

Intertek 731 Enterprise Drive Lexington, KY 40510

Tel 859 226 1000 Fax 859 226 1040

www.intertek.com

# Otodata RF EXPOSURE REPORT

#### **SCOPE OF WORK**

RF EXPOSURE CALCULATION
ON THE TM5040 TANK MONITOR

#### **REPORT NUMBER**

105820250LEX-008

#### **ISSUE DATE**

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## RF EXPOSURE TEST REPORT

**Report Number:** 105820250LEX-008 **Project Number:** G105820250

Report Issue Date: 9/20/2024

**Product Name:** TM5040 Tank Monitor **Product Model:** TM5040 C024-2R1

Standards: FCC Title 47 CFR Part 1.1310(e)(1) Limits for

Maximum Permissible Exposure (MPE)

RSS-102 Issue 6 RF Field Strength Limits for Devices Used by the General Public

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510
USA

Client: Otodata 1180 De Louvain Street West Montreal, QC H4N 1G5 Canada

Report prepared by

Report reviewed by

David Perry, EMC Engineer Michael Carlson, EMC Team Leader

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Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

## **Table of Contents**

1	Introduction and Conclusion	4
2	Test Summary	4
3	Client Information	5
4	Description of Equipment under Test	6
	Cellular Radio	
6	BLE Radio	9
7	FCC RF Exposure Limits	10
8	RSS-102 Issue 6 RF Exposure Limits	11
10	Test Procedure	12
11	Results:	13
12	Revision History	16

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1 Date: 9/20/2024

#### 1 Introduction and Conclusion

The tests indicated in section 2 were performed on the product constructed as described in section 4. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

#### 2 Test Summary

Section	Test full name	Result
11	FCC Title 47 CFR Part 1.1310(e)(1) Limits for Maximum Permissible Exposure (MPE) (Limits for General Population / Uncontrolled Exposure)	Pass
11	RSS-102 Issue 6 RF Field Strength Limits (For Devices Used by the General Public)	Pass

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1 Date: 9/20/2024

### 3 Client Information

This product was tested at the request of the following:

	Client Information			
Client Name:	Otodata			
Address:	1180 De Louvain Street West			
	Montreal, QC H4N 1G5			
	Canada			
Contact:	Julien Renaud			
Telephone:	514-673-0244			
Email:	jrenaud@otodata.ca			
	Manufacturer Information			
Manufacturer Name:	Otodata			
Manufacturer Address:	1180 De Louvain Street West			
	Montreal, QC H4N 1G5			
	Canada			

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

### 4 Description of Equipment under Test

	Equipment Under Test					
Product Name	TM5040 Tank Monitor					
Model Number	TM5040 C024-2R1					
Hardware Version	C024					
Software Version	ZR1					
Embedded Module(s)	BLE: TM5040 C024-2R1					
	Cellular: EG91-AUXGA-128-3GNS					
FCC ID	BLE: N/A					
	Cellular: XMR202106EG91AUX					
Wireless Technology	BLE					
wheless reciniology	Cellular LTE					
Supported Transmit Bands	BLE: 2402MHz – 2480MHz					
Supported Transmit Bands	Cellular: LTE B2, B4, B12, B13, B26					
Antonno Coin	BLE: 3.16dBi <sup>1</sup>					
Antenna Gain	Cellular: 8.51dBi <sup>1</sup>					
Maximum Output Payer	BLE: 3.86dBm <sup>1</sup>					
Maximum Output Power	Cellular: 23dBm²					
Ratings	Battery, 3.6VDC					
Descri	Description of Equipment Under Test (provided by client)					

The MT4ADS is a remote tank level monitoring device. It is intended to be powered by a non-rechargeable lithium battery pack for a predicted average lifetime of at least 10 years

The unit uses a BLE (Bluetooth Low Energy) microcontroller which manages all wireless communications. BLE advertising is also used to allow infield testing and diagnostics as well as enabling possible firmware upgrade. A 1.98dBi PCB (Printed Circuit Board) antenna over a ground plane is used as main BLE antenna.

The device reads the tank level sensor every few minutes. When a significant level change is detected, the microcontroller (MCU) activates the BLE transceiver to advertise the tank's level. If there is no level change after 24 hours, the unit performs a daily report using the same procedure on the cellular module.

