



## EMI – TEST REPORT

- FCC Part 15.249, RSS210 -

**Type / Model Name** : Acura Bidir Fob MDX MY21 / BTP

**Product Description** : Remote Transceiver for Car access

**Applicant** : Continental Automotive GmbH

**Address** : Siemensstrasse 12

93055 Regensburg, Germany

**Manufacturer** : Continental Guadalajara México, S.A. de C.V.

**Address** : Camino a la Tijera No.3

45640 Tlajomulco de Zúñiga, Jalisco, Mexico

**Test Result** according to the standards  
listed in clause 1 test standards:

**POSITIVE**

**Test Report No. :** **T37598-05-01HU**

23. March 2020

Date of issue



Deutsche  
Akkreditierungsstelle  
D-PL-12030-01-01  
D-PL-12030-01-02

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## 1 TEST STANDARDS

The tests were performed according to following standards:

### **FCC Rules and Regulations Part 15, Subpart A - General (February 28, 2020)**

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

### **FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (February 28, 2020)**

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204 modifications	External radio frequency power amplifiers and antenna
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.249	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz
ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
ANSI C95.1:2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
CISPR 16-4-2: 2003	Uncertainty in EMC measurement
KDB 558074 D01	Guidance for performing compliance measurements on DTS operating under Section 15.247, v03r01 of April 9, 2013.

## 2 SUMMARY

### 2.1 Test result summary

Operating in the 902 MHz – 928 MHz band:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS Gen	AC power line conducted emissions	not applicable
15.215(c)	RSS Gen	-20 dBc EBW	not applicable
15.249(a)	RSS 210	Field strength of fundamental	passed
15.249(d)	RSS 210	Out-of-band emission, radiated	passed
15.205(a)	RSS Gen	Emissions in restricted bands	passed
15.35(c)	RSS-Gen	Pulsed operation	not applicable
15.107	RSS Gen	AC power line conducted emissions	not applicable
	RSS-Gen	Transmitter frequency stability	not applicable
	RSS-Gen	99 % Bandwidth	passed
	RSS 102	Co-location, Co-transmission	not applicable

The mentioned RSS Rule Parts in the above table are related to:

RSS Gen, Issue 5, March 2019

RSS 210, Issue 10, December 2019

RSS 102, Issue 5, March 2015

### 2.2 General remarks

All radiated tests have been performed on samples which are in original state in a test mode function.

The test mode function is only available by EEPROM settings, which could provided only in specially programmed samples for measuring purpose.

Button functions				
	Button description	red LED	green LED	amber LED
Engine S1	no function			
LOCK S2	no function			
UNLOCK S3	TX Modulated Modes		X	
TRUNK S4	RX Modes		X	x
PANIC S5	TX CW Modes	X		

By pressing the specified button, the previously defined channels are revolving.

## FCC ID: KR5BTP / IC ID: 7812D-BTP

The EuT has an incorporated antenna and is powered by a primary battery.  
All radiated measurements were made with the device in all three orthogonal axis (X, Y, Z).  
The test report covers the worst case values which were measured.

Declaration of manufacturer:

- Operation modes:
- DSSS transmissions shall comply with the US / IC regulation as defined in FCC part 15.247 / RSS 247
  - o LR CH1: 924.00 MHz
    - Rx mode:
      - 926.00 MHz
- FSK transmissions shall comply with the US / IC regulation as defined in FCC part 15.249 / RSS 210
  - o SR CH1: 924.600 MHz
  - o SR CH2: 923.625 MHz
    - Rx mode:
      - 926.225 MHz
      - 925.400 MHz

Modulation Scheme:

Range	Scheme	Data Rate	Tolerance	Boud Rate
SR	FSK	7.8125 kbit/s	$\pm 1 \%$	15.625 kbaud/s
LR	DSSS	1.2 kbit/s	$\pm 1 \%$	2.4 kbaud/s

## FINAL ASSESSMENT:

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 04. March 2020

Testing concluded on : 12. March 2020

Checked by:

Tested by:

\_\_\_\_\_  
Klaus Gegenfurtner  
Teamleader Radio

\_\_\_\_\_  
Markus Huber

### **3 EQUIPMENT UNDER TEST**

#### **3.1 Information provided by the Client**

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

#### **3.2 Sampling**

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according his/her instructions.

#### **3.3 Photo documentation of the EuT – See Attachment A**

## FCC ID: KR5BTP / IC ID: 7812D-BTP

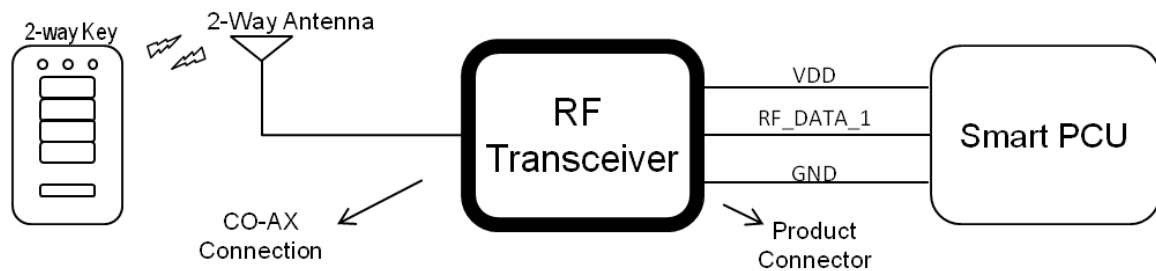
### 3.4 Power supply system utilised

Power supply voltage: 3.0 V / DC (Battery type: CR2032)

### 3.5 Short description of the Equipment under Test (EUT)

The EUT is a bidirectional RF key designed to provide remote engine start with feedback, remote keyless entry, passive entry, passive engine start, and immobilization functionality.

