

RAPPORTO DI PROVA

TEST REPORT

Rif. / Ref. n.	MPETR_180903-1	Data / Date:	08/06/2022	Pagine / Pages:	13
Scopo delle prove Test object	Prove di tipo in accordo alla Norma <i>Type test according to standards</i> FCC Cfr 47 part 2 - §2.1093 RSS-102:2015				
Richiedente Applicant	DATALOGIC S.r.l. Via S. Vitalino 13 - 40012 Lippo Di Calderara Di Reno - Bologna - Italy Phone. +39 051 3147196 Fax +39 051 3147561				
Marchio commerciale Trade mark					
Fabbricante Manufacturer	DATALOGIC S.r.l. Via S. Vitalino 13 - 40012 Lippo Di Calderara Di Reno - Bologna - Italy				
Prodotto Product	Barcode reader				
Modello testato Testing model	QBT2500				
Tipo Type	QBT2500-BK				
Identificativo FCC & IC FCC & IC ID	FCC: U4FQBT25 IC: 3862D-QBT25				
Data ricevimento campioni Date of test samples receipt	09/12/2021				
Campioni verificati No. of tested samples	1 – Sampled by the applicant				
Data verifiche Testing date	From 14/12/2021 to 05/04/2022				
Sito di prova Testing site	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
Esito delle valutazioni Assessment results	CONFORME / COMPLIANT				
Verifiche effettuate da Verifications carried out by	Daniele AOSANI Tecnico Laboratorio Laboratory Engineer				
Approvato Approved by	Riccardo PFEIFFER Responsabile Laboratorio Laboratory Manager				

I risultati delle prove riportati nel presente rapporto di prova si riferiscono solo ai campioni esaminati.

The test results reported in this test report shall refer only to the samples tested.

Il campione è stato fornito dal cliente ed i risultati si riferiscono al campione così come ricevuto

The sample has been provided by the customer and the results apply to the sample as received

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Conformity Assessment Body Identifier (CABID)	5347A
Identificativo FCC del sito di prova FCC designation number	IT0012

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0. RELEASE CONTROL RECORD

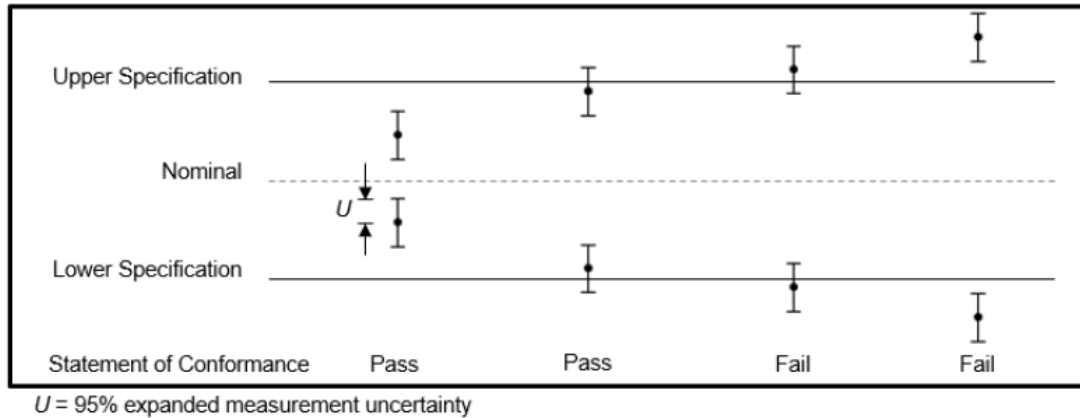
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_180903-0	Original Release	19/04/2022
MPETR_180903-1	Updated ISED calculation at pag.13	08/06/2022

This document is valid in last revision that deletes and replaces the previous one

1. DECISION RULE

PRSLAB specifies that, if the decision rules of conformity of the test results are not indicated in detail in the standard/s object of tests, it takes as a decision rule for the declaration of conformity the simple binary system ($w = 0$) stated in the ILAC-G8-09:2019 document.

The decision rule is applicable for all parts of standard



Statements of conformity are reported as:

- Pass: the measured value is below the acceptance limit, $AL=TL$.
- Fail: the measured value is above the acceptance limit, $AL=TL$.

Definitions

- Guard Band (w): interval between a tolerance limit and a corresponding acceptance limit where length $w=|TL-AL|$.
- Tolerance Limit (TL) (Specification Limit): specified upper or lower bound of permissible values of a property.
- Acceptance Limit (AL): specified upper or lower bound of permissible measured quantity values.

2. INFORMATION PROVIDED BY CUSTOMER

- None

3. GENERAL REMARKS

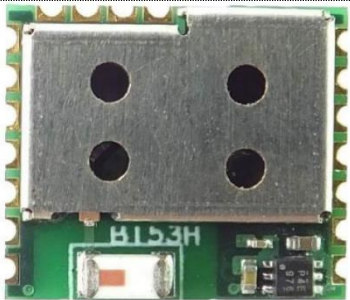
- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

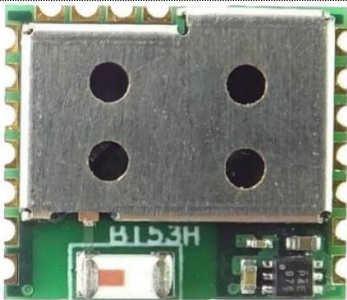
4.1 EUT Identification

DESCRIPTION	Barcode reader
MODEL NAME	QBT2500
FCC ID	U4FQBT25
IC ID	3862D-QBT25
S/N	B21P12466
PRS LAB INTERNAL REFERENCE	BC 399/2021 2/10
TRADEMARK	
MANUFACTURER	Datalogic
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	Internal lithium battery
POWER SUPPLY NOMINAL VOLTAGE	3.6V 
MAX POWER or MAX ABSORBED CURRENT	700mA
OPERATING TEMPERATURE	+0°C ~ +50°C
DIMENSIONS	See photography documentation
EUT STANDING	Hand

