**SPORTON International Inc.**
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

# FCC RADIO TEST REPORT

| | |
|---|---|
| Applicant's company | **Zebra Technologies Corporation** |
| Applicant Address | 1 Zebra Plaza, Holtsville, NY 11742 |
| FCC ID | **UZ7FX7500** |
| Manufacturer's company | **Zebra Technologies Corporation** |
| Manufacturer Address | 1 Zebra Plaza, Holtsville, NY 11742 |

| | |
|---|---|
| Product Name | FX7500 RFID FIXED READER |
| Brand Name | Zebra |
| Model Name | FX7500 |
| Test Rule | 47 CFR FCC Part 15 Subpart C § 15.247 |
| Test Freq. Range | 902 ~ 928 MHz |
| Received Date | Jun. 15, 2016 |
| Final Test Date | Jun. 30, 2016 |
| Submission Type | Class II Change |

## Statement

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013, DA-00705** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

# Table of Contents

# History of This Test Report

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FR660830 | Rev. 01 | Initial issue of report | Jul. 01, 2016 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# 1. VERIFICATION OF COMPLIANCE

| | | |
|---|---|---|
| Product Name | : | FX7500 RFID FIXED READER |
| Brand Name | : | Zebra |
| Model No. | : | FX7500 |
| Applicant | : | Zebra Technologies Corporation |
| Test Rule Part(s) | : | 47 CFR FCC Part 15 Subpart C § 15.247 |

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 15, 2016 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

# 2. SUMMARY OF THE TEST RESULT

| Applied Standard: 47 CFR FCC Part 15 Subpart C | | | |
|---|---|---|---|
| **Part** | **Rule Section** | **Description of Test** | **Result** |
| 4.1 | 15.207 | AC Power Line Conducted Emissions | Complies |
| 4.2 | 15.247(b)(2) | Maximum Conducted Output Power | Complies |
| 4.3 | 15.247(a)(i) | Hopping Channel Separation | Complies |
| 4.4 | 15.247(b)(2) | Number of Hopping Frequency | Complies |
| 4.5 | 15.247(a)(i) | Dwell Time | Complies |
| 4.6 | 15.247(d) | Radiated Emissions | Complies |
| 4.7 | 15.247(d) | Band Edge Emissions | Complies |
| 4.8 | 15.203 | Antenna Requirements | Complies |

# 3. GENERAL INFORMATION

## 3.1. Product Details

| Items | Description |
|---|---|
| Power Type | From power adapter or PoE |
| Modulation | DB-ASK, PR-ASK |
| Frequency Range | 902 ~ 928 MHz |
| Operating Range | 902.75 ~ 927.25 MHz |
| Channel Number | 50 |
| Channel Space | 0.5 MHz |
| Channel Band Width (99%) | 272.0694 kHz |
| Maximum Conducted Peak Output Power | 29.36 dBm |
| Maximum Conducted Average Output Power | 29.34 dBm |
| Carrier Frequencies | Please refer to section 3.4 |
| Antenna | Please refer to section 3.3 |

## 3.2. Accessories

| Power | Brand Holder | Model | Rating | Rmark |
|---|---|---|---|---|
| Adapter | LEADER ELECTRONICS INC. | NU80-4240325-I1 | Input: 100-240V~50/60Hz 1.4A<br>Output: 24.0V, 3.25A | DC cable<br>Non-shielded, 2.0m |
| **Power** | **Brand** | **P/N** | **Rating** | |
| PoE | Symbol | AP-PSBIAS-2P3-ATR | Input: 100-240VAC~50/60Hz, 0.67A<br>Output: 55V, 0.6A | |
| **Others** | | | | |
| Power line*1: Non-shielded, 1.8m | | | | |
| Ant. cable*4: Shielded, 5.2m | | | | |

## 3.3. Table for Filed Antenna

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Laird | PAL902010-ZB1 | Circularly Polarized Plate | Fixed Type -N Female | 6.6 |

## 3.4. Table for Carrier Frequencies

| Frequency Band | Channel No. | Frequency |
|---|---|---|
| 902 ~ 928 MHz | 1 | 902.75 MHz |
| | 2 | 903.25 MHz |
| | : | : |
| | 26 | 915.25 MHz |
| | 27 | 915.75 MHz |
| | 28 | 916.25 MHz |
| | : | : |
| | 49 | 926.75 MHz |
| | 50 | 927.25 MHz |

## 3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | Channel | Antenna Port |
|---|---|---|---|
| AC Power Conducted Emissions | Normal Link | - | - |
| Maximum Conducted Output Power | CTX | 1/27/50 | 2 |
| Hopping Channel Separation | CTX | 1～3<br>27～29<br>48～50 | 2 |
| Number of Hopping Frequency | CTX | 1～50 | 2 |
| Dwell Time | CTX | 1/27/50 | 2 |
| Radiated Emissions Below 1GHz | Normal Link | - | - |
| Radiated Emissions Above 1GHz | CTX | 1/27/50 | 2 |
| Band Edge Emissions | CTX | 1/27/50 | 2 |

Note: 1.There are 4 antenna ports for this EUT. After evaluating, antenna port 2 was the worst case. Thus, antenna port 2 was used to test.

2.The test configuration and test modes written in this test report are designated by the applicant.

The following test modes were performed for all tests:

**For Conducted Emission and Radiated Emission below 1GHz test:**

Mode 1. Normal Link - EUT Z axis with PoE

Mode 2. Normal Link - EUT Z axis with Adapter

Mode 2 is the worst case, so it was selected to record in this test report

**For Radiated Emission test:**

Mode 1. CTX with Adapter

## 3.6. Table for Testing Locations

| Test Site Location | | | | | |
|---|---|---|---|---|---|
| Address: | No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C. | | | | |
| TEL: | 886-3-656-9065 | | | | |
| FAX: | 886-3-656-9085 | | | | |
| **Test Site No.** | **Site Category** | **Location** | **FCC Designation No.** | **IC File No.** | **VCCI Reg. No** |
| 03CH01-CB | SAC | Hsin Chu | TW0006 | IC 4086D | - |
| CO01-CB | Conduction | Hsin Chu | TW0006 | IC 4086D | - |
| TH01-CB | OVEN Room | Hsin Chu | - | - | - |

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

## 3.7. Table for Class II Change

Below is the table for the change of the product with respect to the original one.

| Modifications | Performance Checking |
|---|---|
| Adding one set same type antenna with higher gain than the original Certificate. | AC Power Conducted Emissions<br>Maximum Conducted Output Power<br>Hopping Channel Separation<br>Number of Hopping Frequency<br>Dwell Time<br>Radiated Emissions<br>Band Edge Emissions |

## 3.8. Table for Supporting Units

**For Test Site No: 03CH01-CB (Below 1GHz)**

| Support Unit | Brand | Model | FCC ID |
|---|---|---|---|
| Notebook | DELL | E4300 | DoC |
| Earphone | e-Power | S90W | N/A |
| Mouse | Logitech | M-U0026 | DoC |
| RFID Tag | JCPenney | N/A | N/A |
| Surge suppressor | ESP | ESP-100-Poe | N/A |

**For Test Site No: CO01-CB**

| Support Unit | Brand | Model | FCC ID |
|---|---|---|---|
| RFID Tag | JCPenney | N/A | N/A |
| Earphone | e-Power | S90W | N/A |
| Mouse | HP | FM100 | DoC |
| Notebook | DELL | E6430 | DoC |
| Surge suppressor | ESP | ESP-100-Poe | N/A |

**For Test Site No: TH01-CB and 03CH01-CB (Above 1GHz)**

| Support Unit | Brand | Model | FCC ID |
|---|---|---|---|
| Notebook | DELL | E4300 | DoC |

## 3.9. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

| Test Software Version | PUTTY | | |
|---|---|---|---|
| Frequency | 902.75 MHz | 915.75 MHz | 927.25 MHz |
| Power Parameters | 305 | 305 | 304 |

## 3.10. EUT Operation during Test

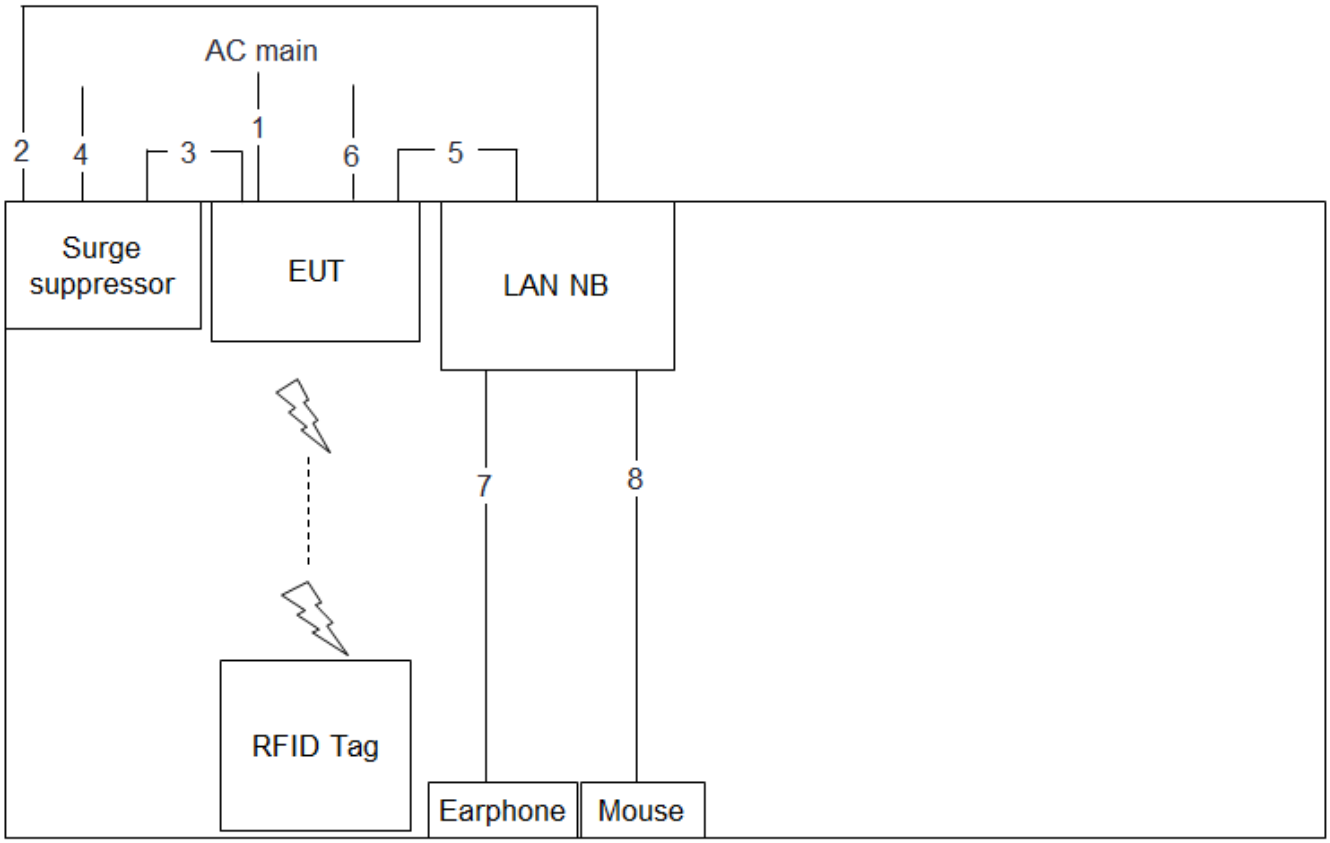
The EUT was programmed to be in continuously transmitting mode.