Number of tested samples: 1  
Serial number: B6A57C4A



### 3.6 EUT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- Tx mode at SR1 924.600 MHz, SR2 923.625 MHz

- Rx mode at SR1 926.225 MHz, SR2 925.400 MHz

-

### 3.7 EUT configuration:

The following peripheral devices and interface cables were connected during the measurements:

- |         |               |
|---------|---------------|
| - _____ | Model : _____ |
| - _____ | Model : _____ |
| - _____ | Model : _____ |
| - _____ | Model : _____ |
| - _____ | Model : _____ |
| - _____ | Model : _____ |

## 4 TEST ENVIRONMENT

### 4.1 Address of the test laboratory

**CSA Group Bayern GmbH  
Ohmstrasse 1-4  
94342 STRASSKIRCHEN  
GERMANY**

### 4.2 Statement regarding the usage of logos in test reports

The accreditation and notification body logos displayed in this test report are only valid for standards listed in the accreditation or notification scope of CSA Group Bayern GmbH.

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

### 4.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor  $k = 2$ . The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.



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Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	$\pm 3.29$ dB
Emission Bandwidth	Center frequency of EuT	95%	$\pm 2.5 \times 10^{-7}$
Occupied Bandwidth	Center frequency of EuT	95%	$\pm 2.5 \times 10^{-7}$
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	$\pm 3.53$ dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	$\pm 3.71$ dB
Radiated Spurious Emissions	1000 MHz to 10000 MHz	95%	$\pm 2.34$ dB
Radiated power of the fundamental wave	Center frequency of EuT	95%	$\pm 3.71$ dB
Peak conducted output power	902 MHz to 928 MHz	95%	$\pm 0.35$ dB
Conducted Spurious Emissions	9 kHz to 10000 MHz	95%	$\pm 2.15$ dB

### 4.5 Measurement Protocol for FCC, VCCI and AUSTEL

#### 4.5.1 GENERAL INFORMATION

##### 4.5.1.1 Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

##### 4.5.1.1 General information

CSA Group Bayern GmbH is recognized as wireless testing laboratory under the CAB identifier:

**FCC: DE 0011**

**ISED: DE0009**

In compliance with RSS 210 Issue 9 testing for RSS compliance may be achieved by following the procedures set out in ANSI.

### 4.6 Deviations or Exclusions from the Requirements and Standards

None

## 5 TEST CONDITIONS AND RESULTS

### 5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

#### 5.1.1 Description of the test location

Test location: NONE

#### 5.1.2 Photo documentation of the test set-up

#### 5.1.3 Applicable standard

According to FCC Part 15, Section 15.207(a):

Except as shown in paragraphs (b) and (c) of this Section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the given limits.

#### 5.1.4 Description of Measurement

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

#### 5.1.5 Test result

Limit according to FCC Part 15, Section 15.207(a):

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency

**Remarks:** The measurement is not applicable.

The EuT has no AC mains connections.

The EuT is separated powered by a 3.0 V battery.

**FCC ID: KR5BTP / IC ID: 7812D-BTP****5.2 Radiated emission of the fundamental wave**

For test instruments and accessories used see section 6 Part CPR 2.

**5.2.1 Description of the test location**

Test location: OATS 1

Test distance: 3 m

**5.2.2 Photo documentation of the test set-up – See Attachment B****5.2.3 Applicable standard**

According to FCC Part 15C, Section 15.249(a):

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the effective limits.

**5.2.4 Description of Measurement**

The radiated power of the fundamental wave from the EUT is measured in the frequency range of 30 to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003.

The Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization`s and the EuT are rotated 360 degrees.

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The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page.

The resolution bandwidth during the measurement is as follows:

30 MHz – 1000 MHz:

ResBW: 120 kHz

### 5.2.5 Test result

Frequency [MHz]	L: QP [dB $\mu$ V]	L: AV [dB $\mu$ V]	Bandwidth [kHz]	Correct. [dB]	L: QP [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Delta [dB]
924.600	51.9		120	28.9	80.8		94.0	-13.2
923.625	51.2		120	28.9	80.1		94.0	-14.9

Average-Limit according to FCC Part 15C, Section 15.249(a):

Frequency (MHz)	Field strength of fundamental	
	(mV/m)	dB( $\mu$ V/m)
<b>902 - 928</b>	<b>50</b>	<b>94</b>
2400 - 2483.5	50	94
5725-5875	50	94
24000 - 24250	250	108

Peak-Limit according to FCC Part 15C, Section 15.249(e):

However the peak fieldstrength shall not exceed the maximum permitted average limit by more than 20 dB.

The requirements are **FULFILLED**.

