

## FCC Part 22H&24E&27M Test Report

Product Name : Module  
Trade Name :   
Model No. : LE910C1-LA  
FCC ID : RI7LE910C1LA

Applicant : TELIT WIRELESS SOLUTIONS CO., LTD  
Address : 12TH FL., SHINYOUNG SECURITIES BLD.SEOUL.REPUBLIC  
OF KOREA

Date of Receipt : Mar. 21, 2019  
Issued Date : May. 07, 2019  
Report No. : 1930357R-HPUSP28V00  
Report Version : V1.0



The test results relate only to the samples tested.

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# Test Report Certification

Issued Date : May. 07, 2019

Report No. : 1930357R-HPUSP28V00



Product Name : Module  
Applicant : TELIT WIRELESS SOLUTIONS CO., LTD  
Address : 12TH FL., SHINYOUNG SECURITIES  
BLD.SEOUL.REPUBLIC OF KOREA  
Manufacturer : TELIT WIRELESS SOLUTIONS CO., LTD  
Address : 12TH FL., SHINYOUNG SECURITIES  
BLD.SEOUL.REPUBLIC OF KOREA  
Model No. : LE910C1-LA  
FCC ID : RI7LE910C1LA  
EUT Voltage : DC 3.8V  
Testing Voltage : DC 3.8V  
Trade Name :   
Applicable Standard : FCC CFR Title 47 Part 2, ANSI/TIA-603-D  
FCC Part 22 Subpart H, FCC Part 24 Subpart E,  
FCC Part 27 Subpart M  
Test Lab : Hsin Chu Laboratory  
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu  
County 310, Taiwan, R.O.C.  
TEL: +886-3-582-8001 / FAX: +886-3-582-8958  
Test Result : Complied

Documented By :



( Fonbo Fang / Engineering Adm. Specialist )

Tested By :



( Clemens Fang / Senior Engineer )

Approved By :



( Louis Hsu / Deputy Manager )

### **Revision History**

| <b>Report No.</b>   | <b>Version</b> | <b>Description</b>      | <b>Issued Date</b> |
|---------------------|----------------|-------------------------|--------------------|
| 1930357R-HPUSP28V00 | V1.0           | Initial issue of report | May. 07, 2019      |
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## 1. General Information

### 1.1. EUT Description

|                                       |                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------|
| Product Name                          | Module                                                                                              |
| Trade Name                            |                    |
| Model No.                             | LE910C1-LA                                                                                          |
| Tx Frequency Range/<br>Channel number | WCDMA Band 2: 1852.4-1907.6 MHz<br>WCDMA Band 4: 1712.4-1752.6 MHz<br>WCDMA Band 5: 826.4-846.6 MHz |
| Rx Frequency Range/<br>Channel number | WCDMA Band 2: 1932.4-1987.6 MHz<br>WCDMA Band 4: 2112.4-2152.6 MHz<br>WCDMA Band 5: 871.4-891.6 MHz |
| Type of Modulation                    | WCDMA: QPSK (Uplink)<br>HSDPA: QPSK (Uplink)<br>HSUPA: QPSK (Uplink)                                |
| HW Version                            | 1.0                                                                                                 |
| Firmware Version                      | 25.20.272-B024                                                                                      |

| Accessories Information |       |
|-------------------------|-------|
| Antenna                 | 1 pcs |

| Antenna Information |                                    |
|---------------------|------------------------------------|
| MFR. / Model        | Hankook / WE14-LF-07               |
| Antenna Type        | Dipole Antenna                     |
| Antenna Gain        | Band 5: 1.5dBi<br>Band 2/4: 3.5dBi |

Note:

1. This LE910C1-LA support GSM 850, PCS 1900, WCDMA Band 2/4/5 and LTE Band 2/4/5/7.
2. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

## 1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

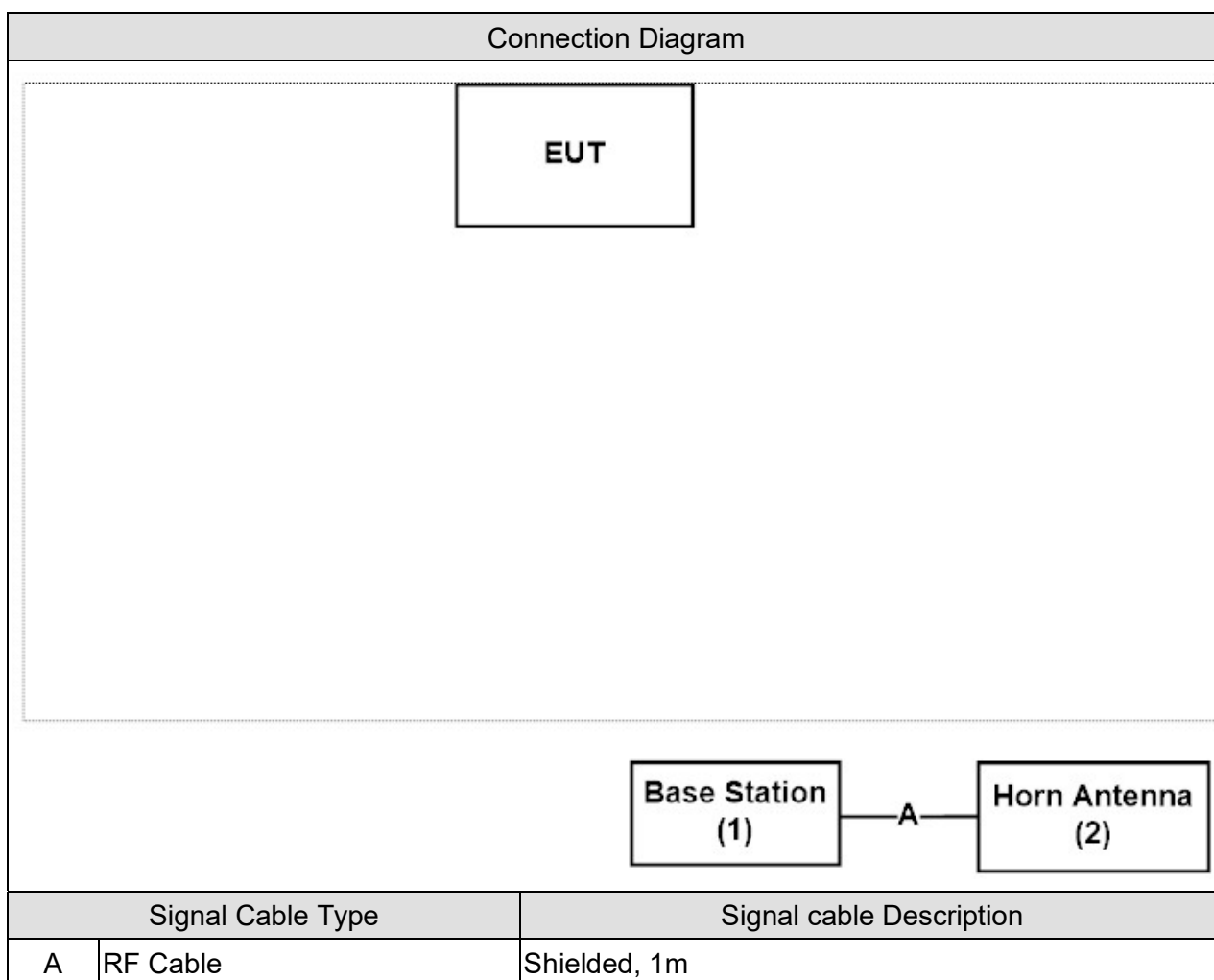
| Test Mode            |
|----------------------|
| Mode 1: WCDMA_Band 2 |
| Mode 2: WCDMA_Band 4 |
| Mode 3: WCDMA_Band 5 |

### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product        | Manufacturer | Model No. | Serial No. | FCC ID | Power Cord        |
|----------------|--------------|-----------|------------|--------|-------------------|
| 1 Base Station | R&S          | CMW500    | 106071     | DoC    | Non-Shielded, 2m. |
| 2 Horn Antenna | scnwahzbeck  | BBHA9120B | 639        | DoC    | --                |

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

|   |                                                                         |
|---|-------------------------------------------------------------------------|
| 1 | Setup the EUT and simulators as shown on 1.4.                           |
| 2 | Turn on the power of all equipment. Horn link with base station.        |
| 3 | The EUT link with base station and it will continue receive the signal. |
| 4 | Repeat the above procedure.                                             |

## 2. Technical Test

### 2.1. Summary of Test Result

- ☒ No deviations from the test standards  
☐ Deviations from the test standards as below description:

#### For WCDMA Band 2

#### (FCC Part 24 Subpart E)

| Performed Item        | FCC Rule                      | Limit       | Result |
|-----------------------|-------------------------------|-------------|--------|
| Maximum Output Power  | §2.1033<br>§2.1046<br>§24.232 | < 2 Watts   | Pass   |
| Occupied Bandwidth    | §2.1049                       | N/A         | Pass   |
| Peak To Average Ratio | §24.232(d)                    | $\leq$ 13dB | Pass   |
| Conducted Band Edge   | §27.238                       | < -13dBm    | Pass   |
| Spurious Emission     | §2.1053<br>§24.238            | < -13dBm    | Pass   |
| Frequency Stability   | §2.1055<br>§24.235            | < 2.5 ppm   | Pass   |

**For WCDMA Band 4**  
**(FCC Part 27 Subpart M)**

| Performed Item        | FCC Rule                                | Limit          | Result |
|-----------------------|-----------------------------------------|----------------|--------|
| Maximum Output Power  | FCC PART 2.1046 and PART 27.50(h)(2)    | < 1 Watts EIRP | Pass   |
| Occupied Bandwidth    | FCC PART 2.1049 and PART 27.53(l)(6)    | N/A            | Pass   |
| Peak To Average Ratio | §27.50(b)                               | ≤ 13dB         | Pass   |
| Conducted Band Edge   | FCC PART 2.1051 and PART 27.53(l)(4)(6) | < -13 dBm      | Pass   |
| Spurious Emission     | FCC PART 2.1051 and PART 27.53(l)(4)(6) | < -25 dBm      | Pass   |
| Frequency Stability   | FCC PART 2.1055(a)(l) and PART 27.54    | < 2.5 ppm      | Pass   |

**For WCDMA Band 5**  
**(FCC Part 22 Subpart H)**

| Performed Item        | FCC Rule                      | Limit     | Result |
|-----------------------|-------------------------------|-----------|--------|
| Maximum Output Power  | §2.1033<br>§2.1046<br>§22.913 | < 7 Watts | Pass   |
| Occupied Bandwidth    | §2.1049                       | N/A       | Pass   |
| Peak To Average Ratio | §22.913(d)                    | ≤ 13dB    | Pass   |
| Conducted Band Edge   | §22.917                       | < -13dBm  | Pass   |
| Spurious Emission     | §2.1053<br>§22.917            | < -13dBm  | Pass   |
| Frequency Stability   | §2.1055<br>§22.335            | < 2.5 ppm | Pass   |

## 2.2. Test Environment

| Items                      | Test Item             | Required (IEC 68-1) | Actual   | Test Site |
|----------------------------|-----------------------|---------------------|----------|-----------|
| Temperature (°C)           | RF Output Power       | 15-35               | 23       | 3         |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |
| Temperature (°C)           | Occupied Bandwidth    | 15-35               | 23       | 3         |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |
| Temperature (°C)           | Peak To Average Ratio | 15-35               | 23       | 3         |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |
| Temperature (°C)           | Conducted Band Edge   | 15-35               | 23       | 3         |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |
| Temperature (°C)           | Spurious Emission     | 15-35               | 23       | 2/3       |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |
| Temperature (°C)           | Frequency Stability   | 15-35               | 23       | 3         |
| Humidity (%RH)             |                       | 25-75               | 52       |           |
| Barometric pressure (mbar) |                       | 860-1060            | 950-1000 |           |

Note: Test Site information refers to Laboratory Information.

## Laboratory Information

**USA : FCC Registration Number: TW3024**

**Canada : IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : [http://www.dekra.com.tw/index\\_en.aspx](http://www.dekra.com.tw/index_en.aspx)

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

- 1 No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan (R.O.C.)  
TEL: +886-3-592-8858 / FAX: +886-3-592-8859 E-Mail : [info.tw@dekra.com](mailto:info.tw@dekra.com)
- 2 No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.  
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : [info.tw@dekra.com](mailto:info.tw@dekra.com)
- 3 No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.  
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : [info.tw@dekra.com](mailto:info.tw@dekra.com)

## 2.3. List of Test Equipment

### RF Output Power / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

### Occupied Bandwidth / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

### Peak To Average Ratio / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

### Conducted Band Edge / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

## Conducted Spurious Emissions / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

## Radiated Spurious Emissions / CB2-H

| Instrument                          | Manufacturer | Model No.                      | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|--------------------------------|------------|------------|----------------|
| Horn Antenna                        | Schwarzbeck  | BBHA 9120D                     | 639        | 2018/06/01 | 2019/05/31     |
| Bilog Antenna                       | Teseq        | CBL6112D                       | 23191      | 2018/06/26 | 2019/06/25     |
| Signal & Spectrum Analyzer          | R&S          | FSV40                          | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A                         | MY51440132 | 2019/03/15 | 2020/03/14     |
| Signal Analyzer                     | R&S          | FSVA40                         | 101455     | 2018/11/05 | 2019/11/04     |
| Horn Antenna                        | Schwarzbeck  | BBHA 9170                      | 202        | 2019/01/16 | 2020/01/15     |
| Pre-Amplifier                       | Dekra        | AP-400C                        | 201801231  | 2018/12/05 | 2019/12/04     |
| Pre-Amplifier                       | EMCI         | EMC11830I                      | 980366     | 2018/12/21 | 2019/12/20     |
| Horn Antenna                        | Schwarzbeck  | BBHA 9120D                     | 01656      | 2018/10/17 | 2019/10/16     |
| Pre-Amplifier                       | Dekra        | AP-025C                        | 201801236  | 2019/02/18 | 2020/02/17     |
| Signal Analyzer                     | R&S          | FSV40                          | 101435     | 2018/07/19 | 2019/07/18     |
| Wideband Radio Communication Tester | R&S          | CMW500                         | 106071     | 2019/01/16 | 2020/01/15     |
| Wireless Conn. Tseter               | R&S          | CMW500                         | 157118     | 2018/08/16 | 2019/08/15     |
| Coaxial Cable                       | Huber+Suhner | SF104_SF104_SF104_SF104(16.0m) | CB2-H      | 2018/08/21 | 2019/08/20     |

## Frequency Stability / SR10-H

| Instrument                          | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|-------------------------------------|--------------|-----------|------------|------------|----------------|
| Signal & Spectrum Analyzer          | R&S          | FSV40     | 101049     | 2018/12/21 | 2019/12/20     |
| EXA Signal Analyzer                 | Keysight     | N9010A    | MY51440132 | 2019/03/15 | 2020/03/14     |
| Spectrum Analyzer                   | Keysight     | N9030B    | MY57140404 | 2018/06/26 | 2019/06/25     |
| Spectrum Analyzer                   | Keysight     | N9010B    | MY57110159 | 2018/05/25 | 2019/05/24     |
| Wireless Conn. Tseter               | R&S          | CMW500    | 157118     | 2018/08/16 | 2019/08/15     |
| Wideband Radio Communication Tester | R&S          | CMW500    | 106071     | 2019/01/16 | 2020/01/15     |

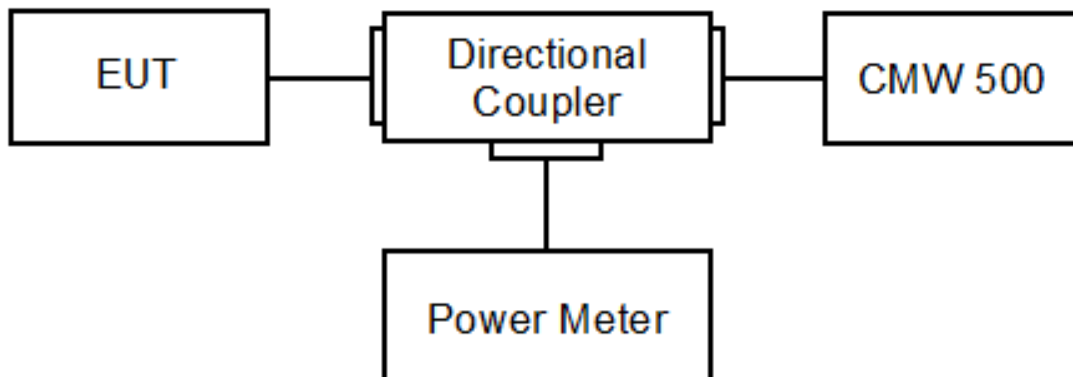
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

## 2.4. Measurement Uncertainty

| Test Item             | Uncertainty                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RF Output Power       | $\pm 1.27\text{dB}$                                                                                                                                                                  |
| Occupied Bandwidth    | $\pm 10\text{ Hz}$                                                                                                                                                                   |
| Peak To Average Ratio | In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13dB.                                   |
| Conducted Band Edge   | $\pm 1.2\text{ dB}$                                                                                                                                                                  |
| Spurious Emissions    | The measurement uncertainty is defined as $\pm 1.27\text{ dB}$ for Conducted Measurement.<br>The measurement uncertainty is defined as $\pm 3.2\text{ dB}$ for Radiated Measurement. |
| Frequency Stability   | $\pm 10\text{ Hz}$                                                                                                                                                                   |

### 3. RF Output Power

#### 3.1. Test Setup



#### 3.2. Test Procedure

- The RF output of the transmitter was connected to base station simulator.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set EUT at maximum average power by base station simulator.
- Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi)

Effective Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi) - 2.15dB

#### 3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.2.4

ANSI C63.26-2015 Sub-clause 5.2.4.2

### 3.4. Test Result

|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | RF Output Power (Conducted) |           |        |
| Test Mode    | Mode 1: WCDMA _Band 2       |           |        |
| Date of Test | 2019/04/02                  | Test Site | SR10-H |

| Test Mode | Frequency (MHz) | Reading Level (dBm) | Antenna Gain (dBi) | Measure Level (dBm) | Measure Level (W) | Limit (W) EIRP |
|-----------|-----------------|---------------------|--------------------|---------------------|-------------------|----------------|
| RMC       | 1852.4          | 23.15               | 3.5                | 26.650              | 0.462             | 2              |
|           | 1880.0          | 23.01               | 3.5                | 26.510              | 0.448             | 2              |
|           | 1907.6          | 22.86               | 3.5                | 26.360              | 0.433             | 2              |
| HSUPA     | 1852.4          | 20.92               | 3.5                | 24.420              | 0.277             | 2              |
|           | 1880.0          | 20.87               | 3.5                | 24.370              | 0.274             | 2              |
|           | 1907.6          | 20.58               | 3.5                | 24.080              | 0.256             | 2              |
| HSDPA     | 1852.4          | 20.38               | 3.5                | 23.880              | 0.244             | 2              |
|           | 1880.0          | 20.32               | 3.5                | 23.820              | 0.241             | 2              |
|           | 1907.6          | 20.26               | 3.5                | 23.760              | 0.238             | 2              |
| Voice     | 1852.4          | 22.65               | 3.5                | 26.150              | 0.412             | 2              |
|           | 1880.0          | 22.68               | 3.5                | 26.180              | 0.415             | 2              |
|           | 1907.6          | 22.76               | 3.5                | 26.260              | 0.423             | 2              |

Note: Measure Level (EIRP) = Reading Level + Antenna Gain

|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | RF Output Power (Conducted) |           |        |
| Test Mode    | Mode 2: WCDMA _Band 4       |           |        |
| Date of Test | 2019/04/02                  | Test Site | SR10-H |

| Test Mode | Frequency (MHz) | Reading Level (dBm) | Antenna Gain (dBi) | Measure Level (dBm) | Measure Level (W) | Limit (W) EIRP |
|-----------|-----------------|---------------------|--------------------|---------------------|-------------------|----------------|
| RMC       | 1712.4          | 23.03               | 3.5                | 26.530              | 0.450             | 1              |
|           | 1732.6          | 23.05               | 3.5                | 26.550              | 0.452             | 1              |
|           | 1752.6          | 23.01               | 3.5                | 26.510              | 0.448             | 1              |
| HSUPA     | 1712.4          | 20.63               | 3.5                | 24.130              | 0.259             | 1              |
|           | 1732.6          | 21.06               | 3.5                | 24.560              | 0.286             | 1              |
|           | 1752.6          | 20.71               | 3.5                | 24.210              | 0.264             | 1              |
| HSDPA     | 1712.4          | 20.42               | 3.5                | 23.920              | 0.247             | 1              |
|           | 1732.6          | 20.37               | 3.5                | 23.870              | 0.244             | 1              |
|           | 1752.6          | 20.32               | 3.5                | 23.820              | 0.241             | 1              |
| Voice     | 1712.4          | 22.95               | 3.5                | 26.450              | 0.442             | 1              |
|           | 1732.6          | 22.94               | 3.5                | 26.440              | 0.441             | 1              |
|           | 1752.6          | 22.87               | 3.5                | 26.370              | 0.434             | 1              |

Note: Measure Level (EIRP) = Reading Level + Antenna Gain

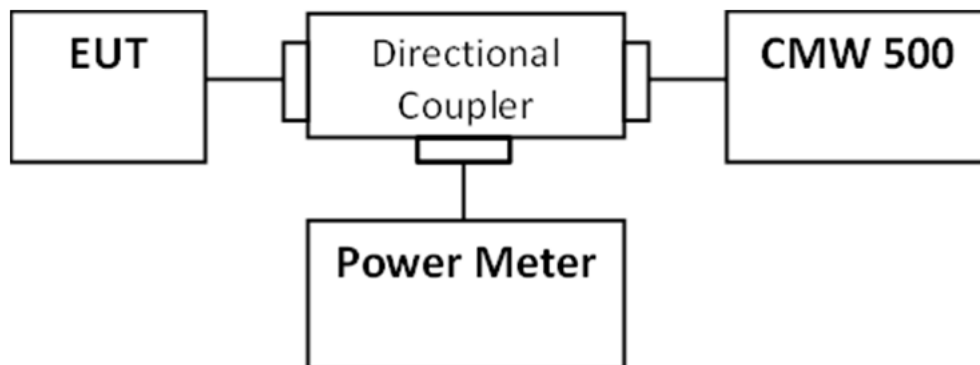
|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | RF Output Power (Conducted) |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5        |           |        |
| Date of Test | 2019/04/02                  | Test Site | SR10-H |

| Test Mode | Frequency (MHz) | Reading Level (dBm) | Antenna Gain (dBi) | Measure Level (dBm) | Measure Level (W) | Limit (W) ERP |
|-----------|-----------------|---------------------|--------------------|---------------------|-------------------|---------------|
| RMC       | 826.4           | 23.37               | 1.5                | 22.720              | 0.187             | 7             |
|           | 836.6           | 23.31               | 1.5                | 22.660              | 0.185             | 7             |
|           | 846.6           | 23.29               | 1.5                | 22.640              | 0.184             | 7             |
| HSUPA     | 826.4           | 21.32               | 1.5                | 20.670              | 0.117             | 7             |
|           | 836.6           | 21.42               | 1.5                | 20.770              | 0.119             | 7             |
|           | 846.6           | 21.37               | 1.5                | 20.720              | 0.118             | 7             |
| HSDPA     | 826.4           | 20.92               | 1.5                | 20.270              | 0.106             | 7             |
|           | 836.6           | 21.04               | 1.5                | 20.390              | 0.109             | 7             |
|           | 846.6           | 20.94               | 1.5                | 20.290              | 0.107             | 7             |
| Voice     | 826.4           | 23.21               | 1.5                | 22.560              | 0.180             | 7             |
|           | 836.6           | 23.22               | 1.5                | 22.570              | 0.181             | 7             |
|           | 846.6           | 23.20               | 1.5                | 22.550              | 0.180             | 7             |