## 3.11. Duty Cycle

| On Time (ms) | On+Off Time (ms) | Duty Cycle (%) | Duty Factor (dB) | 1/T Minimum VBW (kHz) |
|---|---|---|---|---|
| 1.000 | 1.000 | 100.00% | 0.00 | 0.01 |

## 3.12. Test Configurations

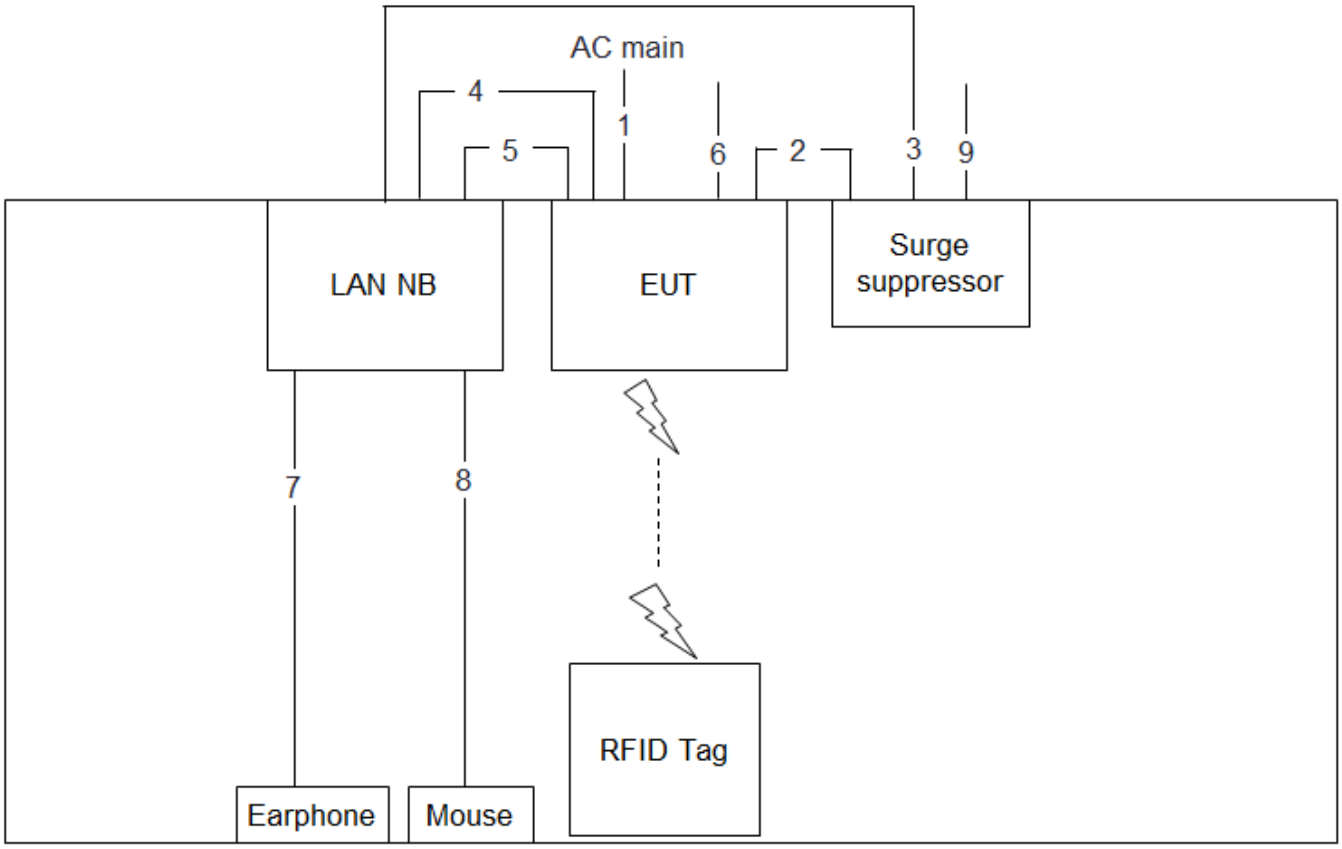
### 3.12.1. AC Power Line Conduction Emissions Test Configuration




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable | No | 1.5m |
| 3 | RJ-45 cable | No | 1m |
| 4 | Ground cable | No | 1.5m |
| 5 | USB cable *2 | Yes | 1.5m |
| 6 | GPIO cable | No | 1m |
| 7 | Audio cable | No | 1.4m |
| 8 | USB cable | Yes | 1.8m |

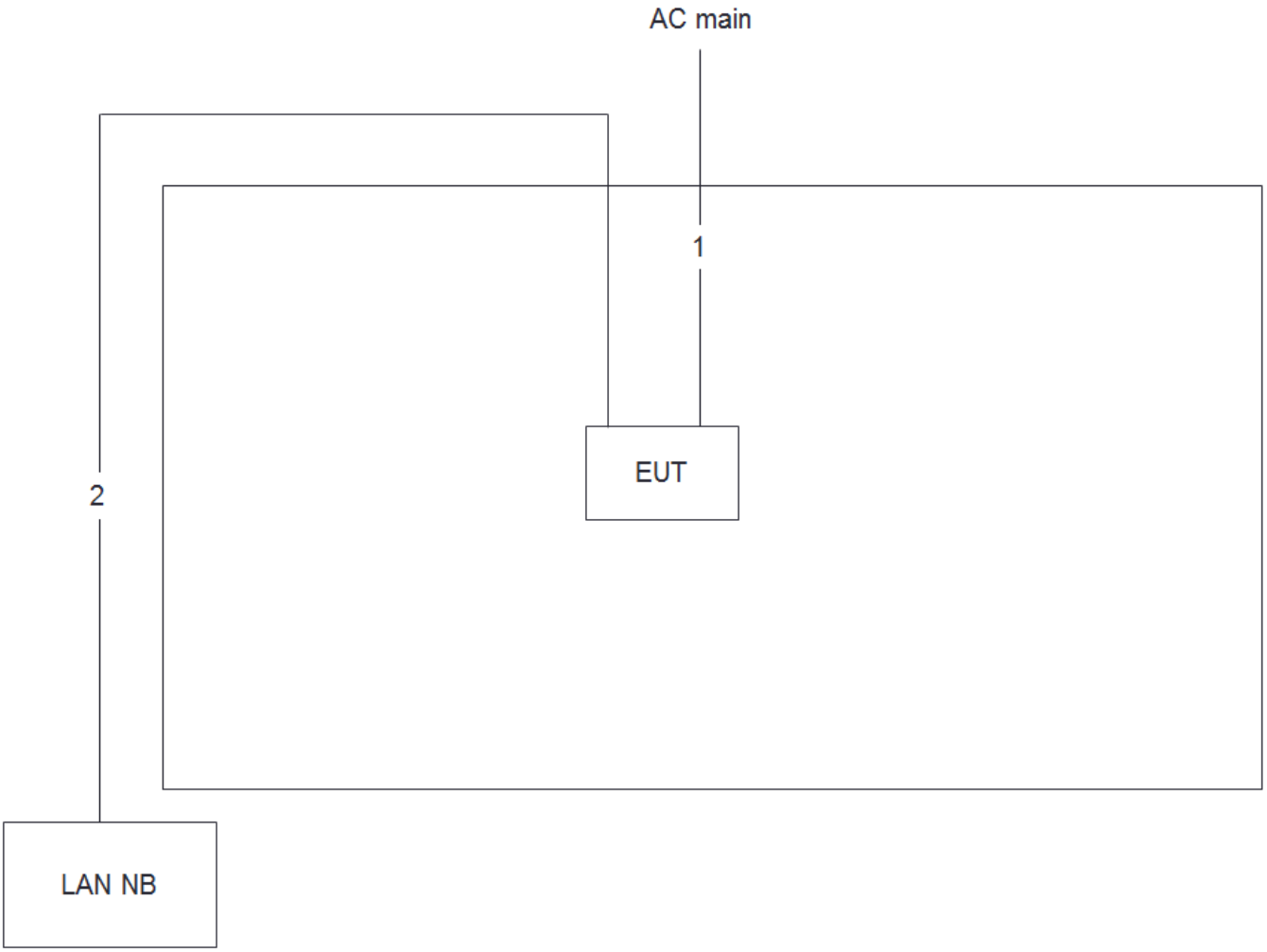
### 3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable | No | 1.5m |
| 3 | RJ-45 cable | No | 1.5m |
| 4 | USB cable | Yes | 1.5m |
| 5 | USB cable | Yes | 1m |
| 6 | GPIO cable | No | 0.8m |
| 7 | Audio cable | No | 1.5m |
| 8 | USB cable | No | 1.8m |
| 9 | Ground cable | No | 1.5m |

Test Configuration: above 1GHz




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable | No | 10m |

# 4. TEST RESULT

## 4.1. AC Power Line Conducted Emissions Measurement

### 4.1.1. Limit

For a Low-power Radio-frequency Device which is designed to be connected to the 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 below limits table.

| Frequency (MHz) | QP Limit (dBuV) | AV Limit (dBuV) |
|---|---|---|
| 0.15~0.5 | 66~56 | 56~46 |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

### 4.1.2. Measuring Instruments and Setting

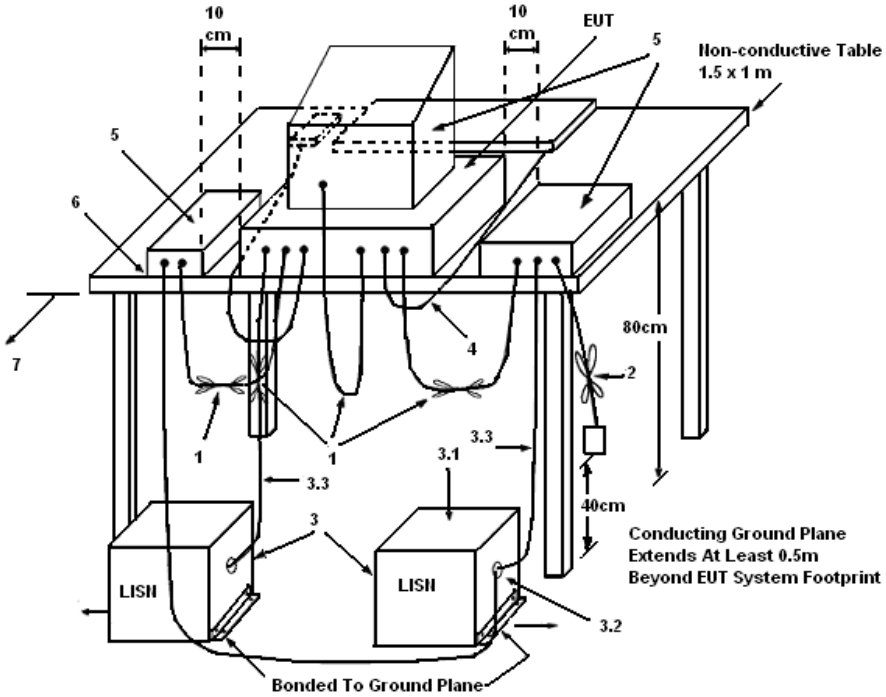
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

### 4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

### 4.1.4. Test Setup Layout




LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

### 4.1.5. Test Deviation

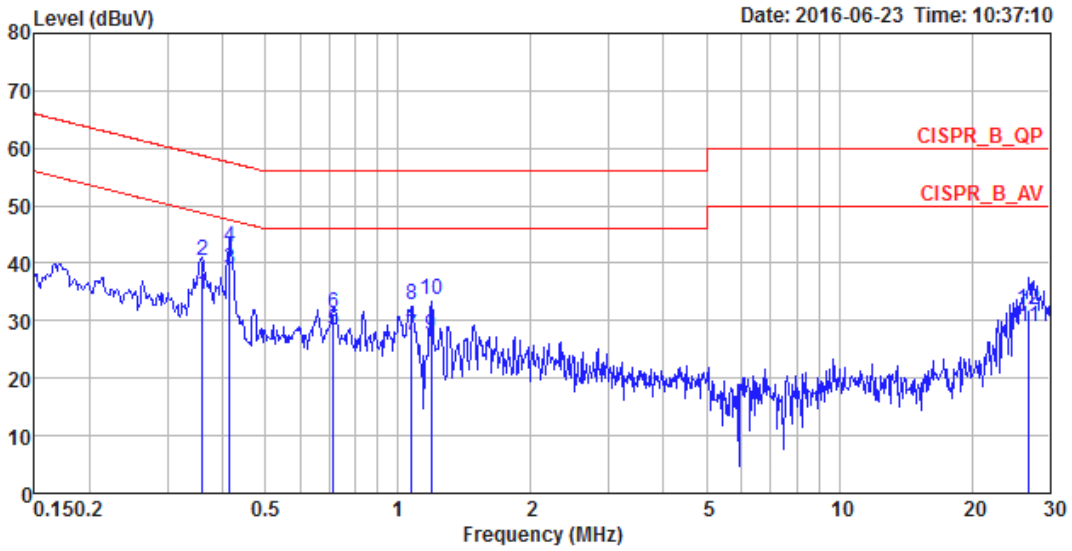
There is no deviation with the original standard.

