

|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Prüfbericht-Nr.:<br/>Test Report No.:</b>                                                                                                                                                                                                                                                                                                                                                                                                         | <b>50090511 001</b>                                                                                                      | <b>Auftrags-Nr.:<br/>Order No.:</b>                                                 | <b>154235491</b>                                                                                                                      | <b>Seite 1 von 17<br/>Page 1 of 17</b>                                             |
| <b>Kunden-Referenz-Nr.:<br/>Client Reference No.:</b>                                                                                                                                                                                                                                                                                                                                                                                                | <b>439773</b>                                                                                                            | <b>Auftragsdatum:<br/>Order date:</b>                                               | <b>24.03.2017</b>                                                                                                                     |                                                                                    |
| <b>Auftraggeber:<br/>Client:</b>                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>NCC CO.,LTD</b><br>New River Tower 3F 1-6-11 Shinkawa Chuoku Tokyo zip104-0033                                        |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Prüfgegenstand:<br/>Test item:</b>                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Remote Controller (FCC ID:2ANO2-R)</b>                                                                                |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Bezeichnung / Typ-Nr.:<br/>Identification / Type No.:</b>                                                                                                                                                                                                                                                                                                                                                                                         | <b>NCC-002</b>                                                                                                           |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Auftrags-Inhalt:<br/>Order content:</b>                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Complete test</b>                                                                                                     |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Prüfgrundlage:<br/>Test specification:</b>                                                                                                                                                                                                                                                                                                                                                                                                        | <b>FCC CFR47 Part 15, Subpart C Section 15.231</b><br><b>ANSI C63.10: 2013</b>                                           |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Wareneingangsdatum:<br/>Date of receipt:</b>                                                                                                                                                                                                                                                                                                                                                                                                      | <b>06.04.2017</b>                                                                                                        | <b>Please refer to the External Photos</b>                                          |                                                                                                                                       |                                                                                    |
| <b>Prüfmuster-Nr.:<br/>Test sample No.:</b>                                                                                                                                                                                                                                                                                                                                                                                                          | <b>A000525574-001</b>                                                                                                    |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Prüfzeitraum:<br/>Testing period:</b>                                                                                                                                                                                                                                                                                                                                                                                                             | <b>27.05.2017 to 21.06.2017</b>                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Ort der Prüfung:<br/>Place of testing:</b>                                                                                                                                                                                                                                                                                                                                                                                                        | <b>MRT Technology(Suzhou)<br/>Co., Ltd.</b>                                                                              |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Prüflaboratorium:<br/>Testing laboratory:</b>                                                                                                                                                                                                                                                                                                                                                                                                     | <b>TÜV Rheinland (Shanghai)<br/>Co., Ltd.</b>                                                                            |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Prüfergebnis*:<br/>Test result*:</b>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Pass</b>                                                                                                              |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>geprüft von / tested by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                          | <b>kontrolliert von / reviewed by:</b>                                              |                                                                                                                                       |                                                                                    |
| <b>29.06.2017</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Owen Tian / Senior Project Manager</b>                                                                                | <b>29.06.2017</b>                                                                   | <b>Eliot Zhang / Assistant Project Manager</b>                                                                                        |                                                                                    |
| <b>Datum<br/>Date</b>                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Name / Stellung<br/>Name / Position</b>                                                                               | <b>Unterschrift<br/>Signature</b>                                                   | <b>Datum<br/>Date</b>                                                                                                                 | <b>Name / Stellung<br/>Name / Position</b>                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                          |                                                                                     |                                                                                                                                       | <b>Unterschrift<br/>Signature</b>                                                  |
| <b>Sonstiges / Other</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |
| <b>Zustand des Prüfgegenstandes bei Anlieferung:<br/>Condition of the test item at delivery:</b>                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                          | <b>Prüfmuster vollständig und unbeschädigt<br/>Test item complete and undamaged</b> |                                                                                                                                       |                                                                                    |
| * Legende:                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 = sehr gut<br>P(ass) = entspricht o.g. Prüfgrundlage(n)<br>1 = very good<br>P(ass) = passed a.m. test specification(s) | 2 = gut<br>2 = good                                                                 | 3 = befriedigend<br>F(ail) = entspricht nicht o.g. Prüfgrundlage(n)<br>3 = satisfactory<br>F(ail) = failed a.m. test specification(s) | 4 = ausreichend<br>N/A = nicht anwendbar<br>4 = sufficient<br>N/A = not applicable |
| Legend:                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                                                                                     |                                                                                                                                       | 5 = mangelhaft<br>N/T = nicht getestet<br>5 = poor<br>N/T = not tested             |
| <b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.<br/>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</b> |                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |
| TUV Rheinland (Shanghai) Co., Ltd Floor 1~3, No. 178, Lane 777 West Guanzhong Road, Jinqiao District, Shanghai 200072, P.R. China                                                                                                                                                                                                                                                                                                                    |                                                                                                                          |                                                                                     |                                                                                                                                       |                                                                                    |