Note: Measure Level (EIRP) = Reading Level + Antenna Gain - 2.15

## 4. Occupied Bandwidth

### 4.1. Test Setup



### 4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

### 4.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 4.2 & 4.3  
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Occupied Bandwidth    |           |        |
| Test Mode    | Mode 1: WCDMA _Band 2 |           |        |
| Date of Test | 2019/04/16            | Test Site | SR10-H |

| WCDMA_Band 2_RMC   |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 1852.4             | 4.664                  | 4.132  | N/A            |
| 1880               | 4.686                  | 4.119  | N/A            |
| 1907.6             | 4.680                  | 4.131  | N/A            |

**Spectrum 1** **Spectrum 2** **Spectrum 3** **Spectrum 4**

Ref Level 30.00 dBm Offset 5.00 dB RBW 50 kHz  
 Att 40 dB SWT 10.1 ms VBW 200 kHz Mode Sweep

1Pk Max

20 dBm  
 10 dBm  
 0 dBm  
 -10 dBm  
 -20 dBm  
 -30 dBm  
 -40 dBm  
 -50 dBm  
 -60 dBm

M1[1]  
 M1  
 ndB  
 Q factor

17.07 dBm  
 1.853010939 GHz  
 26.00 dB  
 4.664500000 MHz  
 397.3

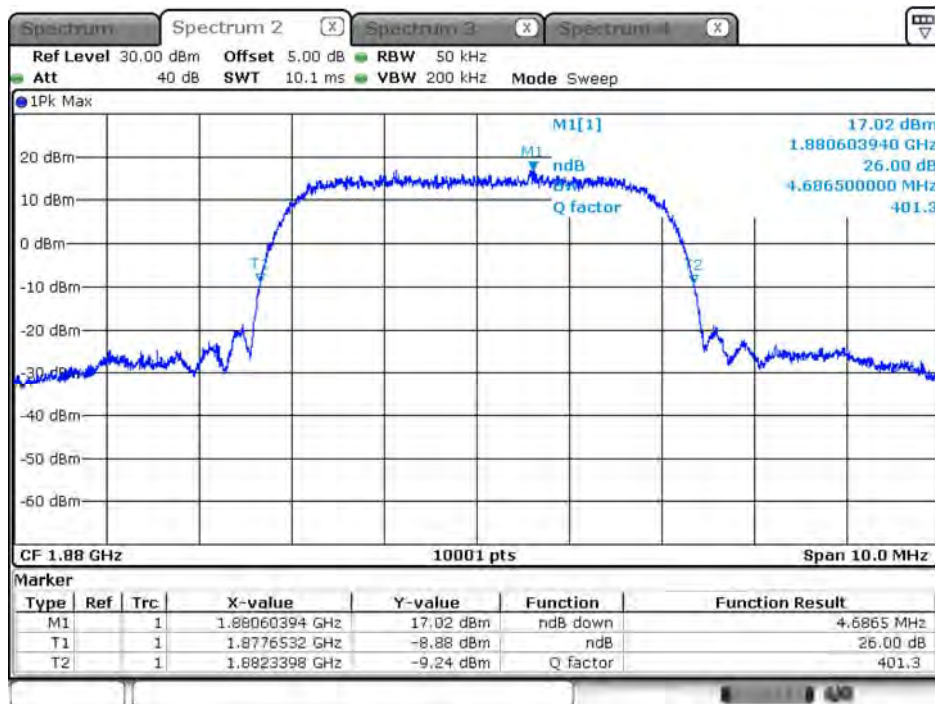
CF 1.8524 GHz 10001 pts Span 10.0 MHz

**Marker**

| Type | Ref | Trc | X-value        | Y-value   | Function | Function Result |
|------|-----|-----|----------------|-----------|----------|-----------------|
| M1   |     | 1   | 1.85301094 GHz | 17.07 dBm | ndB down | 4.6645 MHz      |
| T1   |     | 1   | 1.8500642 GHz  | -8.93 dBm | ndB      | 26.00 dB        |
| T2   |     | 1   | 1.8547288 GHz  | -9.03 dBm | Q factor | 397.3           |

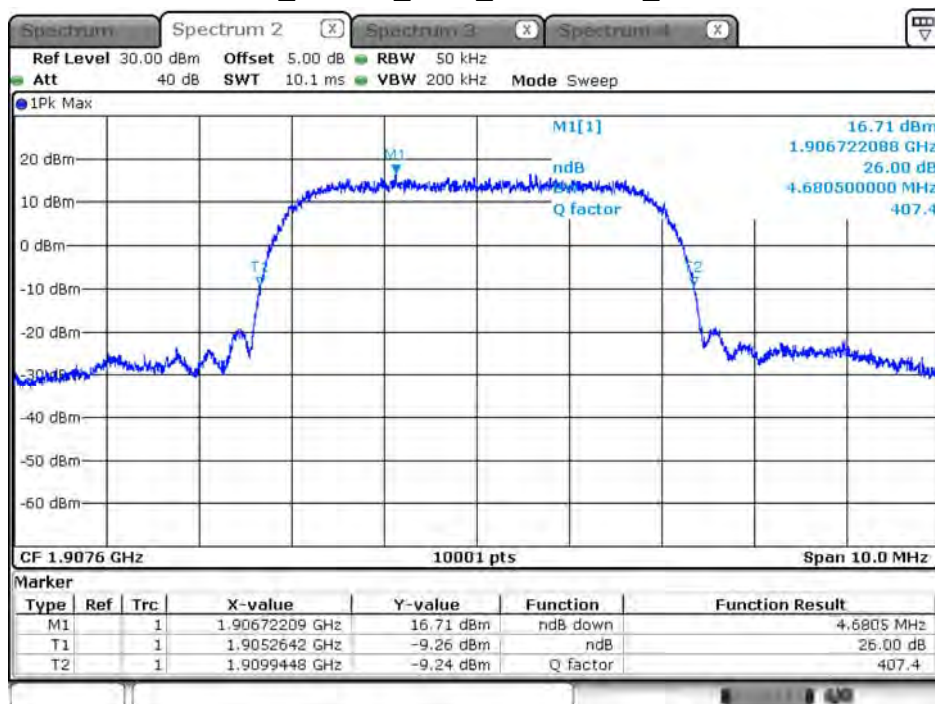
Page: 20 of 132

## WCDMA\_Band 2\_RMC\_1880.0MHz\_26dB BW

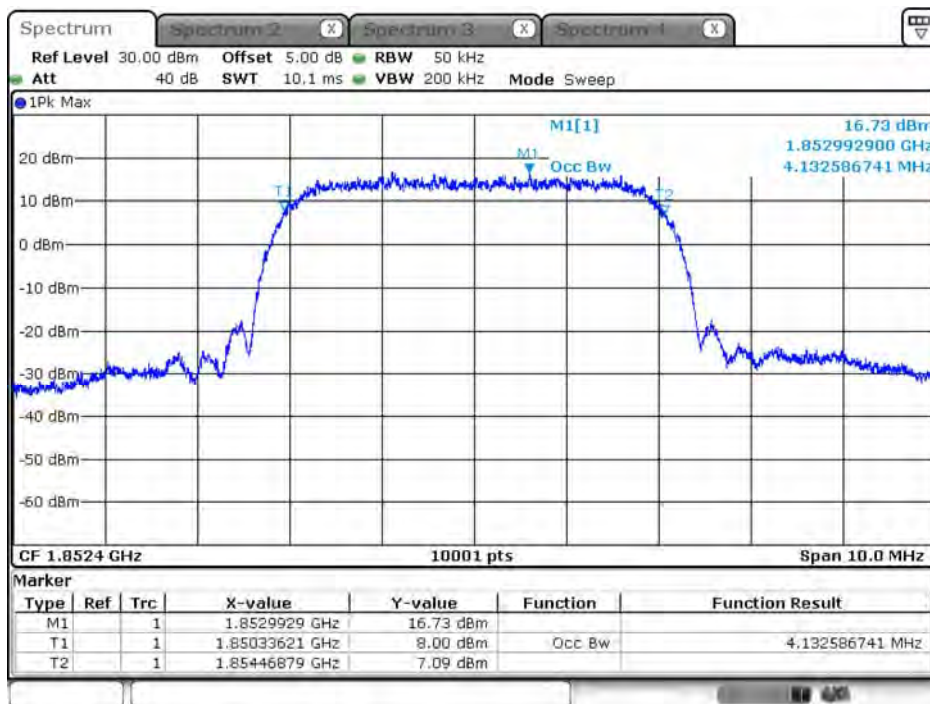


Date: 2.APR.2019 19:34:45

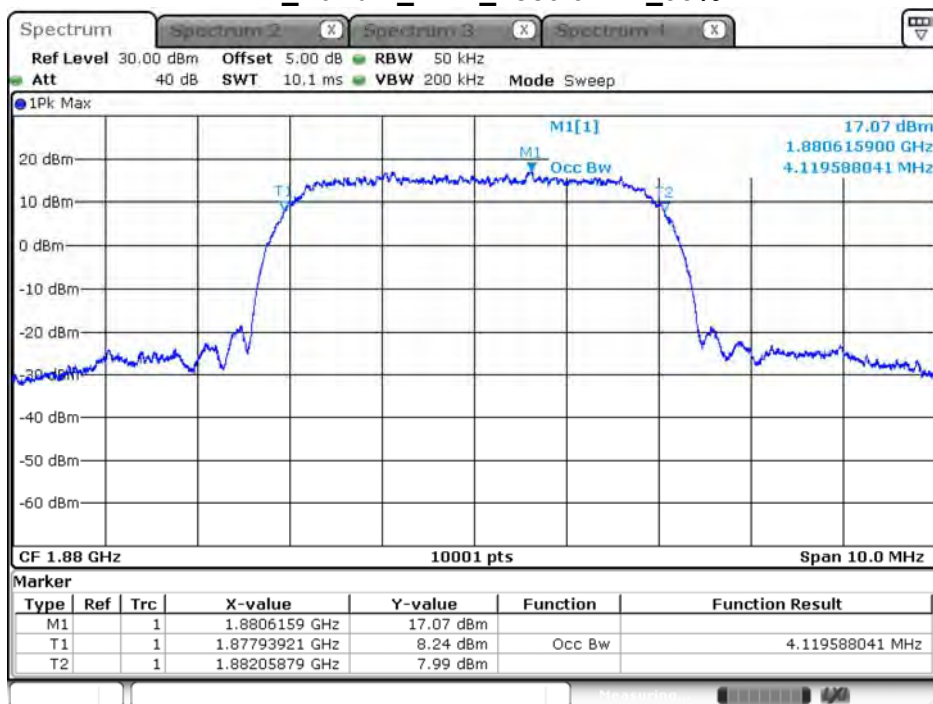
## WCDMA\_Band 2\_RMC\_1907.6MHz\_26dB BW



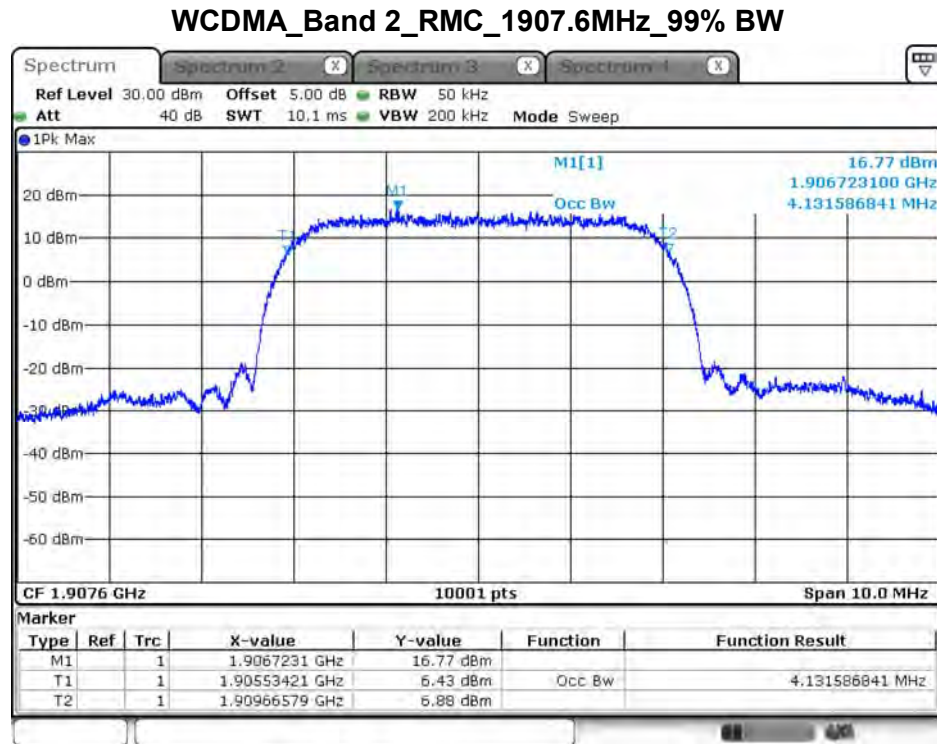
Date: 2.APR.2019 19:36:05

**WCDMA\_Band 2\_RMC\_1852.4MHz\_99% BW**

Date: 2.APR.2019 19:29:19

**WCDMA\_Band 2\_RMC\_1880.0MHz\_99% BW**

Date: 2.APR.2019 19:34:11

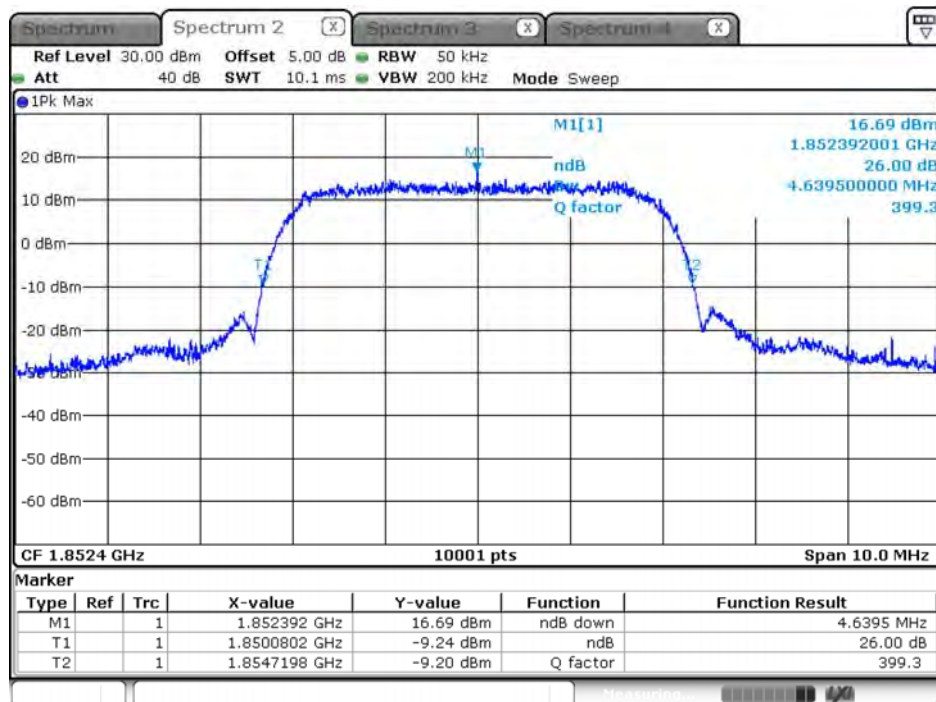


Date: 2 APR 2019 19:37:40

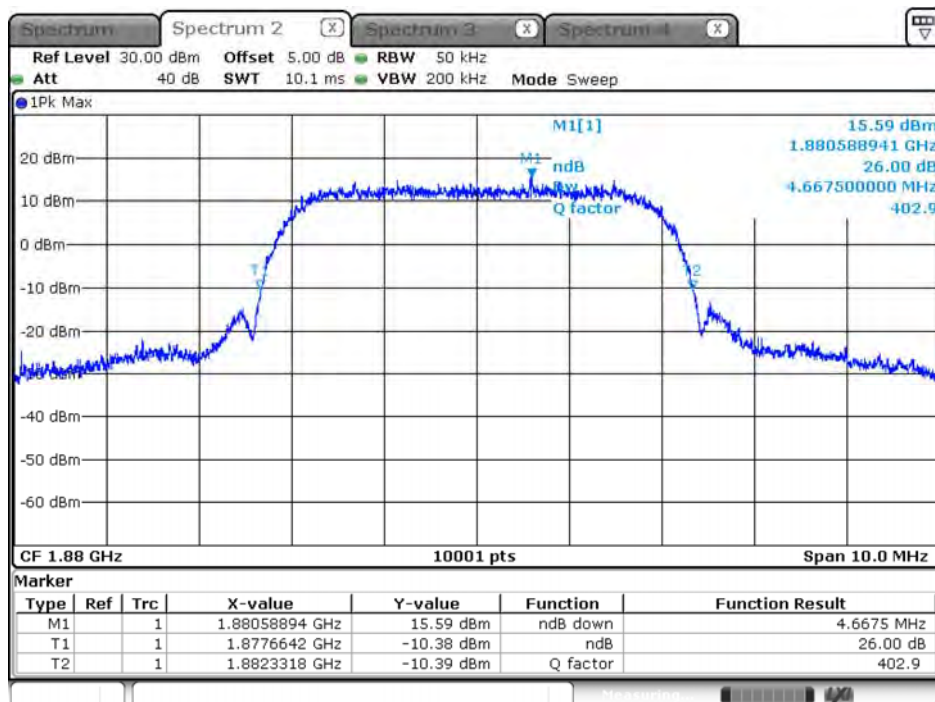
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 2_HSDPA |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 1852.4             | 4.639                  | 4.133  | N/A            |
| 1880               | 4.667                  | 4.136  | N/A            |
| 1907.6             | 4.671                  | 4.135  | N/A            |

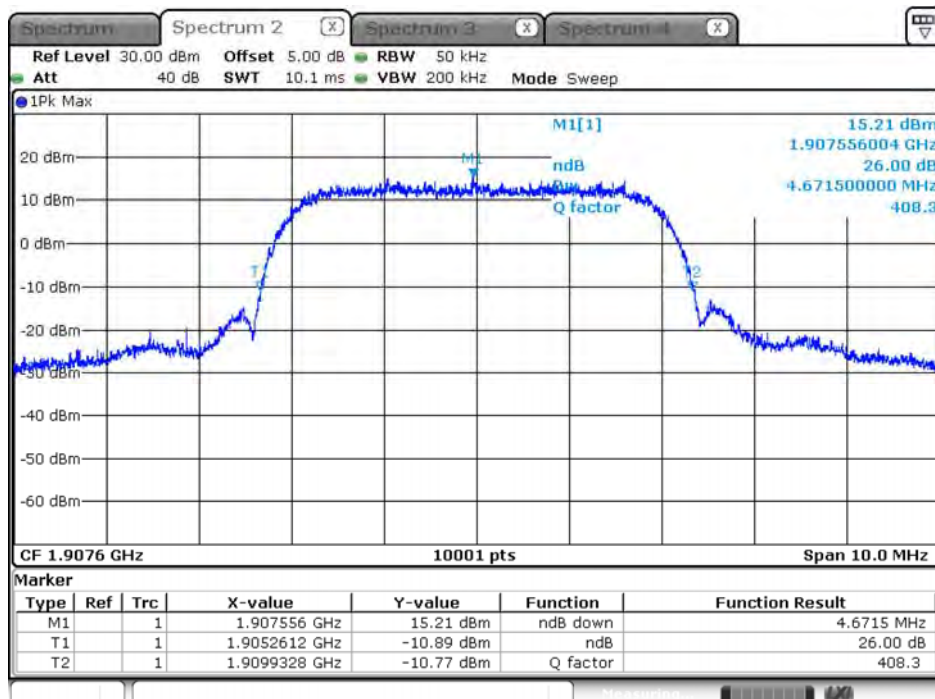
### WCDMA\_Band 2\_HSDPA\_1852.4MHz\_26dB BW