### 4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

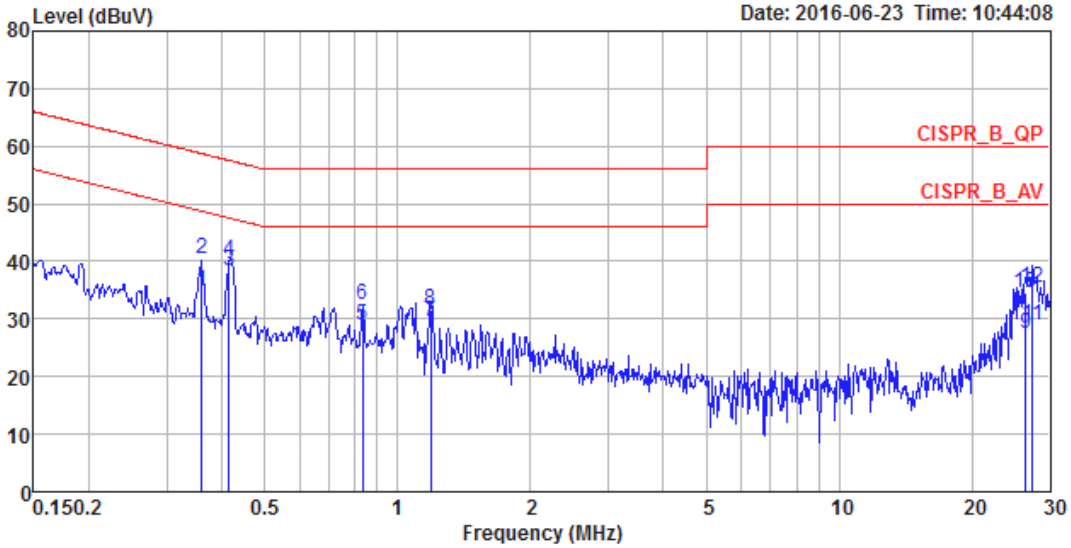
## 4.1.7. Results of AC Power Line Conducted Emissions Measurement

| Temperature | 23°C | Humidity | 61% |
|---|---|---|---|
| Test Engineer | GN Hou | Phase | Line |
| Configuration | Normal Link / Mode 2 | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | | |
| 1 | 0.3602 | 34.68 | -14.04 | 48.72 | 24.72 | 9.92 | 0.04 | LINE | Average |
| 2 | 0.3602 | 40.58 | -18.14 | 58.72 | 30.62 | 9.92 | 0.04 | LINE | QP |
| 3 | 0.4150 | 38.89 | -8.66 | 47.55 | 28.93 | 9.92 | 0.04 | LINE | Average |
| 4 | 0.4150 | 42.72 | -14.83 | 57.55 | 32.76 | 9.92 | 0.04 | LINE | QP |
| 5 | 0.7122 | 28.40 | -17.60 | 46.00 | 18.00 | 9.93 | 0.47 | LINE | Average |
| 6 | 0.7122 | 31.22 | -24.78 | 56.00 | 20.82 | 9.93 | 0.47 | LINE | QP |
| 7 | 1.0743 | 27.56 | -18.44 | 46.00 | 16.95 | 9.94 | 0.67 | LINE | Average |
| 8 | 1.0743 | 32.91 | -23.09 | 56.00 | 22.30 | 9.94 | 0.67 | LINE | QP |
| 9 | 1.1901 | 27.53 | -18.47 | 46.00 | 17.02 | 9.94 | 0.57 | LINE | Average |
| 10 | 1.1901 | 33.52 | -22.48 | 56.00 | 23.01 | 9.94 | 0.57 | LINE | QP |
| 11 | 26.9673 | 28.97 | -21.03 | 50.00 | 18.19 | 10.49 | 0.29 | LINE | Average |
| 12 | 26.9673 | 31.92 | -28.08 | 60.00 | 21.14 | 10.49 | 0.29 | LINE | QP |

| Temperature | 23°C | Humidity | 61% |
|---|---|---|---|
| Test Engineer | GN Hou | Phase | Neutral |
| Configuration | Normal Link / Mode 2 | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Pol/Phase | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | | |
| 1 | 0.3596 | 34.74 | -14.00 | 48.74 | 24.78 | 9.92 | 0.04 | NEUTRAL | Average |
| 2 | 0.3596 | 40.53 | -18.21 | 58.74 | 30.57 | 9.92 | 0.04 | NEUTRAL | QP |
| 3 | 0.4155 | 38.39 | -9.15 | 47.54 | 28.43 | 9.92 | 0.04 | NEUTRAL | Average |
| 4 | 0.4155 | 40.29 | -17.25 | 57.54 | 30.33 | 9.92 | 0.04 | NEUTRAL | QP |
| 5 | 0.8319 | 28.79 | -17.21 | 46.00 | 18.27 | 9.93 | 0.59 | NEUTRAL | Average |
| 6 | 0.8319 | 32.34 | -23.66 | 56.00 | 21.82 | 9.93 | 0.59 | NEUTRAL | QP |
| 7 | 1.1896 | 29.41 | -16.59 | 46.00 | 18.90 | 9.94 | 0.57 | NEUTRAL | Average |
| 8 | 1.1896 | 31.53 | -24.47 | 56.00 | 21.02 | 9.94 | 0.57 | NEUTRAL | QP |
| 9 | 26.4178 | 27.51 | -22.49 | 50.00 | 16.75 | 10.48 | 0.28 | NEUTRAL | Average |
| 10 | 26.4178 | 34.47 | -25.53 | 60.00 | 23.71 | 10.48 | 0.28 | NEUTRAL | QP |
| 11 | 27.3956 | 28.79 | -21.21 | 50.00 | 17.99 | 10.50 | 0.30 | NEUTRAL | Average |
| 12 | 27.3956 | 35.44 | -24.56 | 60.00 | 24.64 | 10.50 | 0.30 | NEUTRAL | QP |

Note: Level = Read Level + LISN Factor + Cable Loss.

## 4.2. Maximum Conducted Output Power Measurement

### 4.2.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: 1 watt (30dBm) for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph 15.247 (a)(1)(i).

### 4.2.2. Measuring Instruments and Setting

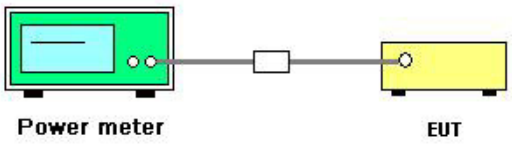
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

| Power Meter Parameter | Setting |
|---|---|
| Bandwidth | 50MHz bandwidth is greater than the EUT emission bandwidth |
| Detector | Peak and Average |

### 4.2.3. Test Procedures

This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

### 4.2.4. Test Setup Layout




### 4.2.5. Test Deviation

There is no deviation with the original standard.

### 4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 4.2.7. Test Result of Maximum Conducted Output Power

| Temperature | 21°C | Humidity | 60% |
|---|---|---|---|
| Test Engineer | Serway Li | Configurations | CTX |
| Test Date | Jun. 23, 2016 | | |

| Channel | Frequency | Conducted Peak Power (dBm) | Conducted Average Power (dBm) | Max. Limit (dBm) | Result |
|---|---|---|---|---|---|
| 1 | 902.75 MHz | 29.36 | 29.34 | 29.40 | Complies |
| 27 | 915.75 MHz | 29.34 | 29.32 | 29.40 | Complies |
| 50 | 927.25 MHz | 29.35 | 29.33 | 29.40 | Complies |

Note: Antenna gain=6.6dBi, so limit=30-(6.6-6)=29.40 dBm

## 4.3. Hopping Channel Separation Measurement

### 4.3.1. Limit

Frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

### 4.3.2. Measuring Instruments and Setting

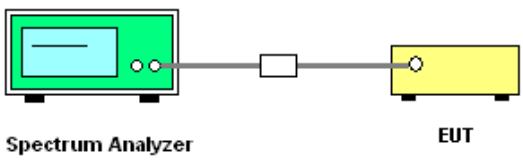
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | > Measurement Bandwidth or Channel Separation |
| RBW | ≥ 1% of the 20 dB bandwidth (20dB Bandwidth) / ≥ 1% of the span (Channel Separation) |
| VBW | ≥ RBW (20dB Bandwidth) / ≥ RBW (Channel Separation) |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

### 4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 3 kHz and the video bandwidth of 30 kHz were utilized for 20 dB bandwidth measurement.
3. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized for channel separation measurement.

### 4.3.4. Test Setup Layout




### 4.3.5. Test Deviation

There is no deviation with the original standard.

### 4.3.6. EUT Operation during Test

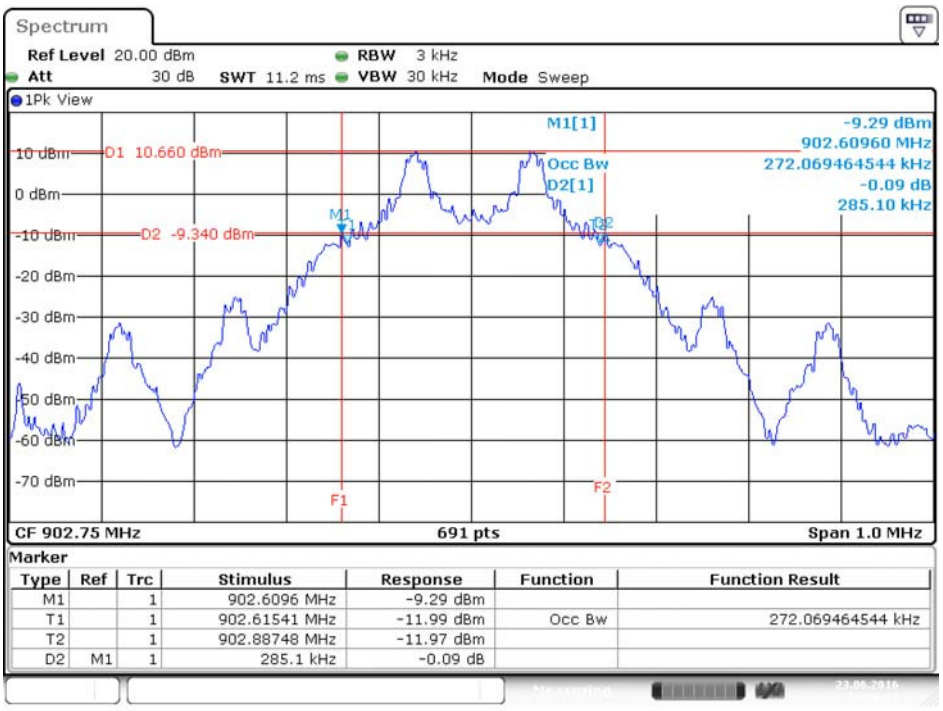
The EUT was programmed to be in continuously transmitting mode.