Report Number: 105820250LEX-008

<sup>&</sup>lt;sup>1</sup> Value taken from Intertek report 105195808LEX-006

<sup>&</sup>lt;sup>2</sup> Values were provided by the client and may affect compliance. Intertek does not make any claims of compliance for values other than those shown.

RF Exposure Report

5 **Cellular Radio** 

#### 5.1 **Output Power**

The output power was provided by the client. Any deviations from the below stated values may affect compliance. Intertek does not make any claims of compliance for values other than shown below. The excerpt was taken from the EG91-AUX technical specifications.

#### LPWA modules

Product	BG96	BG95 Series <sup>1</sup>	BG95xA-GL Series	BG950S-GL
	BUSE 0- 0-0000  WINDOWS OF THE PROPERTY OF T	EUMETEL BOS = com Waterstrain Waterstrain	POSSON-DEL	PRINCE FEE. B80905-01. comm  Name of the comm  N
Form factor	LGA	LGA	LGA	LGA
Dimensions (mm)	26.5 × 22.5 × 2.3	23.6 × 19.9 × 2.2	23.6 × 19.9 × 2.2 (BG950A-GL/BG951A-GL/ BG952A-GL/BG953A-GL/BG955A-GL)	23.6 × 19.9 × 2.2
RAT	LTE Cat M1/NB1/EGPRS	LTE Cat M1/Cat NB2/EGPRS	LTE Cat M1/Cat NB1/NB2:	Cat-M & NB IoT
RAT	LIE Cat M1/NB1/EGPRS	LTE Cat M1/Cat NB2/EGPRS	LTE Cat M1/NB1/NB2/GPRS (BG955A-GL)	Cat-M & NB IoT
Frequency bands (MHz)	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/26*/ 28: EGPRS: 850/900/1800/1900MHz	LTE.FDD: B1/2/3/4/5/8/12/13/18/19/20/25/26 (Cat M1 Only)/27 (Cat M1 Only)/28/31/58/71 (Cat N82 Only)/72/73/85/86*(Cat N82 only)/ 87*/88*. EBPR: 850/900/1800/1900MHz	ITF-FDD: 81/22/3/45/8/12/13/17 (Oat NB1/ NB2 Only/181/9/20/25/26(Cat M1 Only)/27 (Cat M1 Only)/28/68 (BB850A-61/BB951A-61/ BB852A-61/BB953A-61); ITF-FDD: 817/23/3/45/8/12/13/17 (Cat NB1/NB2 Only/181/9/20/25/26(Cat M1 Only)/27 (Cat M1 Only)/28/66, OPS: 850/900/1800/ 1800MHz(B958A-61)	Cat M1: B1/2/3/4/5/8/12/13/18/19/20/25/26 27/28/66/71; Cat NB2: B1/2/3/4/5/8/12/13/17/18/19/20/ 25/26/28/66/71/85
Weight (approx.) g	3.1	2.15	2.15 (BG950A-GL/BG951A-GL/BG952A-GL/ BG953A-GL); 2.05 (BG955A-GL)	2.31
Operating temperature	-35°C ~ +75°C	-35°C ~ +75°C	-35°C ~ +75°C	-35°C ~ +75°C
Extended temperature	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
Data transmission				
LTE Cat M1 data rates (Kbps)	Max. 375 (DL), Max. 375 (UL)	Max. 588 (DL), Max. 1119 (UL)	Max. 588 (DL), Max. 1119 (UL)	Cat M1*: Max. 588 (DL), Max. 1119 (UL)
LTE Cat NB1 data rates (Kbps)	Max. 32 (DL), Max. 70 (UL)	Max. 32 (DL), Max. 70 (UL)	Max. 27.2 (DL), Max. 62.5 (UL)	Max. 27.2 (DL), Max. 62.5 (UL)
LTE Cat NB2 data rates (Kbps) EDGE data rates (Kbps)	/ Max. 296 (DL), Max. 236.8 (UL)	Max. 127 (DL), Max. 158.5 (UL) Max. 296 (DL), Max. 236.8 (UL)	Max. 127 (DL), Max. 158.5 (UL)	Cat NB2*: Max. 127 (DL), Max. 158 (UL)
GPRS data rates (Kbps)	Max. 296 (UL), Max. 236.8 (UL) Max. 107 (DL), Max. 85.6 (UL)	Max. 296 (UL), Max. 236.8 (UL) Max. 107 (DL), Max. 85.6 (UL)	Max. 85.6 (DL), Max. 42.8 (UL) (BG955A-GL)	/
	**************************************			Point-to-Point M0 and MT; SMS cell
SMS	•	Point-to-point M0 and MT; Text and PDU mode; SMS cell broadcast	Point-to-point M0 and MT; Text and PDU mode; SMS cell broadcast	broadcast; Text and PDU mode; SMS storage: ME by default TCP/PPP*/UDP/SSL*/MQTT/FTP(S)*/HTTP(S)/
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/ PING/MQTT(S)/LwM2M/CoAP(S)/IPv6/DNS/NTP	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/ PING/MQTT(S)/MQTT-SN/LwM2M/CoAP(S)/ IPv6/DNS/NTP	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/ PING/MQTT/LwM2M	LwM2M*/IPv4/IPv6*/TLS*/DTLS*/PING*/CoAP/ NITZ*
Interfaces (U)SIM	1.8 W 3 V	1.8 V	1.8 V	× 1 (Supports 1.8 V only)
UART	× 3 (MAIN, DEBUG, NMEA)	× 3 (MAIN, DEBUG, NMEA)	1.0 v 3 (MAIN, DEBUG, GNSS)(BG950A-GL/BG951A- GL/BG953A-GL/BG955A-GL); × 2 (BG952A-GL)	× 1 (supports 1.5 v only)