4.2 Bluetooth Basic Rate / Enhanced Data Rate module technical data

CHIP MANUFACTURER			
MODEL NAME	BT53H		
ETS CATEGORY	Bluetooth - Basic Rate & EDR		
TYPE OF RADIO DEVICE	Transceiver		
FREQUENCY BAND	2402 – 2480MHz		
NUMBER OF CHANNELS	79		
CHANNEL SPACING	1MHz		
MODE	Basic Rate	Enhanced Data Rate	
TYPE OF MODULATION	GFSK	$\pi/4$ -DQPSK	8DQPSK
PACKET TYPE	DH5	2DH5	3DH5
DATA RATE (Mbit/s)	1	2	3
ANTENNA	Chip antenna		
ANTENNA GAIN	0.5dBi		
ANTENNA MANUFACTURER			
PHOTO MODULE			

4.3 Bluetooth Low Energy module technical data

CHIP MANUFACTURER		
MODEL NAME	BT53H	
ETS CATEGORY	Bluetooth Low Energy	
TYPE OF RADIO DEVICE	Transceiver	
FREQUENCY BAND	2402 – 2480MHz	
NUMBER OF CHANNELS	40	
CHANNEL BANDWIDTH	1MHz	
CHANNEL SPACING	2MHz	
TYPE OF MODULATION	GFSK	
DATA RATES (Mbit/s)	1	
ANTENNA	Chip antenna	
ANTENNA GAIN	0.5dBi	
ANTENNA MANUFACTURER		
PHOTO MODULE		

5. REFERENCE STANDARDS

REFERENCE STANDARD	
Title 47 Part 1 Subpart I § 1.1310	Procedures Implementing the National Environmental Policy Act of 1969. Radiofrequency radiation exposure limits.
Title 47 Part 2 Subpart J § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
ANSI C63.4	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz
RSS 102:2015	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

6. MEASUREMENTS AND CALCULATION RESULTS

6.1 SAR exemption

This device has been excluded from SAR testing based on source-based time-averaged conducted output power and KDB 447498 D01 section 4.3.1 1). This document serves as the RF exposure exhibit in the FCC Form 731 application in lieu of a SAR report.

6.2 Operational Description

The QuickScan™ QBT2500 is a powerful omni-directional reader. It is necessary a calculation for portable use demonstrating that the transmitter can be excluded from SAR testing.

6.3 RF Exposure Conditions:

The device is intended for use in the portable exposure condition and the General Population / Uncontrolled RF exposure environment.

6.4 RF Output Power:

Mode				Basic Rate		
Modulation				GFSK		
Packet Type: (Maximum Payload):				DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	5.78	+0.5	5.28	30	WITHIN THE LIMITS
39	2441	4.90	+0.5	4.40		
78	2480	8.11	+0.5	7.61		
Note: ---						

Mode				Enhanced Data Rate		
Modulation				π/4-DQPSK		
Packet Type: (Maximum Payload):				2DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	5.46	+0.5	4.96	30	WITHIN THE LIMITS
39	2441	6.32	+0.5	5.82		
78	2480	9.06	+0.5	8.56		
Note: ---						

Mode				Enhanced Data Rate		
Modulation				8DQPSK		
Packet Type: (Maximum Payload):				3DH5		
Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	3.56	+0.5	3.06	30	WITHIN THE LIMITS
39	2441	6.59	+0.5	6.09		
78	2480	9.32	+0.5	8.82		
Note: ---						

Channel	Frequency (MHz)	EIRP (dBm)	Antenna Gain	Max Conducted Output power	Limit (dBm)	Result
0	2402	5.25	+0.5	4.75	30	WITHIN THE LIMITS
19	2440	6.01	+0.5	5.51		
39	2480	8.35	+0.5	7.85		
Note: ---						

Max output power: 9,32dBm @2480MHz (8,55mW)

Max output power ± Tune Up tolerance = 9,5mW

6.1 FCC Calculation method and limits

SAR Test Exclusion Thresholds:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [vf(\text{GHz})] \leq 3.0$ (for 1-g body SAR) or 7.5 (for 10-g extremity SAR)

where respectively

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

6.2 FCC Calculation results

Measured Output Power, including tune-up tolerance: 9,5mW

Min Test separation distance: 5mm

f: 2.480GHz (as worst case)

Exclusion Threshold Limb: 7.5 (10-g extremity SAR)

$$\frac{9.5mW}{5mm} * \sqrt{2.480} = 2.98 \leq 7.5$$

Exclusion Threshold body: 3 (10-g extremity SAR)

$$\frac{9.5mW}{5mm} * \sqrt{2.480} = 2.98 \leq 3$$

RESULT: The device is excluded from SAR testing.

6.3 ISED Calculation method and limits

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

For medical implants devices, the exemption limit for routine evaluation is set at 1 mW. The output power of a medical implants device is defined as the higher of the conducted or e.i.r.p to determine whether the device is exempt from the SAR evaluation.

6.4 ISED Calculation results

Frequency (MHz)	Maximum measured output Power (mW)	Limit for limb (mW)	Result
2450	9,5	10	SAR exempt