### 4.3.7. Test Result of Hopping Channel Separation

| Temperature | 21°C | Humidity | 60% |
|---|---|---|---|
| Test Engineer | Serway Li | Configurations | CTX |

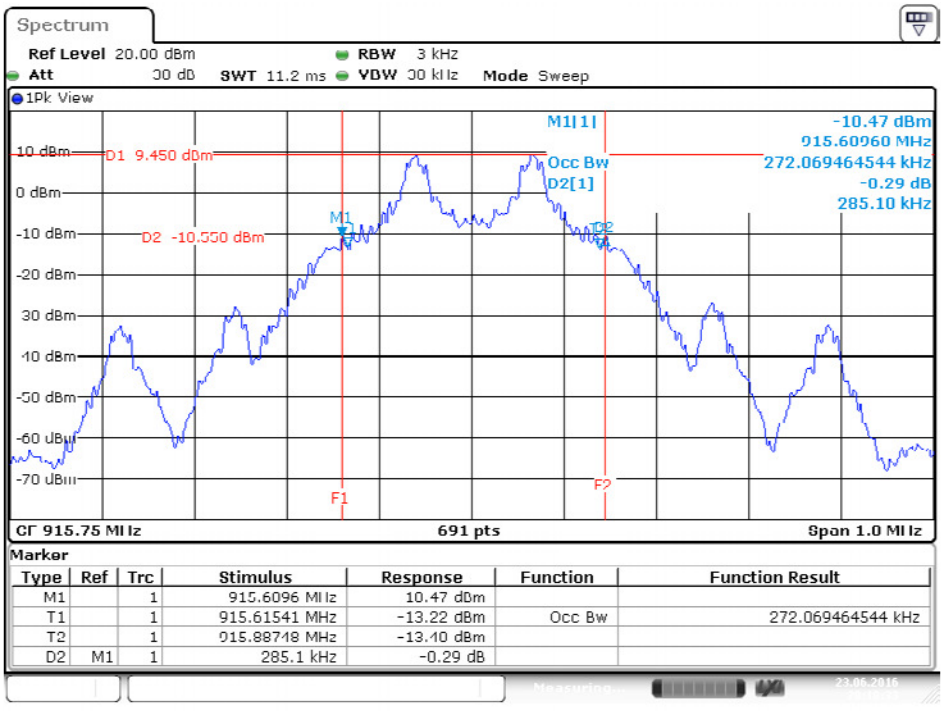
| Frequency | 20dB Bandwidth (kHz) | 99% Occupied Bandwidth (kHz) | Ch. Separation (kHz) | Limit of 20dB Bandwidth (kHz) | Result |
|---|---|---|---|---|---|
| 902.75 MHz | 285.1000 | 272.0694 | 500.00 | 500.000 | Complies |
| 915.75 MHz | 285.1000 | 272.0694 | 500.00 | 500.000 | Complies |
| 927.25 MHz | 285.1000 | 272.0694 | 500.00 | 500.000 | Complies |

## 20 dB Bandwidth Plot / Channel 1 / 902.75 MHz



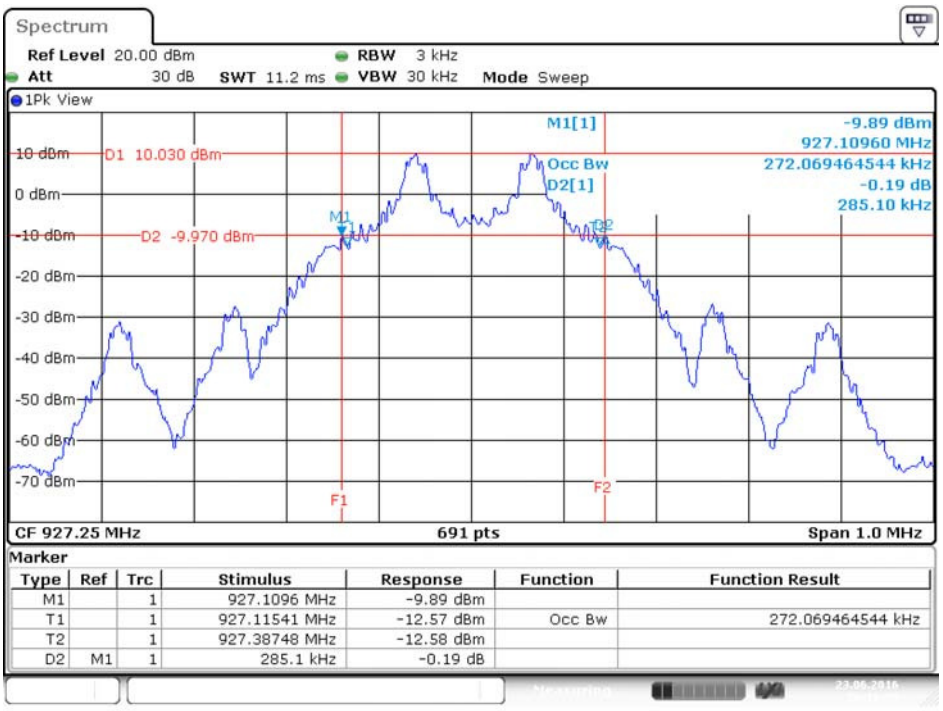

Date: 23.JUN.2016 19:56:38

## 20 dB Bandwidth Plot / Channel 27 / 915.75 MHz



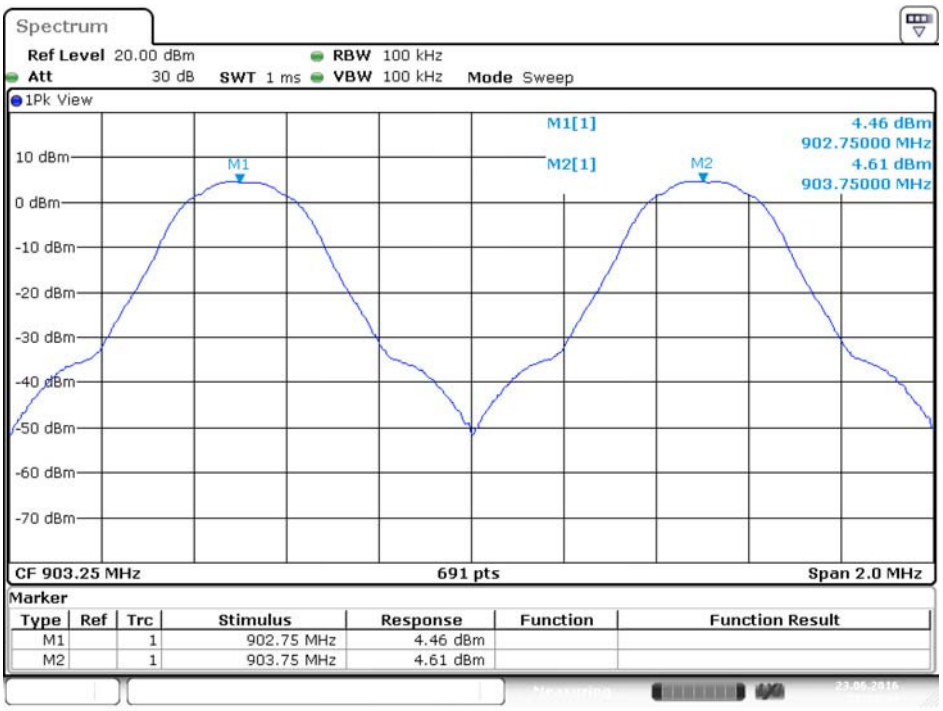

Date: 23.JUN.2016 20:10:33

## 20 dB Bandwidth Plot / Channel 50 / 927.25 MHz



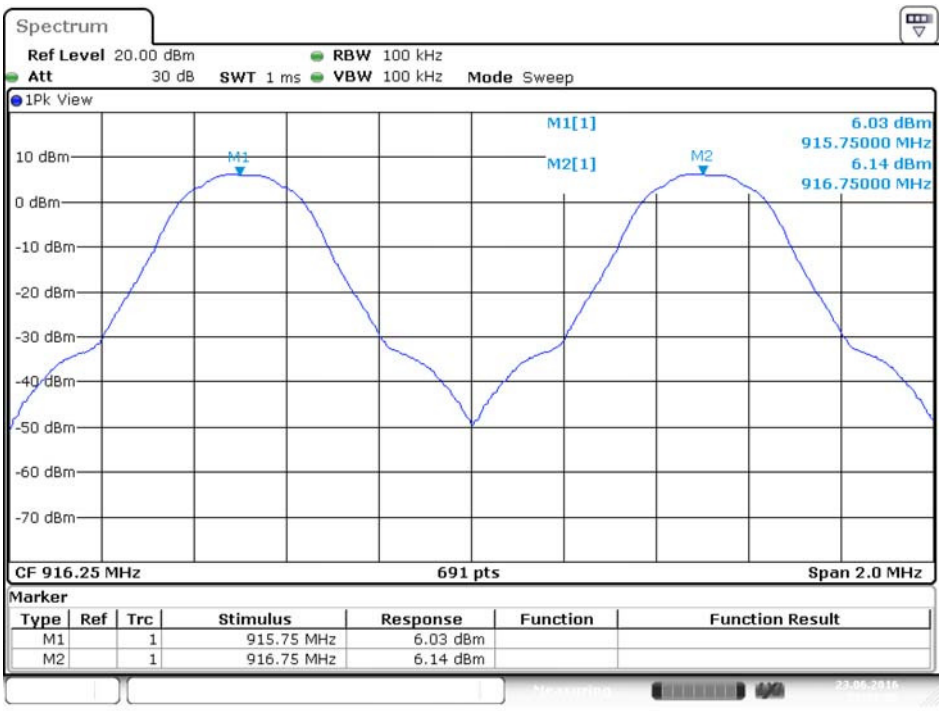

Date: 23.JUN.2016 20:16:29

## Channel Separation Plot / Channel 1~3 / 902.75 MHz ~ 903.75 MHz



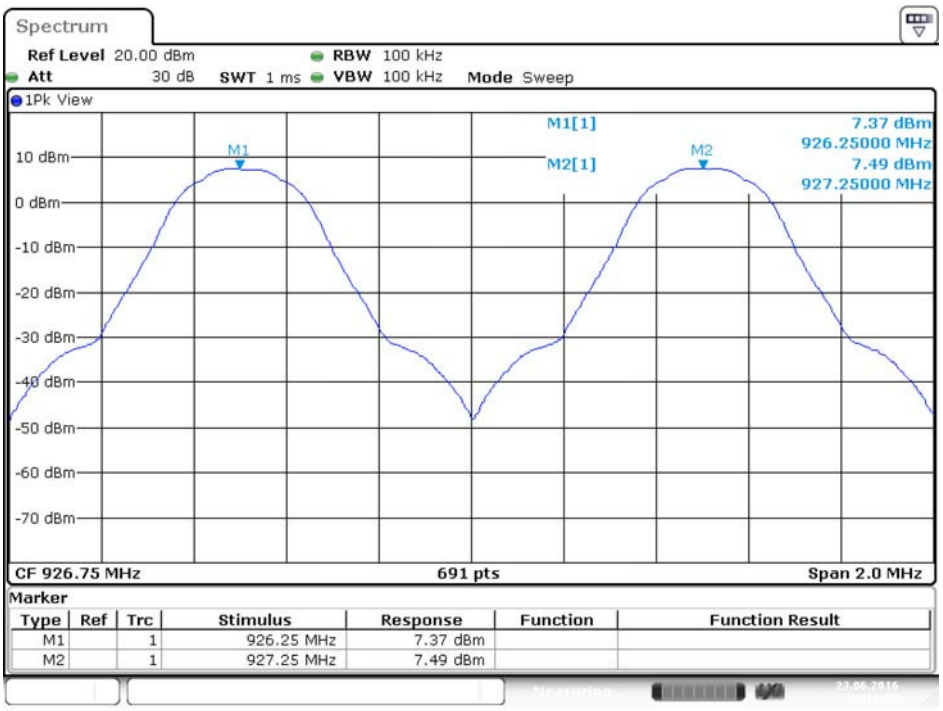

Date: 23.JUN.2016 21:03:44

## Channel Separation Plot / Channel 27~29 / 915.75 MHz ~ 916.75 MHz




Date: 23.JUN.2016 21:11:26

## Channel Separation Plot / Channel 48~50 / 926.25 MHz ~ 927.25 MHz




Date: 23.JUN.2016 21:18:23

## 4.4. Number of Hopping Frequency Measurement

### 4.4.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

### 4.4.2. Measuring Instruments and Setting

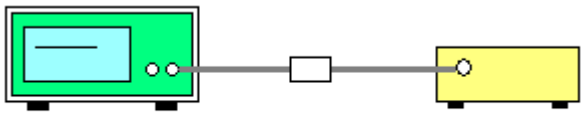
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

| Spectrum Parameters | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | > Operating Frequency Range |
| RBW | 1% of the span |
| VBW | ≥ RBW |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

### 4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were utilized.
3. Observe frequency hopping in 902MHz~928MHz, there are at least 50 channels.

### 4.4.4. Test Setup Layout




### 4.4.5. Test Deviation

There is no deviation with the original standard.