Remarks:

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## FCC ID: KR5BTP / IC ID: 7812D-BTP

### 5.3 Spurious emissions radiated

For test instruments and accessories used see section 6 Part **SER1, SER 2, SER 3**.

#### 5.3.1 Description of the test location

Test location: OATS 1  
Test location: Anechoic chamber 2  
Test distance: 3 m

#### 5.3.2 Photo documentation of the test set-up – See Attachment B

#### 5.3.3 Applicable standard

According to FCC Part 15C, Section 15.249 (d):

Emission radiated outside of the specified frequency bands, except harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limit in FCC Part 15C, Section 15.209, whichever is the lesser attenuation.

#### 5.3.4 Description of Measurement

The radiated emissions from the EUT are measured in the frequency range of 9 kHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. The set up of the EUT will be in accordance to ANSI C63.4. In the frequency range above 1 GHz a spectrum analyser is used with appropriate linear polarized antennas. If the emission level in peak mode complies with the average limit then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported. During the test, the EUT was set into continuous transmitting mode modulated.

Instrument settings:

9 kHz – 150 kHz	RBW:	200 Hz
150 kHz - 30 MHz	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz
1000 MHz – 40 GHz	RBW:	1 MHz

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### 5.3.5 Test result $f < 1$ GHz

Frequency [kHz]	L: QP [dB $\mu$ V]	L: AV [dB $\mu$ V]	Bandwidth [kHz]	Correct. [dB]	L: QP [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Delta [dB]
536.8	24.1	19.7	9.0	20	44.1	39.7	73.0	-33.3
1073.6	23.4	18.0	9.0	20	43.4	38.0	67.0	-29.0
1342.0	21.6	15.9	9.0	20	41.6	35.9	65.0	-29.1

Frequency [MHz]	L: QP [dB $\mu$ V]	Correct. [dB]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Delta [dB]
73.50	2.8	12.0	14.8	40.0	-22.9
162.20	6.9	14.6	21.5	43.5	-21.3

*In both frequency ranges only ambient noises could be detected.*

### 5.3.6 Test result $f > 1$ GHz

Frequency SR1, 924.600 MHz:

Frequency (MHz)	L: PK (dB $\mu$ V)	L: AV (dB $\mu$ V)	Bandwidth (kHz)	Correct. (dB)	Duty Cycle Correct. factor (dB)	Corrected PK level dB( $\mu$ V/m)	Effective limit dB( $\mu$ V/m)	Delta (dB)
1849.20	62.0	--	1000	-16.0	--	46.0	54.0	-8.0
2773.80	58.0	--	1000	-12.8	--	45.2	54.0	-8.8
3698.40	50.3	--	1000	-12.1	--	38.2	54.0	-15.8
4623.00	43.3	--	1000	2.0	--	45.4	54.0	-8.6
5547.60	46.2	--	1000	4.1	--	50.4	54.0	-3.6
6472.20	42.4	--	1000	6.2	--	48.7	54.0	-5.3
7396.80	42.7	--	1000	6.7	--	49.4	54.0	-4.6
8321.40	40.8	--	1000	7.1	--	47.9	54.0	-2.5
9246.00	41.9	--	1000	7.3	--	49.3	54.0	-4.7

Frequency SR2, 923.625 MHz:

Frequency (MHz)	L: PK (dB $\mu$ V)	L: AV (dB $\mu$ V)	Bandwidth (kHz)	Correct. (dB)	Duty Cycle Correct. factor (dB)	Corrected PK level dB( $\mu$ V/m)	Effective limit dB( $\mu$ V/m)	Delta (dB)
1847.25	64.3	--	1000	-16.0	--	48.3	54.0	-5.7
2770.88	58.8	--	1000	-12.8	--	46.0	54.0	-8.0
3694.50	53.4	--	1000	-12.1	--	41.3	54.0	-12.7
4618.13	46.6	--	1000	2.0	--	48.6	54.0	-5.4
5541.75	43.2	--	1000	4.1	--	47.3	54.0	-4.6
6465.38	45.5	--	1000	6.2	--	51.7	54.0	-2.3
7389.00	45.2	--	1000	6.7	--	51.9	54.0	-2.1
8312.63	41.2	--	1000	7.1	--	48.3	54.0	-5.7
9236.25	39.9	--	1000	7.3	--	47.1	54.0	-6.9

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Limit according to FCC Part 15C, Section 15.209:

Frequency (MHz)	15.209 Limits dB(μV/m)	Measurement distance (m)
0.009 - -0.49	2400/f(kHz)	300
0.49 – 1.705	24000/f(kHz)	30
1.705 – 30.0	30	30
30-88	40	3
88-216	43.5	3
216-960	46	3
Above 960	54	3

Average limit according to FCC Part 15C, Section 15.249(a):

Fundamental frequency (MHz)	Field strength of harmonics	
	(μV/m)	dB(μV/m)
<b>902 - 928</b>	<b>500</b>	<b>54</b>
2400 - 2483.5	500	54
5725-5875	500	54
24000 - 24250	2500	68

Peak-Limit according to FCC Subpart 15.249(a), Subpart 15.249(e)

Frequency (MHz)	Fieldstrength of harmonics	
	(μV/m)	dB (μV/m)
<b>902-928</b>	<b>5000</b>	<b>74</b>
2400-2483.5	5000	74
5725-5875	5000	74