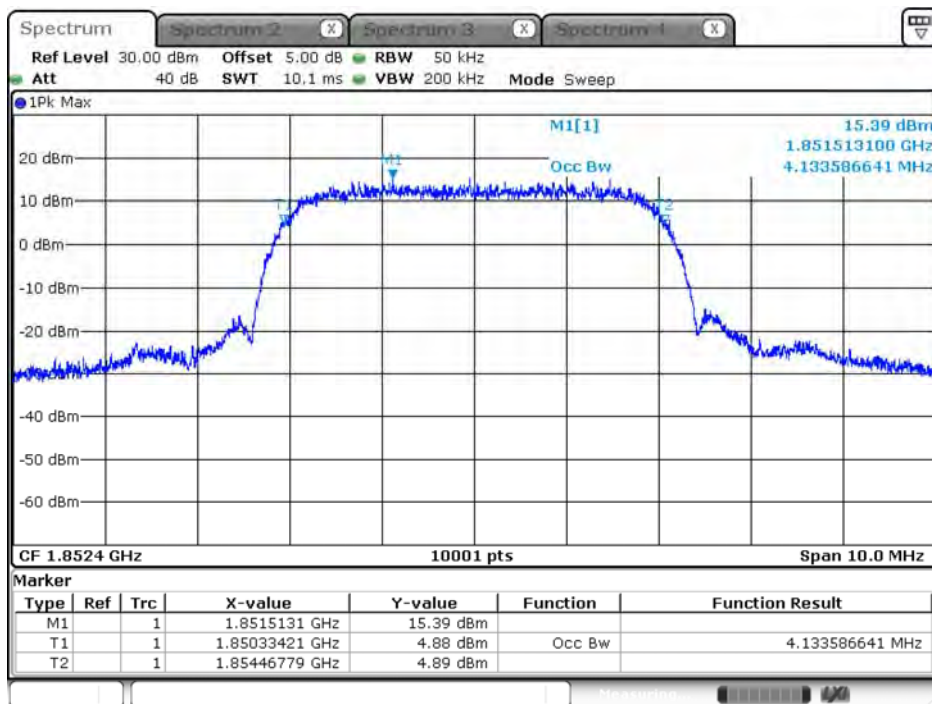
Date: 2.APR.2019 20:29:31

**WCDMA\_Band 2\_HSDPA\_1880.0MHz\_26dB BW**

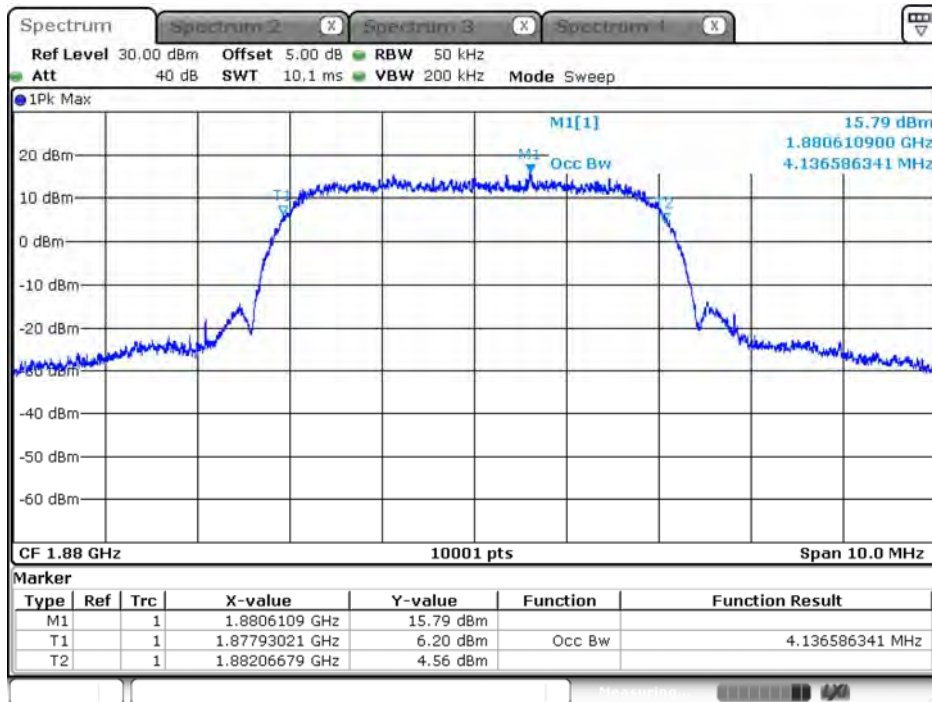
Date: 2.APR.2019 20:27:42

**WCDMA\_Band 2\_HSDPA\_1907.6MHz\_26dB BW**

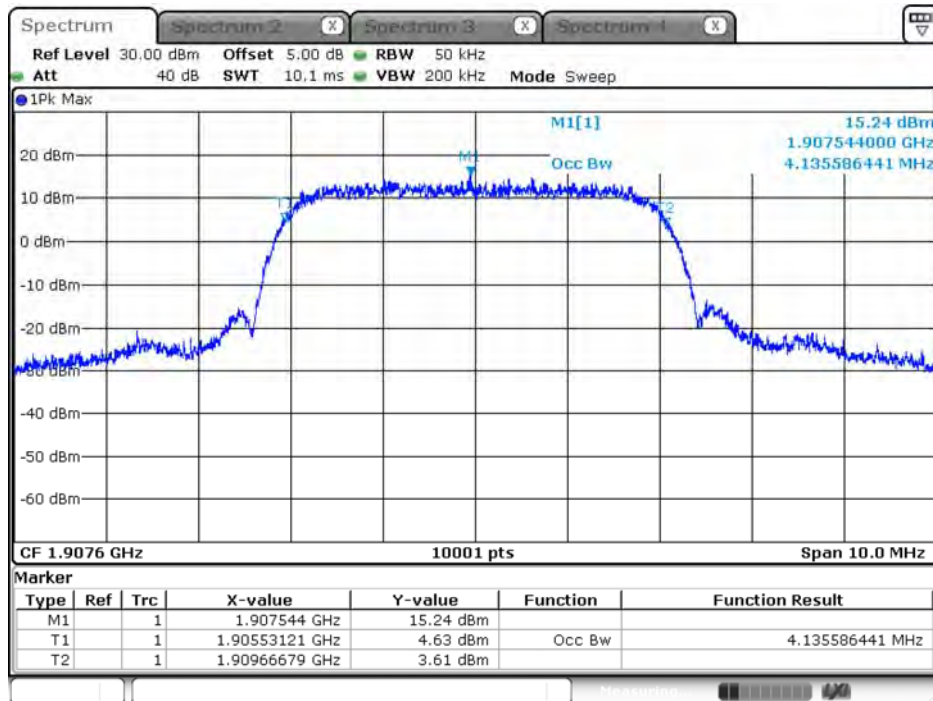
Date: 2.APR.2019 20:26:12

**WCDMA\_Band 2\_HSDPA\_1852.4MHz\_99% BW**

Date: 2.APR.2019 20:28:30

**WCDMA\_Band 2\_HSDPA\_1880.0MHz\_99% BW**

Date: 2.APR.2019 20:27:20

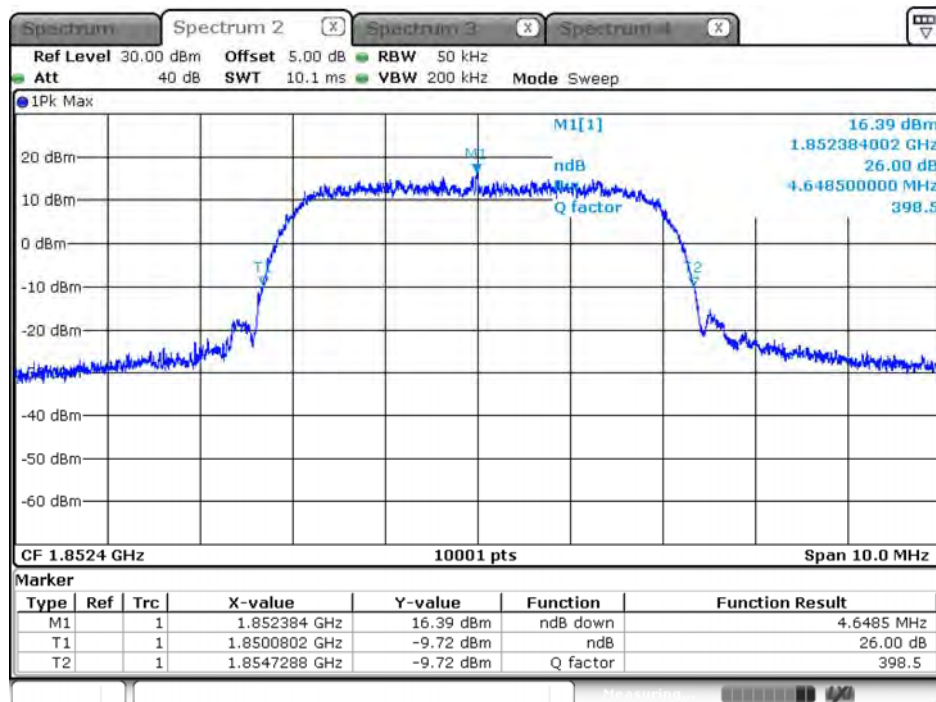
**WCDMA\_Band 2\_HSDPA\_1907.6MHz\_99% BW**

Date: 2.APR.2019 20:25:40

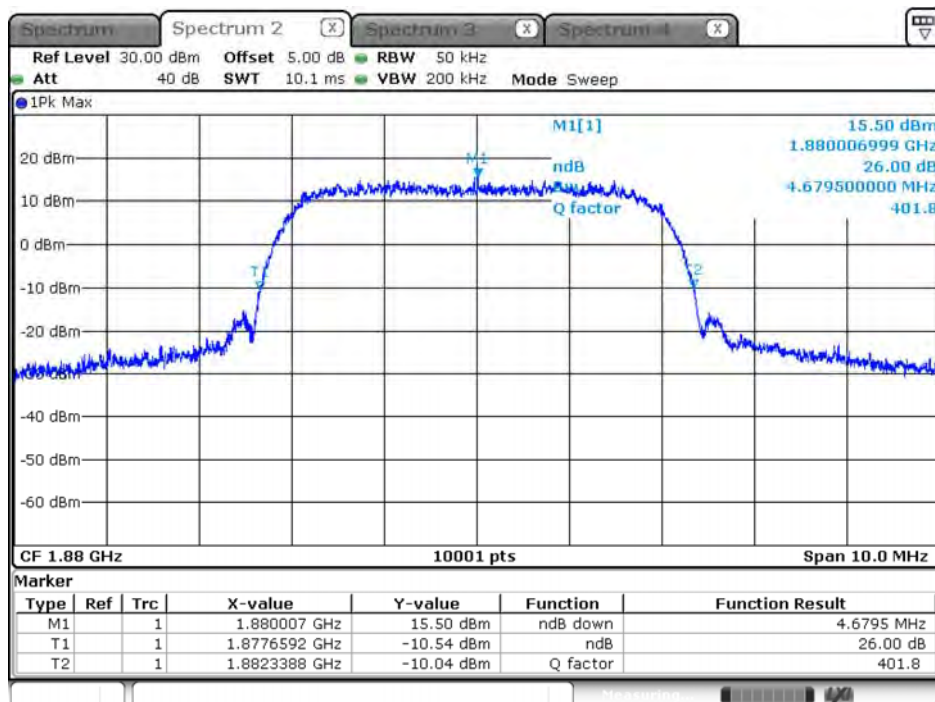
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 2_HSUPA |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 1852.4             | 4.648                  | 4.135  | N/A            |
| 1880               | 4.679                  | 4.124  | N/A            |
| 1907.6             | 4.674                  | 4.130  | N/A            |

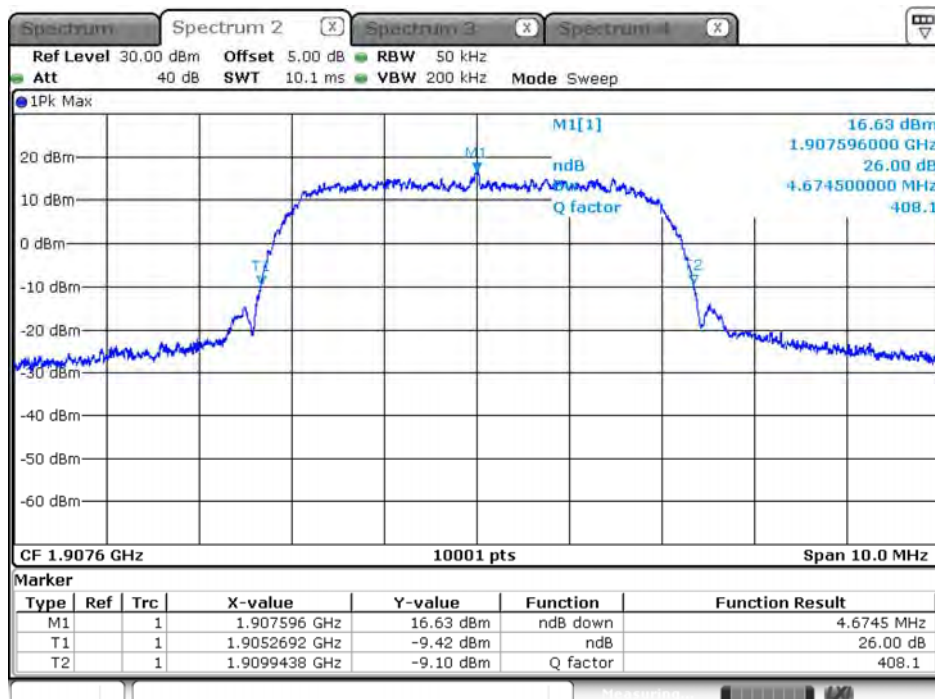
WCDMA\_Band 2\_HSUPA\_1852.4MHz\_26dB BW



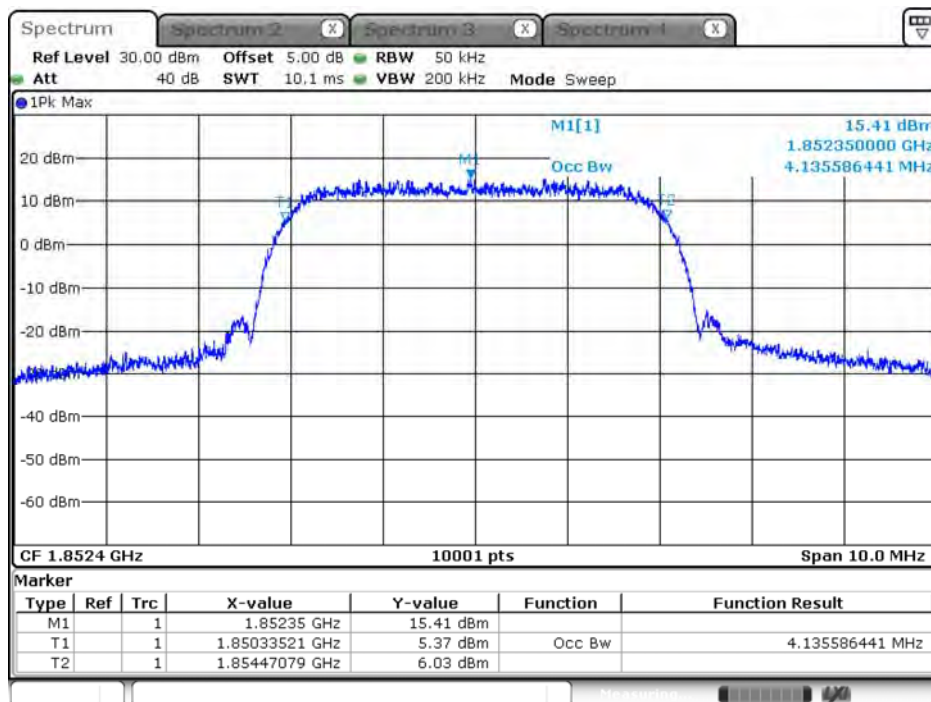
Date: 2.APR.2019 20:31:22

**WCDMA\_Band 2\_HSUPA\_1880.0MHz\_26dB BW**

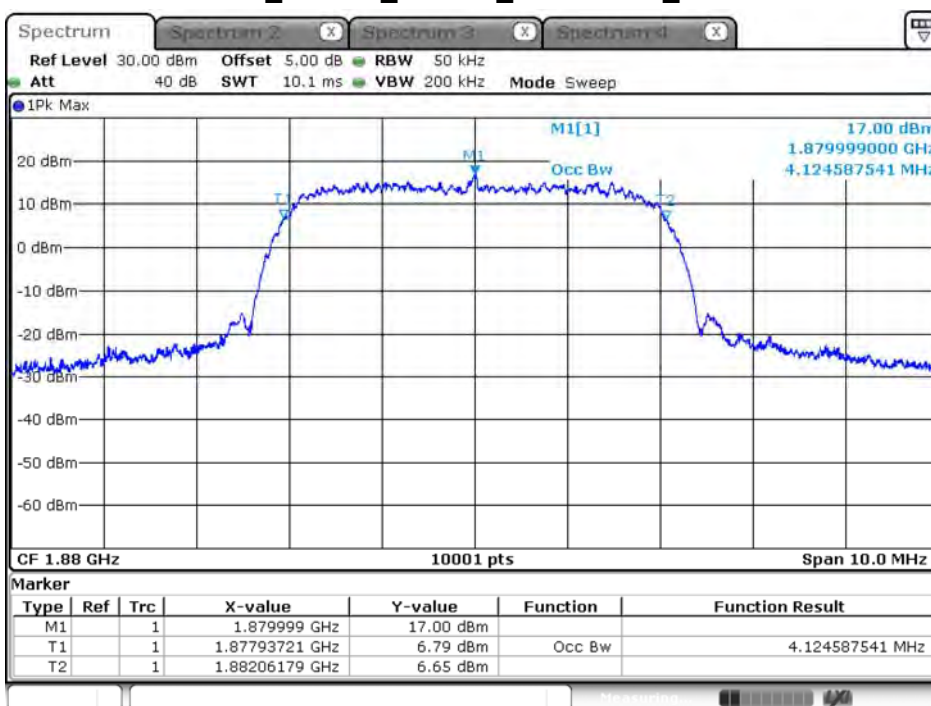
Date: 2.APR.2019 20:37:47

**WCDMA\_Band 2\_HSUPA\_1907.6MHz\_26dB BW**

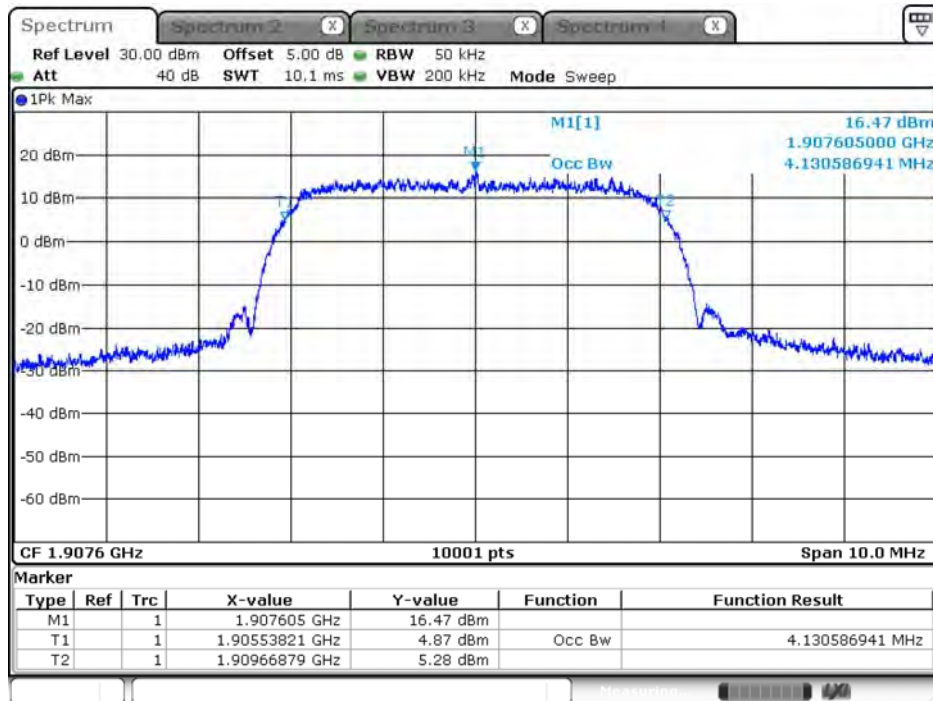
Date: 2.APR.2019 20:41:54

**WCDMA\_Band 2\_HSUPA\_1852.4MHz\_99% BW**

Date: 2.APR.2019 20:30:47

**WCDMA\_Band 2\_HSUPA\_1880.0MHz\_99% BW**

Date: 2.APR.2019 20:37:17

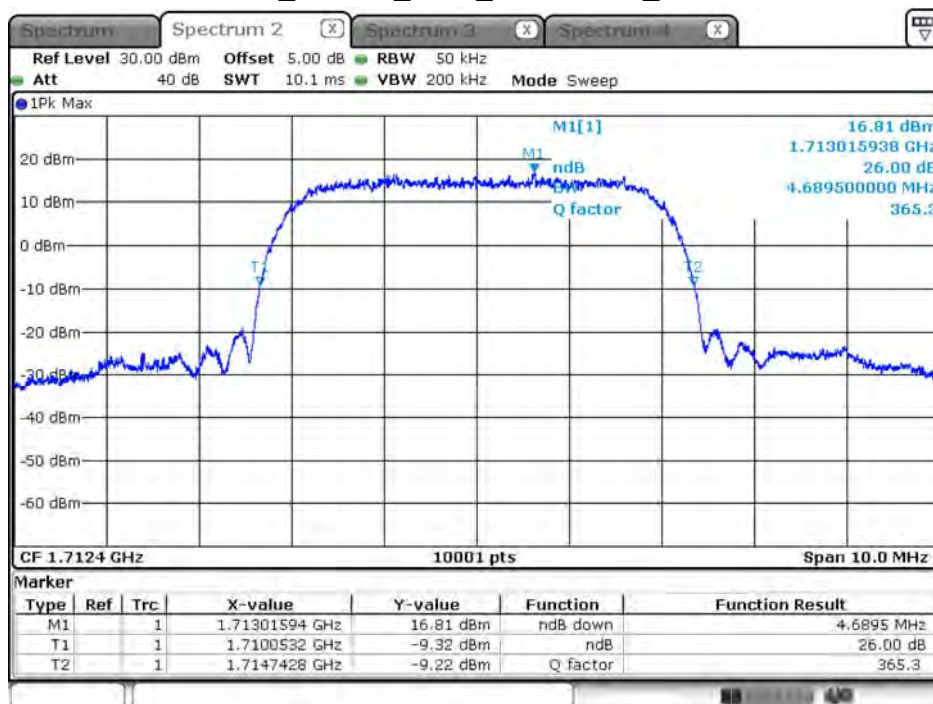
**WCDMA\_Band 2\_HSUPA\_1907.6MHz\_99% BW**

Date: 2.APR.2019 20:39:09

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

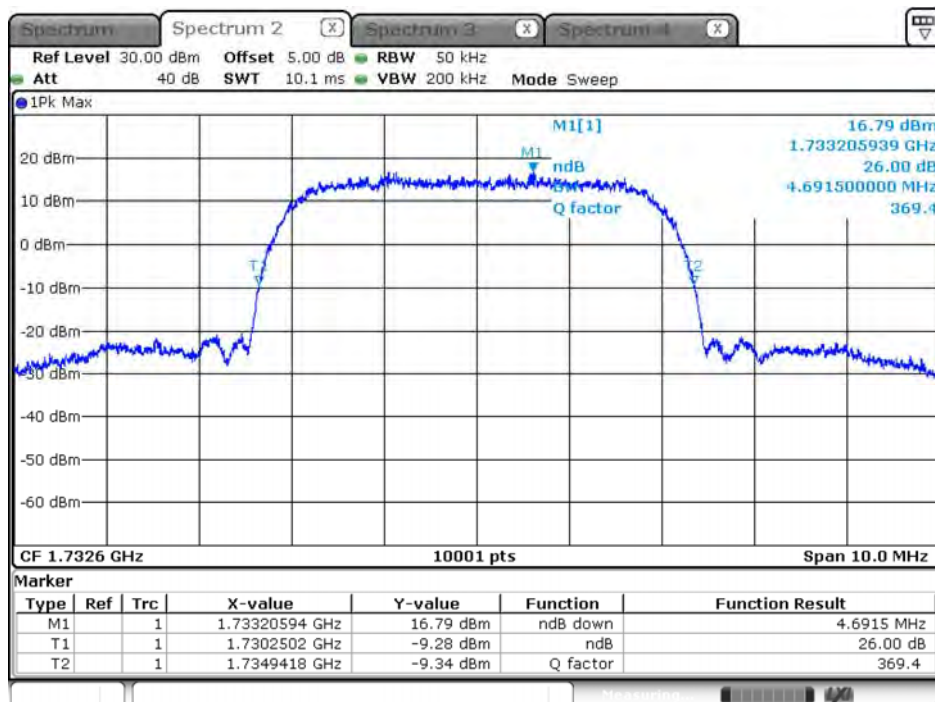
| WCDMA_Band 4_RMC   |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 1712.4             | 4.689                  | 4.128  | N/A            |
| 1732.6             | 4.691                  | 4.127  | N/A            |
| 1752.6             | 4.683                  | 4.121  | N/A            |