### 4.4.6. EUT Operation during Test

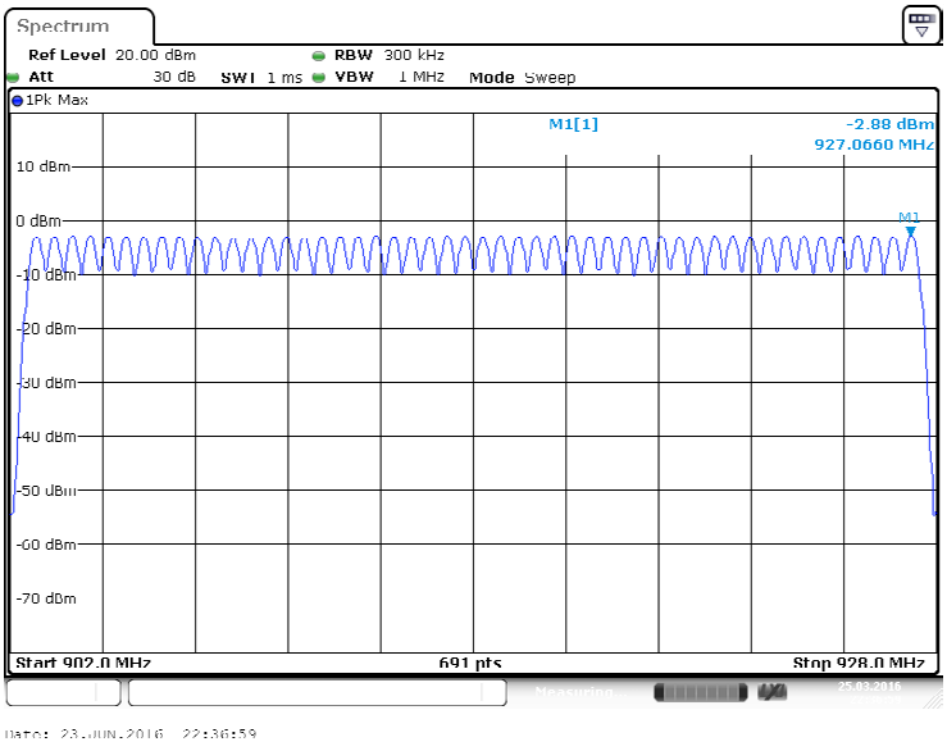
The EUT was programmed to be in continuously transmitting mode.

## 4.4.7. Test Result of Number of Hopping Frequency

| Temperature | 21°C | Humidity | 60% |
|---|---|---|---|
| Test Engineer | Serway Li | Configurations | CTX |

| Channel No. | Frequency (MHz) | Hopping Ch. (Channels) | Min. Limit (Channels) | Test Result |
|---|---|---|---|---|
| 1 ~ 50 | 902 ~ 928 MHz | 50 | 25 | Complies |

**Number of Hopping Channel Plot / Channel 1~50 / 902.75 MHz ~ 927.25 MHz**



## 4.5. Dwell Time Measurement

### 4.5.1. Limit

Frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

### 4.5.2. Measuring Instruments and Setting

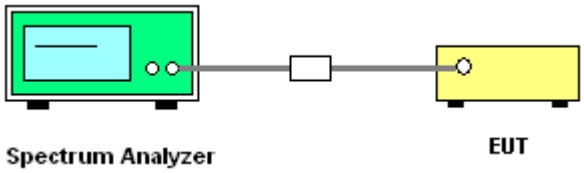
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | 0 MHz |
| RBW | 1MHz |
| VBW | ≥ RBW |
| Detector | Peak |
| Trace | Single Trigger |

### 4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
6. Measure the maximum time duration of one single pulse.

### 4.5.4. Test Setup Layout




### 4.5.5. Test Deviation

There is no deviation with the original standard.

### 4.5.6. EUT Operation during Test

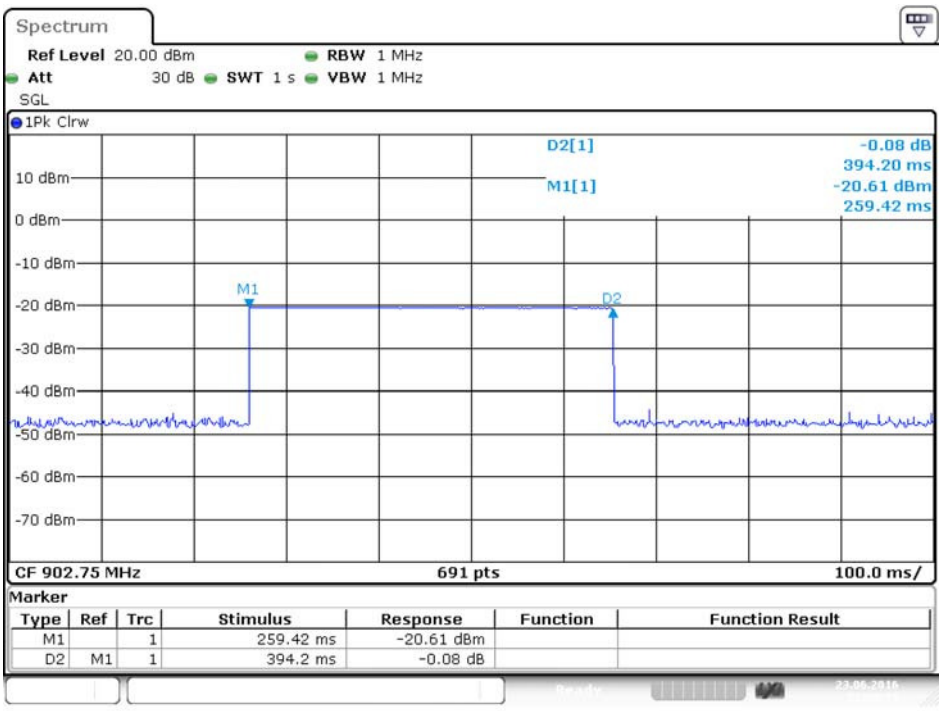
The EUT was programmed to be in continuously transmitting mode.

### 4.5.7. Test Result of Dwell Time

| Temperature | 21°C | Humidity | 60% |
|---|---|---|---|
| Test Engineer | Serway Li | Configurations | CTX |

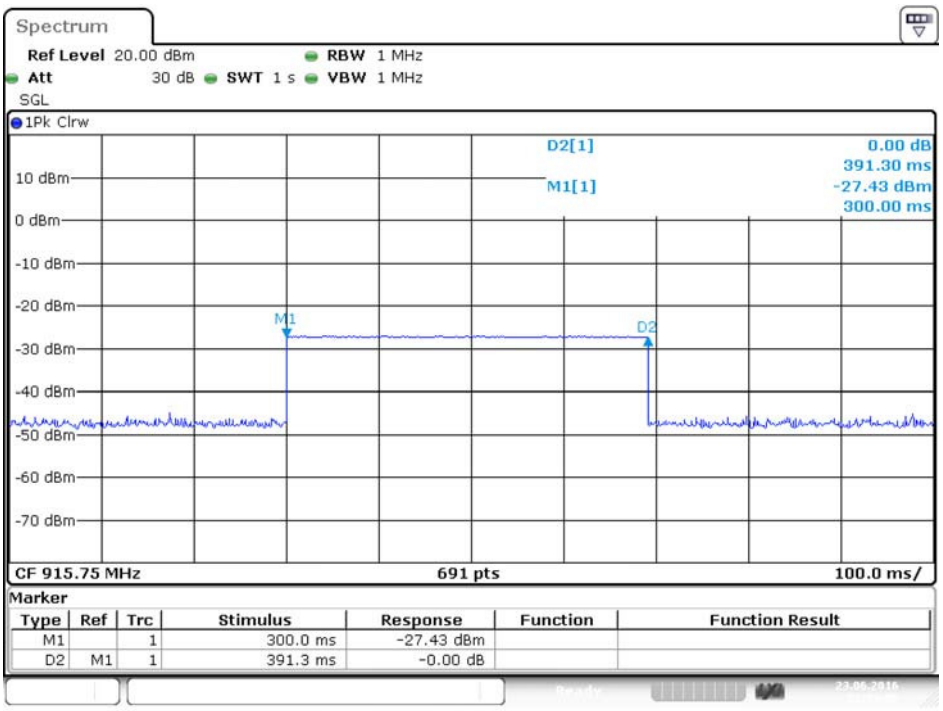
| Frequency (MHz) | Pulse Duration (ms) | Pulse number within 10s | Dwell Time (s) | Limits (s) | Test Result |
|---|---|---|---|---|---|
| 902.75 MHz | 394.20 | 1 | 0.394 | 0.4 | Complies |
| 902.75 MHz | 391.30 | 1 | 0.391 | 0.4 | Complies |
| 902.75 MHz | 392.75 | 1 | 0.393 | 0.4 | Complies |

