

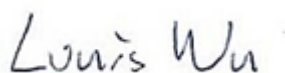


# FCC CO-LOCATION RADIO TEST REPORT

**FCC ID** : PY7-16813Y  
**Equipment** : GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII  
a/b/g/n/ac/ax, GPS, WPC and NFC  
**Brand Name** : Sony  
**Applicant** : Sony Corporation  
1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan  
**Manufacturer** : Sony Corporation  
1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan  
**Standard** : FCC 47 CFR Part 2, 22(H)

The product was received on Mar. 08, 2021 and testing was started from Apr. 08, 2021 and completed on Apr. 09, 2021. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.



Approved by: Louis Wu

**Sporton International Inc. Wensan Laboratory**

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FG0D2217C  | 01      | Initial issue of report | Apr. 09, 2021 |
| FG0D2217C  | 02      | Revise test data        | Apr. 14, 2021 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause        | Test Items                                    | Result (PASS/FAIL) | Remark                                     |
|---------------|------------------------|-----------------------------------------------|--------------------|--------------------------------------------|
| 3.4           | §2.1053<br>§22.917 (a) | Field Strength of Spurious Radiation (GSM850) | Pass               | Under limit<br>40.85 dB at<br>2512.000 MHz |

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by:** Wii Chang

**Report Producer:** Lucy Wu

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac/ax, FM Receiver, NFC, WPC/WPT, and GNSS.

| Product Specification subjective to this standard |              |
|---------------------------------------------------|--------------|
| Antenna Type                                      | Loop Antenna |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

| EUT Information List |            |            |                            |
|----------------------|------------|------------|----------------------------|
| HW Version           | SW Version | S/N        | Performed Test Item        |
| A                    | 0.440      | QV72002D6J | Radiated Spurious Emission |

| Accessory List |                      |
|----------------|----------------------|
| AC Adapter     | Model Name : XQZ-UC1 |
|                | S/N: 0020W51300095   |
| Earphone       | Model Name.: STH40D  |
|                | S/N : N/A            |
| USB Cable      | Model Name.: XQZ-UB1 |
|                | S/N : N/A            |

**Note:**

1. Above EUT list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report. .
3. For other wireless features of this EUT, test report will be issued separately.

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.

### 1.3 Testing Location

|                    |                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Test Site          | Sporton International Inc. Wensan Laboratory                                                                                                  |
| Test Site Location | No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)<br>TEL: +886-3-327-0868<br>FAX: +886-3-327-0855 |
| Test Site No.      | <b>Sporton Site No.</b><br>03CH12-HY                                                                                                          |
| Test Engineer      | Jack Cheng, Lance Chiang and Chuan Chu                                                                                                        |
| Temperature        | 22~26°C                                                                                                                                       |
| Relative Humidity  | 52~62%                                                                                                                                        |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW0007

### 1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ 47 CFR Part 2, 22(H)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for GSM850

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

| Test Modes |                     |
|------------|---------------------|
| Band       | Radiated TCs        |
| GSM850     | ■ EDGE Class 8 Link |

**Remark:** During the Radiated Spurious Emission test, the EUT turn on the WLAN functions simultaneously, and used the WLAN worst case output power.

### 2.2 Connection Diagram of Test System





## 2.3 Support Unit used in test configuration

| Item | Equipment        | Brand Name | Model No. | FCC ID | Data Cable | Power Cord        |
|------|------------------|------------|-----------|--------|------------|-------------------|
| 1.   | System Simulator | R&S        | CMU 200   | N/A    | N/A        | Unshielded, 1.8 m |

## 2.4 Frequency List of Low/Middle/High Channels

| Frequency List |                        |        |        |         |
|----------------|------------------------|--------|--------|---------|
| Band           | Channel/Frequency(MHz) | Lowest | Middle | Highest |
| GSM850         | Channel                | -      | 189    | -       |
|                | Frequency              | -      | 836.4  | -       |

