

CERTIFICATE OF END OF LINE CALIBRATION

PRODUCT NAME:

UMRR-11 Type 44 Enforcement 4D/HD

SENSOR SERIAL:

0x0004BA58

RF SERIAL:

0x00047486

DSP SERIAL:

0x0004A70B

DSP BOARD TYPE:

0x110400

RF TYPE:

0x2C3800

PRODUCT STRING:

UMRR11040004BA58

FILE DATE:

7. February 2025

DOCUMENT:

Certificate_01.1279.0206_0x0004BA58.pdf

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2 SERVICE

Service type: EOL Calibration & BurnIn

Service Place: smart microwave sensors GmbH

In den Waashainen 1

38108 Braunschweig

Germany

This calibration is valid until 24 months after calibration date.

This calibration is valid only for device firmware version TM-DEMO 4.5.0.0 and higher.

The end of line calibration and burn in procedures are executed for the purpose of verifying that the tested product complies to the performance parameters stipulated in the datasheet.

3 DUT IDENTIFICATION

Name	Value
Serial Number	0x0004BA58
RF Serial	0x00047486
DSP Serial	0x0004A70B
DSP Board Type	0x110400
RF Type	0x2C3800
IDX	01.1279.0206
DSP main processor software	UMRR-11_Type_44_Speed-Enforcement_EU_4.5.0.0_cfg15_serial_CAN.xml
DSP bootloader	racerunner_bootloader_umrr1100_2c38_2d38.xml

4 GENERAL VERDICTS

PASS: The DUT meets the EOL requirements from the datasheet.

Name	Value
Calibration	
Result	Pass
Date	May 13, 2024
EOL Place	Chamber_007
Calibration DSP Software Version	Version: 113.2, Application: Cal Modular-SW Flash-Version
Calibration DSP Software Compile Info	7/21/2021 11:18:41 AM
Calibration PC Software Version	V20a-45-2G
Technician ID	238
Name of calibration protocol	2024-05-13-21-42-01_Tuner0_rf0x00047486_dsp0x0004A70B_Protocol
Burn-In procedure	
Result Burn-In procedure	Pass
Date	May 13, 2024
EOL Place	Chamber_007
EOL PC Software Version	V20a-45-2G
Software Version	1.4.3.6.1.44.1
Project ID	4
Customer ID	4
Technician ID	238
Name of Burn-In protocol	2024-05-13-21-46-42_Tuner0_rf0x00047486_dsp0x0004A70B_Protocol

5 RADAR FUNCTION

Name	Value
VCO Limits	Pass
Signal Quality	Pass
Sidelobe level	Pass

Name	Result	Value	Required
Center frequency interval	Pass	24 GHz	< 24,015 GHz
		24,24 GHz	> 24,23 GHz
Output power	Pass	11,34 dB	<= 12 dB
		19,98 dB	<= 20 dB

6 BURN IN RESULT

Results after Burn In test :

6.1 TARGET REPORTING TEST

Measurement: 1

Name	Result	min. Value	max. Value	meas. Value
Angle in degrees	Pass	8,75	11,25	9,93
Speed in m/s	Pass	6,6	7	6,75
Range in cm	Pass	800	820	804,8
Amplitude in dB	Pass	71	81	75,33
Cycle time in s	Pass	0,06	0,08	0,07

Measurement: 2

Name	Result	min. Value	max. Value	meas. Value
Angle in degrees	Pass	3,75	6,25	4,96
Speed in m/s	Pass	6,6	7	6,75
Range in cm	Pass	800	820	807,6
Amplitude in dB	Pass	71	81	75,83
Cycle time in s	Pass	0,06	0,08	0,07

Measurement: 3

Name	Result	min. Value	max. Value	meas. Value
Angle in degrees	Pass	-1,25	1,25	0,01
Speed in m/s	Pass	6,6	7	6,75
Range in cm	Pass	800	820	807,6
Amplitude in dB	Pass	68	78	73,5
Cycle time in s	Pass	0,06	0,08	0,07

CERTIFICATE OF END OF LINE CALIBRATION



Measurement: 4

Name	Result	min. Value	max. Value	meas. Value
Angle in degrees	Pass	-6,25	-3,75	-5,14
Speed in m/s	Pass	6,6	7	6,75
Range in cm	Pass	800	820	808
Amplitude in dB	Pass	67	77	72,05
Cycle time in s	Pass	0,06	0,08	0,07

Measurement: 5

Name	Result	min. Value	max. Value	meas. Value
Angle in degrees	Pass	-11,25	-8,75	-10,06
Speed in m/s	Pass	55,4	55,8	55,4
Range in cm	Pass	800	820	808
Amplitude in dB	Pass	69	79	75,15
Cycle time in s	Pass	0,06	0,08	0,07

7 DIAGNOSTICS

7.1 ONBOARD DIAGNOSTICS

Name	Value
-Cycle Time	Pass
-Ethernet	Pass
-RS485	Pass

7.2 POWER CONSUMPTION

Name	Result	Value	Required
Current	Pass	0,19A	>= 0,17 A <= 0,2 A
Voltage	Pass	24 V	>= 23,9 V <= 24,1 V
Power	Pass	4,54 W	>= 4,1 W <= 4,8 W

8 COMMUNICATION PROTOCOL

Name	Value
Command reception and validation	Pass
o UAT V4 based (where applicable)	
Status message	Pass

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