Average-Limit according to FCC Subpart 15.249(d) for spurious emissions outside of the specified frequency band:

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

Frequency [MHz]	50dB below of the fundamental [dBμV/m]	15.209 Limits [dBμV/m]	General Radiated Limits [dBμV/m]
30-88	44	40	44
88-216	44	43.5	44
216-960	44	46	46
Above 960	44	54	54

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### Restricted bands of operation:

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209

MHz	MHz	GHz
25.5 – 25.67	960 – 1240	4.5 – 5.15
37.5 – 38.25	1300 – 1427	5.35 – 5.46
73 – 74.6	1435 – 1626.5	7.25 – 7.75
74.8 – 75.2	1645.5 – 1646.5	8.025 – 8.5
108 – 121.94	1660 – 1710	9.0 – 9.2
123 – 138	1718.8 – 1722.2	9.3 – 9.5
149.9 – 150.05	2200 – 2300	10.6 – 12.7
156.52475 – 156.52525	2310 – 2390	13.25 – 13.4
156.7 – 156.9	2483.5 – 2500	14.47 – 14.5
162.0125 – 167.17	2655 – 2900	15.35 – 16.2
167.72 – 173.2	3260 – 3267	17.7 – 21.4
240 – 285	3332 – 3339	22.01 – 23.12
322 – 335.4	3345.8 – 3358	23.6 – 24.0
399.9 – 410	3600 – 4400	31.2 – 31.8
608 – 614		36.43 – 36.5

The requirements are **FULFILLED**.

**Remarks:** The measurement was performed up to the 10<sup>th</sup> harmonic (10.0 GHz).



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### 5.4 Emission bandwidth

For test instruments and accessories used see section 6 Part MB.

#### 5.4.1 Description of the test location

Test location: Shielded Room S4

#### 5.4.2 Photo documentation of the test set-up – See Attachment B

#### 5.4.3 Applicable standard

According to FCC Part 15, Section 15.215(c):

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in Section 15.217 through Section 15.257, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

#### 5.4.4 Description of Measurement

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio of -20 dB. The reference level is the level of the highest signal amplitude observed from the transmitter at the fundamental frequency. Alternative is the x-dB-down function of the analyser used. The EBW is than directly shown in the marker display. The measurement is performed with normal modulation and a transfer rate means the worst case.

#### 5.4.5 Test result

Fundamental [MHz]	20dB Bandwidth F1 [MHz]	20dB Bandwidth F2 [MHz]	Measured Bandwidth [MHz]	LIMIT Fundamental $f \cdot 0,0050$ [MHz]
926.40	924.5576	924.6416	0.0840	4.63
923.625	923.5874	923.6610	0.0736	4.62

Limit according to FCC Part 15C Section 15.215(c):

Frequency (MHz)	20 dB BW limit dependent of the carrier (%)
70 – 900	0.25
above 900	0.50

The bandwidth of the emission shall be no wider than 0.50% of the centre frequency for devices operating above 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

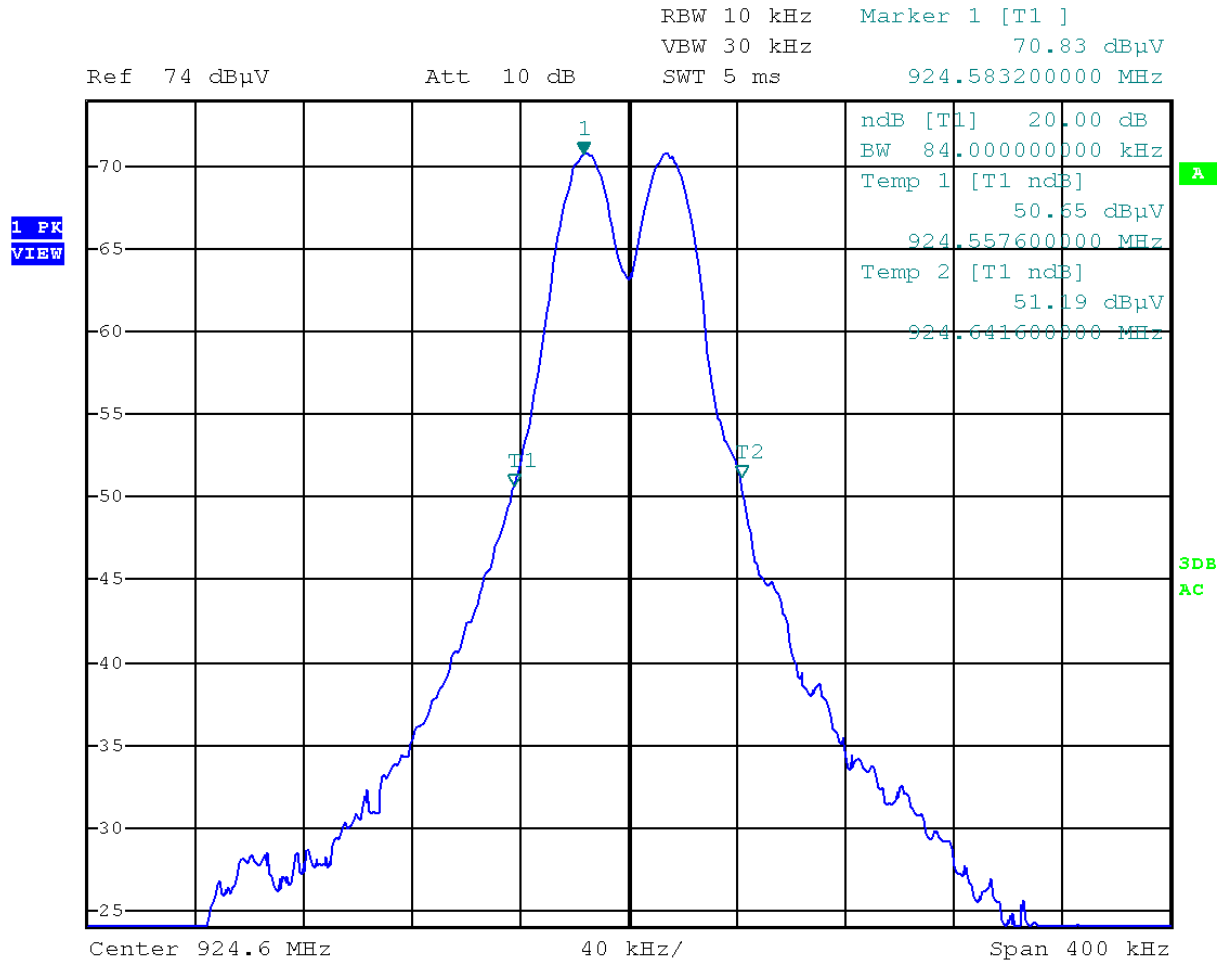
The requirements are **FULFILLED**.