**Prüfbericht - Nr.: 50090511 001**  
Test Report No.

**Seite 2 von 17**  
Page 2 of 17

## TEST SUMMARY

**5.1.1 ANTENNA REQUIREMENT**

RESULT: Pass

**5.1.2 CONDUCTED EMISSION**

RESULT: N/A

**5.1.3 RADIATED SPURIOUS EMISSIONS**

RESULT: PASS

**5.1.4 20dB BANDWIDTH**

RESULT: Pass

**5.1.5 DEACTIVATION TIME**

RESULT: Pass

**5.1.6 DUTY CYCLE**

RESULT: Pass

## Contents

|            |                                                           |           |
|------------|-----------------------------------------------------------|-----------|
| <b>1.</b>  | <b>GENERAL REMARKS .....</b>                              | <b>4</b>  |
| <b>1.1</b> | <b>COMPLEMENTARY MATERIALS .....</b>                      | <b>4</b>  |
| <b>2.</b>  | <b>TEST SITES .....</b>                                   | <b>4</b>  |
| <b>2.1</b> | <b>TEST FACILITIES .....</b>                              | <b>4</b>  |
| <b>2.2</b> | <b>LIST OF TEST AND MEASUREMENT INSTRUMENTS.....</b>      | <b>5</b>  |
| <b>2.3</b> | <b>TRACEABILITY .....</b>                                 | <b>5</b>  |
| <b>2.4</b> | <b>CALIBRATION .....</b>                                  | <b>5</b>  |
| <b>2.5</b> | <b>MEASUREMENT UNCERTAINTY.....</b>                       | <b>6</b>  |
| <b>3.</b>  | <b>GENERAL PRODUCT INFORMATION .....</b>                  | <b>7</b>  |
| <b>3.1</b> | <b>PRODUCT FUNCTION AND INTENDED USE.....</b>             | <b>7</b>  |
| <b>3.2</b> | <b>RATINGS AND SYSTEM DETAILS .....</b>                   | <b>7</b>  |
| <b>3.3</b> | <b>INDEPENDENT OPERATION MODES .....</b>                  | <b>7</b>  |
| <b>3.4</b> | <b>NOISE GENERATING AND NOISE SUPPRESSING PARTS .....</b> | <b>8</b>  |
| <b>3.5</b> | <b>SUBMITTED DOCUMENTS .....</b>                          | <b>8</b>  |
| <b>4.</b>  | <b>TEST SET-UP AND OPERATION MODES .....</b>              | <b>9</b>  |
| <b>4.1</b> | <b>PRINCIPLE OF CONFIGURATION SELECTION.....</b>          | <b>9</b>  |
| <b>4.2</b> | <b>TEST OPERATION AND TEST SOFTWARE .....</b>             | <b>9</b>  |
| <b>4.3</b> | <b>SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT .....</b>  | <b>9</b>  |
| <b>4.4</b> | <b>COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....</b>     | <b>9</b>  |
| <b>5.</b>  | <b>TEST RESULTS .....</b>                                 | <b>10</b> |
| <b>5.1</b> | <b>TRANSMITTER REQUIREMENT &amp; TEST SUITES .....</b>    | <b>10</b> |
| 5.1.1      | Antenna Requirement .....                                 | 10        |
| 5.1.2      | Conducted Emission .....                                  | 11        |
| 5.1.3      | Radiated Spurious Emissions .....                         | 12        |
| 5.1.4      | 20dB Bandwidth .....                                      | 13        |
| 5.1.5      | Deactivation Time .....                                   | 14        |
| 5.1.6      | Duty Cycle .....                                          | 15        |
| <b>6.</b>  | <b>LIST OF TABLES .....</b>                               | <b>17</b> |
| <b>7.</b>  | <b>LIST OF FIGURES .....</b>                              | <b>17</b> |

## 1. General Remarks

### 1.1 Complementary Materials

Null.

## 2. Test Sites

### 2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communications Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules. The description of the test facility is listed under FCC registration number 809388.

