



## **STC Test Report**

Date : 2012-07-19

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No. : MH186689

**Applicant (C01494):** NINCO DESARROLLOS S.L.  
Ctra.de l'Hospitalet 32, 08940 Cornellà, Barcelona, Spain

**Manufacturer:** NINCO DESARROLLOS S.L.  
Ctra.de l'Hospitalet 32, 08940 Cornellà, Barcelona, Spain

**Description of Sample(s):** Submitted sample(s) said to be  
Product: WICO Wireless Controller Kit  
Brand Name: NINCO  
Model Number: 10413TX  
FCC ID: HOG10413TX

**Date Sample(s) Received:** 2012-05-10

**Date Tested:** 2012-06-22

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 and ANSI C63.4:2009 for FCC Certification.

**Conclusion(s):** The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remark(s):** ---

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Dr. LEE Kam Chuen  
Authorized Signatory  
ElectroMagnetic Compatibility Department  
For and on behalf of  
The Hong Kong Standards and Testing Centre Ltd.

**The Hong Kong Standards and Testing Centre Ltd.**

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### **1.0 General Details**

#### **1.1 Equipment Under Test [EUT] Description of Sample(s)**

|                |                                |
|----------------|--------------------------------|
| Product:       | WICO Wireless Controller Kit   |
| Manufacturer:  | NINCO DESARROLLOS S.L.         |
| Brand Name:    | NINCO                          |
| Model Number:  | 10413TX                        |
| Input Voltage: | 4.5Vd.c. ("AA" size battery×3) |

#### **1.2 Description of EUT Operation**

The Equipment Under Test (EUT) is a NINCO DESARROLLOS S.L., WICO Wireless Controller Kit. The transmission transmitter operating in the 2.4GHz ISM frequency band. The EUT continues to transmit while Key is being pressed. Modulation by digital data; and type is GFSK modulation.

#### **1.3 Date of Order**

2012-05-10

#### **1.4 Submitted Sample(s):**

1 Sample

#### **1.5 Test Duration**

2012-06-22

#### **1.6 Country of Origin**

China

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### **2.0 Technical Details**

#### **2.1 Investigations Requested**

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 Regulations and ANSI C63.4:2009 for FCC Certification.

#### **2.2 Test Standards and Results Summary Tables**

| <b>EMISSION<br/>Results Summary</b>                       |                  |                 |                     |                                     |                          |                          |
|---|------------------|-----------------|---------------------|-------------------------------------|--------------------------|--------------------------|
| Test Condition  | Test Requirement | Test Method     | Class /<br>Severity | Test Result                         |                          |                          |
|   |                  |                 |                     | Pass                                | Fail                     | N/A                      |
| Field Strength of<br>Fundamental &<br>Harmonics Emissions | FCC 47CFR 15.249 | ANSI C63.4:2009 | N/A                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emissions  | FCC 47CFR 15.209 | ANSI C63.4:2009 | N/A                 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Note: N/A - Not Applicable

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### **3.0 Test Results**

#### **3.1 Emission**

##### **3.1.1 Radiated Emissions**

|                    |                  |
|--------------------|------------------|
| Test Requirement:  | FCC 47CFR 15.249 |
| Test Method:       | ANSI C63.4:2009  |
| Test Date:         | 2012-06-22       |
| Mode of Operation: | Tx mode          |

#### **Test Method:**

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. The emissions worst-case are shown in Test Results of the following pages.

Remark: 3 orthogonal axis apply to hand-held device only.

\*: Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

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### **Spectrum Analyzer Setting:**

9KHz – 30MHz (Pk & Av)

RBW: 10kHz  
VBW: 30kHz  
Sweep: Auto  
Span: Fully capture the emissions being measured  
Trace: Max. hold

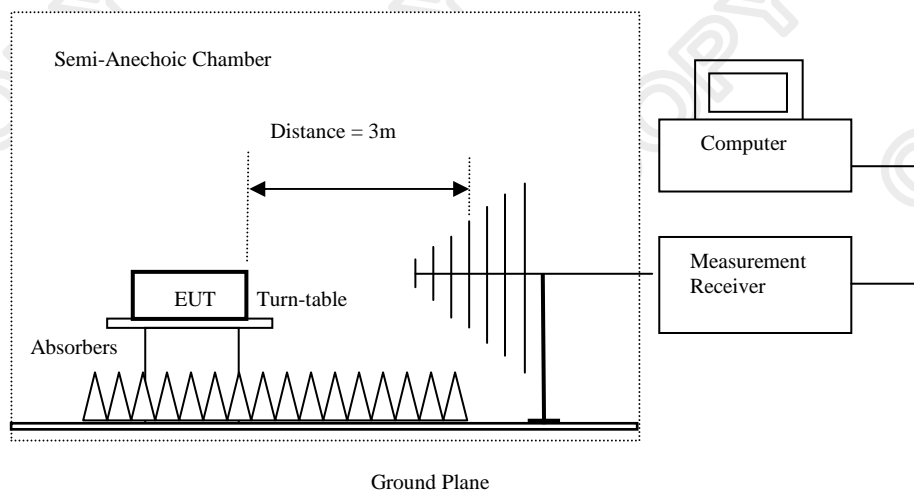
30MHz – 1GHz (QP)

RBW: 120kHz  
VBW: 120kHz  
Sweep: Auto  
Span: Fully capture the emissions being measured  
Trace: Max. hold

Above 1GHz (Pk & Av)

RBW: 3MHz  
VBW: 3MHz  
Sweep: Auto  
Span: Fully capture the emissions being measured  
Trace: Max. hold

### **Test Setup:**



Absorbers placed on top of the ground plane are for measurements above 1000MHz only.