USB	USB 2.0 × 1	USB 2.0 × 1	USB 2.0 × 1	/
I2C ADC	12C <sup>3</sup> × 1 ADC × 2	12C <sup>3</sup> × 1 ADC × 1	12C* × 2 (BG952A-GL) ADC × 2	/ × 2
AUG		AUG × I	RPID x 9 /RR9504-RI /RR9514-RI /RR9534-RI /	×Z
GPI0	GPIO × 2 (I2C and NMEA can be re-configured as GPIO)	GPIO <sup>4</sup> × 9	BG955A-GL); GPIO Max. × 15 (BG952A-GL)	× 9
RESET PCM	RESET × 1 PCM <sup>3</sup> × 1	RESET × 1 PCM <sup>3</sup> × 1	RESET × 1	×1
		Antenna <sup>5</sup> : 2 (for main antenna and GNSS	2 (for main antenna and GNSS antenna,	/
Antenna	Primary, GNSS	antenna, respectively)	respectively)	× 2 (Main Antenna: × 1; GNSS Antenna*: × 2 )
Enhanced features				
Quec0pen"	Simplifies the Development of embedded applications	Simplifies the Development of embedded applications	Simplifies the Development of embedded applications (B0952A-GL)	/
iSIM	/	/	•(BG953A-GL)	1
DFOTA				
GNSS/RIL driver	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	1	
NDIS	Windows 7/8/8.1/10/11	/	1	I .
USB serial driver	Windows 7/8/8.1/10/11, Linux 2.6 or later, Android 4.x/5.x/6.x/7.x/8.x/9.x/10.x/11.x/12.x	Windows 7/8/8.1/10/11, Linux 2.6~5.15, Android 4.x/5.x/6.x/7.x/ 8.x/9.x/10.x/11.x/ 12.x	1	1
SIM detection				
GNSS	Optional	Optional	GPS, GLONASS(BG950A-GL/BG952A-GL/BG953A- GL/BG955A-GL); GPS/GLONASS/Galileo/Beidou/QZSS, LTE & GNSS	
Firmware update	via USB Interface	via USB Interface	concurrency (BG951A-GL); via UART/USB*/DF0TA	
Electrical features	VIA USB Interrace	via usb interrace	VIB UAKI/OSB / DPUTA	
Supply voltage range	3.3 V ~ 4.3 V, typ. 3.8 V	typ. 3.8 V / typ. 3.3 V <sup>8</sup>	2.2 V ~ 4.35 V, typ. 3.3 V. (BG950A-GL/BG951A-GL/BG952A-GL/BG953A-GL);	VBAT_BB/ VBAT_RF: 2.2 V ~ 4.35 V, typ. 3.3 V
Power consumption	10 μA@PSM	3.9 µАgrPSM <sup>7</sup>	3.3 V ~ 4.3 V, typ. 3.8 V (869554-GL) 1.5 µA⊕ PSM	Power Saving Mode: 1.35 μA; Sleep Mode @ QSCLK-2; Cat M1: 0.8 mA @ DRX = 1.28 s; 18 μA @ el-DRX = 40.96 s; PTW = 1.28 s; DRX = 1.28 s; 12 μA @ el-DRX = 81.92 s; PTW = 1.28 s; DRX = 1.28 s;
Max output power	Power class 3 23dBm @ LTE bands	Power class5 21dBm @ LIE bands / Power class2 23dBm @ LIE bands */ Power class 2 26dBm @ LIE bands */ Power class 2 26dBm @ LIE 831/72/73 of 8895-M4/Power class 2 26dBm @ LIE 831/72/73 and Power class 3 23dBm @ other LIE bands of 8895-M9	Power class 3 23dBm @ LTE bands	Power class 3 23dBm @ LTE bands
Certifications <sup>6</sup>	Vodafone/Deutsche Telekom/Telefónica/ Verizon/AT&TT-Mobile/U.SCellular/Rogers/ Telus/Telstra/SKT/U.BV-HTT DOCOMO/ SoftBank/KDDI/CE/GCF/PTCRB/FCC/IC/IFETEL/ RCM/KG/JATE/TELEC/HBTC/IMDA/ICASA/NCC/CCC	Vodafone/Deutsche Telekom/Telefónica/ Verizon/TATI/T-Höble/U.Scellusar/Prange/ Rogers/Telus/Telstra/KTSKT/LBU-/NTT DDCOMO/SoftBank*/KDD/UCF/UKCA/GGF/PTCRF/ FCC/IC/Anatch/FETEL/CDM/KSQLATE/TELEC/ NBTC*/IMDA/NCC/ROHS/ATEX/PEN/CDC	Vodafone /Doutsche Telekom/Verizon/AT&T/ T-Mobile/Telus/Telstra/KT/SKT*/LBU+/MTT DDCOMO*/KDDI*/CE/BCF/PTCRB/FCC/IC/RCM/KC/ JATE/TELEC	GCF*/CE*/PTCRB*/FCC*/IC*/RCM*
Recommended applications	Gas detectors, soil PH testers, optical sensor person/pet tracking, water/gas metering an	s, machinery alarm systems, irrigation control art parking systems, fire hydrants, smoke ala	llers, elevators, asset tracking electronics, rms, smart bins, street lighting	Tracker, metering, smart Health
Note 1: For different variants, ples Note 2: BG95-M9 support B86/B87	ase refer to the BG95 specification.	Note 6: For the supply voltage of different va Note 7: For the power consumption of differ	ariants, please refer to the BG95 Hardware Des ent variants, please refer to the BG95 Hardware tt variant, please refer to BG95 Hardware Desic	ign document. * Under developme e Design document. • Supports