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

### Radiated Test Equipments

| Instrument                       | Manufacturer | Type No.  | Asset No.   | Cali. Due Date |
|----------------------------------|--------------|-----------|-------------|----------------|
| Spectrum Analyzer                | Agilent      | E4447A    | MY45300136  | 08.12.2017     |
| EMI Test Receiver                | R&S          | ESR7      | 101209      | 03.11.2017     |
| Preamplifier                     | Schwarzbeck  | BBV 9721  | 9721-008    | 15.04.2018     |
| Preamplifier                     | Agilent      | 83017A    | MY53270040  | 28.03.2018     |
| Loop Antenna                     | Schwarzbeck  | FMZB1519  | 1519-041    | 14.12.2017     |
| TRILOG Antenna                   | Schwarzbeck  | VULB9162  | 9162-047    | 07.11.2017     |
| Broad-Band Horn Antenna          | Schwarzbeck  | BBHA9120D | 9120D-1167  | 07.11.2017     |
| Broadband Horn Antenna           | Schwarzbeck  | BBHA9170  | BBHA9170549 | 03.01.2018     |
| Digital Thermometer & Hygrometer | Minggao      | N/A       | N/A         | 30.11.2017     |

### Conducted Test Equipment

| Instrument                 | Manufacturer | Type No. | Asset No.  | Cali. Due Date |
|----------------------------|--------------|----------|------------|----------------|
| Spectrum Analyzer          | Agilent      | N9020A   | MY52090106 | 08.05.2018     |
| USB Wideband Power Sensor  | Boonton      | 55006    | 8911       | 08.05.2018     |
| Temperature/Humidity Meter | Yuhuaize     | N/A      | N/A        | 20.12.2017     |

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

**Table 2: Measurement Uncertainty**

| Measurement Type                | Frequency    | Uncertainty |
|---------------------------------|--------------|-------------|
| Antenna Port Conducted Emission | < 1GHz       | ±0.39dB     |
|                                 | > 1GHz       | ±0.68dB     |
| Radiated Emission               | 30MHz - 1GHz | ±5.34dB     |
|                                 | > 1GHz       | ±5.40dB     |

## 3. General Product Information

### 3.1 Product Function and Intended Use

The EUT (Equipment Under Test) contains a STRERCH REFLE Air2.0 and Remote Control.

The STRERCH REFLE Air2.0 contains a 433.92MHz receiver.

The Remote Control contains a 433.92MHz transmitter.

The aim of this report is to evaluate the RF performance of the Remote Controller.

For details refer to the User Manual and Circuit Diagram.

### 3.2 Ratings and System Details

STRERCH REFLE Air2.0 (Receiver)

|                     |                                                         |
|---------------------|---------------------------------------------------------|
| Model name          | : NCC-002                                               |
| Frequency band      | : 433.05-434.79 MHz                                     |
| Operating Frequency | : 433.92 MHz                                            |
| Modulation Type     | : ASK                                                   |
| Operation Voltage   | : DC 3.7V Re-chargable battery                          |
| Charger Voltage     | : Input AC 100-240V ,50-60Hz 0.3A, output DC 5V, 1200mA |

Remote control(Transmitter)

|                     |                     |
|---------------------|---------------------|
| Rated Voltage       | : DC 3V(CR2025)     |
| Modulation Type     | : ASK               |
| Frequency band      | : 433.05-434.79 MHz |
| Operating Frequency | : 433.92 MHz        |

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On-The transmitter was powered on and kept transmitting during the test.

**Prüfbericht - Nr.: 50090511 001**  
*Test Report No.*

**Seite 8 von 17**  
*Page 8 of 17*

### **3.4 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.5 Submitted Documents**

- |                    |                      |
|--------------------|----------------------|
| - Bill of Material | - Circuit Diagram    |
| - PCB Layout       | - Instruction Manual |
| - Photo Document   | - Rating Label       |

## **4. Test Set-up and Operation Modes**

### **4.1 Principle of Configuration Selection**

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

### **4.2 Test Operation and Test Software**

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

Software used for testing: Null.

### **4.3 Special Accessories and Auxiliary Equipment**

Null.

### **4.4 Countermeasures to achieve EMC Compliance**

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

## 5. Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

RESULT:

Pass

According to the manufacturer declared, the EUT has one PCB antenna, the directional gain of antenna is 2.5dBi and the PCB antenna is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

**Table 3: Antenna Requirement****FCC 15.203 – Antenna Requirement 1**

Requirement: No antenna other than that furnished by the responsible party shall be used with the device.

- ☒ Use of a permanently attached antenna, or
- ☐ Use an antenna that uses a unique coupling to the intentional radiator.

Results: Antenna type: PCB antenna

Verdict: PASS

**FCC 15.204 – Antenna Requirement 2**

Requirement: An intentional radiator may be operated only with the antenna with which it is authorized. If an antenna is marketed with the intentional radiator, it shall be of a type which is authorized with the intentional radiator.