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### Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

| Frequency Range of Fundamental<br>[MHz] | Field Strength of Fundamental Emission<br>[microvolts/meter] | Field Strength of Harmonics Emission<br>[microvolts/meter] |
|---|--|--|
| 902-928                                 | 50,000 [Average]   | 500 [Average]  |
| 2400-2483.5                             | 50,000 [Average]   | 500 [Average]  |

### Results of Tx mode (Low frequency channel): Pass

| Field Strength of Fundamental Emissions<br>Peak Value |   |                                   |                                |                             |                        |                  |
|---|---|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Frequency<br>MHz                                      | Measured Level @3m<br>dB $\mu$ V/m                          | Correction Factor<br>dB $\mu$ V/m | Field Strength<br>dB $\mu$ V/m | Field Strength<br>$\mu$ V/m | Limit @3m<br>$\mu$ V/m | E-Field Polarity |
| 2401.5  | 44.9  | 35.4                              | 80.3                           | 10,351.4                    | 500,000                | Vertical         |
| * 4803.0  | 8.4   | 41.5                              | 49.9                           | 312.6                       | 5,000                  | Vertical         |
| 7204.5  | 1.3   | 48.8                              | 50.1                           | 319.9                       | 5,000                  | Vertical         |
| 9606.0  | Emissions detected are more than 20 dB below the FCC Limits |                                   |                                |                             | 5,000                  | Vertical         |
| * 12007.5   |   |                                   |                                |                             | 5,000                  | Vertical         |
| 14409.0   |   |                                   |                                |                             | 5,000                  | Vertical         |
| 16810.5   |   |                                   |                                |                             | 5,000                  | Vertical         |
| * 19212.0   |   |                                   |                                |                             | 5,000                  | Vertical         |
| 21613.5   |   |                                   |                                |                             | 5,000                  | Vertical         |
| 24015.0   |   |                                   |                                |                             | 5,000                  | Vertical         |

| Field Strength of Fundamental Emissions<br>Average Value |                                    |                                   |                                |                             |                        |                  |
|--|------------------------------------|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Frequency<br>MHz   | Measured Level @3m<br>dB $\mu$ V/m | Correction Factor<br>dB $\mu$ V/m | Field Strength<br>dB $\mu$ V/m | Field Strength<br>$\mu$ V/m | Limit @3m<br>$\mu$ V/m | E-Field Polarity |
| 2401.5   | 30.3                               | 35.4                              | 65.7                           | 1,927.5                     | 50,000                 | Vertical         |
| * 4803.0   | -4.6                               | 41.5                              | 36.9                           | 70.0                        | 500                    | Vertical         |
| 7204.5   | -12.2                              | 48.8                              | 36.6                           | 67.6                        | 500                    | Vertical         |

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB  
1GHz to 18GHz 5.1dB

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### Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

| Frequency Range of Fundamental<br>[MHz] | Field Strength of Fundamental Emission<br>[microvolts/meter] | Field Strength of Harmonics Emission<br>[microvolts/meter] |
|---|--|--|
| 902-928                                 | 50,000 [Average]   | 500 [Average]  |
| 2400-2483.5                             | 50,000 [Average]   | 500 [Average]  |

### Results of Tx mode (Middle frequency channel): Pass

| Field Strength of Fundamental Emissions |   |                                   |                                |                             |                        |                  |
|---|---|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Peak Value                              |   |                                   |                                |                             |                        |                  |
| Frequency<br>MHz                        | Measured Level @3m<br>dB $\mu$ V/m                          | Correction Factor<br>dB $\mu$ V/m | Field Strength<br>dB $\mu$ V/m | Field Strength<br>$\mu$ V/m | Limit @3m<br>$\mu$ V/m | E-Field Polarity |
| 2440.5                                  | 46.6  | 35.5                              | 82.1                           | 12,735.0                    | 500,000                | Vertical         |
| * 4880.0                                | 7.9   | 41.4                              | 49.3                           | 291.7                       | 5,000                  | Vertical         |
| 7320.0                                  | 0.5   | 48.7                              | 49.2                           | 288.4                       | 5,000                  | Vertical         |
| 9762.0                                  | Emissions detected are more than 20 dB below the FCC Limits |                                   |                                |                             | 5,000                  | Vertical         |
| * 12202.5                               |   |                                   |                                |                             | 5,000                  | Vertical         |
| 14643.0                                 |   |                                   |                                |                             | 5,000                  | Vertical         |
| 17083.5                                 |   |                                   |                                |                             | 5,000                  | Vertical         |
| * 19524.0                               |   |                                   |                                |                             | 5,000                  | Vertical         |
| 21964.5                                 |   |                                   |                                |                             | 5,000                  | Vertical         |
| 24405.0                                 |   |                                   |                                |                             | 5,000                  | Vertical         |