Note 2: B995-M9 support B85/B87/B88. Note 3: For Voice Call only. Note 4: B995-MF provides 7 GPID Interfaces, please refer to HD for details. Note 5: B995-MF provides 3 antenna interfaces, please refer to HD for details.

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

#### 5.2 Antenna Gain

The antenna gain was taken from Intertek report number 105195808LEX-006 section 6.

Baknor 180115-02 Antenna for the Cellular Module							
Frequency (MHz)	Gain (dBi)						
700	6.63						
850	6.63						
1700	6.00						
1800	8.51						

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1 Date: 9/20/2024

#### 6 BLE Radio

## 6.1 Output Power/Antenna gain

The output power and antenna gain was taken from Intertek report number 105820250LEX-001 section 7.8.

BLE, 1 Mbps

								Output	
Frequency	Measured	Attenuation	Output Power	Output	Antenna Gain	EIRP	EIRP	Power Limit	EIRP Limit
(MHz)	(dBm)	(dB)	(dBm)	Power (mW)	(dBi)	(dBm)	(W)	(W)	(W)
2402	-6.14	10	3.86	2.432	3.16	7.02	.005	1	4
2440	-6.14	10	3.86	2.432	3.16	7.02	.005	1	4
2480	-6.19	10	3.81	2.404	3.16	6.97	.005	1	4

#### BLE, 2 Mbps

Frequency (MHz)	Measured (dBm)	Attenuation (dB)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Output Power Limit (W)	EIRP Limit (W)
2402	-6.14	10	3.86	2.432	3.16	7.02	.005	1	4
2440	-6.14	10	3.86	2.432	3.16	7.02	.005	1	4
2480	-6.20	10	3.80	2.398	3.16	6.96	.005	1	4

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

#### **7** FCC RF Exposure Limits

#### Title 47 CFR Part 1.1310(d)(2):

For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b) of this part, except for portable devices as defined in § 2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in § 2.1093.