Results: Only one type antenna can be used

Verdict: PASS

**Prüfbericht - Nr.: 50090511 001**  
*Test Report No.***Seite 11 von 17**  
*Page 11 of 17*

## 5.1.2 Conducted Emission

**RESULT:****N/A**

Test standard : FCC Part 15.207

**Note:**

This device is powered by battery, so the conducted emission test is not required.

### 5.1.3 Radiated Spurious Emissions

**RESULT:**
**PASS**

Date of testing : 27.05.2017  
 Test standard : FCC Part 15.205  
                   : FCC Part 15.209  
                   : FCC Part 15.231(b)  
 Kind of test site : 3m Semi-Anechoic Chamber  
 Operation Mode : A

**Table 4: Radiated Emission of Fundamental Emission**

| Frequency [MHz] | Reading Level [dBuV] | Factor [dB] | Duty Cycle Factor [dB] | Measure Level [dBuV/m] | Limit [dBuV/m] | Over Limit [dB] | Type | Pol. |
|-----------------|----------------------|-------------|------------------------|------------------------|----------------|-----------------|------|------|
| 434.005         | 41.667               | 17.427      | N/A                    | 59.094                 | 95.600         | -36.506         | PK   | H    |
| 434.005         | 33.640               | 17.427      | N/A                    | 51.067                 | 95.600         | -44.533         | PK   | V    |

**Table 5: Spurious Radiated Emission 30MHz-6GHz**

| Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type | Pol. |
|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|------|
| 325.365         | 30.841                 | 15.838               | -15.159         | 46.000         | 15.002      | PK   | H    |
| 1302.500        | 52.081                 | 60.309               | -21.919         | 74.000         | -8.229      | PK   | H    |
| 1735.000        | 46.287                 | 53.605               | -27.713         | 74.000         | -7.319      | PK   | H    |
| 2170.000        | 49.129                 | 53.069               | -24.871         | 74.000         | -3.940      | PK   | H    |
| 314.695         | 24.368                 | 9.660                | -21.632         | 46.000         | 14.708      | PK   | V    |
| 1302.500        | 45.030                 | 53.258               | -28.970         | 74.000         | -8.229      | PK   | V    |
| 1735.000        | 43.020                 | 50.338               | -30.980         | 74.000         | -7.319      | PK   | V    |
| 2170.000        | 47.400                 | 51.340               | -26.600         | 74.000         | -3.940      | PK   | V    |

Note: Below 30MHz no spurious radiated emission, so no frequency list in the table.

### 5.1.4 20dB Bandwidth

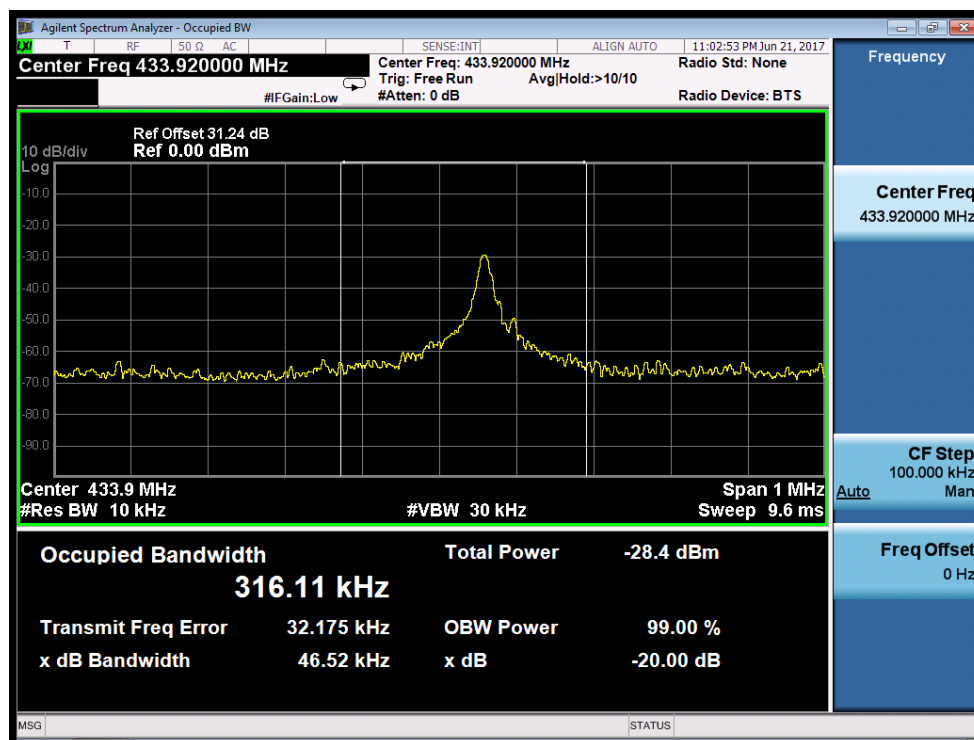
**RESULT:**
**Pass**

Date of testing : 21.06.2017  
 Test standard : FCC Part 15.231(c)