## Dwell Time Plot on Pulse Duration / Channel 1 / 902.75 MHz



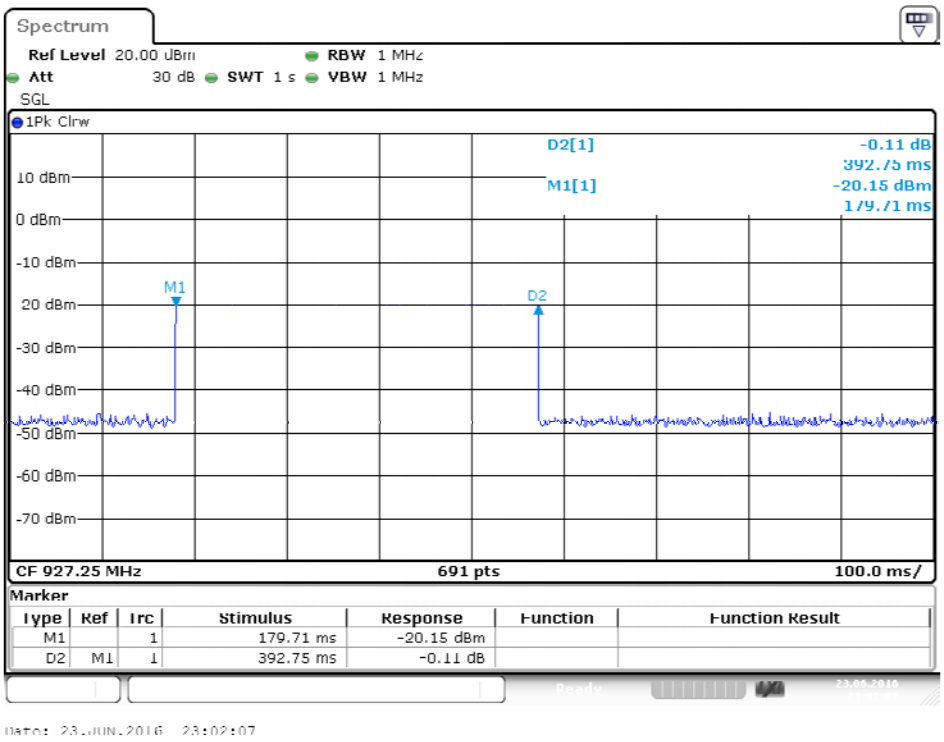

Date: 23.JUN.2016 22:50:16

## Dwell Time Plot on Pulse Duration / Channel 27 / 915.75 MHz

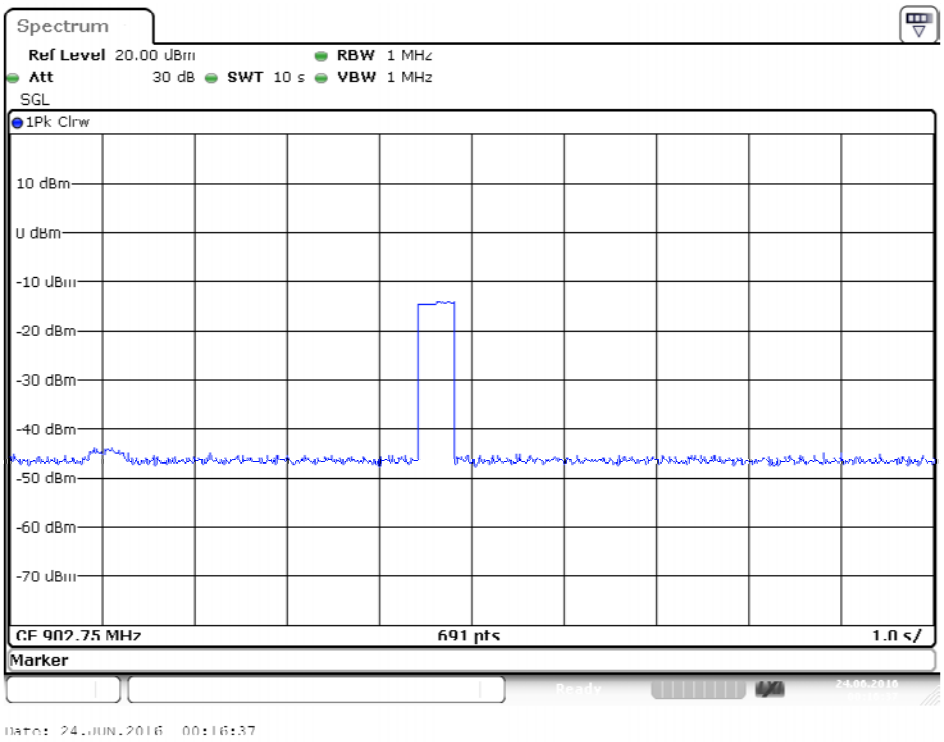



Date: 23.JUN.2016 22:54:57

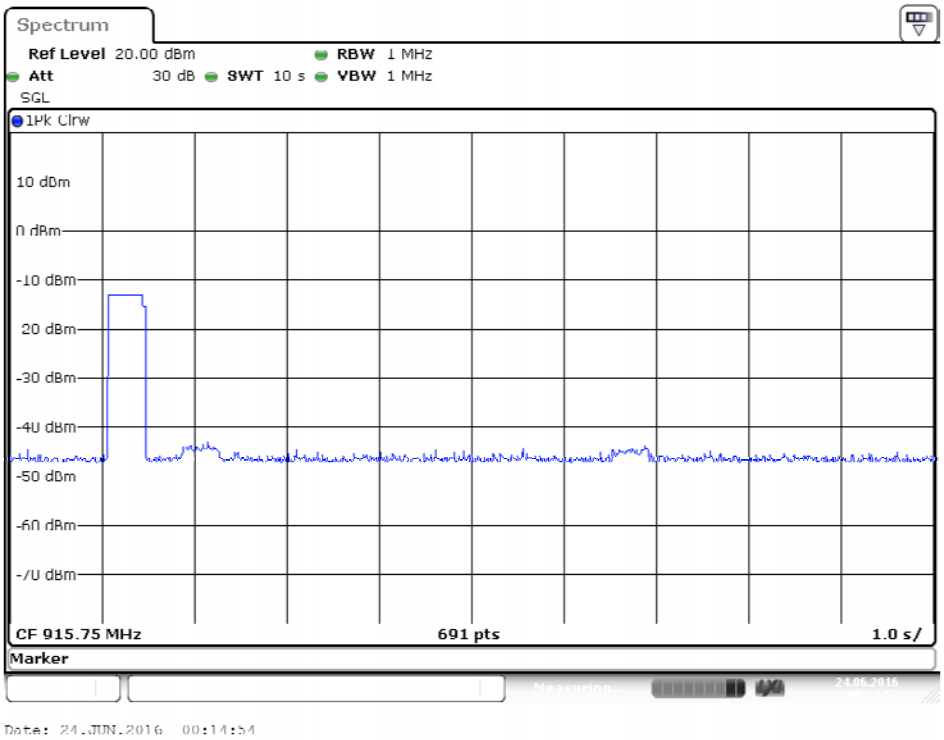
## Dwell Time Plot on Pulse Duration / Channel 50 / 927.25 MHz



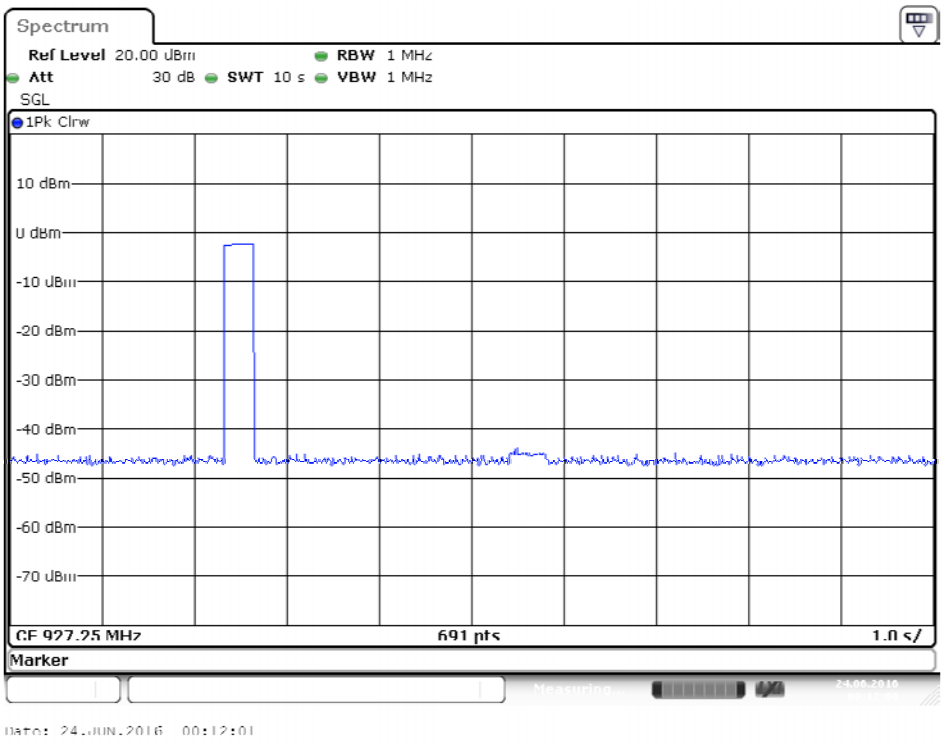
## Dwell Time Plot on Pulse number within 10s / Channel 1 / 902.75 MHz




## Dwell Time Plot on Pulse number within 10s / Channel 27 / 915.75 MHz



## Dwell Time Plot on Pulse number within 10s / Channel 50 / 927.25 MHz



## 4.6. Radiated Emissions Measurement

### 4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak,<br>1MHz / 1/T for Average |
| RBW / VBW (Emission in non-restricted band) | 100kHz, 300kHz for peak |

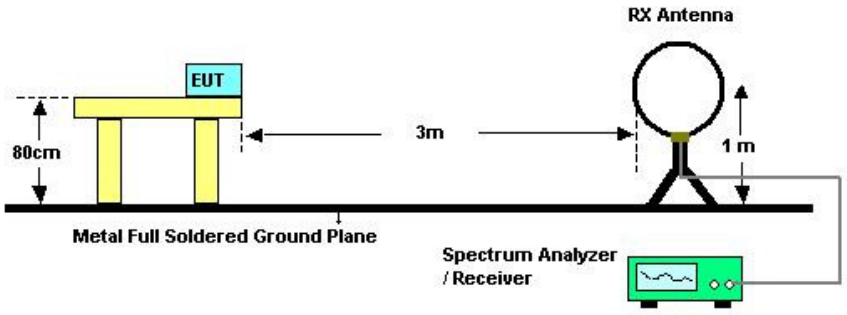
| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz, RBW 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz, RBW 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz, RBW 120kHz for QP |

### 4.6.3. Test Procedures

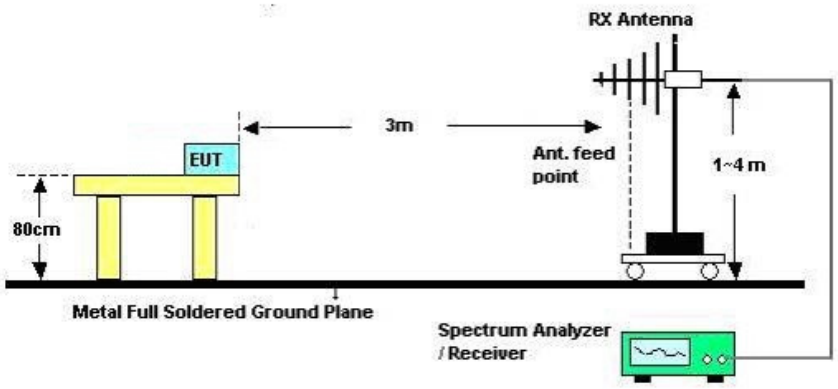
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

### 4.6.4. Test Setup Layout

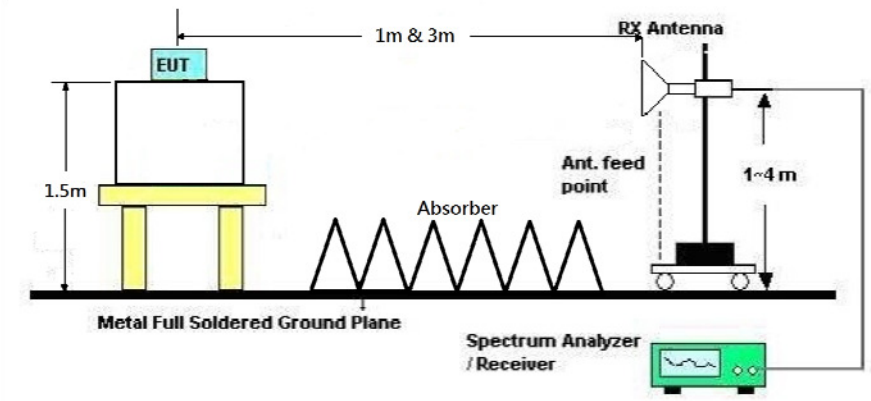
**For Radiated Emissions: 9kHz ~30MHz**




**For Radiated Emissions: 30MHz~1GHz**




**For Radiated Emissions: Above 1GHz**




### 4.6.5. Test Deviation

There is no deviation with the original standard.

### 4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 4.6.7. Results of Radiated Emissions (9kHz~30MHz)

| Temperature | 24°C | Humidity | 54% |
|---|---|---|---|
| Test Engineer | John Tang | Test Date | Jun. 17, 2016 ~ Jun. 20, 2016 |
| Configurations | Normal Link / Mode 2 | | |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Limit Line (dBuV) | Remark |
|---|---|---|---|---|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

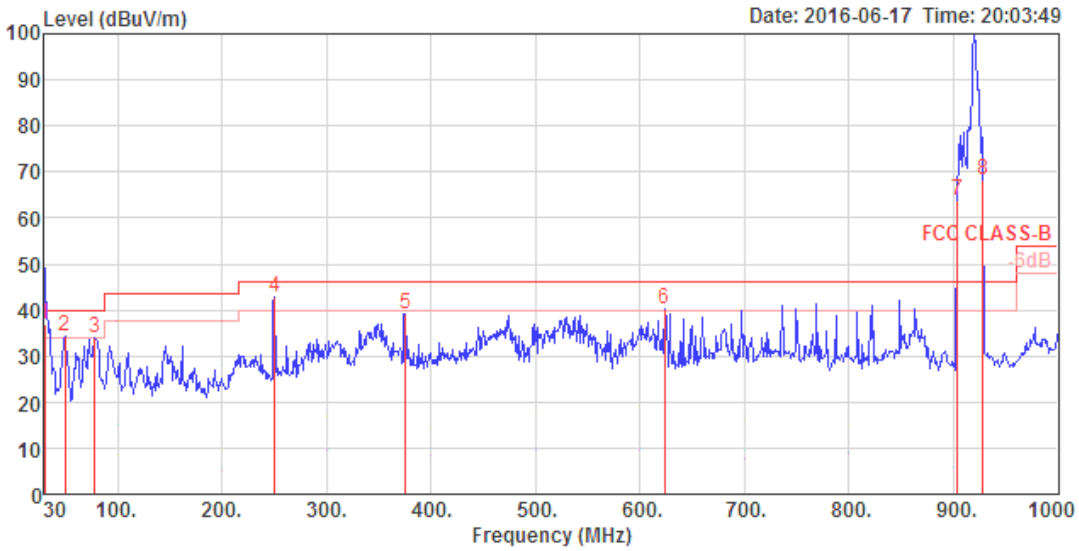
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

## 4.6.8. Results of Radiated Emissions (30MHz~1GHz)

| Temperature | 24°C | Humidity | 54% |
|---|---|---|---|
| Test Engineer | John Tang | Configurations | Normal Link / Mode 2 |