Table 1 to § 1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
	(i) Limits for Oc	cupational/Controlled Ex	posure	
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500- 100,000			5	<6
	(ii) Limits for Genera	al Population/Uncontrolle	d Exposure	
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500- 100,000			1.0	<30

f = frequency in MHz. \* = Plane-wave equivalent power density.

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

8 RSS-102 Issue 6 RF Exposure Limits

#### RSS-102 Issue 6 § 6.6:

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 4.49/f<sup>0.5</sup>W (adjusted for tune-up tolerance), where f is in MHz
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1.31×10<sup>-2</sup>f<sup>0.6834</sup>W (adjusted for tune-up tolerance), where f is in MHz
- at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

#### RSS-102 Issue 6 § 5.3.2:

The electric and magnetic field strength reference levels, power density reference levels, and associated reference period for devices employed by the general public (uncontrolled environment) and controlled-use devices (controlled environment) are specified in table 7 and table 8. Note that the power density limits specified in these tables apply to whole body exposure conditions.

Table 7: RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field (V <sub>RMS</sub> / m)	Magnetic field (A <sub>RMS</sub> / m)	Power density (W/ m²)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	58.07 / f <sup>0.25</sup>	0.1540 / f <sup>0.25</sup>	8.944 / f <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	0.02619 f <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	$0.158 f^{0.5}$	4.21×10 <sup>-4</sup> f <sup>0.5</sup>	6.67×10 <sup>-5</sup> f	616000/ f <sup>1.2</sup>

**Note:** *f* is frequency in MHz.

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1

Date: 9/20/2024

#### 10 Test Procedure

An RF exposure calculation was performed to show that the device was compliant with the general population exposure limits from FCC Title 47 CFR Part 1.1310(e)(1), RSS-102 Issue 6, and ICNIRP Guidelines (2020). The maximum power density was calculated for each transmitter at a separation distance of 20cm using the maximum conducted output power (including tune up tolerance) plus antenna gain, or measured EIRP.

For each transmitter the maximum power density at a 20cm distance using the formula:

$$\begin{split} \mathit{EIRP}(\mathit{dBm}) &= \mathit{Conducted\ Power}(\mathit{dBm}) + \mathit{Antenna\ Gain}(\mathit{dBi}) \\ &= \mathit{EIRP}(\mathit{mW}) = \ 10^{\mathit{EIRP}(\mathit{dBm})/10} \\ &= \mathit{Power\ Density}\left( {\mathit{mW}}/_{\mathit{cm}^2} \right) = \frac{\mathit{EIRP}(\mathit{mW})}{4\pi \cdot (20\mathit{cm})^2} \\ &= \mathit{Power\ Density}\left( {\mathit{W}}/_{\mathit{m}^2} \right) = \left( \frac{100\mathit{cm}}{1\mathit{m}} \right)^2 \left( \frac{1\mathit{W}}{1000\mathit{mW}} \right) \mathit{Power\ Density}\left( {\mathit{mW}}/_{\mathit{cm}^2} \right) \end{split}$$

For transmitters that could operate simultaneously, the ratio of calculated power density to the corresponding limit for each transmitter was calculated and then summed. If the sum of the ratios was less than 1, that specific combination of transmitters was deemed to comply.

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1

Date: 9/20/2024

#### 11 Results:

The calculated maximum power density at 20cm was less than or equal to the limits for general population exposure in FCC Title 47 CFR Part 1.1310(e)(1), RSS-102 Issue 6, and ICNIRP Guidelines (2020).

Additionally, to demonstrate compliance during simultaneous transmission, the worst-case power density to limit ratios for each transmitter were summed. Since the sum was less than 1 that combination of transmitters is deemed to comply with the simultaneous transmission RF exposure criteria.