WCDMA\_Band 4\_RMC\_1712.4MHz\_26dB BW



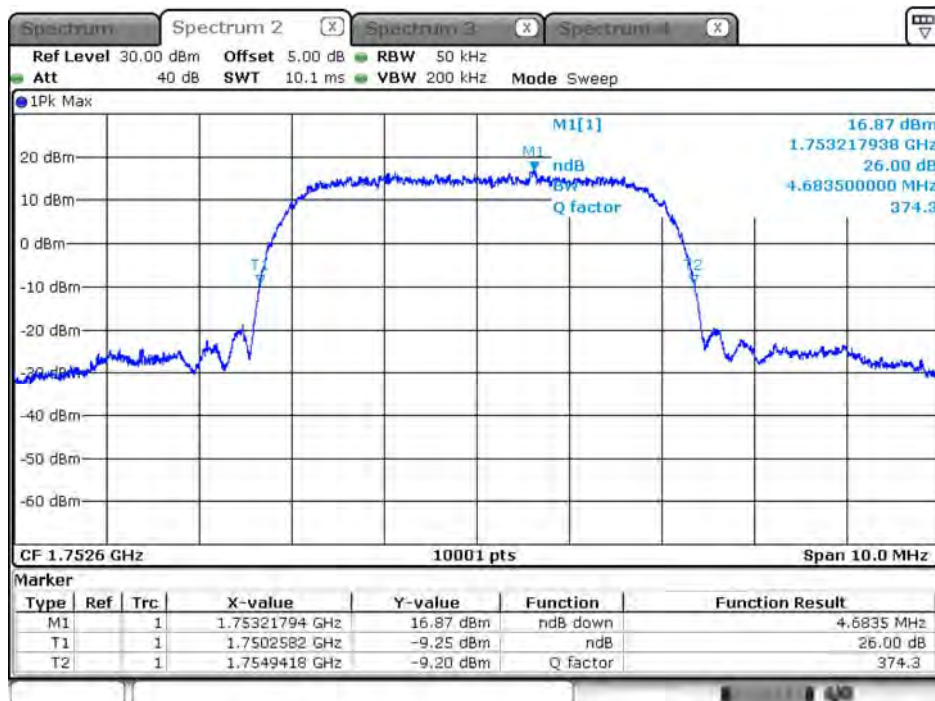
Date: 2.APR 2019 19:42:35

## WCDMA\_Band 4\_RMC\_1732.6MHz\_26dB BW

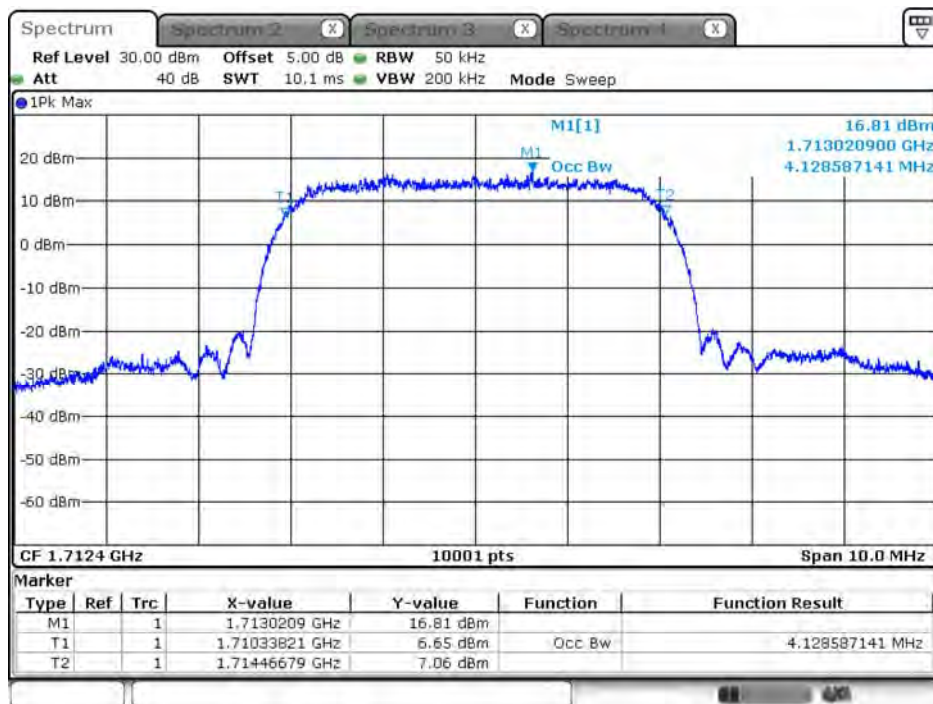


Date: 2.APR.2019 19:43:25

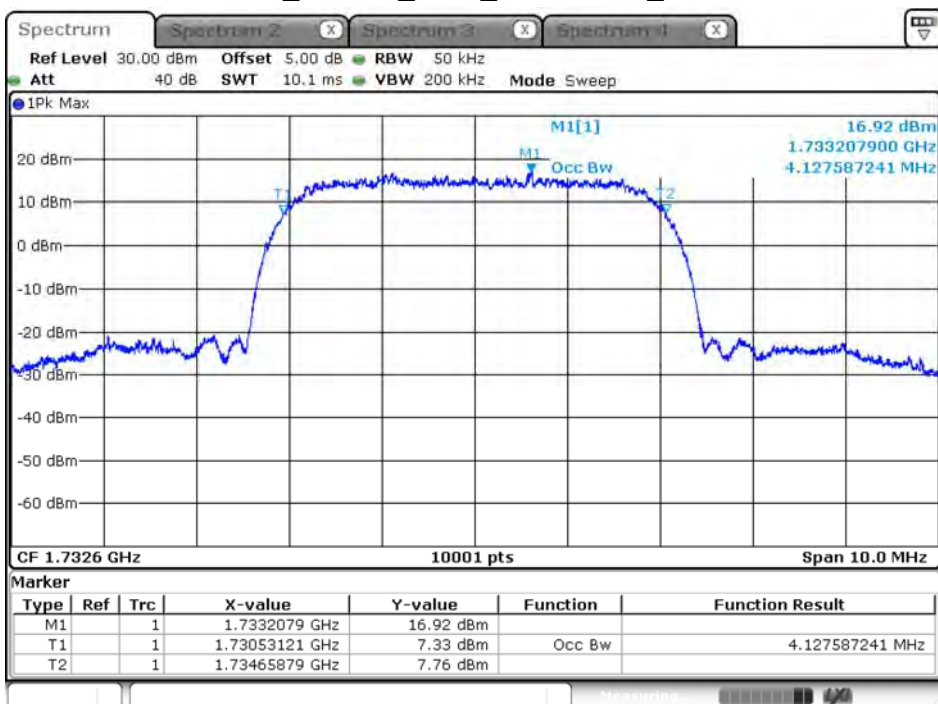
## WCDMA\_Band 4\_RMC\_1752.6MHz\_26dB BW



Date: 2.APR.2019 19:51:57

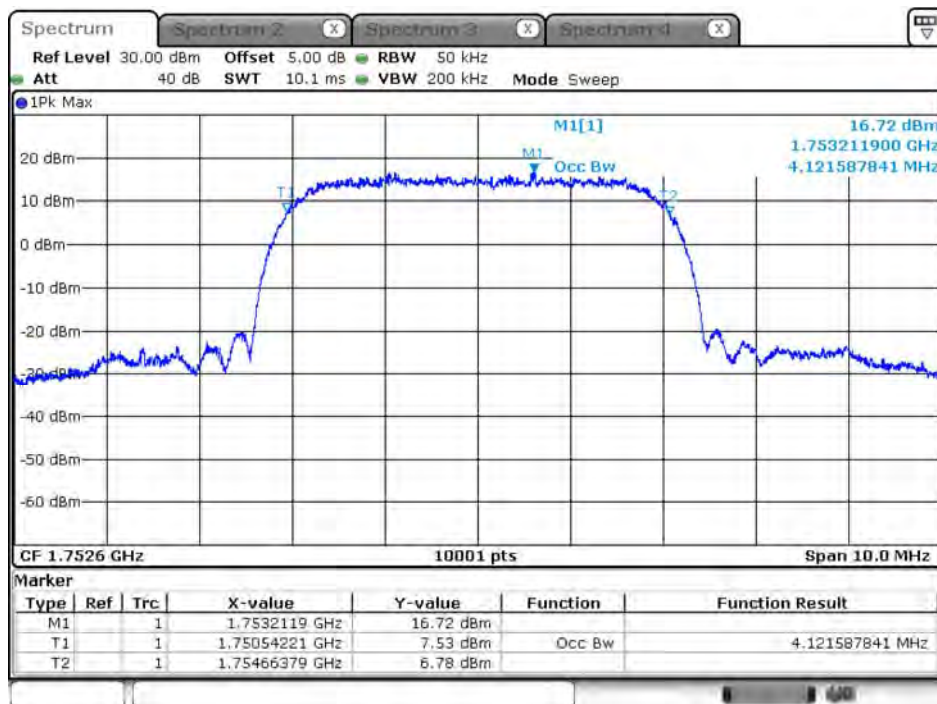
**WCDMA\_Band 4\_RMC\_1712.4MHz\_99% BW**

Date: 2.APR.2019 19:40:56

**WCDMA\_Band 4\_RMC\_1732.6MHz\_99% BW**

Date: 2.APR.2019 19:45:27

### WCDMA\_Band 4\_RMC\_1752.6MHz\_99% BW

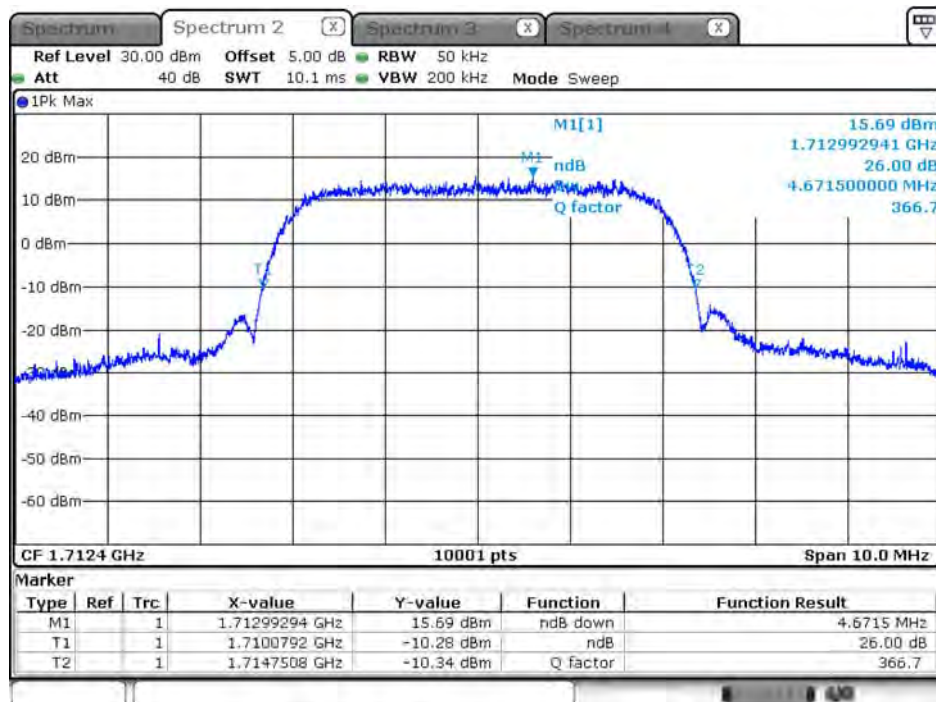


Date: 2.APR.2019 19:50:38

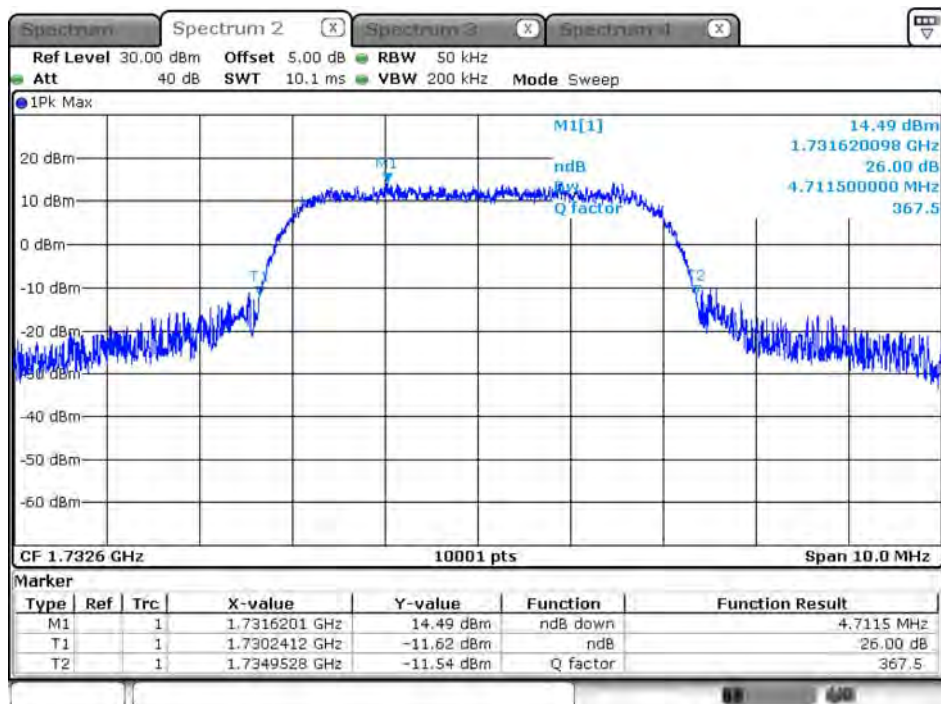
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 4_ HSDPA |                        |        |                |
|---------------------|------------------------|--------|----------------|
| Frequency<br>(MHz)  | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                     | 26dB BW                | 99% BW |                |
| 1712.4              | 4.671                  | 4.135  | N/A            |
| 1732.6              | 4.711                  | 4.147  | N/A            |
| 1752.6              | 4.661                  | 4.128  | N/A            |

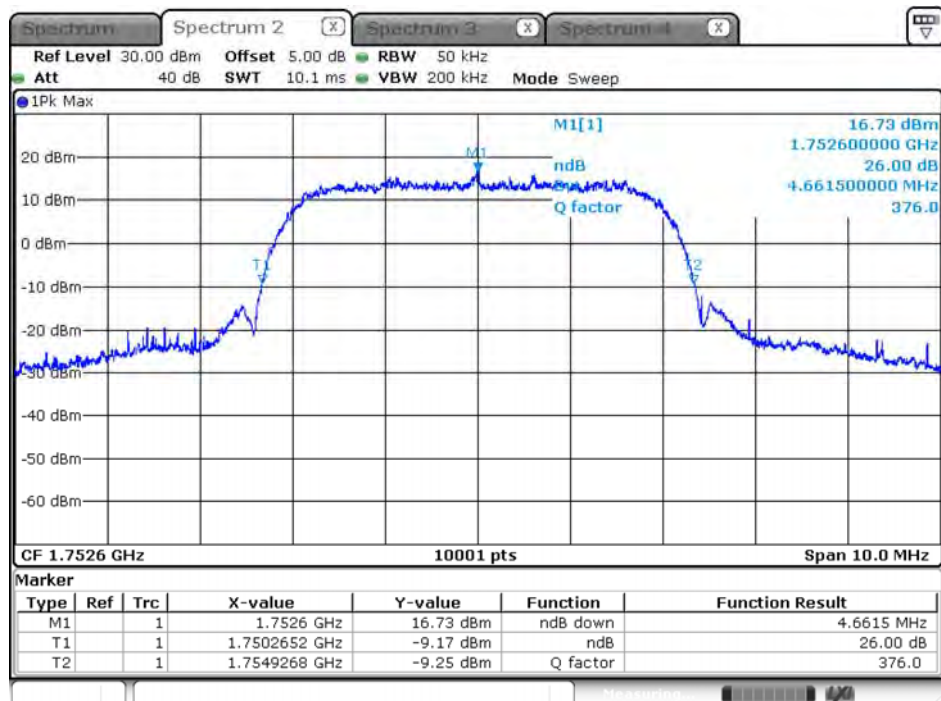
### WCDMA\_Band 4\_HSDPA\_1712.4MHz\_26dB BW



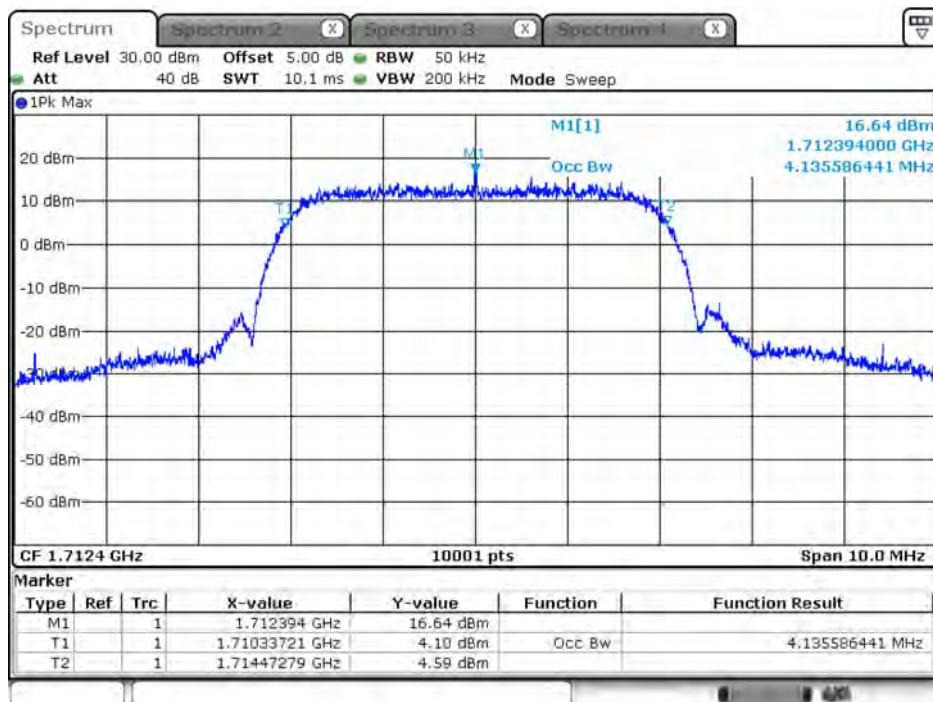
Date: 2.APR 2019 20:24:54

**WCDMA\_Band 4\_HSDPA\_1732.6MHz\_26dB BW**

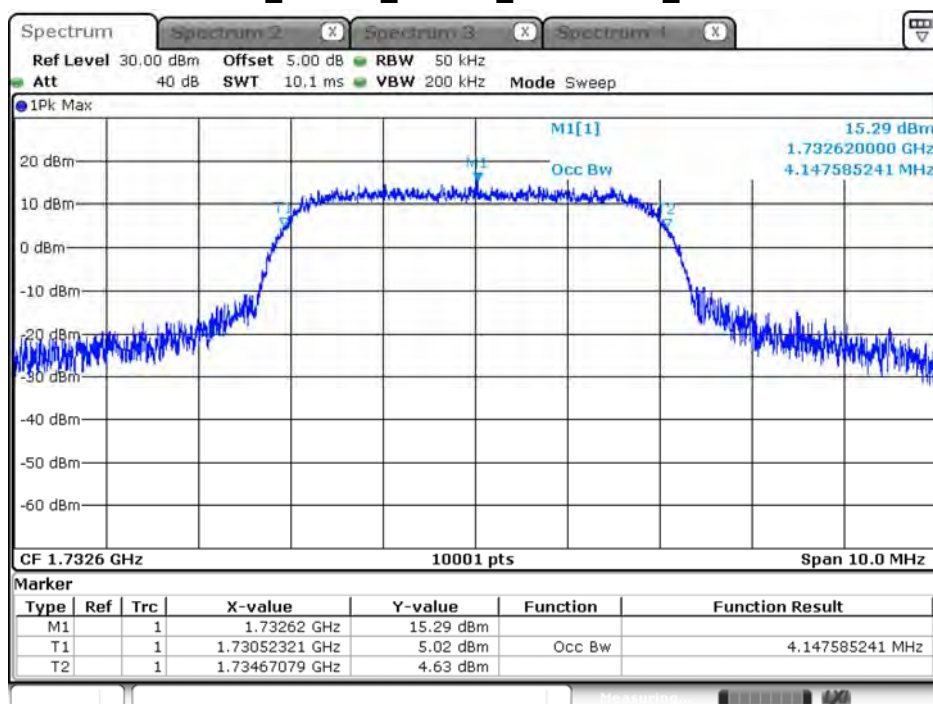
Date: 2.APR.2019 20:22:51

**WCDMA\_Band 4\_HSDPA\_1752.6MHz\_26dB BW**

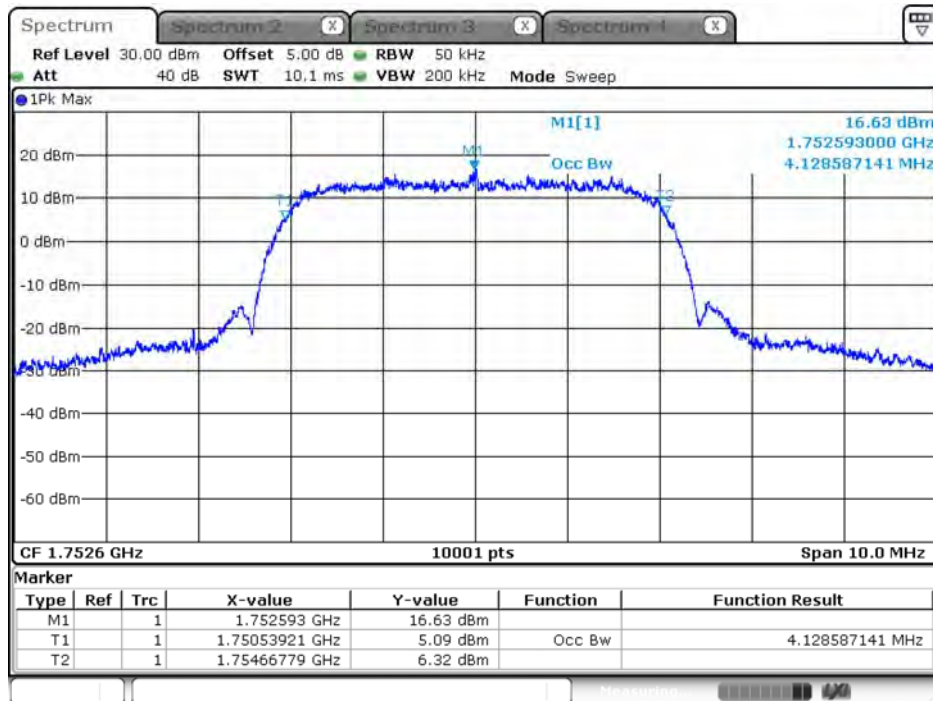
Date: 2.APR.2019 20:18:26

**WCDMA\_Band 4\_HSDPA\_1712.4MHz\_99% BW**

Date: 2.APR.2019 20:24:06

**WCDMA\_Band 4\_HSDPA\_1732.6MHz\_99% BW**

Date: 2.APR.2019 20:22:24

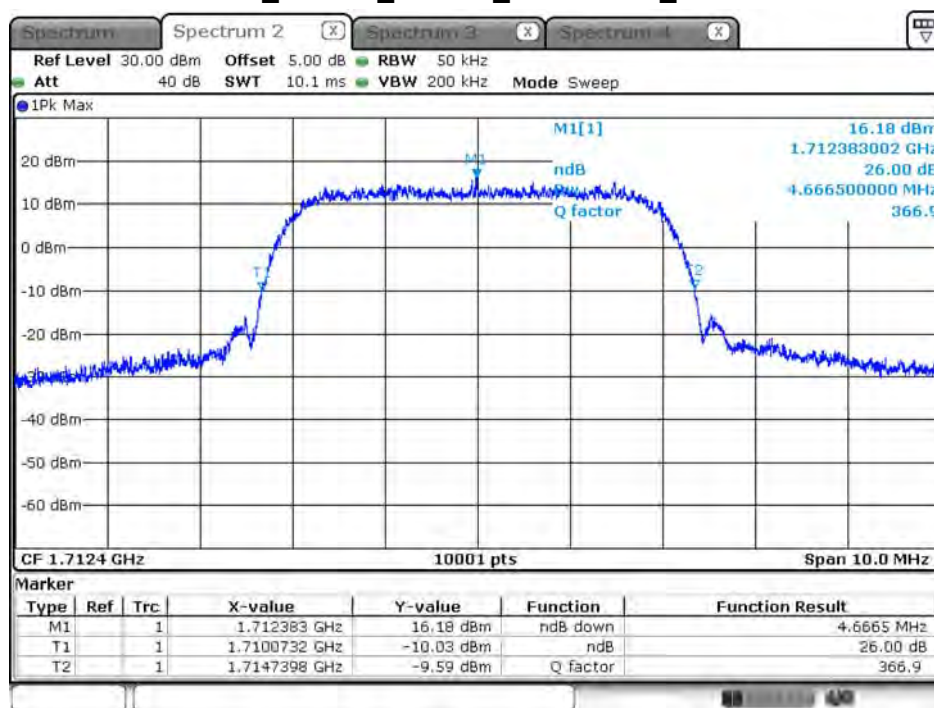
**WCDMA\_Band 4\_HSDPA\_1752.6MHz\_99% BW**