| Field Strength of Fundamental Emissions |                                    |                                   |                                |                             |                        |                  |
|---|------------------------------------|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Average Value                           |                                    |                                   |                                |                             |                        |                  |
| Frequency<br>MHz                        | Measured Level @3m<br>dB $\mu$ V/m | Correction Factor<br>dB $\mu$ V/m | Field Strength<br>dB $\mu$ V/m | Field Strength<br>$\mu$ V/m | Limit @3m<br>$\mu$ V/m | E-Field Polarity |
| 2440.5                                  | 30.3                               | 35.5                              | 65.8                           | 1,949.8                     | 50,000                 | Vertical         |
| * 4881.0                                | -4.8                               | 41.4                              | 36.6                           | 67.6                        | 500                    | Vertical         |
| 7321.5                                  | -12.9                              | 48.7                              | 35.8                           | 61.7                        | 500                    | Vertical         |

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB  
1GHz to 18GHz 5.1dB

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### Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

| Frequency Range of Fundamental | Field Strength of Fundamental Emission | Field Strength of Harmonics Emission |
|--------------------------------|--|--------------------------------------|
| [MHz]                          | [microvolts/meter]                     | [microvolts/meter]                   |
| 902-928                        | 50,000 [Average]                       | 500 [Average]                        |
| 2400-2483.5                    | 50,000 [Average]                       | 500 [Average]                        |

### Results of Tx mode (High frequency channel): Pass

| Field Strength of Fundamental Emissions |   |                   |                |                |           |                  |
|---|---|-------------------|----------------|----------------|-----------|------------------|
| Peak Value                              |   |                   |                |                |           |                  |
| Frequency                               | Measured Level @3m  | Correction Factor | Field Strength | Field Strength | Limit @3m | E-Field Polarity |
| MHz                                     | dB $\mu$ V/m  | dB $\mu$ V/m      | dB $\mu$ V/m   | $\mu$ V/m      | $\mu$ V/m |                  |
| 2480.5                                  | 47.8  | 35.8              | 83.6           | 15,135.6       | 500,000   | Horizontal       |
| * 4961.0                                | 7.8   | 41.4              | 49.2           | 288.4          | 5,000     | Horizontal       |
| 7441.5                                  | 2.0   | 48.6              | 50.6           | 338.8          | 5,000     | Horizontal       |
| 9922.0                                  | Emissions detected are more than 20 dB below the FCC Limits |                   |                |                | 5,000     | Vertical         |
| * 12402.5                               |   |                   |                |                | 5,000     | Vertical         |
| 14883.0                                 |   |                   |                |                | 5,000     | Vertical         |
| 17363.5                                 |   |                   |                |                | 5,000     | Vertical         |
| * 19844.0                               |   |                   |                |                | 5,000     | Vertical         |
| 22324.5                                 |   |                   |                |                | 5,000     | Vertical         |
| 24805.0                                 |   |                   |                |                | 5,000     | Vertical         |

| Field Strength of Fundamental Emissions |                    |                   |                |                |           |                  |
|---|--------------------|-------------------|----------------|----------------|-----------|------------------|
| Average Value                           |                    |                   |                |                |           |                  |
| Frequency                               | Measured Level @3m | Correction Factor | Field Strength | Field Strength | Limit @3m | E-Field Polarity |
| MHz                                     | dB $\mu$ V/m       | dB $\mu$ V/m      | dB $\mu$ V/m   | $\mu$ V/m      | $\mu$ V/m |                  |
| 2480.5                                  | 32.9               | 35.8              | 68.7           | 2,722.7        | 50,000    |                  |
| * 4961.0                                | -4.6               | 41.4              | 36.8           | 69.2           | 500       | Horizontal       |
| 7441.5                                  | -12.5              | 48.6              | 36.1           | 63.8           | 500       | Horizontal       |