Kind of test site : Shielded room  
 Operation Mode : A

**Table 6: Test result of 20dB Bandwidth**

| Channel Frequency<br>[MHz] | 20dB Bandwidth<br>[MHz] | Limit<br>[MHz]                  | Result |
|----------------------------|-------------------------|---------------------------------|--------|
| 433.92                     | 0.31611                 | $0.25\% \times 433.92 = 1.0848$ | PASS   |

**Figure 1: Test Plot of 20dB Bandwidth**


## 5.1.5 Deactivation Time

**RESULT:**
**Pass**

Date of testing : 21.06.2017  
 Test standard : FCC part 15.231(a)  
 Kind of test site : Shield room  
 Operation Mode : A

**Table 7: Deactivation Time**

| Frequency<br>[MHz] | On Transmission Time<br>[s] | Limit<br>[s] | Result |
|--------------------|-----------------------------|--------------|--------|
| 433.92             | 4.764                       | 5            | PASS   |

**Figure 2: Deactivation Time**

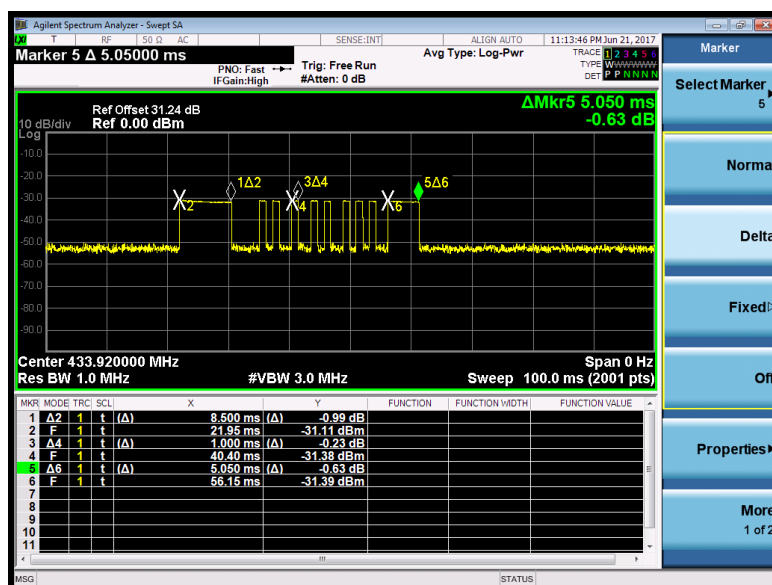

## 5.1.6 Duty Cycle

### RESULT:

**Pass**

Date of testing : 21.06.2017  
 Test standard : FCC part 15.231(a)  
 Kind of test site : Shield room  
 Operation Mode : A

**Figure 3: Test Plot of Duty Cycle**



**Prüfbericht - Nr.: 50090511 001***Test Report No.***Seite 16 von 17***Page 16 of 17*

Duty Cycle:

$$0.0085 + 0.001 \cdot 8 + 0.005 = 0.0215$$

$$0.0215 / 0.296 = 7.26\%$$

Duty Cycle Factor:

$$20 \cdot \log(\text{Duty Cycle}) = 20 \cdot \log(0.0726) = -22.78\text{dB}$$

## 6. List of Tables

|                                                         |    |
|---------------------------------------------------------|----|
| Table 1: List of Test and Measurement Equipment .....   | 5  |
| Table 2: Measurement Uncertainty .....                  | 6  |
| Table 3: Antenna Requirement .....                      | 10 |
| Table 4: Radiated Emission of Fundamental Emission..... | 12 |
| Table 5: Spurious Radiated Emission 30MHz-6GHz .....    | 12 |
| Table 6: Test result of 20dB Bandwidth .....            | 13 |
| Table 7: Deactivation Time.....                         | 14 |

## 7. List of Figures

|                                            |    |
|--------------------------------------------|----|
| Figure 1: Test Plot of 20dB Bandwidth..... | 13 |
| Figure 2: Deactivation Time.....           | 14 |
| Figure 3: Test Plot of Duty Cycle.....     | 15 |