Date: 2.APR.2019 20:15:21

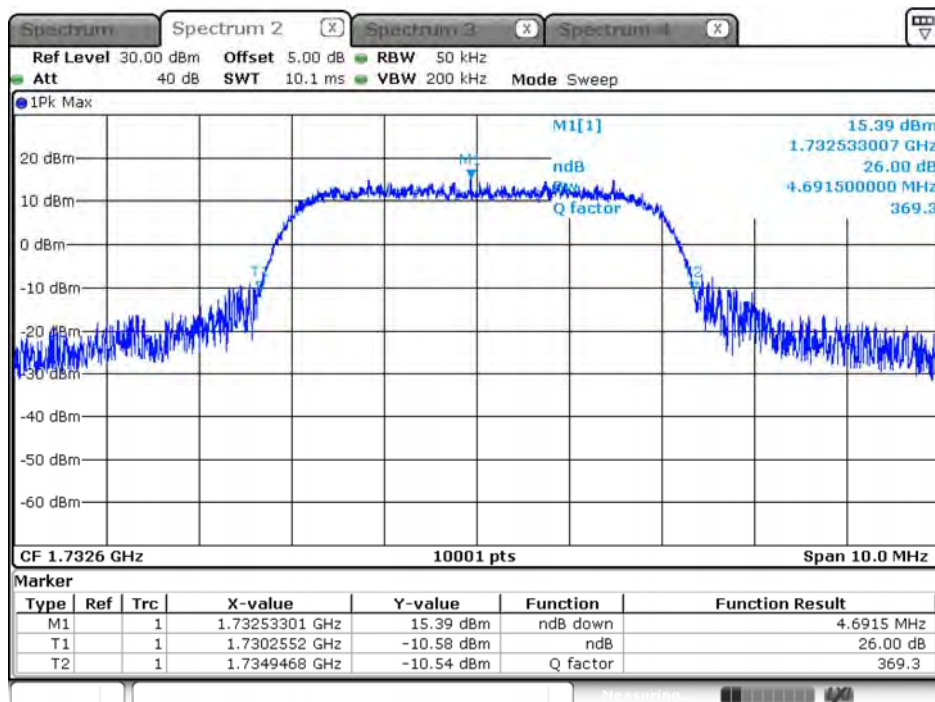
|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Occupied Bandwidth    |           |        |
| Test Mode    | Mode 2: WCDMA _Band 4 |           |        |
| Date of Test | 2019/04/16            | Test Site | SR10-H |

| WCDMA_Band 4_HSUPA |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 1712.4             | 4.666                  | 4.132  | N/A            |
| 1732.6             | 4.691                  | 4.160  | N/A            |
| 1752.6             | 4.663                  | 4.122  | N/A            |

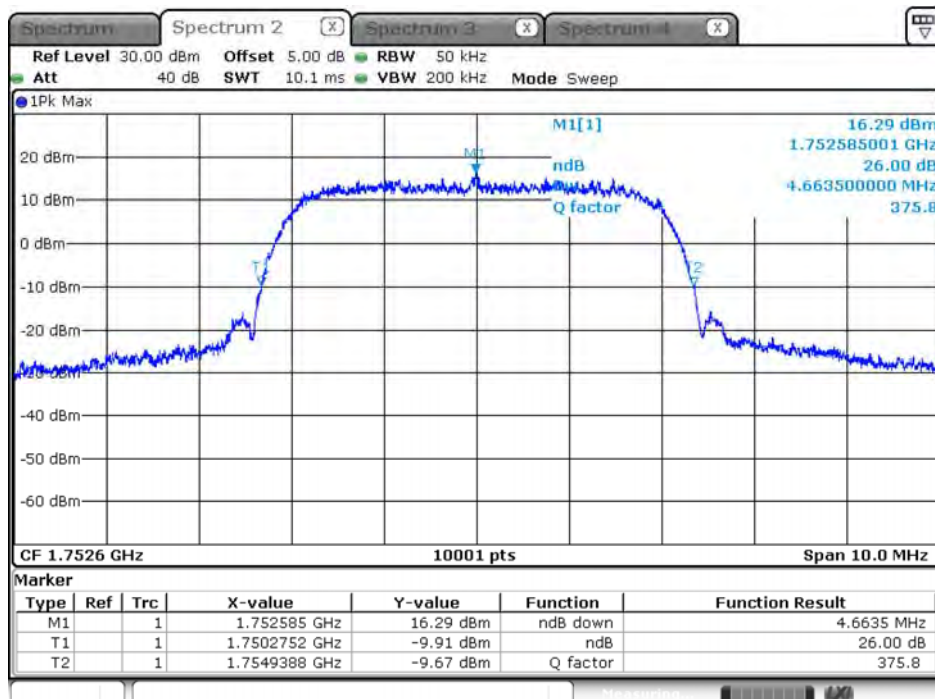
WCDMA\_Band 4\_HSUPA\_1712.4MHz\_26dB BW



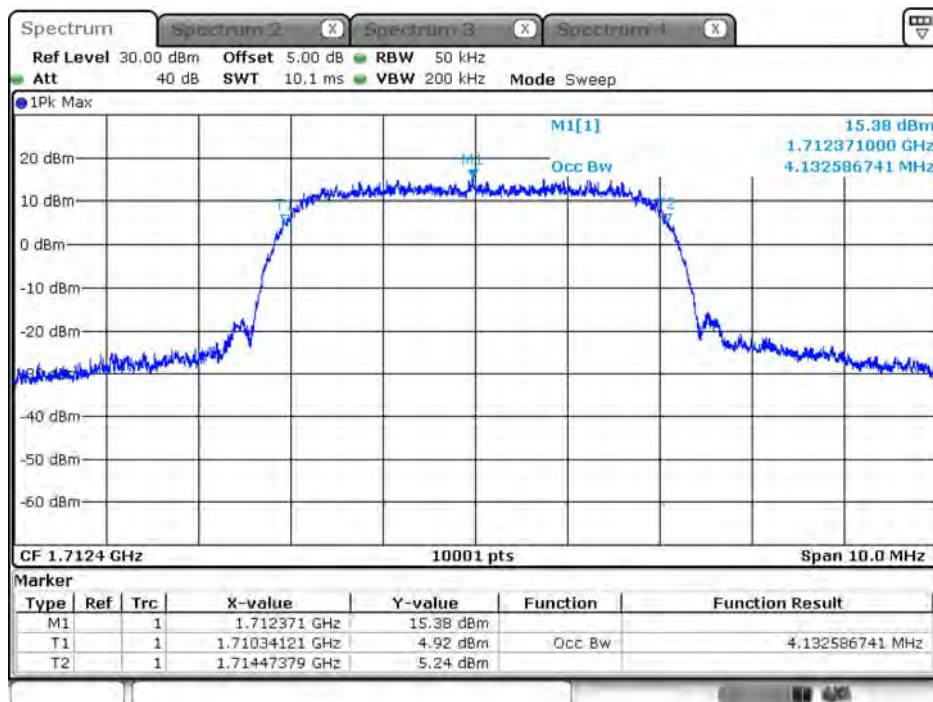
Date: 2.APR 2019 20:43:30

**WCDMA\_Band 4\_HSUPA\_1732.6MHz\_26dB BW**

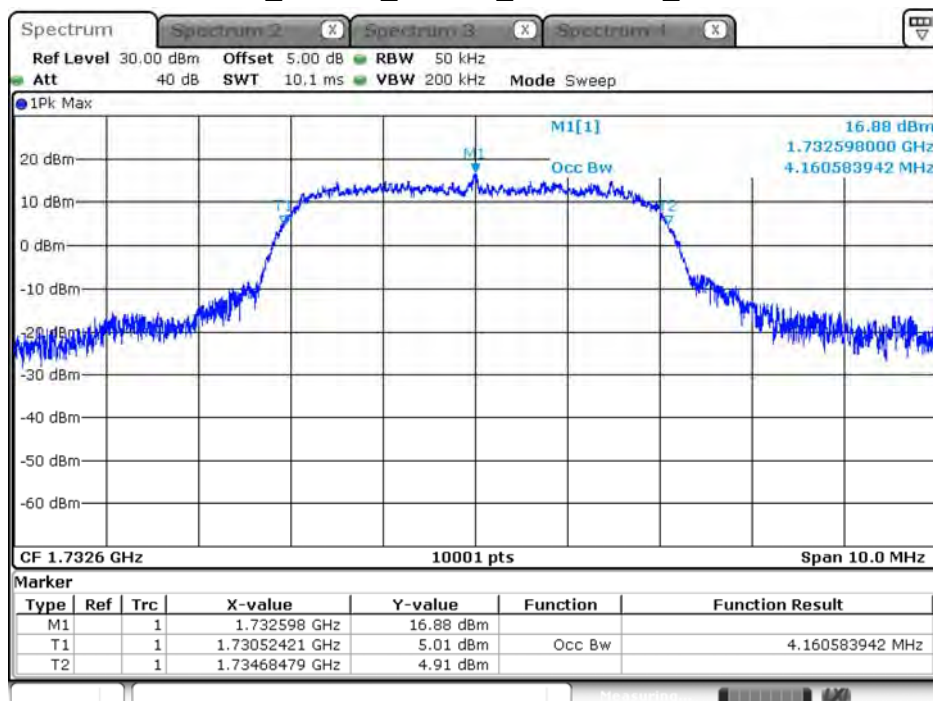
Date: 2.APR.2019 20:47:12

**WCDMA\_Band 4\_HSUPA\_1752.6MHz\_26dB BW**

Date: 2.APR.2019 20:51:43

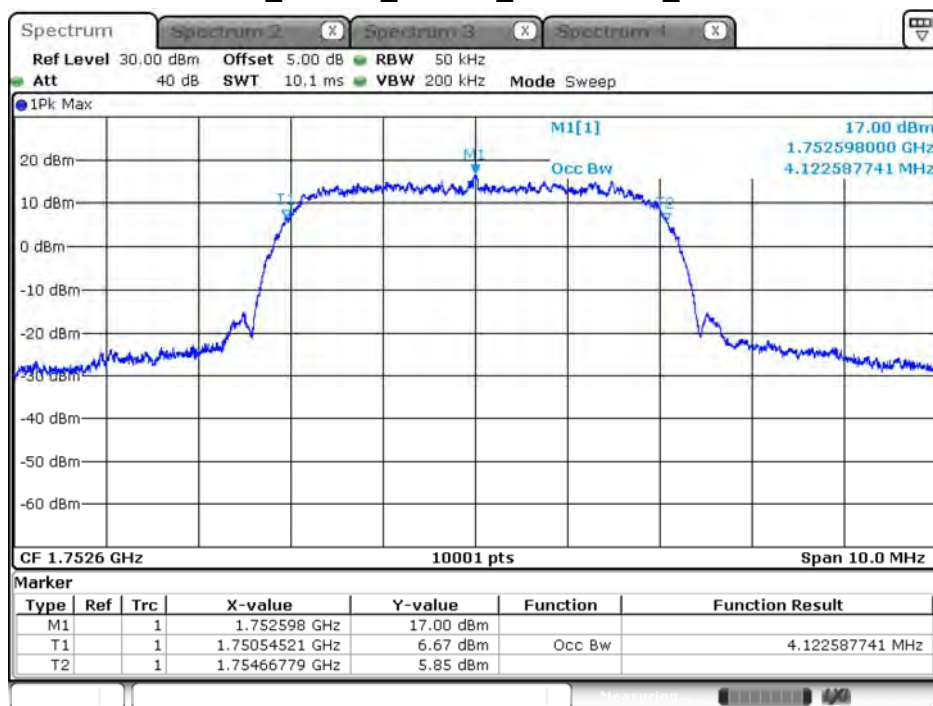
**WCDMA\_Band 4\_HSUPA\_1712.4MHz\_99% BW**

Date: 2.APR.2019 20:42:48

**WCDMA\_Band 4\_HSUPA\_1732.6MHz\_99% BW**

Date: 2.APR.2019 20:46:45

### WCDMA\_Band 4\_HSUPA\_1752.6MHz\_99% BW

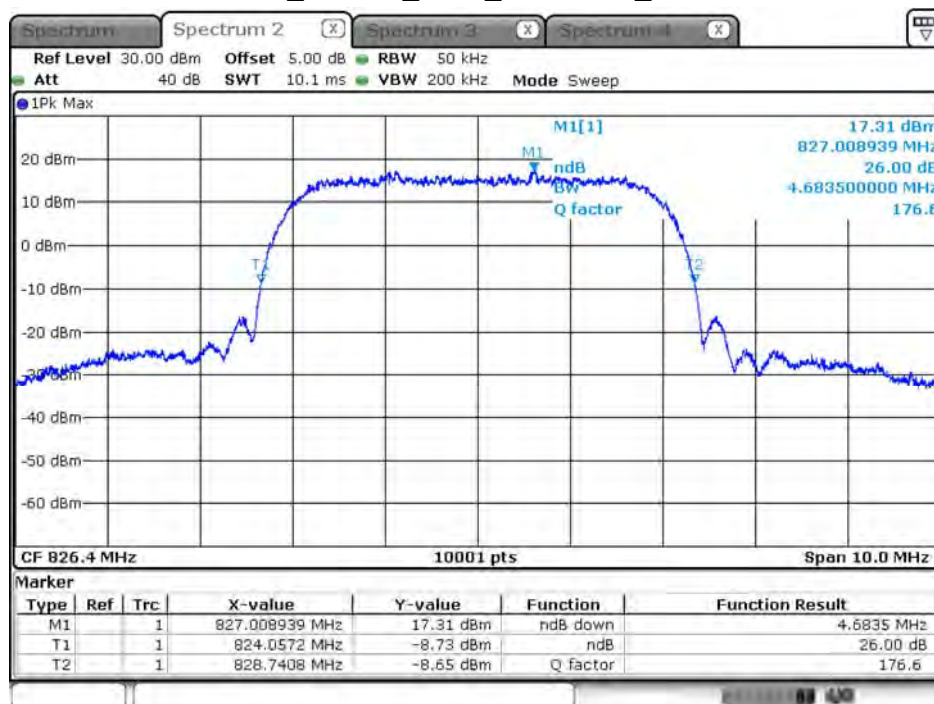


Date: 2.APR.2019 20:50:59

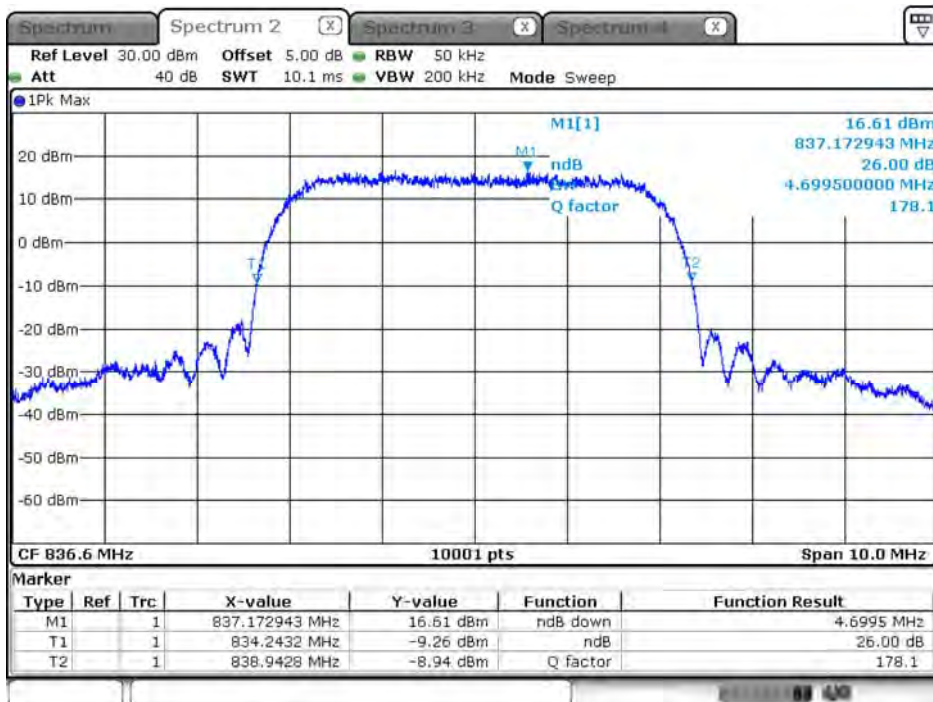
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 5_RMC   |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 826.4              | 4.683                  | 4.128  | N/A            |
| 836.6              | 4.699                  | 4.149  | N/A            |
| 846.6              | 4.691                  | 4.149  | N/A            |

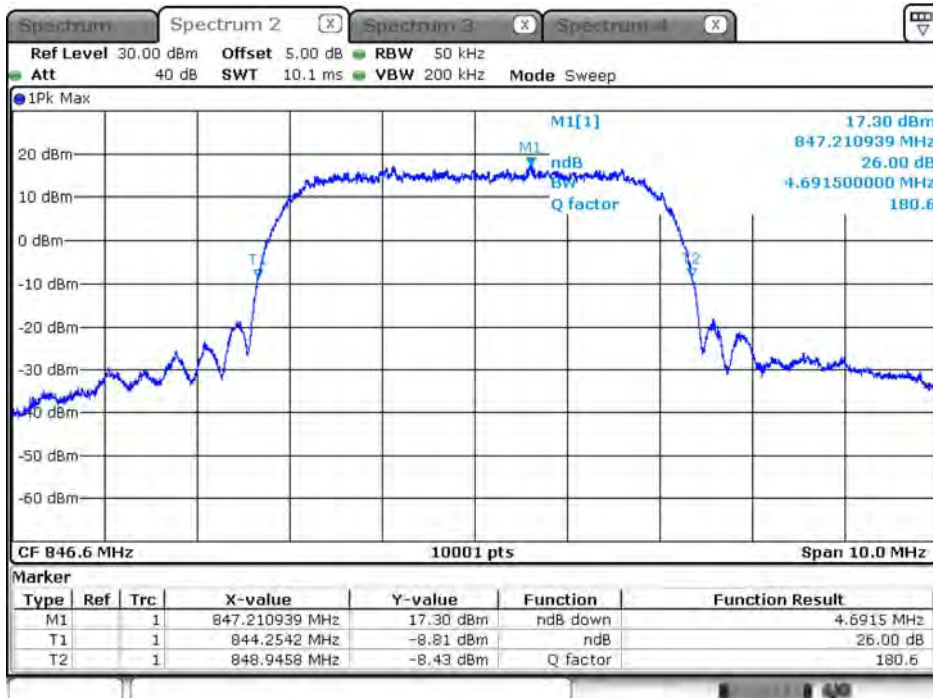
### WCDMA\_Band 5\_RMC\_826.4MHz\_26dB BW