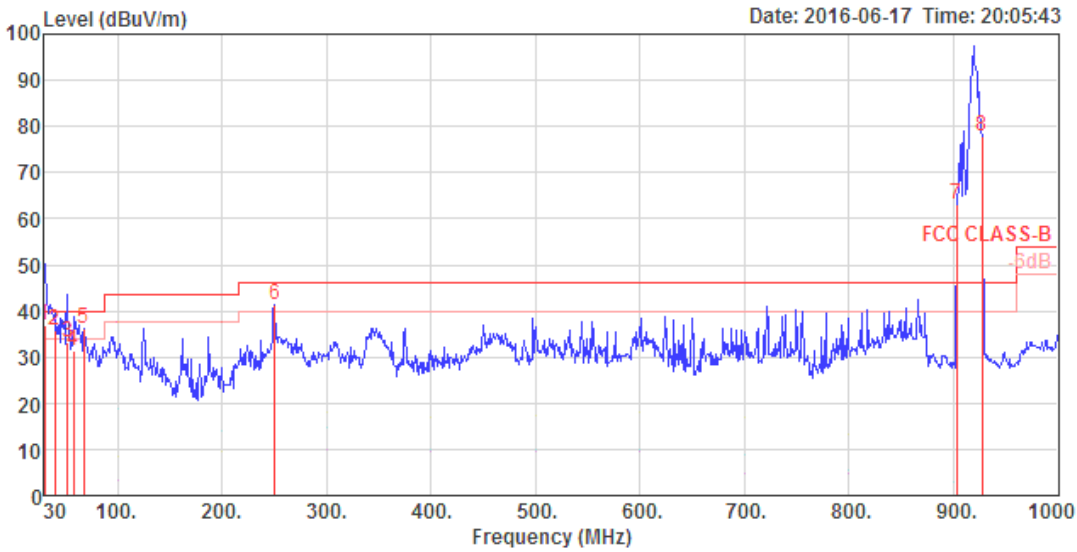
*Horizontal*




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 30.64 | 36.81 | 40.00 | -3.19 | 43.43 | 0.49 | 25.29 | 32.40 | 125 | 147 | QP | HORIZONTAL |
| 2 | 49.40 | 34.44 | 40.00 | -5.56 | 51.05 | 0.61 | 15.19 | 32.41 | 200 | 237 | Peak | HORIZONTAL |
| 3 | 78.50 | 33.88 | 40.00 | -6.12 | 52.02 | 0.77 | 13.49 | 32.40 | 200 | 232 | Peak | HORIZONTAL |
| 4 | 250.19 | 42.88 | 46.00 | -3.12 | 54.74 | 1.34 | 19.10 | 32.30 | 150 | 192 | Peak | HORIZONTAL |
| 5 | 375.32 | 39.22 | 46.00 | -6.78 | 47.79 | 1.67 | 22.08 | 32.32 | 100 | 194 | Peak | HORIZONTAL |
| 6 | 623.64 | 40.06 | 46.00 | -5.94 | 44.57 | 2.16 | 25.73 | 32.40 | 150 | 157 | Peak | HORIZONTAL |
| 7 | 903.97 | 63.90 | 46.00 | | 65.29 | 2.58 | 27.73 | 31.70 | 100 | 360 | Peak | HORIZONTAL |
| 8 | 928.22 | 68.45 | 46.00 | | 69.34 | 2.63 | 27.94 | 31.46 | 100 | 360 | Peak | HORIZONTAL |

Note: Item 7, 8 are the fundamental frequency.

***Vertical***




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 30.00 | 36.89 | 40.00 | -3.11 | 43.20 | 0.49 | 25.60 | 32.40 | 125 | 6 | QP | VERTICAL |
| 2 | 39.99 | 35.93 | 40.00 | -4.07 | 47.60 | 0.54 | 20.20 | 32.41 | 100 | 351 | QP | VERTICAL |
| 3 | 52.12 | 33.19 | 40.00 | -6.81 | 50.35 | 0.63 | 14.62 | 32.41 | 100 | 260 | QP | VERTICAL |
| 4 | 58.13 | 31.50 | 40.00 | -8.50 | 49.32 | 0.68 | 13.91 | 32.41 | 125 | 212 | QP | VERTICAL |
| 5 | 67.83 | 36.30 | 40.00 | -3.70 | 54.93 | 0.71 | 13.06 | 32.40 | 200 | 173 | Peak | VERTICAL |
| 6 | 250.19 | 41.31 | 46.00 | -4.69 | 53.17 | 1.34 | 19.10 | 32.30 | 125 | 135 | Peak | VERTICAL |
| 7 | 903.00 | 63.18 | 46.00 | | 64.57 | 2.58 | 27.73 | 31.70 | 200 | 348 | Peak | VERTICAL |
| 8 | 927.25 | 78.02 | 46.00 | _____ | 78.95 | 2.62 | 27.91 | 31.46 | 125 | 0 | Peak | VERTICAL |

Item 7, 8 are the fundamental frequency.

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## 4.6.9. Results for Radiated Emissions (1GHz~10th Harmonic)

| Temperature | 24°C | Humidity | 54% |
|---|---|---|---|
| Test Engineer | John Tang | Configurations | Channel 1 |
| Test Date | Jun. 17, 2016 ~ Jun. 20, 2016 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4513.57 | 47.98 | 74.00 | -26.02 | 42.55 | 5.98 | 32.43 | 32.98 | 176 | 114 | Peak | HORIZONTAL |
| 2 | 4513.72 | 39.07 | 54.00 | -14.93 | 33.64 | 5.98 | 32.43 | 32.98 | 176 | 114 | Average | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4513.74 | 45.49 | 54.00 | -8.51 | 40.06 | 5.98 | 32.43 | 32.98 | 272 | 216 | Average | VERTICAL |
| 2 | 4513.78 | 52.67 | 74.00 | -21.33 | 47.24 | 5.98 | 32.43 | 32.98 | 272 | 216 | Peak | VERTICAL |

| Temperature | 24°C | Humidity | 54% |
|---|---|---|---|
| Test Engineer | John Tang | Configurations | Channel 27 |
| Test Date | Jun. 17, 2016 ~ Jun. 20, 2016 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4578.72 | 33.83 | 54.00 | -20.17 | 28.18 | 6.04 | 32.58 | 32.97 | 167 | 339 | Average | HORIZONTAL |
| 2 | 4578.75 | 46.71 | 74.00 | -27.29 | 41.06 | 6.04 | 32.58 | 32.97 | 167 | 339 | Peak | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4578.78 | 37.75 | 54.00 | -16.25 | 32.10 | 6.04 | 32.58 | 32.97 | 154 | 198 | Average | VERTICAL |
| 2 | 4578.95 | 49.51 | 74.00 | -24.49 | 43.86 | 6.04 | 32.58 | 32.97 | 154 | 198 | Peak | VERTICAL |

| Temperature | 24°C | Humidity | 54% |
|---|---|---|---|
| Test Engineer | John Tang | Configurations | Channel 50 |
| Test Date | Jun. 17, 2016 ~ Jun. 20, 2016 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4636.08 | 46.12 | 74.00 | -27.88 | 40.25 | 6.10 | 32.73 | 32.96 | 170 | 110 | Peak | HORIZONTAL |
| 2 | 4636.11 | 32.48 | 54.00 | -21.52 | 26.61 | 6.10 | 32.73 | 32.96 | 170 | 110 | Average | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 4636.18 | 35.81 | 54.00 | -18.19 | 29.94 | 6.10 | 32.73 | 32.96 | 191 | 194 | Average | VERTICAL |
| 2 | 4636.22 | 47.91 | 74.00 | -26.09 | 42.04 | 6.10 | 32.73 | 32.96 | 191 | 194 | Peak | VERTICAL |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## 4.7. Emissions Measurement

### 4.7.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

### 4.7.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | 100 MHz |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak,<br>1MHz / 1/T for Average |
| RBW / VBW (20dBc in any 100 kHz bandwidth emission) | 100 kHz /100 kHz for Peak |

### 4.7.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.6.3.

For Radiated Out of Band Emission Measurement:

1. The test procedure is follow 15.247(d).

### 4.7.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.6.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.6.4.

### 4.7.5. Test Deviation

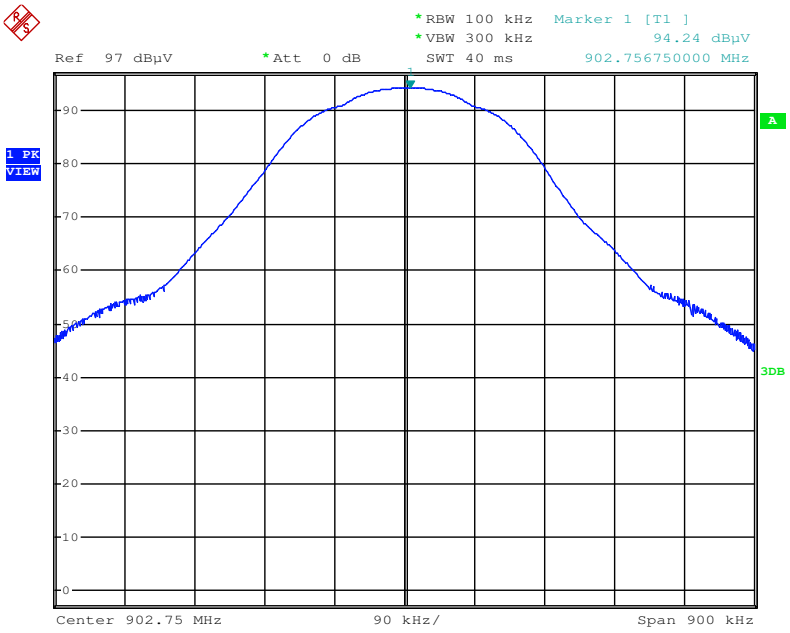
There is no deviation with the original standard.

### 4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

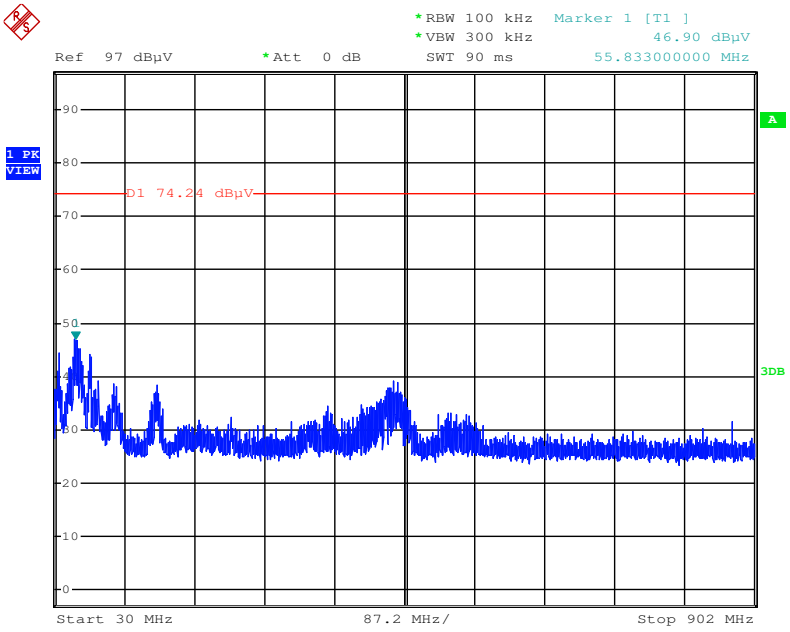
## 4.7.7. Test Result of Band Edge and Fundamental Emissions