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB  
1GHz to 18GHz 5.1dB

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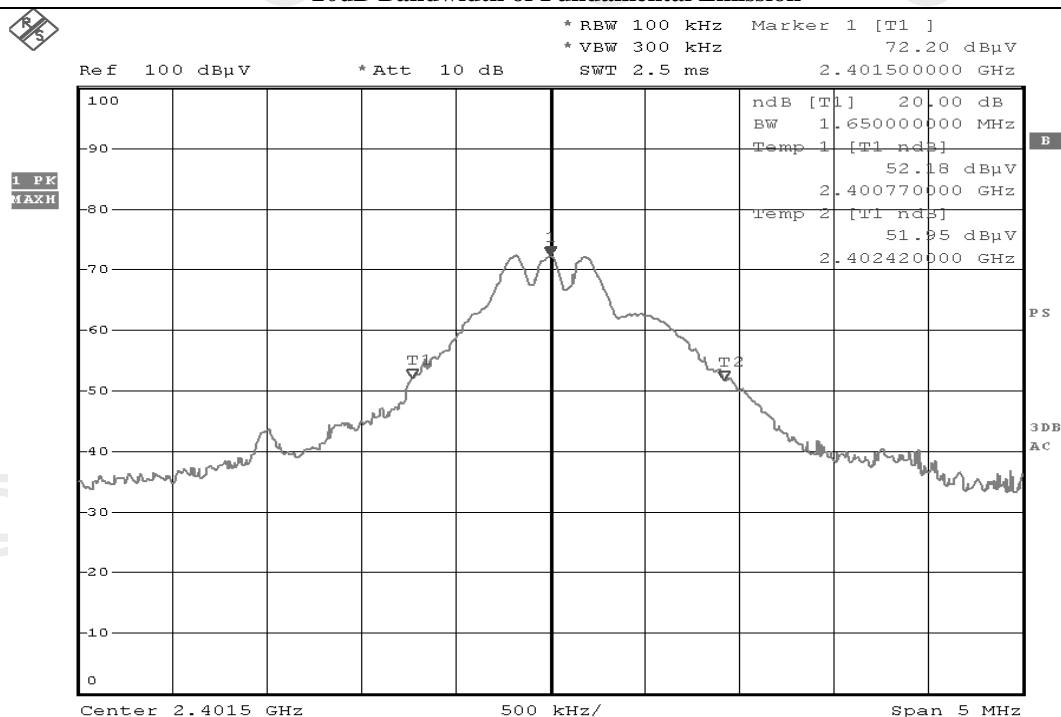
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### Limits for 20dB Bandwidth of Fundamental Emission:

| Frequency Range<br>[MHz] | 20dB Bandwidth<br>[kHz] |
|--------------------------|-------------------------|
| 2401.5                   | 1650                    |

### 20dB Bandwidth of Fundamental Emission



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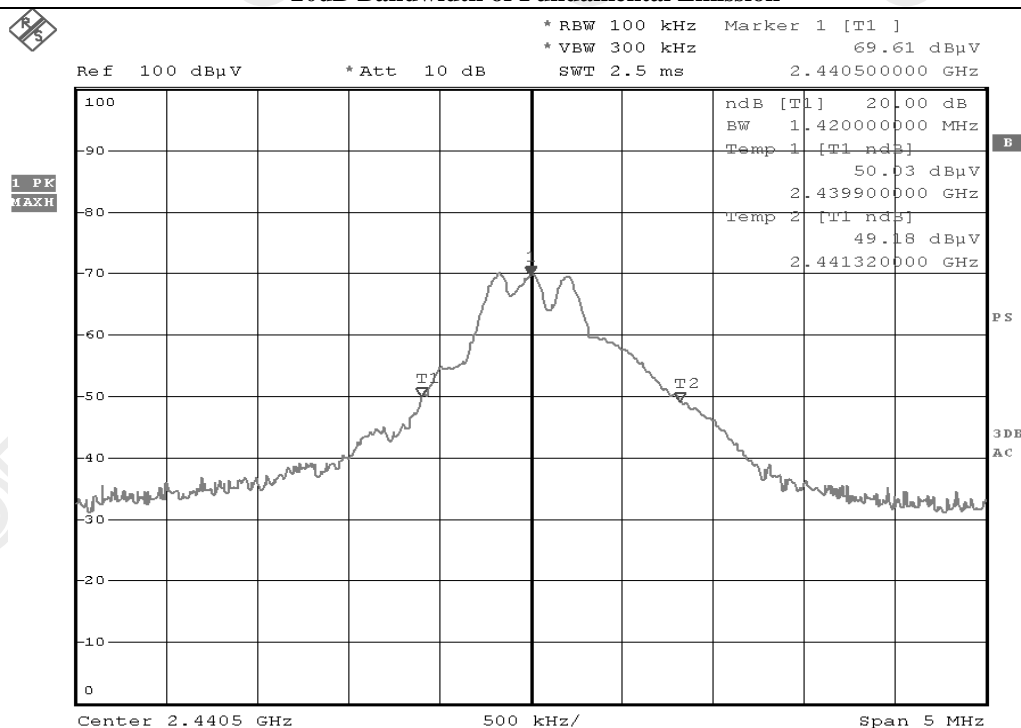
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### Limits for 20dB Bandwidth of Fundamental Emission:

| Frequency Range<br>[MHz] | 20dB Bandwidth<br>[kHz] |
|--------------------------|-------------------------|
| 2440.5                   | 1420                    |