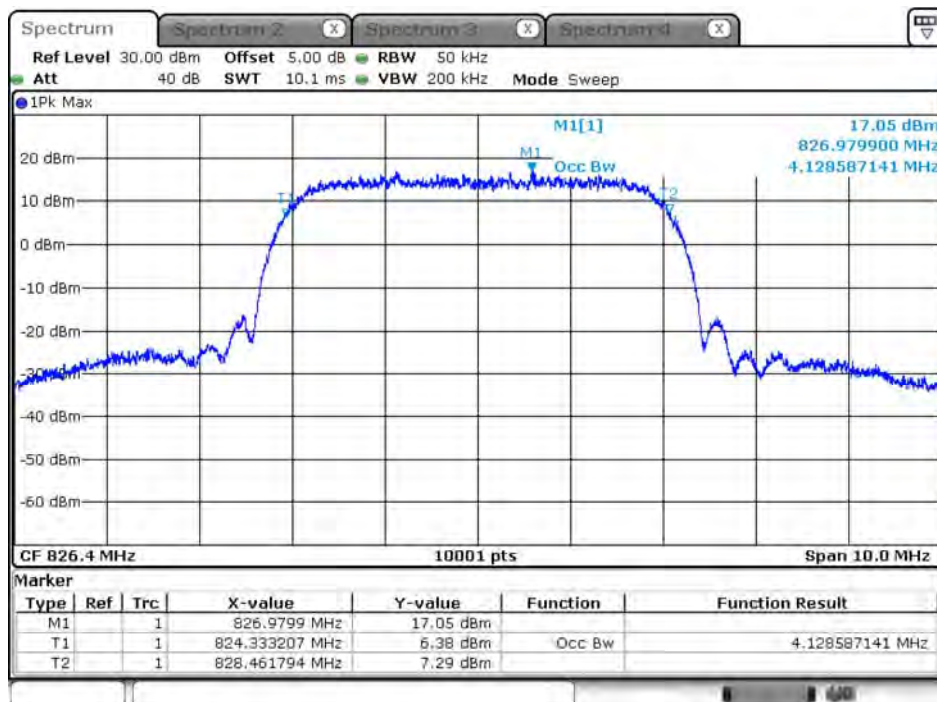
Date: 2.APR 2019 19:57:16

**WCDMA\_Band 5\_RMC\_836.6MHz\_26dB BW**

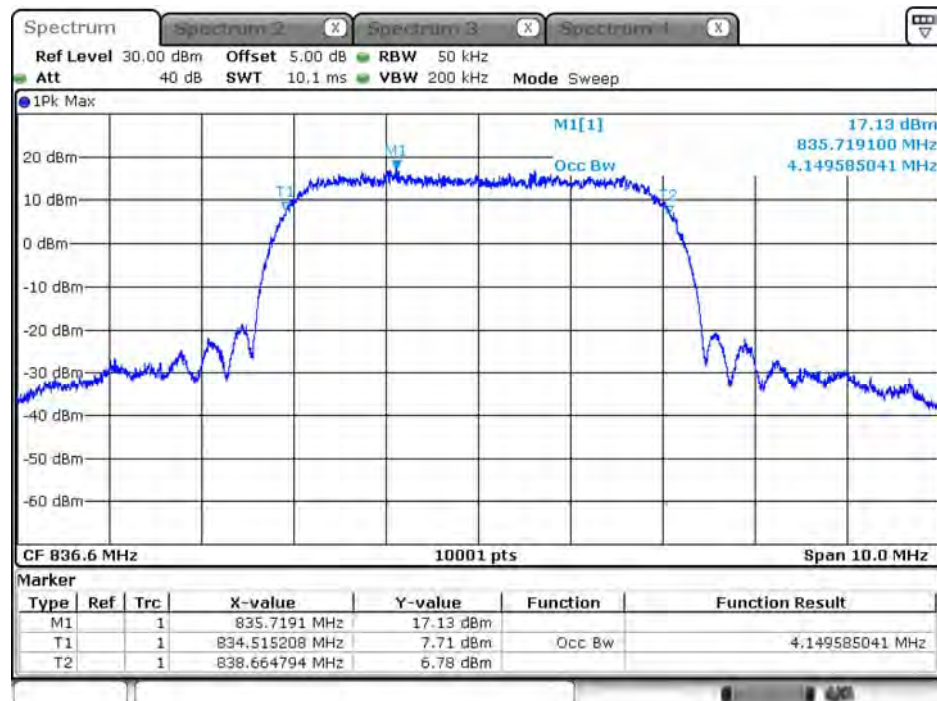
Date: 2.APR.2019 19:59:31

**WCDMA\_Band 5\_RMC\_846.6MHz\_26dB BW**

Date: 2.APR.2019 20:02:47

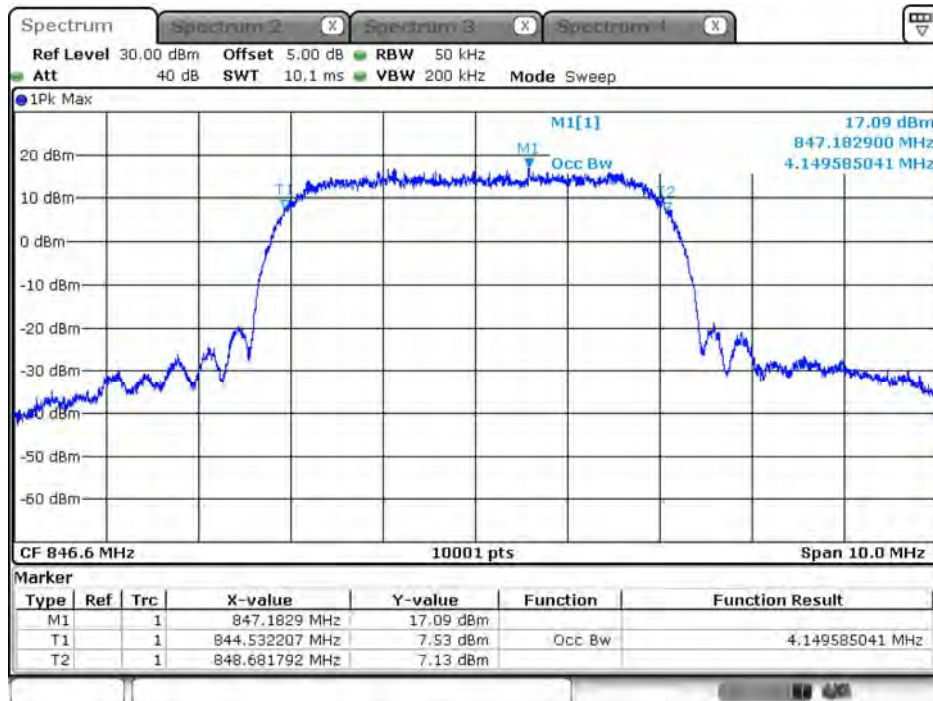
**WCDMA\_Band 5\_RMC\_826.4MHz\_99% BW**

Date: 2.APR.2019 19:55:35

**WCDMA\_Band 5\_RMC\_836.6MHz\_99% BW**

Date: 2.APR.2019 19:58:06

## WCDMA\_Band 5\_RMC\_846.6MHz\_99% BW

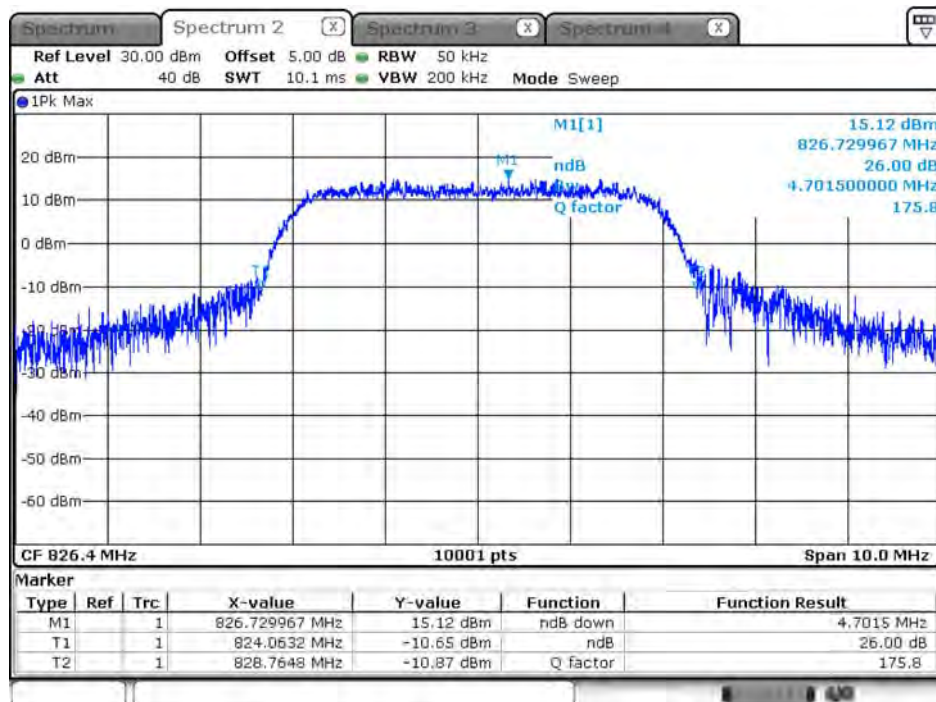


Date: 2 APR 2019 20:01:01

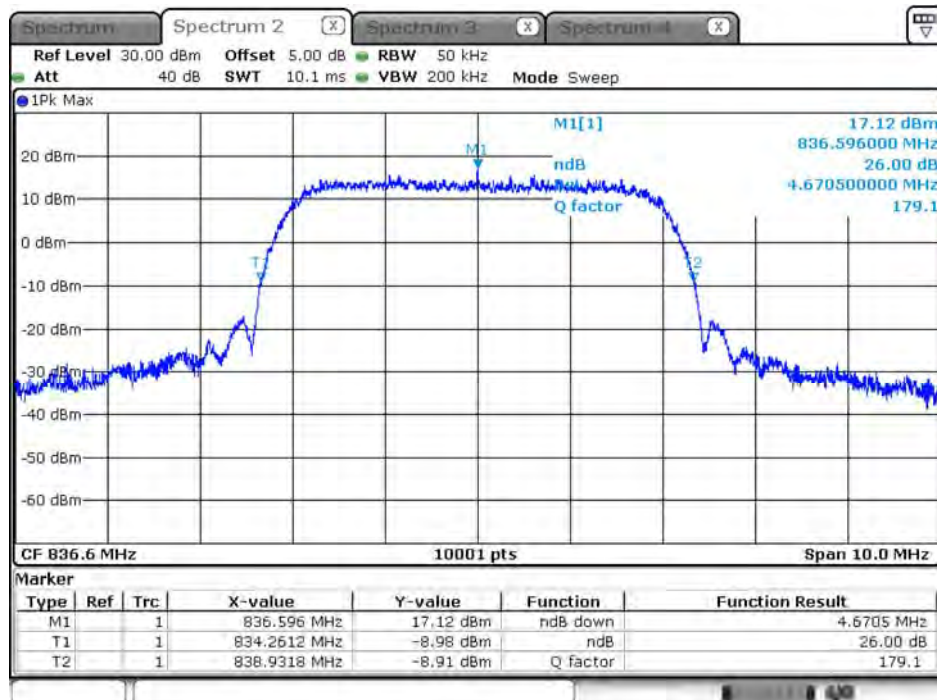
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 5_HSDPA |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 826.4              | 4.701                  | 4.217  | N/A            |
| 836.6              | 4.670                  | 4.157  | N/A            |
| 846.6              | 4.682                  | 4.142  | N/A            |

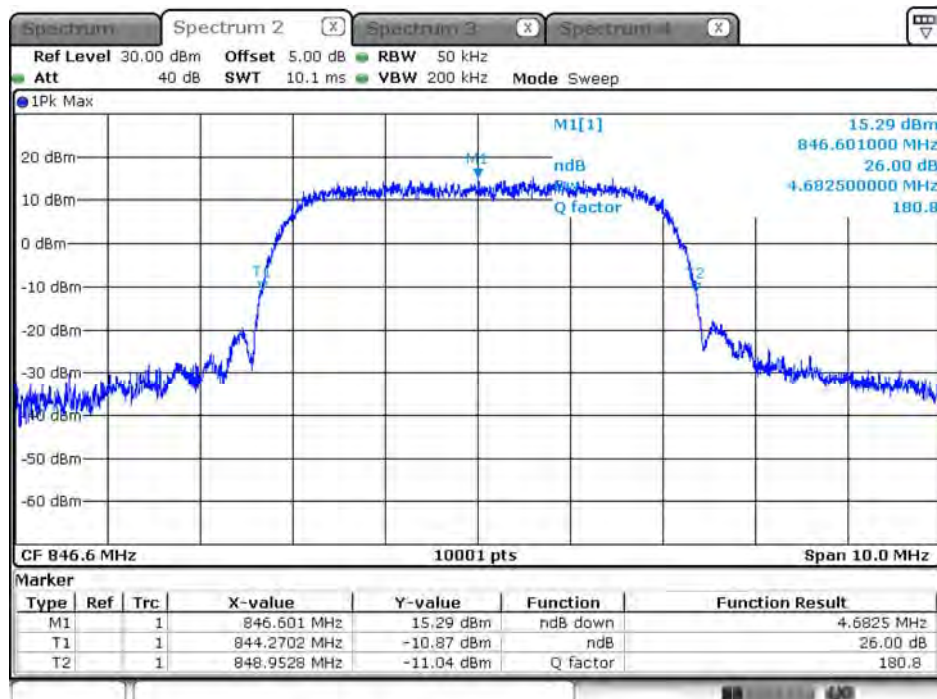
### WCDMA\_Band 5\_HSDPA\_826.4MHz\_26dB BW



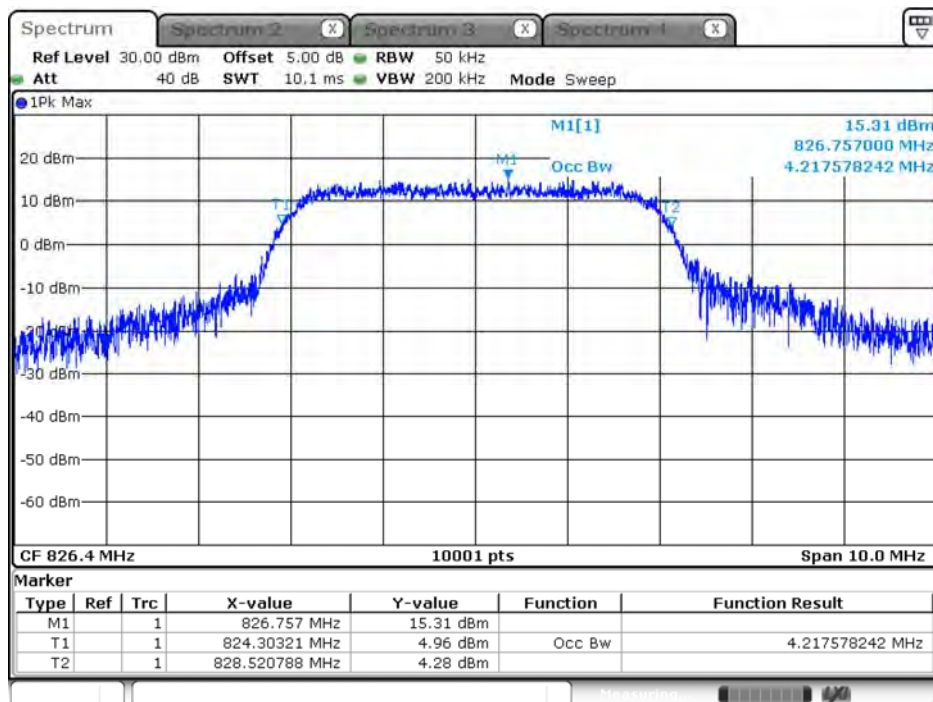
Date: 2.APR 2019 20:12:54

**WCDMA\_Band 5\_HSDPA\_836.6MHz\_26dB BW**

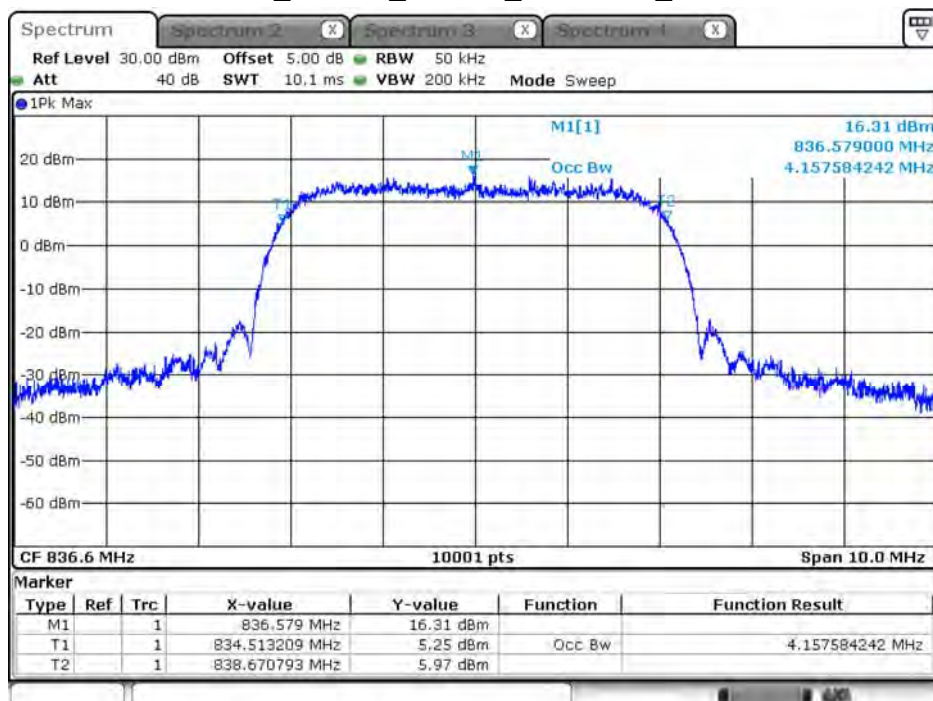
Date: 2.APR.2019 20:07:55

**WCDMA\_Band 5\_HSDPA\_846.6MHz\_26dB BW**

Date: 2.APR.2019 20:05:41

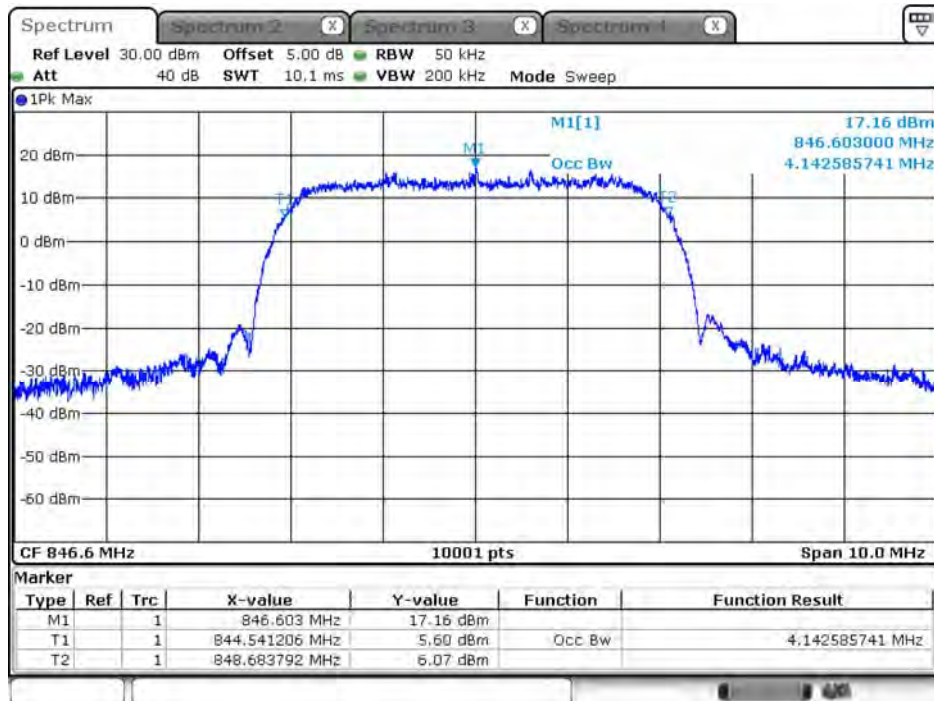
**WCDMA\_Band 5\_HSDPA\_826.4MHz\_99% BW**

Date: 2.APR.2019 20:12:31

**WCDMA\_Band 5\_HSDPA\_836.6MHz\_99% BW**

Date: 2.APR.2019 20:06:57

## WCDMA\_Band 5\_HSDPA\_846.6MHz\_99% BW

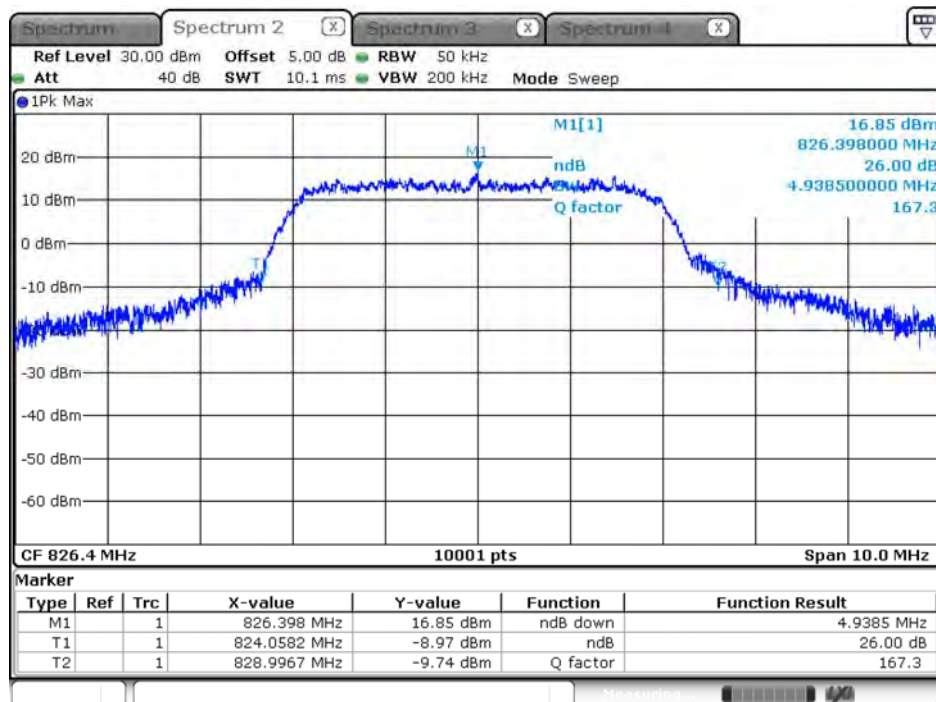


Date: 2 APR 2019 20:05:05

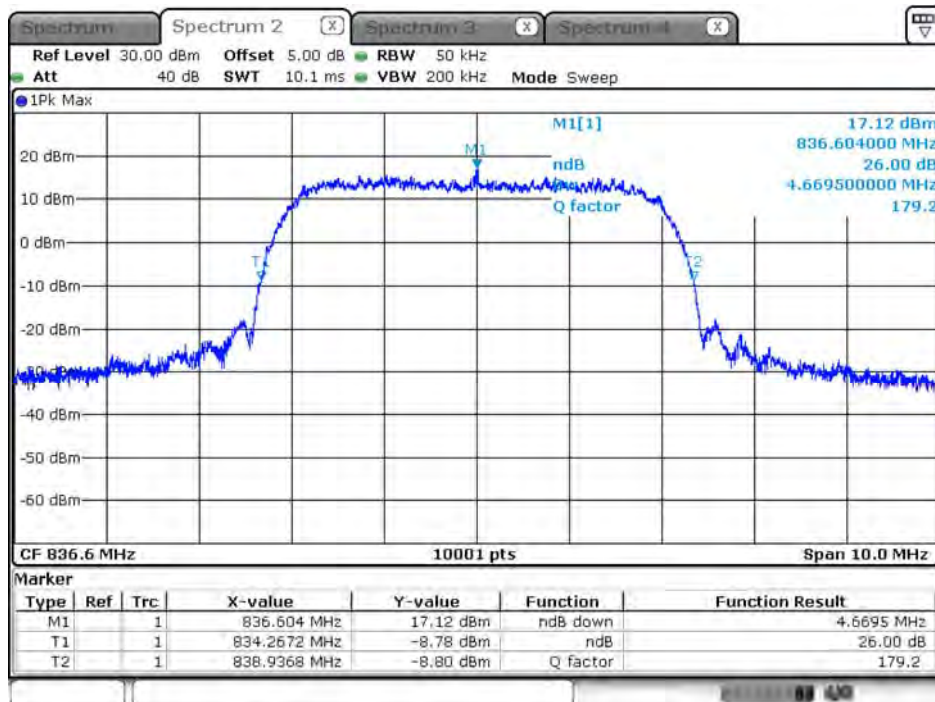
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Occupied Bandwidth   |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/16           | Test Site | SR10-H |

| WCDMA_Band 5_HSUPA |                        |        |                |
|--------------------|------------------------|--------|----------------|
| Frequency<br>(MHz) | Measure Level<br>(MHz) |        | Limit<br>(MHz) |
|                    | 26dB BW                | 99% BW |                |
| 826.4              | 4.938                  | 4.249  | N/A            |
| 836.6              | 4.669                  | 4.143  | N/A            |
| 846.6              | 4.615                  | 4.132  | N/A            |