**Remarks:** For detailed test result please refer to following test protocols.

# FCC ID: KR5BTP / IC ID: 7812D-BTP

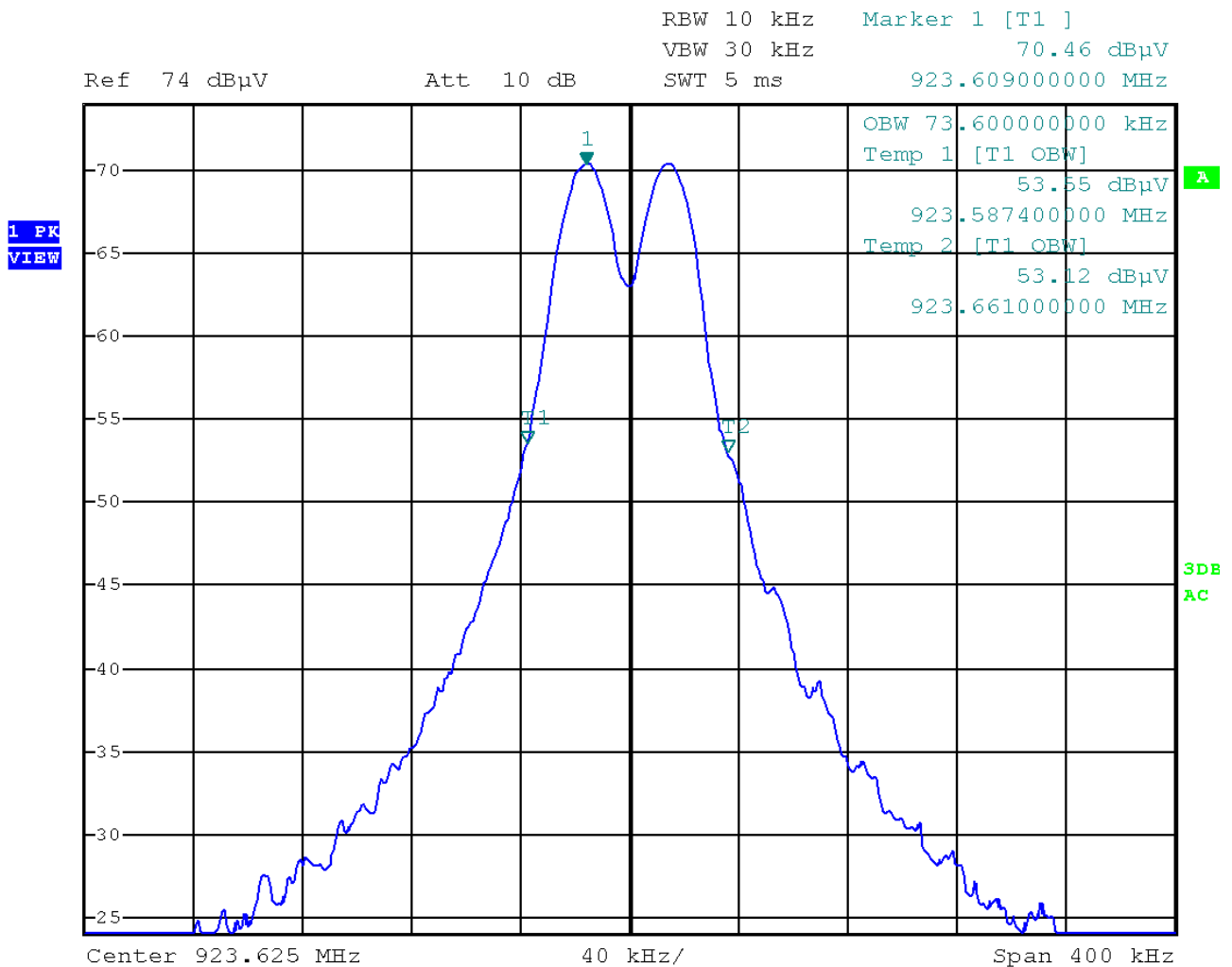
## 5.4.6 Test protocols

20 dB bandwidth SR CH1, 924.60 MHz:



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20 dB bandwidth SR CH2, 923.625 MHz:



The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

## FCC ID: KR5BTP / IC ID: 7812D-BTP

### 5.5 Occupied bandwidth

For test instruments and accessories used see section 6 Part MB.