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

## 11.1 FCC RF Exposure Data

Radio	Band / Modulation	Channel	Frequency (MHz)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Duty Cycle (%)	Duty Cycle Adjusted Cond. Output Power (dBm)	Antenna Gain (dB)	MPE Value @ 20cm (mW/cm²)	MPE Limit (mW/cm²)	MPE / Limit Ratio (for Co- Location)
BLE	BLE	37	2402	3.86	100.0%	3.86	3.16	0.0010	1.0000	0.0010
		17	2440	3.86	100.0%	3.86	3.16	0.0010	1.0000	0.0010
		39	2480	3.86	100.0%	3.86	3.16	0.0010	1.0000	0.0010
Cellular	LTE B2	18000	1920.0	23	100.0%	23.00	8.51	0.2817	1.0000	0.2817
	(FDD)	18299	1949.9	23	100.0%	23.00	8.51	0.2817	1.0000	0.2817
		18599	1979.9	23	100.0%	23.00	8.51	0.2817	1.0000	0.2817
	LTE B4 (FDD)	19950	1710.0	23	100.0%	23.00	6.00	0.1580	1.0000	0.1580
		20174	1732.4	23	100.0%	23.00	6.00	0.1580	1.0000	0.1580
		20399	1754.9	23	100.0%	23.00	6.00	0.1580	1.0000	0.1580
	LTE B12 (FDD)	23010	699.0	23	100.0%	23.00	6.63	0.1827	0.4660	0.3921
		23094	707.4	23	100.0%	23.00	6.63	0.1827	0.4716	0.3874
		23179	715.9	23	100.0%	23.00	6.63	0.1827	0.4773	0.3828
	LTE B13	23180	777.0	23	100.0%	23.00	6.63	0.1827	0.5180	0.3527
	(FDD)	23229	781.9	23	100.0%	23.00	6.63	0.1827	0.5213	0.3505
		23279	786.9	23	100.0%	23.00	6.63	0.1827	0.5246	0.3483
	LTE B26	26690	814.0	23	100.0%	23.00	6.63	0.1827	0.5427	0.3367
	(FDD)	26864	831.4	23	100.0%	23.00	6.63	0.1827	0.5543	0.3296
		27039	848.9	23	100.0%	23.00	6.63	0.1827	0.5659	0.3228
									Sum:	0.3931

Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

## 11.2 RSS-102 Issue 6 RF Exposure Data

Radio	Band	Channel	Frequency (MHz)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	Duty Cycle (%)	Duty Cycle Adjusted Cond. Output Power (dBm)	Antenna Gain (dB)	MPE Value @ 20cm (W/m²)	MPE Limit (W/m²)	MPE / Limit Ratio (for Co- Location)
BLE	BLE	37	2402	3.86	100.0%	3.86	3.16	0.0100	5.3508	0.0019
		17	2440	3.86	100.0%	3.86	3.16	0.0100	5.4085	0.0019
		39	2480	3.86	100.0%	3.86	3.16	0.0100	5.4689	0.0018
Cellular	LTE B2 (FDD)	18000	1920.0	23	100.0%	23.00	8.51	2.8166	4.5914	0.6135
		18299	1949.9	23	100.0%	23.00	8.51	2.8166	4.6401	0.6070
		18599	1979.9	23	100.0%	23.00	8.51	2.8166	4.6888	0.6007
	LTE B4 (FDD)	19950	1710.0	23	100.0%	23.00	6.00	1.5803	4.2419	0.3725
		20174	1732.4	23	100.0%	23.00	6.00	1.5803	4.2798	0.3692
		20399	1754.9	23	100.0%	23.00	6.00	1.5803	4.3178	0.3660
	LTE B12 (FDD)	23010	699.0	23	100.0%	23.00	6.63	1.8270	2.3017	0.7937
		23094	707.4	23	100.0%	23.00	6.63	1.8270	2.3206	0.7873
		23179	715.9	23	100.0%	23.00	6.63	1.8270	2.3396	0.7809
	LTE B13 (FDD)	23180	777.0	23	100.0%	23.00	6.63	1.8270	2.4743	0.7384
		23229	781.9	23	100.0%	23.00	6.63	1.8270	2.4849	0.7352
		23279	786.9	23	100.0%	23.00	6.63	1.8270	2.4958	0.7320
	LTE B26 (FDD)	26690	814.0	23	100.0%	23.00	6.63	1.8270	2.5542	0.7153
		26864	831.4	23	100.0%	23.00	6.63	1.8270	2.5914	0.7050
		27039	848.9	23	100.0%	23.00	6.63	1.8270	2.6285	0.6950
									Sum:	0.7956



Product: TM5040 Tank Monitor, Model TM5040 C024-2R1
Date: 9/20/2024

## 12 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	9/20/2024	105820250LEX-008	DP	<i>m</i> C	Original Issue
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