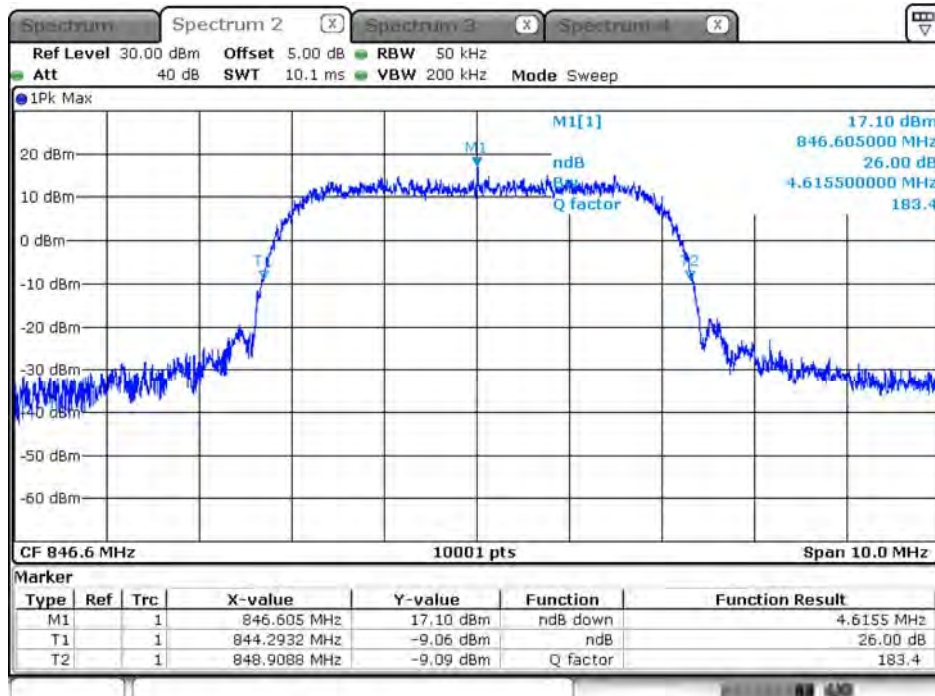
### WCDMA\_Band 5\_HSUPA\_826.4MHz\_26dB BW



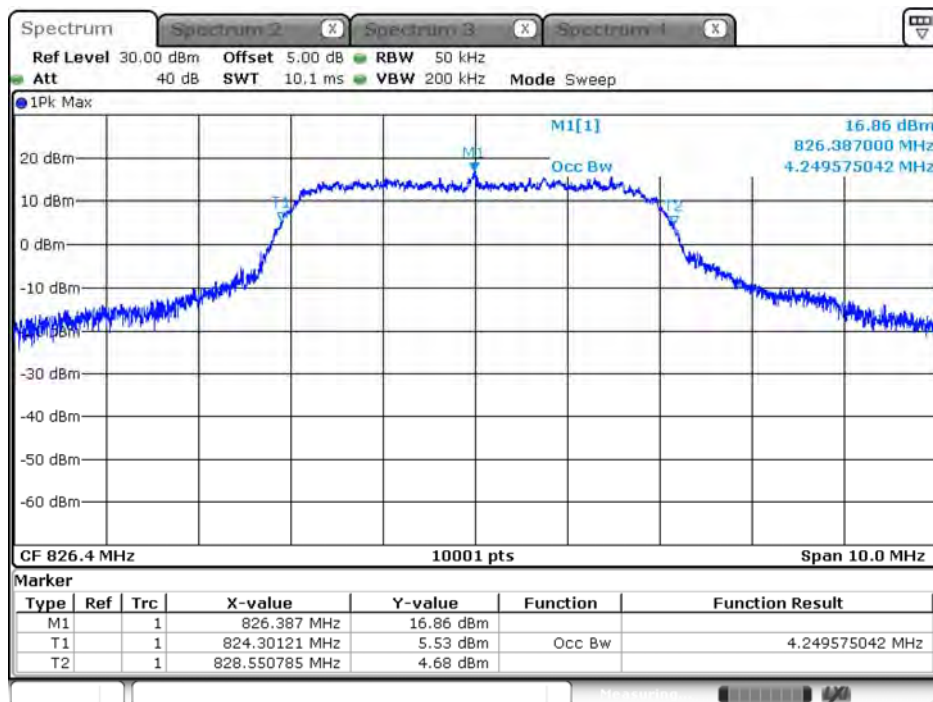
Date: 2.APR.2019 21:02:10

**WCDMA\_Band 5\_HSUPA\_836.6MHz\_26dB BW**

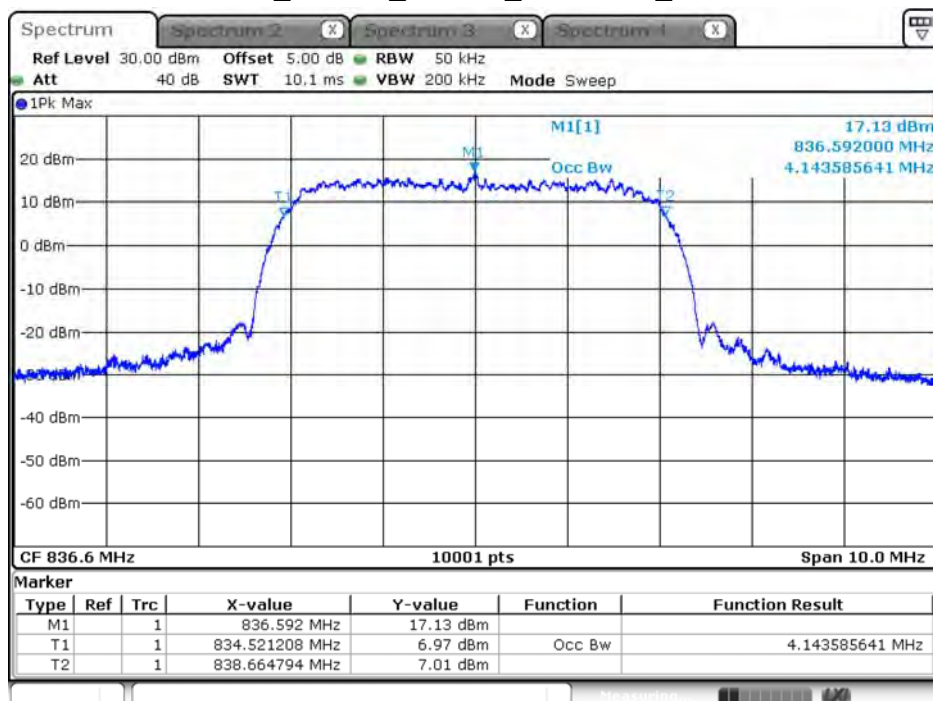
Date: 2.APR.2019 21:10:55

**WCDMA\_Band 5\_HSUPA\_846.6MHz\_26dB BW**

Date: 2.APR.2019 21:13:26

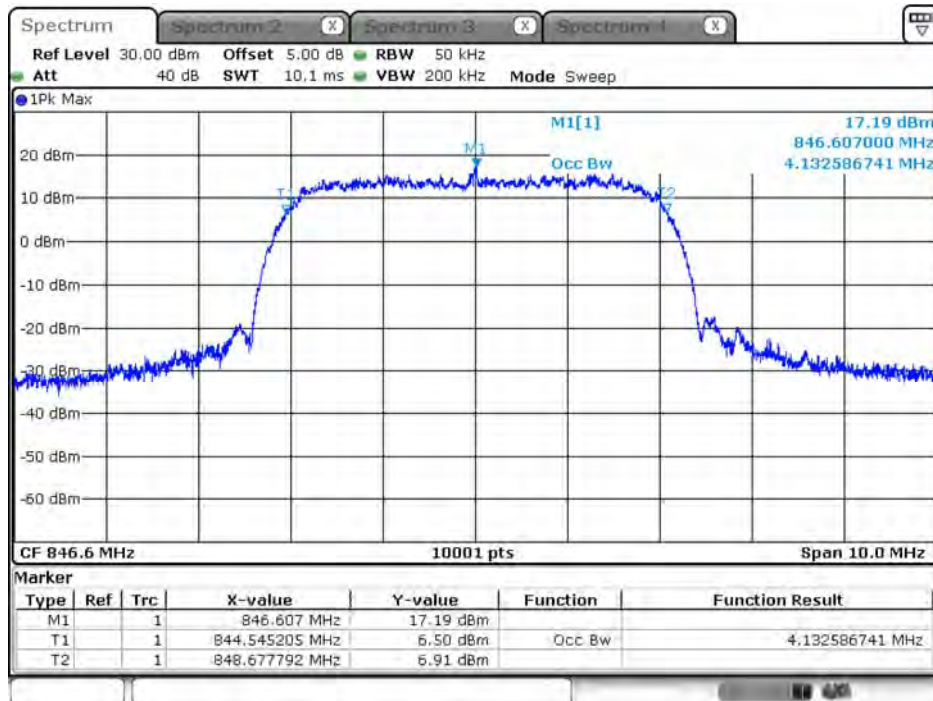
**WCDMA\_Band 5\_HSUPA\_826.4MHz\_99% BW**

Date: 2.APR.2019 20:57:18

**WCDMA\_Band 5\_HSUPA\_836.6MHz\_99% BW**

Date: 2.APR.2019 21:08:55

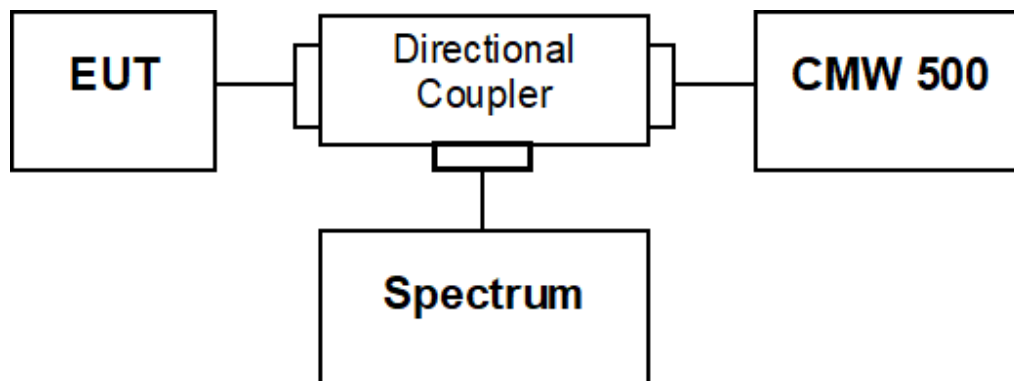
## WCDMA\_Band 5\_HSUPA\_846.6MHz\_99% BW



Date: 2 APR 2019 21:13:12

## 5. Peak To Average Ratio

### 5.1. Test Setup



### 5.2. Test Procedure

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1 %.

### 5.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.7.2  
ANSI C63.26-2015 Sub-clause 5.2.3.4

## 5.4. Test Result

|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Peak To Average Ratio |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2  |           |        |
| Date of Test | 2019/04/10            | Test Site | SR10-H |

| Channel | Frequency (MHz) | Modulation | Peak (dBm) | Average (dBm) | PAPR (dB) |
|---------|-----------------|------------|------------|---------------|-----------|
| 9262    | 1852.4          | RMC        | 25.94      | 22.33         | 3.61      |
| 9400    | 1880            |            | 25.80      | 22.33         | 3.47      |
| 9538    | 1907.6          |            | 25.78      | 22.26         | 3.52      |
| 9262    | 1852.4          | HSUPA      | 27.35      | 20.10         | 7.25      |
| 9400    | 1880            |            | 27.29      | 20.13         | 7.16      |
| 9538    | 1907.6          |            | 27.08      | 20.06         | 7.02      |
| 9262    | 1852.4          | HSDPA      | 25.86      | 19.49         | 6.37      |
| 9400    | 1880            |            | 25.72      | 19.34         | 6.38      |
| 9538    | 1907.6          |            | 25.70      | 19.28         | 6.42      |

### WCDMA\_Band 2\_RMC\_1852.4MHz



Date: 2.APR.2019 18:34:34

## WCDMA\_Band 2\_RMC\_1880.0MHz



Date: 2.APR.2019 18:32:40

## WCDMA\_Band 2\_RMC\_1907.6MHz



Date: 2.APR.2019 18:32:12

**WCDMA\_Band 2\_HSDPA\_1852.4MHz**

Date: 2.APR.2019 18:05:01

**WCDMA\_Band 2\_HSDPA\_1880.0MHz**

Date: 2.APR.2019 18:05:46

**WCDMA\_Band 2\_HSDPA\_1907.6MHz**

Date: 2.APR 2019 18:06:21

## WCDMA\_Band 2\_HSUPA\_1852.4MHz



Date: 2.APR.2019 17:58:42

## WCDMA\_Band 2\_HSUPA\_1880.0MHz



Date: 2.APR.2019 17:58:13

## WCDMA\_Band 2\_HSUPA\_1907.6MHz



Date: 2.APR.2019 17:57:37

|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Peak To Average Ratio |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4  |           |        |
| Date of Test | 2019/04/10            | Test Site | SR10-H |

| Channel | Frequency (MHz) | Modulation | Peak (dBm) | Average (dBm) | PAPR (dB) |
|---------|-----------------|------------|------------|---------------|-----------|
| 1312    | 1712.4          | RMC        | 25.59      | 22.05         | 3.54      |
| 1413    | 1732.6          |            | 25.46      | 22.11         | 3.35      |
| 1513    | 1752.6          |            | 25.54      | 22.07         | 3.47      |
| 1312    | 1712.4          | HSUPA      | 27.33      | 20.04         | 7.29      |
| 1413    | 1732.6          |            | 26.64      | 20.18         | 6.46      |
| 1513    | 1752.6          |            | 27.11      | 20.06         | 7.05      |
| 1312    | 1712.4          | HSDPA      | 25.65      | 19.34         | 6.31      |
| 1413    | 1732.6          |            | 25.48      | 19.36         | 6.12      |
| 1513    | 1752.6          |            | 25.79      | 19.30         | 6.49      |

### WCDMA\_Band 4\_RMC\_1712.4MHz



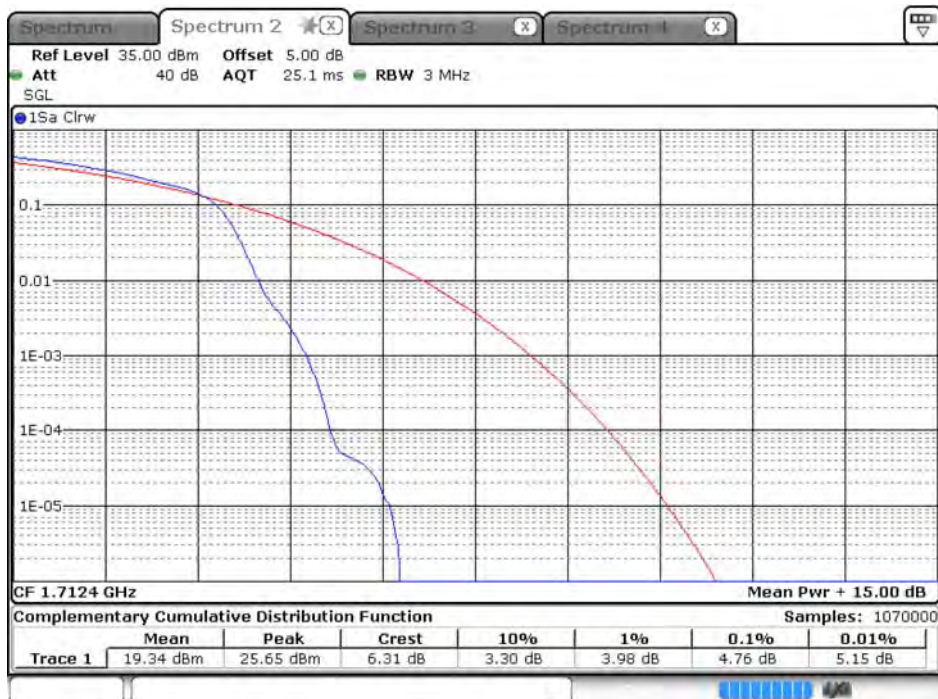
Date: 2.APR.2019 18:28:21

**WCDMA\_Band 4\_RMC\_1732.6MHz**

Date: 2.APR.2019 18:25:22

**WCDMA\_Band 4\_RMC\_1752.6MHz**

Date: 2.APR.2019 18:24:44

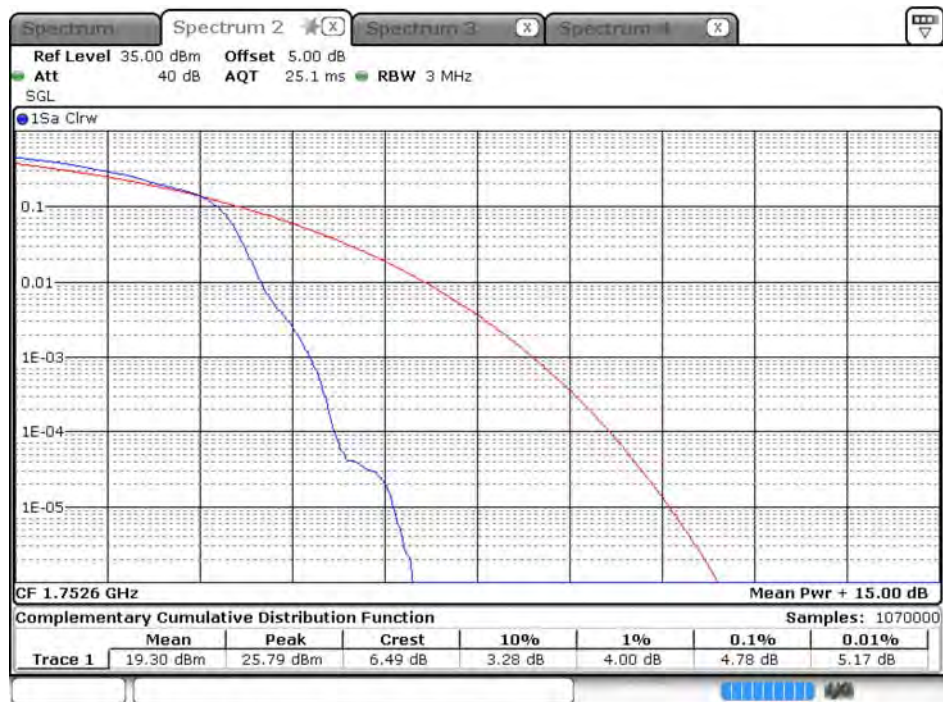
**WCDMA\_Band 4\_HSDPA\_1712.4MHz**

Date: 2.APR.2019 18:07:34

**WCDMA\_Band 4\_HSDPA\_1732.6MHz**

Date: 2.APR.2019 18:08:33

## WCDMA\_Band 4\_HSDPA\_1752.6MHz



Date: 2.APR.2019 18:09:05

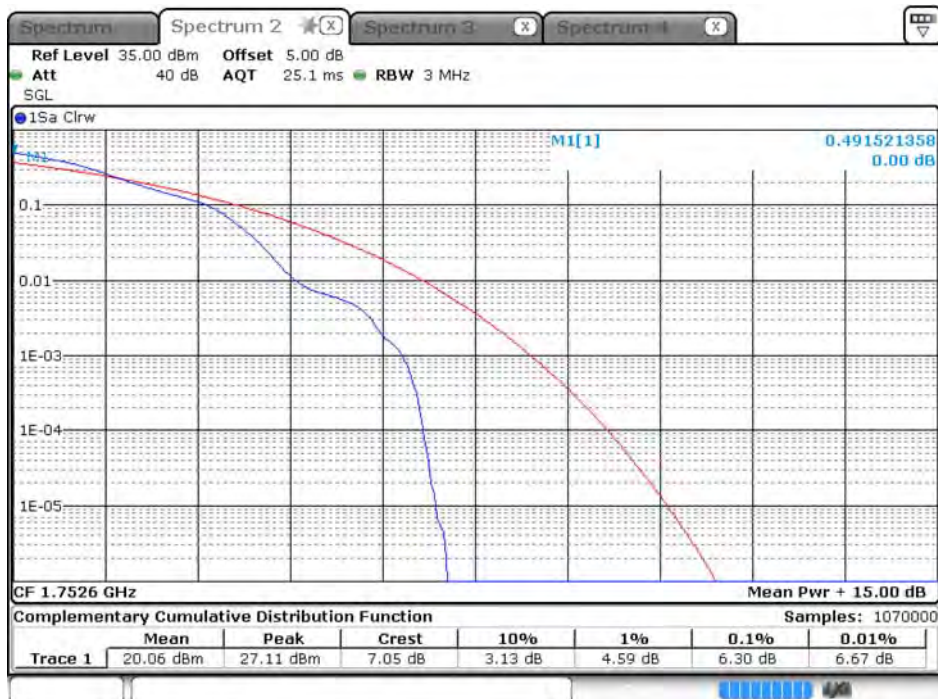
**WCDMA\_Band 4\_HSUPA\_1712.4MHz**

Date: 2.APR.2019 17:57:01

**WCDMA\_Band 4\_HSUPA\_1732.6MHz**

Date: 2.APR.2019 17:56:26

## WCDMA\_Band 4\_HSUPA\_1752.6MHz



Date: 2.APR 2019 17:55:20

|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Peak To Average Ratio |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5  |           |        |
| Date of Test | 2019/04/10            | Test Site | SR10-H |

| Channel | Frequency (MHz) | Modulation | Peak (dBm) | Average (dBm) | PAPR (dB) |
|---------|-----------------|------------|------------|---------------|-----------|
| 4132    | 826.4           | RMC        | 26.18      | 22.60         | 3.58      |
| 4183    | 836.6           |            | 26.08      | 22.57         | 3.51      |
| 4233    | 846.6           |            | 26.04      | 22.57         | 3.47      |
| 4132    | 826.4           | HSUPA      | 27.65      | 20.41         | 7.24      |
| 4183    | 836.6           |            | 27.52      | 20.61         | 6.91      |
| 4233    | 846.6           |            | 27.50      | 20.55         | 6.95      |
| 4132    | 826.4           | HSDPA      | 27.53      | 19.90         | 7.63      |
| 4183    | 836.6           |            | 26.03      | 19.75         | 6.28      |
| 4233    | 846.6           |            | 26.88      | 19.98         | 6.90      |