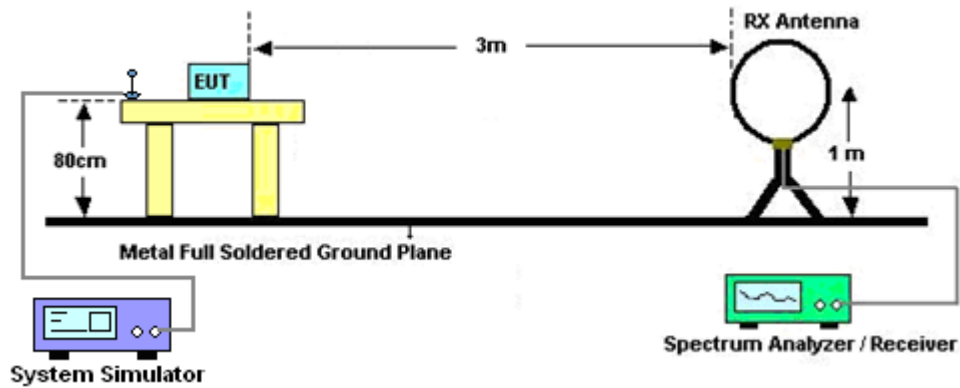
### 3 Radiated Test Items

#### 3.1 Measuring Instruments

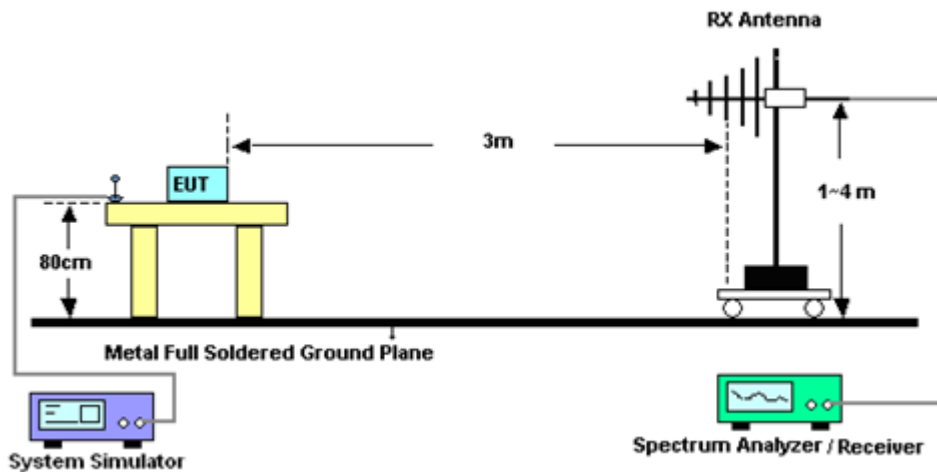
See list of measuring instruments of this test report.

#### 3.2 Test Setup

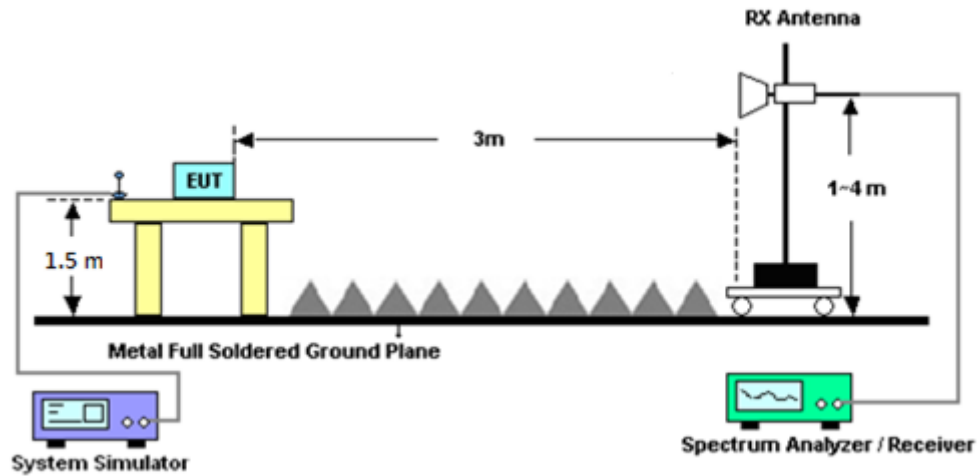
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



### 3.3 Test Result of Radiated Test

Please refer to Appendix A.