### 20dB Bandwidth of Fundamental Emission



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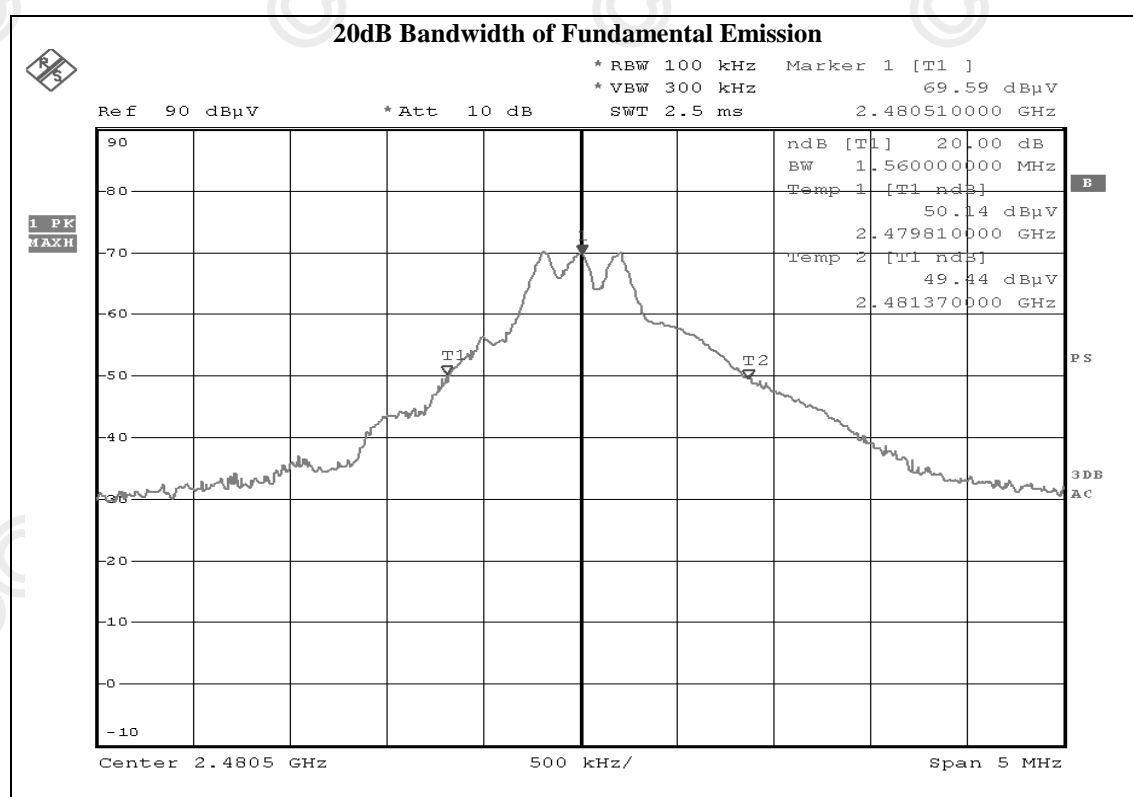
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### Limits for 20dB Bandwidth of Fundamental Emission:

| Frequency Range<br>[MHz] | 20dB Bandwidth<br>[kHz] |
|--------------------------|-------------------------|
| 2480.5                   | 1560                    |



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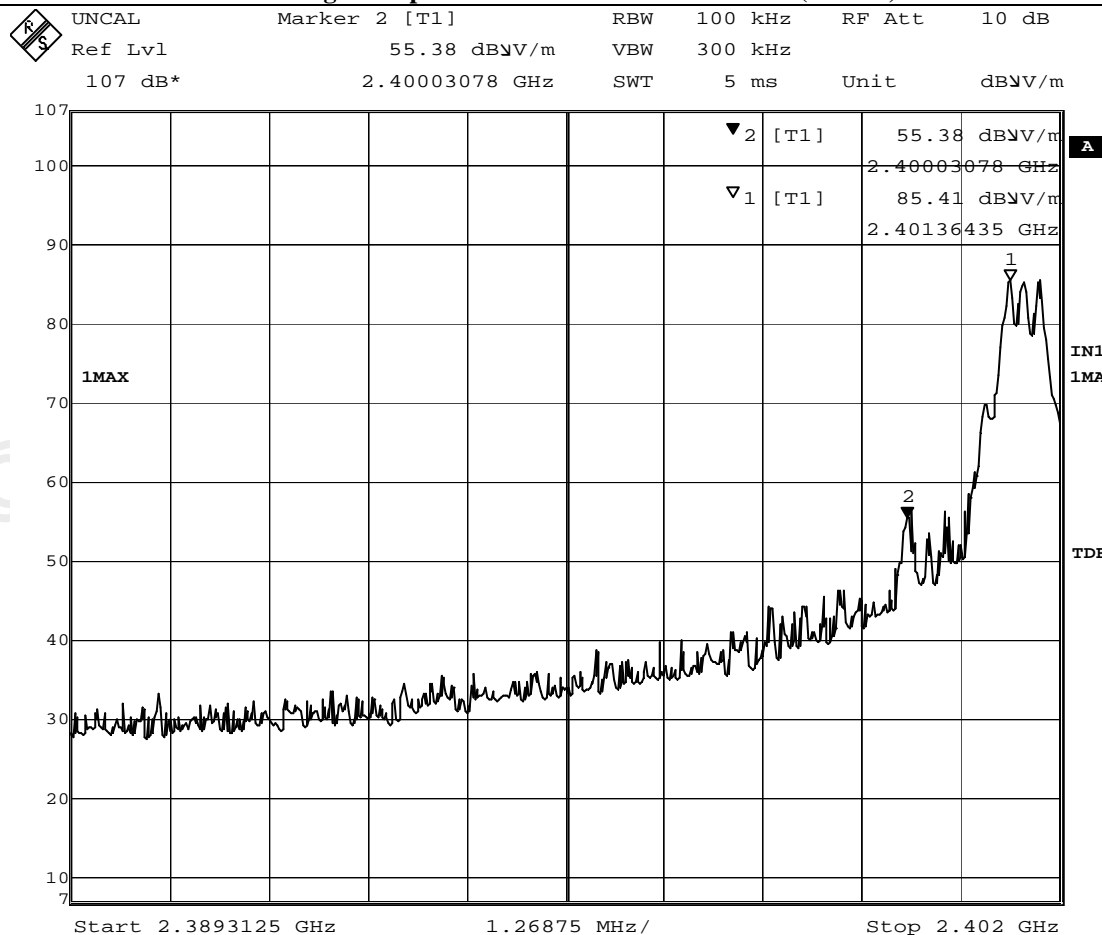
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### Band Edge Measurement:

| Frequency Range<br>[MHz]    | Radiated Emission Attenuated below the<br>Fundamental<br>[dB] |
|-----------------------------|---|
| 2400.0 – Lowest Fundamental | 55.38   |

### Band-edge Compliance of RF Radiated Emissions (Lowest)



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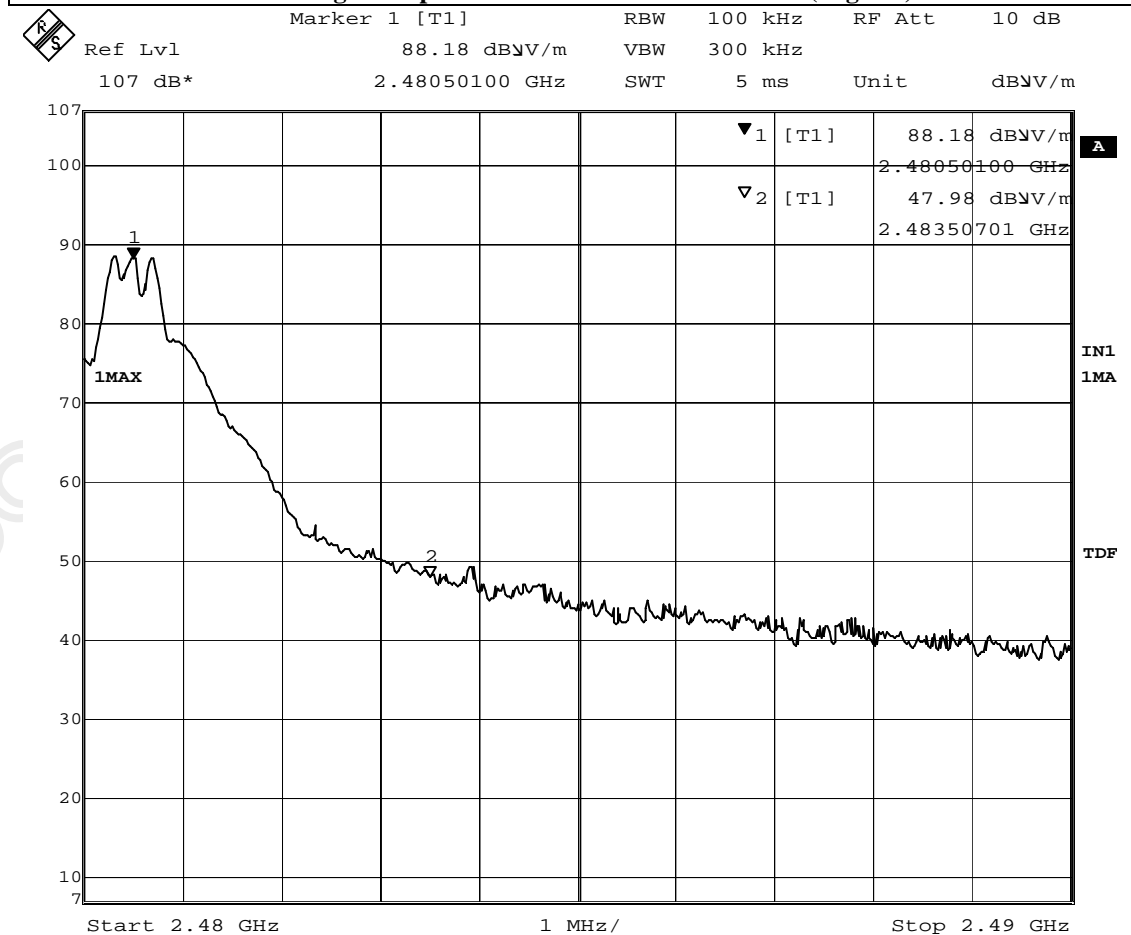
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### Band Edge Measurement:

| Frequency Range<br>[MHz]     | Radiated Emission Attenuated below the<br>Fundamental<br>[dB] |
|------------------------------|---|
| Highest Fundamental – 2483.5 | 88.18   |