#### 5.5.1 Description of the test location

Test location: Shielded Room S4

#### 5.5.2 Photo documentation of the test set-up – See Attachment B

#### 5.5.3 Test result

Fundamental frequency (MHz)	99% bandwidth $f_1$ (MHz)	99% bandwidth $f_2$ (MHz)	Measured bandwidth (MHz)	Limit (MHz)
924.60	924.5624	924.6352	0.0728	4.63
923.625	923.5874	923.6610	0.0736	4.62

Limit according to RSS 210, Annex 1, section A1.1.3:

The 99% bandwidth shall be no wider than 0.50% of the center frequency for devices operating above 900 MHz.

The requirements are **FULFILLED**.

**Remarks:** For detailed results, please see the test protocol below.

The Rhode & Schwarz analyzer which we used for this measurement calculates automatically the 99 % emission bandwidth.

## FCC ID: KR5BTP / IC ID: 7812D-BTP

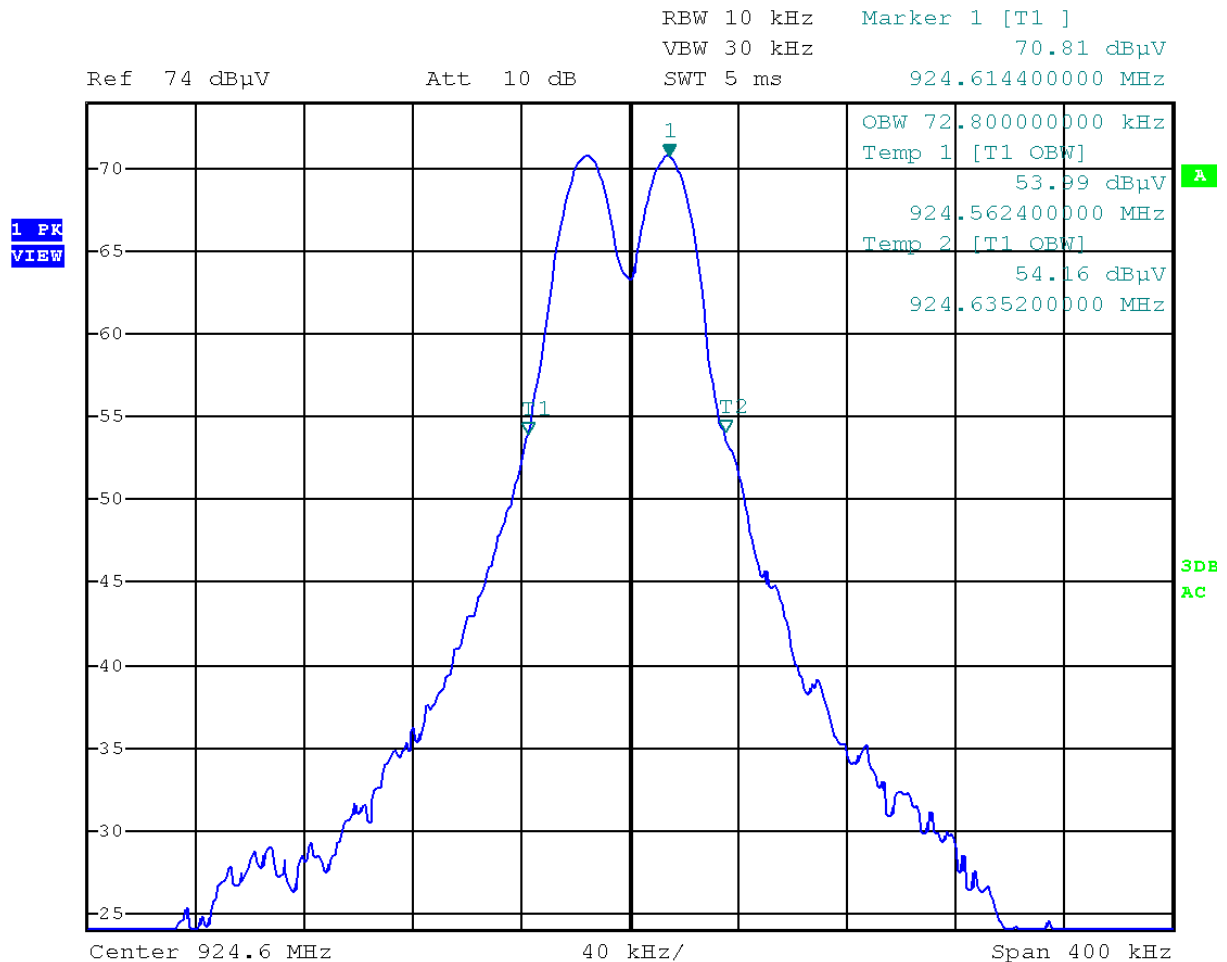
### 5.5.4 Test protocol

#### Emission bandwidth

RSS 210 Annex 1, section A1.1.3

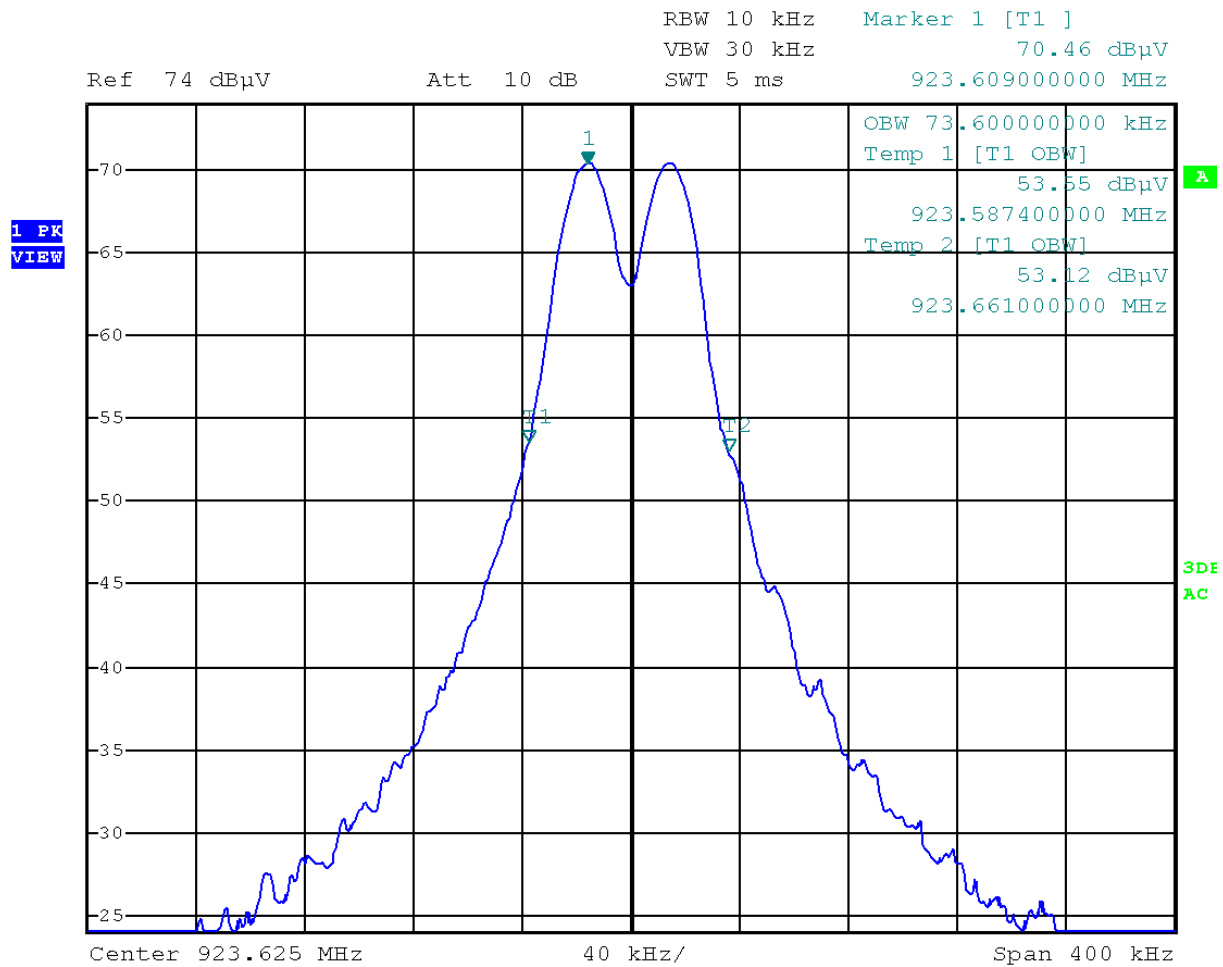
The 99 % emission bandwidth was automatically calculated by the used Rhode & Schwarz analyzer.

SR CH1, 924.60 MHz:



FCC ID: KR5BTP / IC ID: 7812D-BTP

SR CH2, 923.625 MHz:



## 5.7 Antenna application

### 5.7.1 Applicable standard

According to FCC Part 15C, Section 15.203(a):

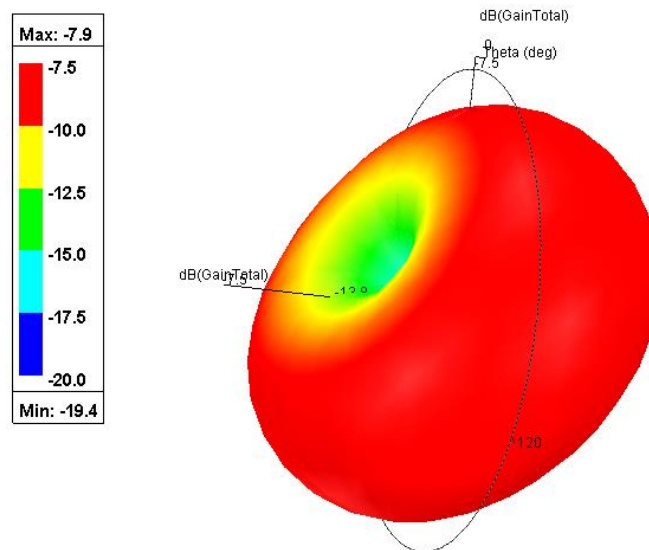
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

### 5.7.2 Result

The EUT use an antenna which will be mounted on a roof of a vehicle. There are two different antenna types. No other antenna than that furnished by the responsible party or external power amplifier can be applied by a customer.