**Note:**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



### **3.4 Field Strength of Spurious Radiation Measurement**

#### **3.4.1 Description of Field Strength of Spurious Radiated Measurement**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

#### **3.4.2 Test Procedures**

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11.  $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)



## 4 List of Measuring Equipment

| Instrument              | Brand Name                    | Model No.                            | Serial No.      | Characteristics             | Calibration Date | Test Date                       | Due Date      | Remark                   |
|-------------------------|-------------------------------|--------------------------------------|-----------------|-----------------------------|------------------|---------------------------------|---------------|--------------------------|
| Loop Antenna            | Rohde & Schwarz               | HFH2-Z2                              | 100315          | 9 kHz~30 MHz                | Jan. 04, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Jan. 03, 2022 | Radiation<br>(03CH12-HY) |
| Bilog Antenna           | TESEQ                         | CBL 6111D &<br>00800N1D01N<br>-06    | 40103 & 07      | 30MHz~1GHz                  | Apr. 29, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Apr. 28, 2021 | Radiation<br>(03CH12-HY) |
| Horn Antenna            | SCHWARZBE<br>CK               | BBHA 9120 D                          | 9120D-1328      | 1GHz~18GHz                  | Nov. 23, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Nov. 22, 2021 | Radiation<br>(03CH12-HY) |
| Horn Antenna            | SCHWARZBE<br>CK               | BBHA 9120 D                          | 9120D-1212      | 1GHz~18GHz                  | May 20, 2020     | Apr. 08, 2021~<br>Apr. 09, 2021 | May 19, 2021  | Radiation<br>(03CH12-HY) |
| SHF-EHF Horn<br>Antenna | SCHWARZBE<br>CK               | BBHA 9170                            | 00993           | 18GHz~40GHz                 | Dec. 19, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Dec. 18, 2021 | Radiation<br>(03CH12-HY) |
| SHF-EHF Horn<br>Antenna | SCHWARZBE<br>CK               | BBHA 9170                            | BBHA917057<br>6 | 18GHz~40GHz                 | May 22, 2020     | Apr. 08, 2021~<br>Apr. 09, 2021 | May 21, 2021  | Radiation<br>(03CH12-HY) |
| Preamplifier            | COM-POWER                     | PA-103                               | 161075          | 10MHz~1GHz                  | Mar. 24, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Mar. 23, 2022 | Radiation<br>(03CH12-HY) |
| Preamplifier            | Keysight                      | 83017A                               | MY57280120      | 1GHz~26.5GHz                | Jul. 20, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Jul. 19, 2021 | Radiation<br>(03CH12-HY) |
| Preamplifier            | E-INSTRUME<br>NT TECH<br>LTD. | ERA-100M-18<br>G-56-01-A70           | EC1900249       | 1GHz-18GHz                  | Dec. 05, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Dec. 04, 2021 | Radiation<br>(03CH12-HY) |
| Preamplifier            | EMEC                          | EM18G40G                             | 060715          | 18GHz~40GHz                 | Dec. 11, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Dec. 10, 2021 | Radiation<br>(03CH12-HY) |
| Spectrum<br>Analyzer    | Agilent                       | N9010A                               | MY53470118      | 10Hz~44GHz                  | Jan. 15, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Jan. 14, 2022 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER             | SUCOFLEX<br>104                      | MY9837/4PE      | 9kHz~30MHz                  | Mar. 11, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Mar. 10, 2022 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER             | SUCOFLEX<br>126E                     | 0058/126E       | 30MHz~18GHz                 | Dec. 11, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Dec. 10, 2021 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER             | SUCOFLEX<br>102                      | 505134/2        | 30MHz~40GHz                 | Feb. 22, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Feb. 21, 2022 | Radiation<br>(03CH12-HY) |
| RF Cable                | HUBER +<br>SUHNER             | SUCOFLEX<br>102                      | 800740/2        | 30MHz~40GHz                 | Feb. 22, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Feb. 21, 2022 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                    | WLKS1200-12<br>SS                    | SN2             | 1.2GHz Low<br>Pass Filter   | Mar. 21, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Mar. 20, 2022 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                    | WHKX12-1080<br>-1200-15000-6<br>OSS  | SN1             | 1.2GHz High<br>Pass Filter  | Mar. 18, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Mar. 17, 2022 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                    | WHKX12-2700<br>-3000-18000-6<br>OST  | SN2             | 3GHz High Pass<br>Filter    | Jul. 14, 2020    | Apr. 08, 2021~<br>Apr. 09, 2021 | Jul. 13, 2021 | Radiation<br>(03CH12-HY) |
| Filter                  | Wainwright                    | WHKX8-5872.<br>5-6750-18000-<br>40ST | SN2             | 6.75GHz High<br>Pass Filter | Mar. 18, 2021    | Apr. 08, 2021~<br>Apr. 09, 2021 | Mar. 17, 2022 | Radiation<br>(03CH12-HY) |
| Antenna Mast            | EMEC                          | AM-BS-4500-B                         | N/A             | 1m~4m                       | N/A              | Apr. 08, 2021~<br>Apr. 09, 2021 | N/A           | Radiation<br>(03CH12-HY) |
| Turn Table              | EMEC                          | TT2000                               | N/A             | 0~360 Degree                | N/A              | Apr. 08, 2021~<br>Apr. 09, 2021 | N/A           | Radiation<br>(03CH12-HY) |
| Software                | Audix                         | E3<br>6.2009-8-24                    | RK-000989       | N/A                         | N/A              | Apr. 08, 2021~<br>Apr. 09, 2021 | N/A           | Radiation<br>(03CH12-HY) |