### Plot on Channel 1 / Reference Level



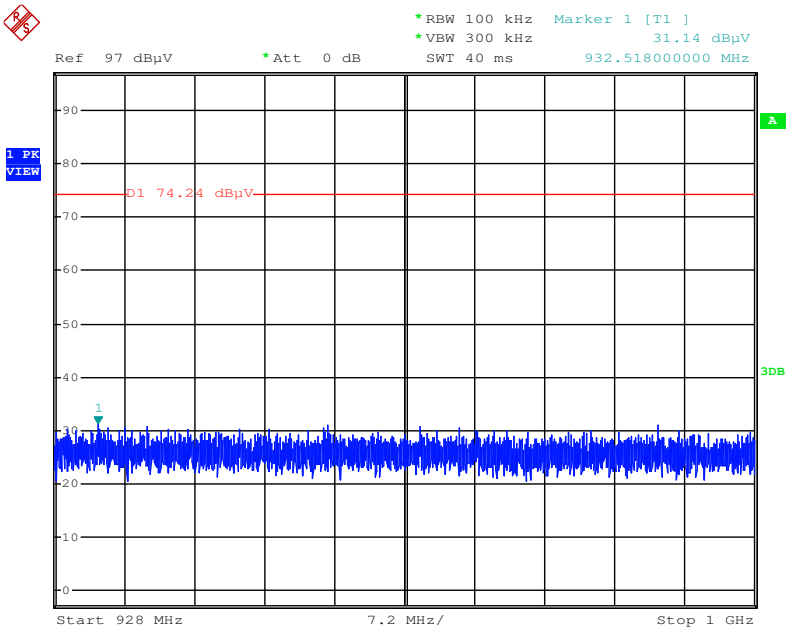

Date: 30.JUN.2016 16:53:31

### Plot on Channel 1 / 30MHz~902MHz (down 20dBc)



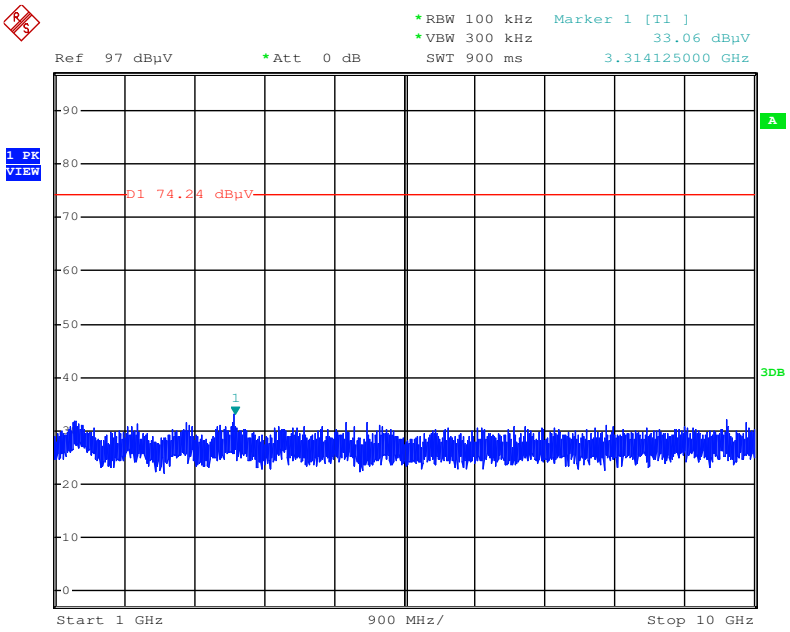

Date: 30.JUN.2016 17:05:17

## Plot on Channel 1 / 928MHz~1000MHz (down 20dBc)



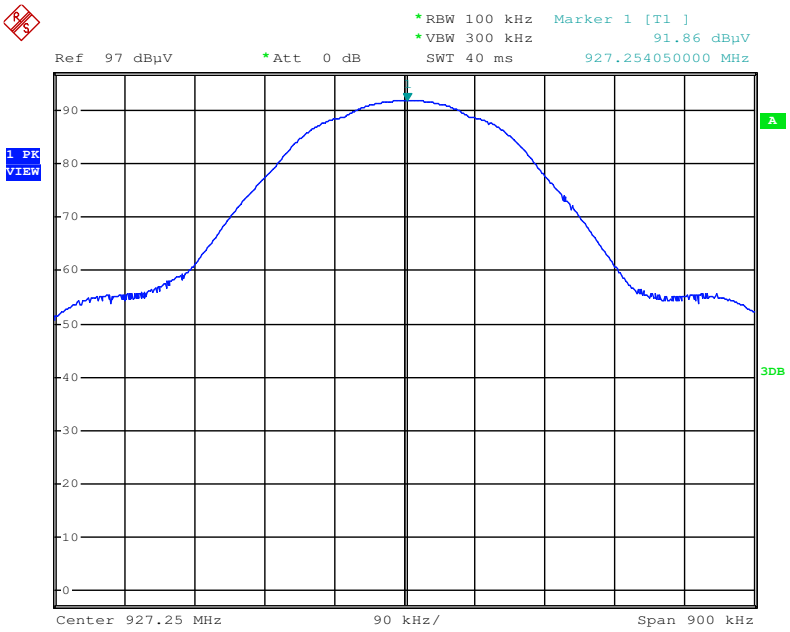

Date: 30.JUN.2016 17:32:54

## Plot on Channel 1 / 1000MHz~10000MHz (down 20dBc)



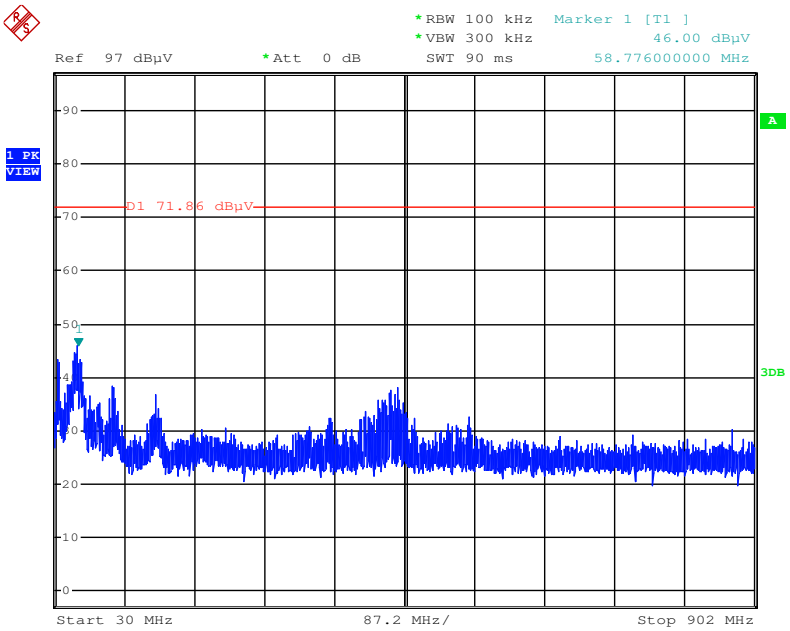

Date: 30.JUN.2016 17:36:02

## Plot on Channel 50 / Reference Level



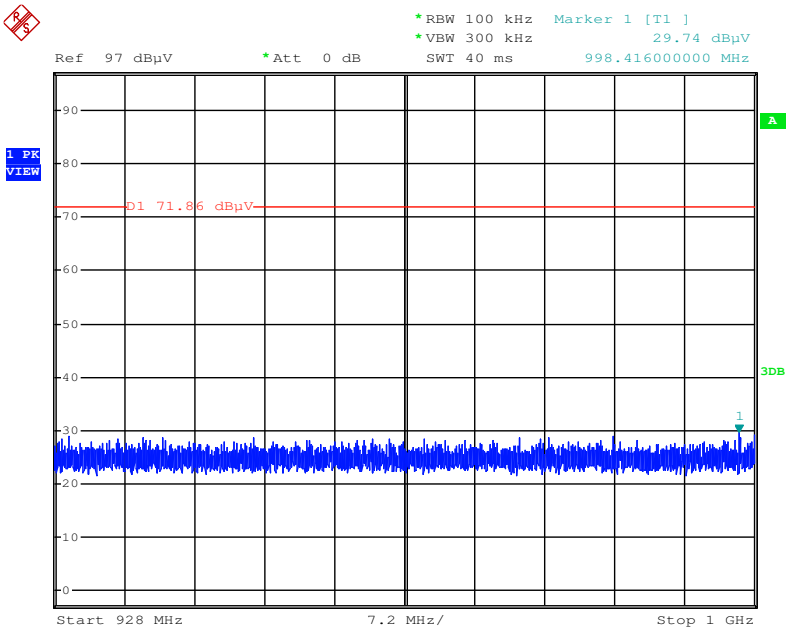

Date: 30.JUN.2016 16:56:54

## Plot on Channel 50 / 30MHz~902MHz (down 20dBc)



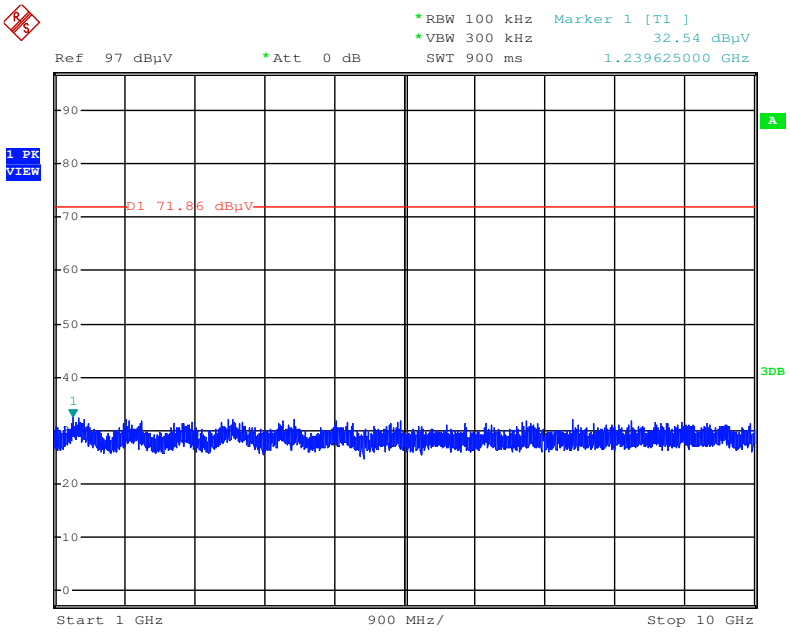

Date: 30.JUN.2016 17:08:00

## Plot on Channel 50 / 928MHz~1000MHz (down 20dBc)




Date: 30.JUN.2016 17:09:35

## Plot on Channel 50 / 1000MHz~10000MHz (down 20dBc)




Date: 30.JUN.2016 17:27:41

## 4.8. Antenna Requirements

### 4.8.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

### 4.8.2. Antenna Connector Construction

Please refer to section 3.3 in this test report, antenna connector complied with the requirements.

# 5. LIST OF MEASURING EQUIPMENTS

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| EMI Receiver | Agilent | N9038A | My52260123 | 9kHz ~ 8.45GHz | Jan. 27, 2016 | Conduction (CO01-CB) |
| LISN | F.C.C. | FCC-LISN-50-16-2 | 04083 | 150kHz ~ 100MHz | Dec. 08, 2015 | Conduction (CO01-CB) |
| LISN | Schwarzbeck | NSLK 8127 | 8127647 | 9kHz ~ 30MHz | Dec. 23, 2015 | Conduction (CO01-CB) |
| COND Cable | Woken | Cable | 01 | 150kHz ~ 30MHz | May 24, 2016 | Conduction (CO01-CB) |
| Software | Audix | E3 | 6.120210n | - | N.C.R. | Conduction (CO01-CB) |
| BILOG ANTENNA | TESEQ | CBL6112D | 37880 | 20MHz ~ 2GHz | Sep. 03, 2015 | Radiation (03CH01-CB) |
| Loop Antenna | Teseq | HLA 6120 | 24155 | 9kHz - 30 MHz | Mar. 16, 2016* | Radiation (03CH01-CB) |
| Horn Antenna | EMCO | 3115 | 00075790 | 750MHz ~ 18GHz | Oct. 22, 2015 | Radiation (03CH01-CB) |
| Pre-Amplifier | Agilent | 8447D | 2944A10991 | 0.1MHz ~ 1.3GHz | Mar. 15, 2016 | Radiation (03CH01-CB) |
| Pre-Amplifier | Agilent | 8449B | 3008A02310 | 1GHz ~ 26.5GHz | Jan. 18, 2016 | Radiation (03CH01-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100056 | 9kHz ~ 40GHz | Oct. 27, 2015 | Radiation (03CH01-CB) |
| EMI Test | R&S | ESCS | 100355 | 9kHz ~ 2.75GHz | May 16, 2016 | Radiation (03CH01-CB) |
| RF Cable-low | Woken | Low Cable-1 | N/A | 30 MHz ~ 1 GHz | Nov. 02, 2015 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-16 | N/A | 1 GHz ~ 18 GHz | Nov. 02, 2015 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-17 | N/A | 1 GHz ~ 18 GHz | Nov. 02, 2015 | Radiation (03CH01-CB) |
| Test Software | Audix | E3 | 6.2009-l0-7 | N/A | N/A | Radiation (03CH01-CB) |
| Spectrum analyzer | R&S | FSV40 | 100979 | 9kHz~40GHz | Dec. 09, 2015 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-6 | 1 GHz – 26.5 GHz | Nov. 02, 2015 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-7 | 1 GHz – 26.5 GHz | Nov. 02, 2015 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-8 | 1 GHz – 26.5 GHz | Nov. 02, 2015 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-9 | 1 GHz – 26.5 GHz | Nov. 02, 2015 | Conducted (TH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-10 | 1 GHz – 26.5 GHz | Nov. 02, 2015 | Conducted (TH01-CB) |
| Power Sensor | Agilent | U2021XA | MY53410001 | 50MHz~18GHz | Nov. 02, 2015 | Conducted (TH01-CB) |

Note: Calibration Interval of instruments listed above is one year.

* Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

# 6. MEASUREMENT UNCERTAINTY

| Test Items | Uncertainty | Remark |
|---|---|---|
| Conducted Emission (150kHz ~ 30MHz) | 3.2 dB | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 3.6 dB | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz) | 3.7 dB | Confidence levels of 95% |
| Conducted Emission | 1.7 dB | Confidence levels of 95% |