21.21
		0	6#0	20.13	20.26	21.23	21.36
	18900/1880	0	1#0	20.14	19.81	21.24	20.91
		0	6#0	20.05	19.95	21.15	21.05
	19125/1902.5	8	1#5	19.95	19.51	21.05	20.61
		11	6#0	19.88	19.87	20.98	20.97
20MHz	18700/1860	3	1#0	20.17	19.96	21.27	21.06
		0	6#0	20.08	20.01	21.18	21.11
	18900/1880	0	1#0	19.90	19.59	21.00	20.69
		0	6#0	19.86	19.97	20.96	21.07
	19100/1900	12	1#5	19.76	19.34	20.86	20.44
		15	6#0	19.83	20.04	20.93	21.14

NB-IoT Band 2	Modulation	Sub-carrier spacing (KHz)	Ntones	Output Power (dBm) for low/middle/high channel			EIRP(dBm)		
				18602/ 1850.2	18900/ 1880.0	19198/ 1909.8	18602/ 1850.2	18900/ 880.0	19198/ 1909.8
Standalone	BPSK	3.75	1@0	20.15	20.01	20.35	21.25	21.11	21.45
			1@47	20.07	19.96	20.29	21.17	21.06	21.39
		15	1@0	20.27	20.05	20.37	21.37	21.15	21.47
			1@11	20.23	20.01	20.35	21.33	21.11	21.45
	QPSK	3.75	1@0	20.11	19.97	20.33	21.21	21.07	21.43
			1@47	20.08	19.94	20.25	21.18	21.04	21.35
		15	1@0	20.30	20.06	20.37	21.40	21.16	21.47
			1@11	20.32	20.10	20.31	21.42	21.20	21.41
		15	12@0	19.32	18.01	18.32	20.42	19.11	19.42

6.2. Radiated Spurious Emission

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

GSM 1900 CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-57.51	2.60	12.50	Horizontal	-47.61	-13.00	34.61	3
3	5640.00	-63.09	3.30	12.50	Horizontal	-53.89	-13.00	40.89	15
4	7520.00	-58.15	4.20	12.20	Horizontal	-50.15	-13.00	37.15	304
5	9400.00	-52.24	4.30	11.10	Horizontal	-45.44	-13.00	32.44	44
6	11280.00	-51.08	5.90	11.90	Horizontal	-45.08	-13.00	32.08	25
7	13160.00	-52.20	5.70	14.00	Horizontal	-43.90	-13.00	30.90	246
8	15040.00	-54.13	5.80	13.10	Horizontal	-46.83	-13.00	33.83	90
9	16920.00	-52.29	6.10	14.60	Horizontal	-43.79	-13.00	30.79	23
10	18800.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE-M Band 2 1.4MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3758.60	-63.58	2.60	12.50	Horizontal	-53.68	-13.00	40.68	75
3	5637.90	-62.76	3.30	12.50	Horizontal	-53.56	-13.00	40.56	96
4	7517.20	-58.84	4.20	12.20	Horizontal	-50.84	-13.00	37.84	78
5	9396.50	-55.77	4.30	11.10	Horizontal	-48.97	-13.00	35.97	165
6	11275.80	-50.30	5.90	11.90	Horizontal	-44.30	-13.00	31.30	74
7	13155.10	-52.81	5.70	14.00	Horizontal	-44.51	-13.00	31.51	55
8	15034.40	-53.26	5.80	13.10	Horizontal	-45.96	-13.00	32.96	32
9	16913.70	-52.24	6.10	14.60	Horizontal	-43.74	-13.00	30.74	175
10	18793.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE-M Band 2 5MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3755.00	-63.55	2.60	12.50	Horizontal	-53.65	-13.00	40.65	44
3	5632.50	-60.31	3.30	12.50	Horizontal	-51.11	-13.00	38.11	237
4	7510.00	-59.01	4.20	12.20	Horizontal	-51.01	-13.00	38.01	46
5	9387.50	-55.24	4.30	11.10	Horizontal	-48.44	-13.00	35.44	173
6	11265.00	-50.58	5.90	11.90	Horizontal	-44.58	-13.00	31.58	123
7	13142.50	-53.04	5.70	14.00	Horizontal	-44.74	-13.00	31.74	95
8	15020.00	-53.67	5.80	13.10	Horizontal	-46.37	-13.00	33.37	56
9	16897.50	-52.57	6.10	14.60	Horizontal	-44.07	-13.00	31.07	13
10	18775.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE-M Band2 20MHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3740.00	-65.23	2.60	12.50	Horizontal	-55.33	-13.00	42.33	0
3	5610.00	-63.30	3.30	12.50	Horizontal	-54.10	-13.00	41.10	135
4	7480.00	-58.19	4.20	12.20	Horizontal	-50.19	-13.00	37.19	78
5	9350.00	-55.49	4.30	11.10	Horizontal	-48.69	-13.00	35.69	77
6	11220.00	-51.47	5.90	11.90	Horizontal	-45.47	-13.00	32.47	234
7	13090.00	-52.08	5.70	14.00	Horizontal	-43.78	-13.00	30.78	111
8	14960.00	-52.17	5.80	13.10	Horizontal	-44.87	-13.00	31.87	22
9	16830.00	-52.12	6.10	14.60	Horizontal	-43.62	-13.00	30.62	45
10	18700.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