## 5 Uncertainty of Evaluation

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.07 |
|--------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.21 |
|--------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 3.80 |
|--------------------------------------------------------------------------|------|

## Appendix A. Test Results of and Radiated

### WLAN 802.11g\_Tx\_Ch01 + WWAN GSM850 Ch189

| 11g_Tx_Ch01+ GSM850 Ch189 |                      |                |                  |                         |                         |                          |                            |                             |                       |
|---------------------------|----------------------|----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                   | Frequency<br>( MHz ) | ERP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | SPA<br>Reading<br>(dBm) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Middle                    | 1672                 | -57.29         | -13              | -44.29                  | -65.79                  | -62.97                   | 0.93                       | 8.75                        | H                     |
|                           | 2512                 | -53.85         | -13              | -40.85                  | -67.34                  | -61.26                   | 1.15                       | 10.71                       | H                     |
|                           | 3344                 | -57.32         | -13              | -44.32                  | -72.54                  | -65.96                   | 1.33                       | 12.13                       | H                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                           | 1672                 | -54.05         | -13              | -41.05                  | -61.92                  | -59.73                   | 0.93                       | 8.75                        | V                     |
|                           | 2512                 | -54.03         | -13              | -41.03                  | -67.71                  | -61.44                   | 1.15                       | 10.71                       | V                     |
|                           | 3344                 | -56.57         | -13              | -43.57                  | -72.24                  | -65.21                   | 1.33                       | 12.13                       | V                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                           |                      |                |                  |                         |                         |                          |                            |                             | V                     |

**Remark:** Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**WLAN 80211a\_Tx\_Ch36 + BT\_1M\_Ch39 + WWAN GSM850 Ch189**

| 11a_Tx_Ch36+BT_1M_Ch39+GSM850 Ch189 |                      |                |                  |                         |                         |                          |                            |                             |                       |
|-------------------------------------|----------------------|----------------|------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------|-----------------------|
| Channel                             | Frequency<br>( MHz ) | ERP<br>( dBm ) | Limit<br>( dBm ) | Over<br>Limit<br>( dB ) | SPA<br>Reading<br>(dBm) | S.G.<br>Power<br>( dBm ) | TX Cable<br>loss<br>( dB ) | TX Antenna<br>Gain<br>(dBi) | Polarization<br>(H/V) |
| Middle                              | 1672                 | -60.63         | -13              | -47.63                  | -69.13                  | -66.31                   | 0.93                       | 8.75                        | H                     |
|                                     | 2509                 | -58.79         | -13              | -45.79                  | -72.28                  | -66.20                   | 1.15                       | 10.71                       | H                     |
|                                     | 3345                 | -56.88         | -13              | -43.88                  | -72.1                   | -65.53                   | 1.33                       | 12.13                       | H                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | H                     |
|                                     | 1672                 | -63.56         | -13              | -50.56                  | -71.43                  | -69.24                   | 0.93                       | 8.75                        | V                     |
|                                     | 2512                 | -58.61         | -13              | -45.61                  | -72.29                  | -66.02                   | 1.15                       | 10.71                       | V                     |
|                                     | 3344                 | -56.94         | -13              | -43.94                  | -72.61                  | -65.58                   | 1.33                       | 12.13                       | V                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | V                     |
|                                     |                      |                |                  |                         |                         |                          |                            |                             | V                     |

**Remark:** Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

————THE END————