The antenna of the EUT meets the requirement of FCC Part 15C, Section 15.203 and 15.204.

- Antenna characteristics:



Gain [dBi]		
Min	Avg	Max
-19.4	-10.3	-7.9

## FCC ID: KR5BTP / IC ID: 7812D-BTP

### 5.8 Receiver radiated emissions

For test instruments and accessories used see section 6 Part **SER1**, **SER2** and **SER3**.

#### 5.8.1 Description of the test location

Test location: OATS 1  
Test location: Anechoic chamber 2  
Test distance: 3 m

#### 5.8.2 Photo documentation of the test set-up – See Attachment B

#### 5.8.3 Applicable standard

According to FCC Part 15C, Section 15.109(a):

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 m shall not exceed the given limit.

#### 5.8.4 Description of Measurement

The radiated emissions from the EUT are measured in the frequency range of 9 kHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. In the frequency range above 1 GHz a spectrum analyser is used with appropriate linear polarized antennas. The set up of the EUT will be in accordance to ANSI C63.4. If the emission level in peak mode complies with the average limit then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported. During the test, the EUT was set into continuous transmitting mode, modulated.

Instrument settings:

9 kHz – 150 kHz	RBW:	200 Hz
150 kHz - 30 MHz	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz
1000 MHz – 40 GHz	RBW = VBW:	1 MHz



## FCC ID: KR5BTP / IC ID: 7812D-BTP

### 5.8.5 Test result $f < 1$ GHz

Frequency [kHz]	L: QP [dBμV]	L: AV [dBμV]	Bandwidth [kHz]	Correct. [dB]	L: QP [dBμV/m]	L: AV [dBμV/m]	Limit [dBμV/m]	Delta [dB]
536.8	24.1	19.7	9.0	20	44.1	39.7	73.0	-33.3
1073.6	23.4	18.0	9.0	20	43.4	38.0	67.0	-29.0
1342.0	21.6	15.9	9.0	20	41.6	35.9	65.0	-29.1

Frequency [MHz]	L: QP [dBμV]	Correct. [dB]	L: QP [dBμV/m]	Limit [dBμV/m]	Delta [dB]
33.78	3.7	13.4	17.1	40.0	-22.9
118.54	9.3	12.9	22.2	43.5	-21.3
517.43	4.8	21.9	26.7	46.0	-19.3

*In both frequency ranges only ambient noises could be detected.*

### 5.8.6 Test result $f > 1$ GHz

Rx mode

Frequency (GHz)	L: PK (dBμV)	L: AV (dBμV)	Bandwidth (kHz)	Correct. (dB)	L: PK dB(μV/m)	L: AV dB(μV/m)	Limit AV dB(μV/m)	Delta (dB)
3761.0	26.2		1000	3.3	29.5		54.0	-24.5
8536.0	23.2		1000	7.5	30.7		54.0	-23.3

*In the frequency range from 1 GHz up to 10 GHz only ambient noises could be detected.*

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(μV/m)	dB (μV/m)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	30	29.5	30

Limit according to FCC part , Section 15.109(a):

Frequency (MHz)	Limit (μV/m)	Limit dB(μV/m)
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

The requirements are **FULFILLED**.

**Remarks:** The measurement was performed up to the 10<sup>th</sup> harmonic (10 GHz).

During the test, the EUT was set into continuous receiving mode in all 2 possible Rx frequency ranges.

## 6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 2	ESVS 30	02-02/03-05-006	19/08/2020	19/08/2019		
	VULB 9168	02-02/24-05-005	19/07/2020	19/07/2019		
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
MB	FSP 40	02-02/11-11-001	07/10/2020	07/10/2019		
	RF Antenna	02-02/24-05-032				
	METRAHIT WORLD	02-02/32-15-001	16/12/2020	16/12/2019		
SER 1	ESCI	02-02/03-05-005	04/12/2020	04/12/2019		
	HFH 2 - Z 2	02-02/24-15-001	28/03/2020	28/03/2019		
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
SER 2	ESVS 30	02-02/03-05-006	19/08/2020	19/08/2019		
	VULB 9168	02-02/24-05-005	19/07/2020	19/07/2019		
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
SER 3	FSP 40	02-02/11-11-001	07/10/2020	07/10/2019		
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	AFS4-01000400-10-10P-4	02-02/17-13-002				
	AMF-4F-04001200-15-10P	02-02/17-13-003				
	3117	02-02/24-05-009	06/06/2020	06/06/2019		
	Sucoflex N-2000-SMA	02-02/50-05-075				

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.