NB-IoT Band 2 15KHz+QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.00	-65.01	2.60	12.50	Horizontal	-55.11	-13.00	42.11	6
3	5640.00	-64.32	3.30	12.50	Horizontal	-55.12	-13.00	42.12	90
4	7520.00	-59.39	4.20	12.20	Horizontal	-51.39	-13.00	38.39	76
5	9400.00	-55.87	4.30	11.10	Horizontal	-49.07	-13.00	36.07	65
6	11280.00	-51.26	5.90	11.90	Horizontal	-45.26	-13.00	32.26	75
7	13160.00	-53.62	5.70	14.00	Horizontal	-45.32	-13.00	32.32	311
8	15040.00	-54.44	5.80	13.10	Horizontal	-47.14	-13.00	34.14	92
9	16920.00	-53.08	6.10	14.60	Horizontal	-44.58	-13.00	31.58	15
10	18800.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

NB-IoT Band 2 15KHz+QPSK CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3700.20	-68.38	2.60	12.50	Horizontal	-58.48	-13.00	45.48	78
3	5550.30	-64.59	3.30	12.50	Horizontal	-55.39	-13.00	42.39	122
4	7400.40	-59.20	4.20	12.20	Horizontal	-51.20	-13.00	38.20	90
5	9250.50	-55.58	4.30	11.10	Horizontal	-48.78	-13.00	35.78	11
6	11100.60	-50.09	5.90	11.90	Horizontal	-44.09	-13.00	31.09	12
7	12950.70	-52.17	5.70	14.00	Horizontal	-43.87	-13.00	30.87	123
8	14800.80	-51.34	5.80	13.10	Horizontal	-44.04	-13.00	31.04	0
9	16650.90	-54.87	6.10	14.60	Horizontal	-46.37	-13.00	33.37	123
10	18501.00	/	/	/	/	/	/	/	/
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

NB-IoT Band 2 15KHz+QPSK CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3819.80	-66.93	2.60	12.50	Horizontal	-57.03	-13.00	44.03	0
3	5729.70	-63.86	3.30	12.50	Horizontal	-54.66	-13.00	41.66	312
4	7639.60	-60.61	4.20	12.20	Horizontal	-52.61	-13.00	39.61	90
5	9549.50	-58.49	4.30	11.10	Horizontal	-51.69	-13.00	38.69	15
6	11459.40	-50.06	5.90	11.90	Horizontal	-44.06	-13.00	31.06	63
7	13369.30	-52.13	5.70	14.00	Horizontal	-43.83	-13.00	30.83	112
8	15279.20	-52.06	5.80	13.10	Horizontal	-44.76	-13.00	31.76	15
9	17189.10	-52.47	6.10	14.60	Horizontal	-43.97	-13.00	30.97	225
10	19099.00	/	/	/	/	/	/	/	/

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

7. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Wideband radio communication tester	R&S	CMW500	113645	2023-03-16	2024-03-15
Signal Analyzer	R&S	FSV30	104028	2023-05-12	2024-05-11
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2023-04-16	2026-04-15
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01439	2021-06-30	2024-06-29
Horn Antenna	Schwarzbeck	BBHA 9120D	1594	2020-12-17	2023-12-16
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Software	R&S	EMC32	10.35.10	/	/

ANNEX A: The EUT Appearance

The EUT Appearance is submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos is submitted separately.

******** END OF REPORT ********