### Band-edge Compliance of RF Radiated Emissions (Highest)



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### **Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

| Frequency Range<br>[MHz] | Quasi-Peak Limits<br>[ $\mu\text{V/m}$ ] |
|--------------------------|--|
| 0.009-0.490              | 2400/F (kHz)                             |
| 0.490-1.705              | 24000/F (kHz)                            |
| 1.705-30                 | 30                                       |
| 30-88                    | 100                                      |
| 88-216                   | 150                                      |
| 216-960                  | 200                                      |
| Above 960                | 500                                      |

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Results of Tx mode (9kHz – 30MHz): PASS**

Emissions detected are more than 20 dB below the FCC Limits

### **Results of Tx mode (30MHz – 18GHz): PASS**

| <b>Radiated Emissions<br/>Quasi-Peak</b> |                     |                                    |                                    |                                 |                                 |
|--|---------------------|------------------------------------|------------------------------------|---------------------------------|---------------------------------|
| Emission<br>Frequency<br>MHz             | E-Field<br>Polarity | Level<br>@3m<br>dB $\mu\text{V/m}$ | Limit<br>@3m<br>dB $\mu\text{V/m}$ | Level<br>@3m<br>$\mu\text{V/m}$ | Limit<br>@3m<br>$\mu\text{V/m}$ |
| 30.4                                     | Horizontal          | 33.1                               | 40.0                               | 45.2                            | 100                             |
| 128.0                                    | Horizontal          | 32.4                               | 43.5                               | 41.7                            | 150                             |
| 150.0                                    | Horizontal          | 30.2                               | 43.5                               | 32.4                            | 150                             |
| 44.1                                     | Vertical            | 32.3                               | 40.0                               | 41.2                            | 100                             |
| 192.0                                    | Vertical            | 28.9                               | 43.5                               | 27.9                            | 150                             |
| 503.3                                    | Vertical            | 38.4                               | 46.0                               | 83.2                            | 200                             |

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.2dB  
1GHz to 18GHz 5.1dB

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### **Appendix A**

#### **Radiated Emission**

| <b>EQP NO.</b> | <b>DESCRIPTION</b>         | <b>MANUFACTURER</b> | <b>MODEL NO.</b> | <b>SERIAL NO.</b> | <b>LAST CAL</b> | <b>DUE CAL</b> |
|----------------|----------------------------|---------------------|------------------|-------------------|-----------------|----------------|
| EM276          | Broadband Horn Antenna     | A-INFOMW            | JXTXLB-10180-SF  | J2031090903007    | 2010/08/21      | 2013/08/21     |
| EM215          | MULTIDEVICE CONTROLLER     | EMCO                | 2090             | 00024676          | N/A             | N/A            |
| EM216          | MINI MAST SYSTEM           | EMCO                | 2075             | 00026842          | N/A             | N/A            |
| EM217          | ELECTRIC POWERED TURNTABLE | EMCO                | 2088             | 00029144          | N/A             | N/A            |
| EM218          | ANECHOIC CHAMBER           | ETS-Linggren        | FACT-3           | --                | 2011/10/25      | 2012/10/25     |
| EM219          | BICONILOG ANTENNA          | EMCO                | 3142C            | 00029071          | 2011/03/01      | 2013/03/01     |
| EM229          | EMI Test Receiver          | R&S                 | ESIB40           | 100248            | 2012/05/03      | 2013/05/03     |
| EM022          | LOOP ANTENNA               | EMCO                | 6502             | 1189-2424         | 2010/09/07      | 2012/09/07     |

#### **Remarks:-**

CM      Corrective Maintenance  
N/A     Not Applicable or Not Available  
TBD    To Be Determined

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### **Appendix B**

#### **Photographs of EUT**

**Front View of the product**



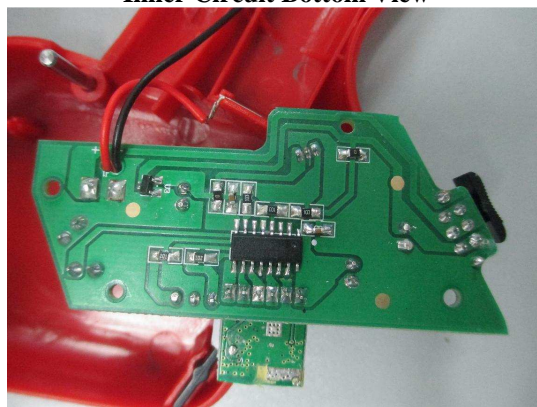
**Rear View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



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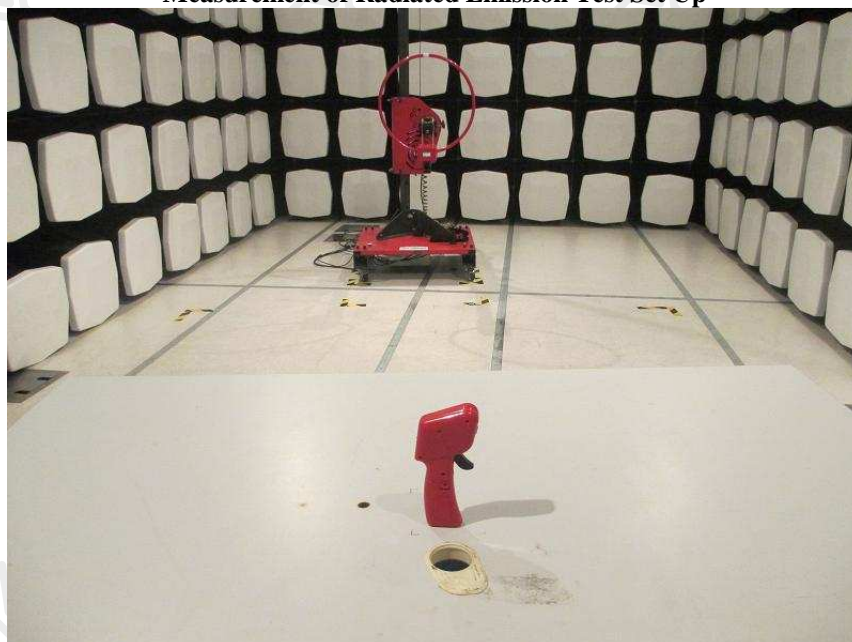
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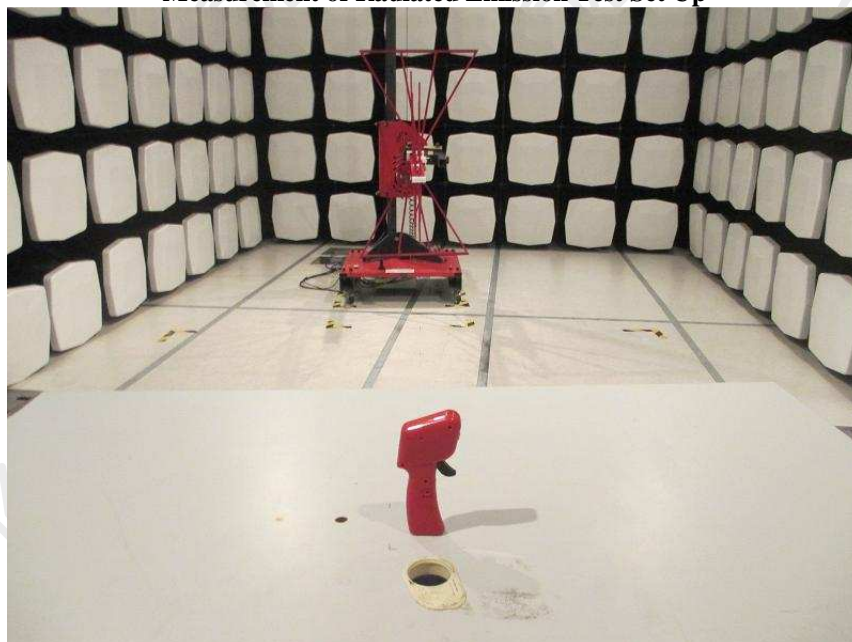
No. : MH186689

### **Photographs of EUT**

**Measurement of Radiated Emission Test Set Up**



**Measurement of Radiated Emission Test Set Up**



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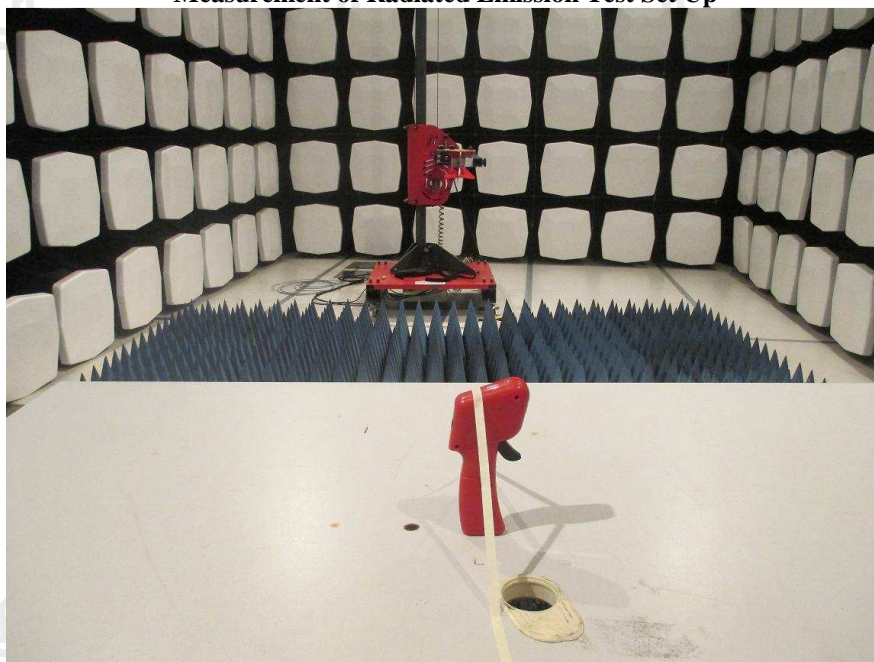
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**Measurement of Radiated Emission Test Set Up**



**\*\*\*\*\* End of Test Report \*\*\*\*\***

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