### WCDMA\_Band 5\_RMC\_826.4MHz



Date: 2.APR.2019 18:24:06

**WCDMA\_Band 5\_RMC\_836.6MHz**

Date: 2.APR.2019 18:23:40

**WCDMA\_Band 5\_RMC\_846.6MHz**

Date: 2.APR.2019 18:23:05

**WCDMA\_Band 5\_HSDPA\_826.4MHz**

Date: 2.APR.2019 18:18:35

**WCDMA\_Band 5\_HSDPA\_836.6MHz**

Date: 2.APR.2019 18:21:05

**WCDMA\_Band 5\_HSDPA\_846.6MHz**

Date: 2.APR 2019 18:21:53

**WCDMA\_Band 5\_HSUPA\_826.4MHz**

Date: 2.APR.2019 17:54:28

**WCDMA\_Band 5\_HSUPA\_836.6MHz**

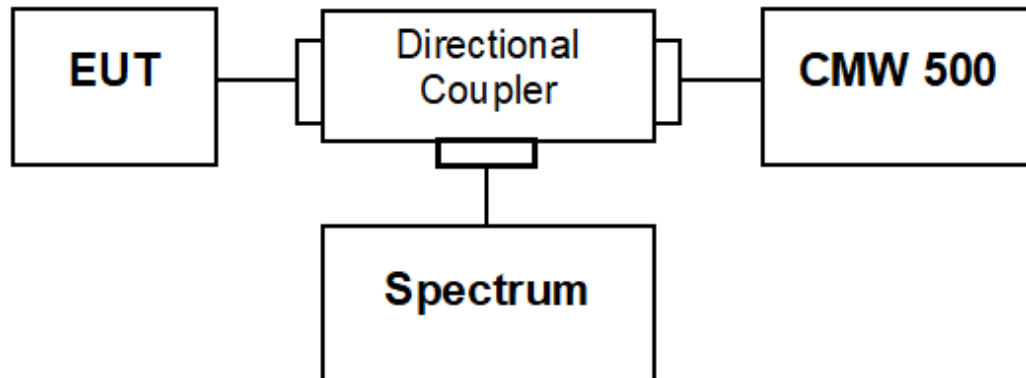
Date: 2.APR.2019 17:52:24

**WCDMA\_Band 5\_HSUPA\_846.6MHz**

Date: 2.APR 2019 17:37:30

## 6. Conducted Band Edge

### 6.1. Test Setup



### 6.2. Test Procedure

1. The EUT was connected to spectrum analyzer and System Simulator via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The conducted spurious emission for the whole frequency range was taken.
4. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

### 6.3. Test Method

#### **Conducted Spurious Measurement:**

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1

ANSI C63.26: 2015 Sub-clause 5.7

#### **Radiated Spurious Measurement:**

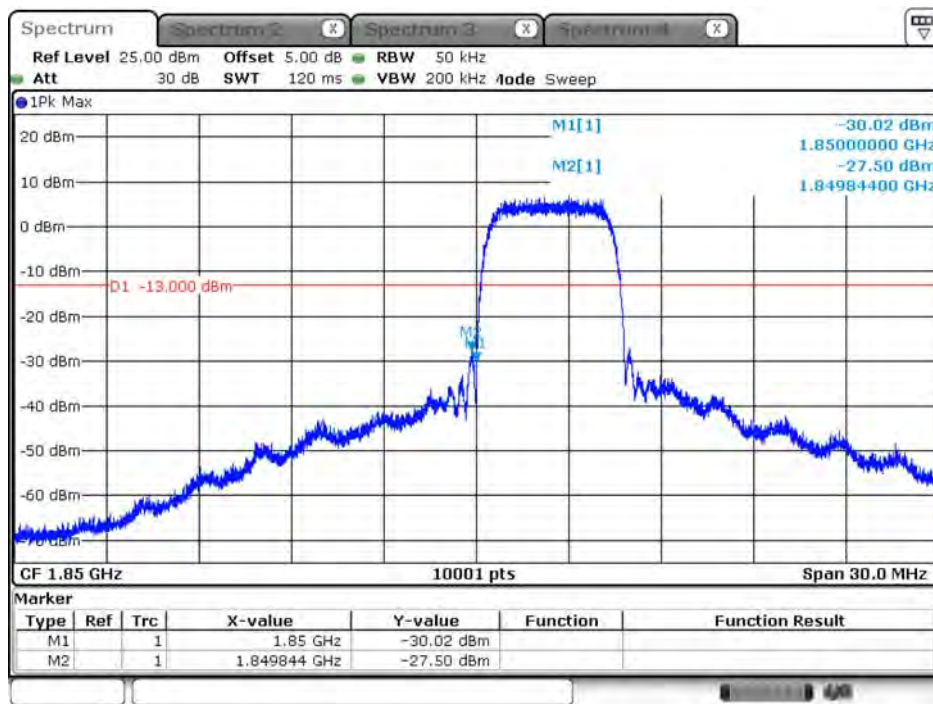
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8

ANSI C63.26: 2015 Sub-clause 5.5.3.2

## 6.4. Test Result

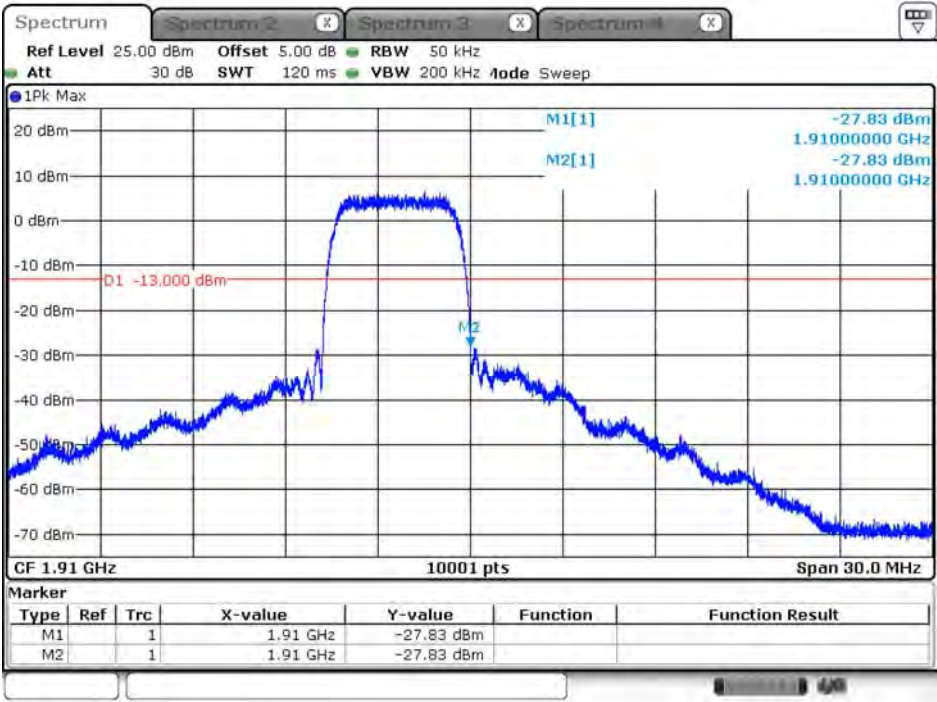
|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Conducted Band Edge  |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

### WCDMA\_Band 2\_RMC\_1852.4MHz

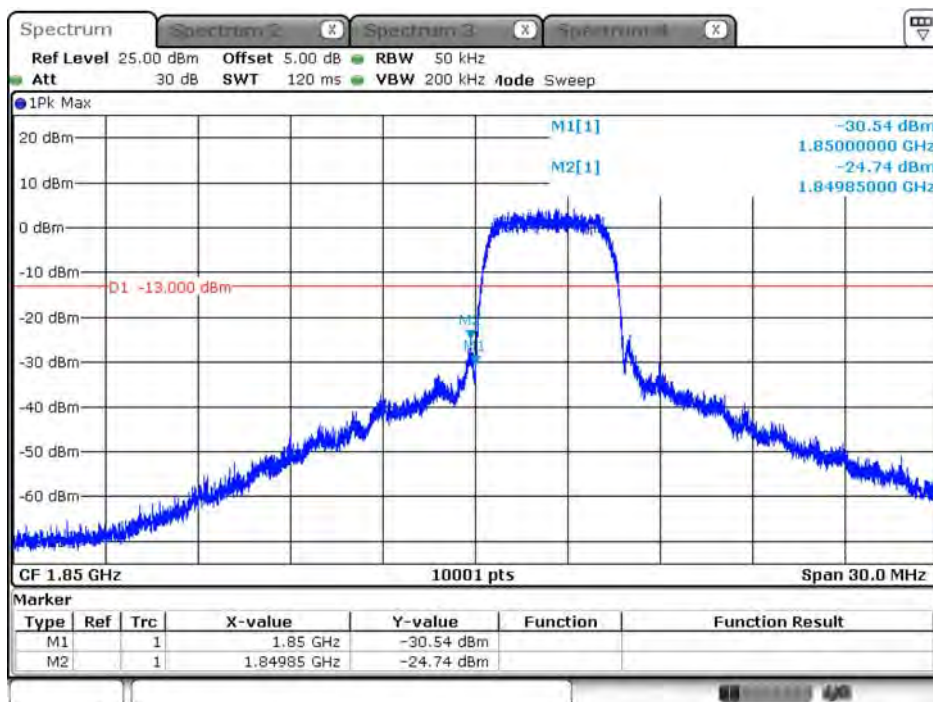


Date: 2.APR.2019 16:42:54

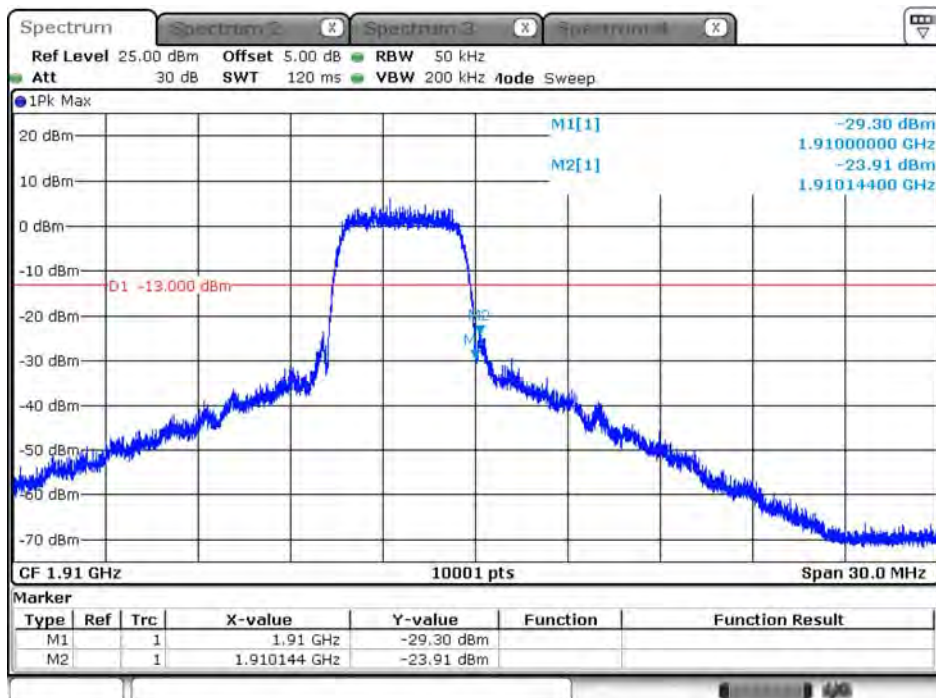
WCDMA\_Band 2\_RMC\_1907.6MHz



Date: 2.APR 2019 16:46:25

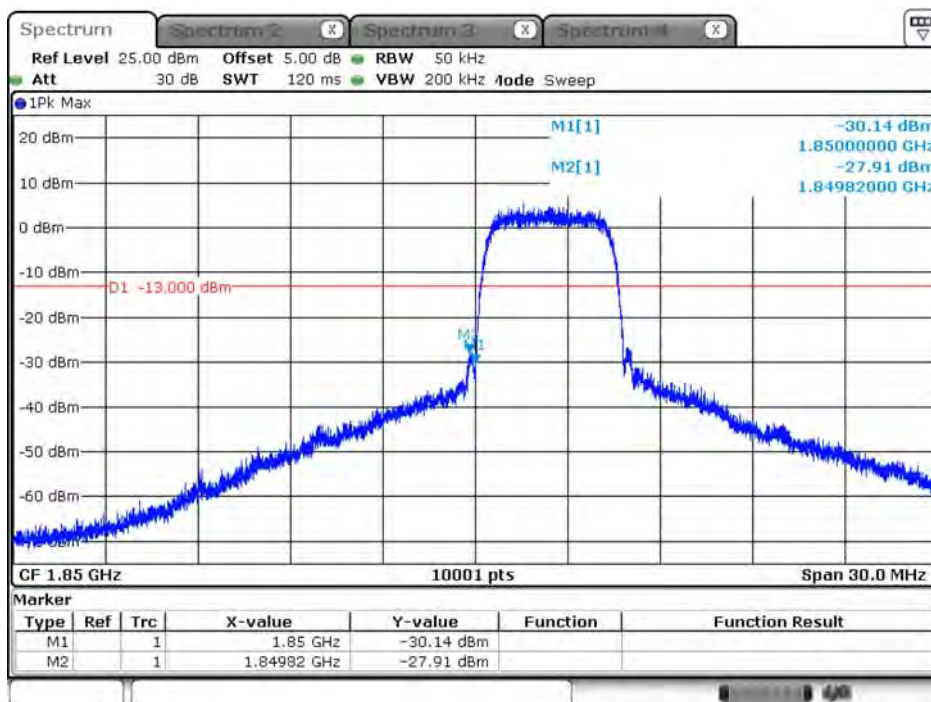
**WCDMA\_Band 2\_HSDPA\_1852.4MHz**

Date: 2.APR.2019 17:07:06

**WCDMA\_Band 2\_HSDPA\_1907.6MHz**

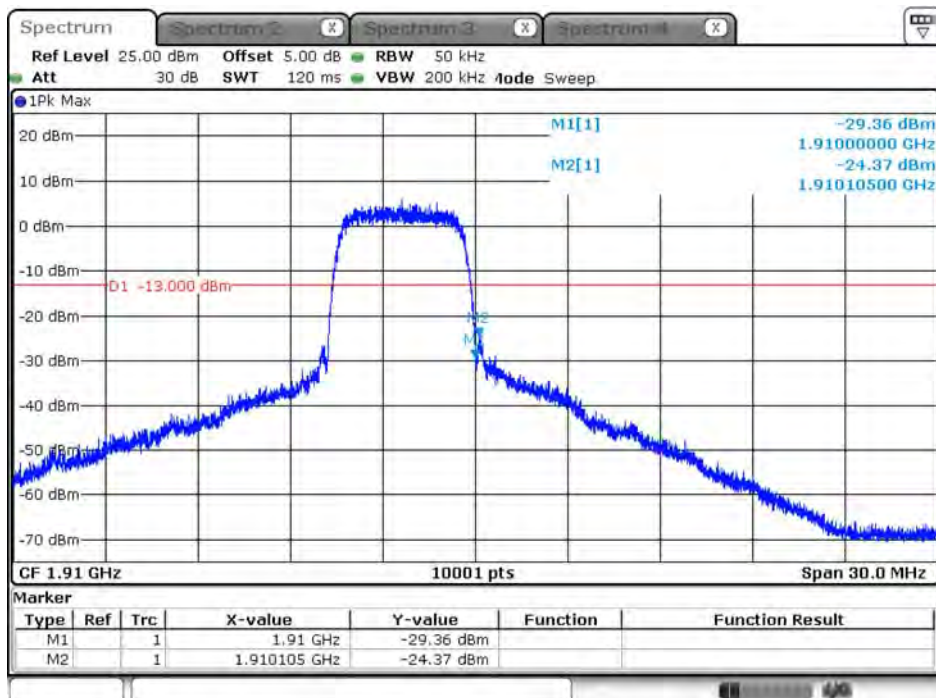
Date: 2.APR.2019 17:06:00

## WCDMA\_Band 2\_HSUPA\_1852.4MHz



Date: 2.APR.2019 17:14:00

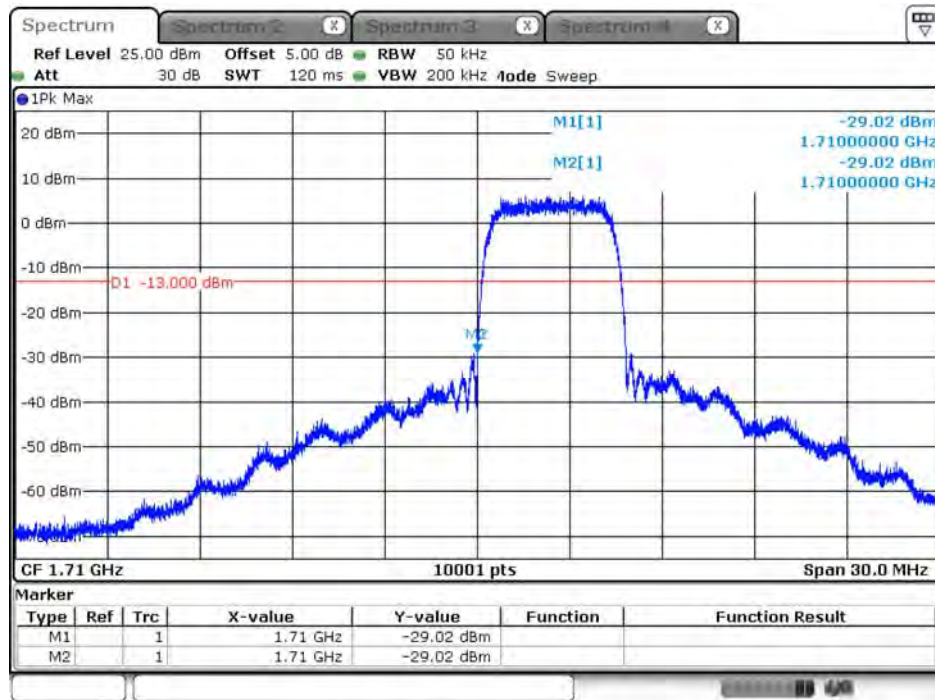
## WCDMA\_Band 2\_HSUPA\_1907.6MHz



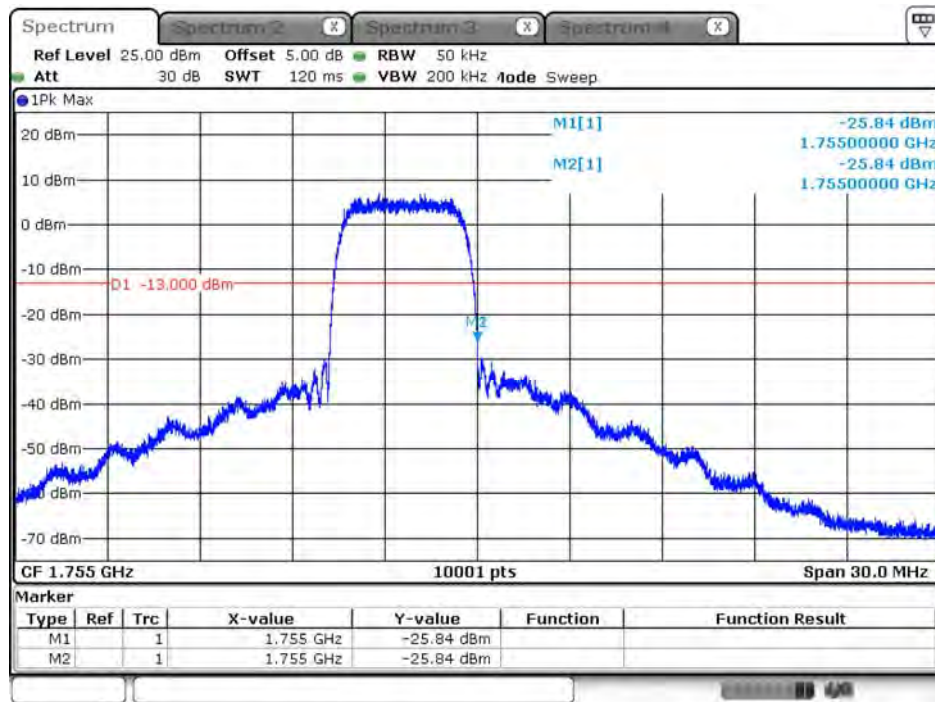
Date: 2.APR.2019 17:17:06

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Conducted Band Edge  |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

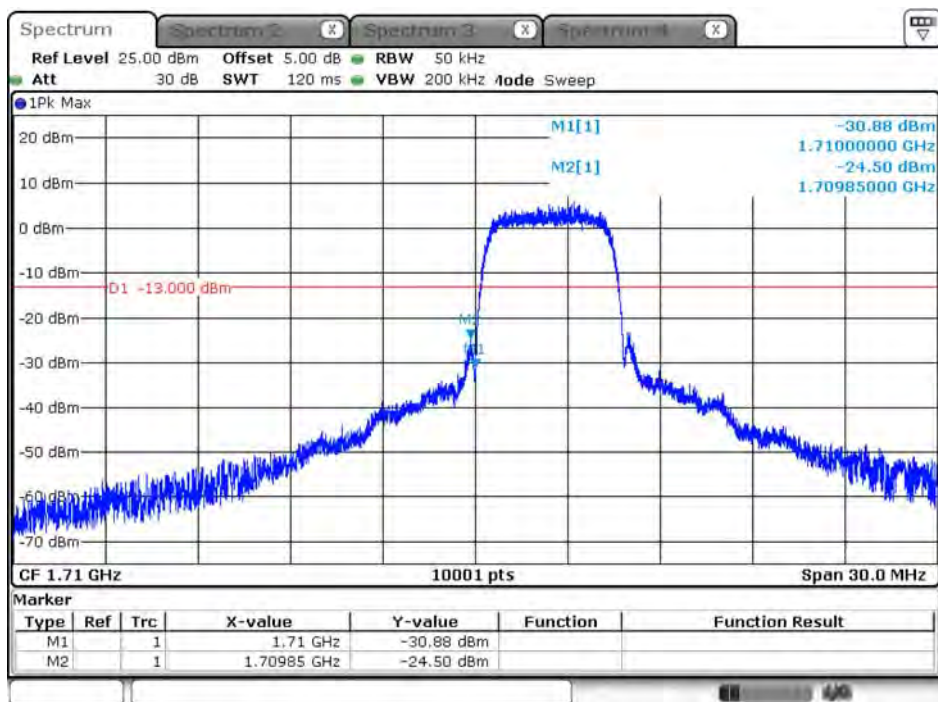
### WCDMA\_Band 4\_RMC\_1712.4MHz



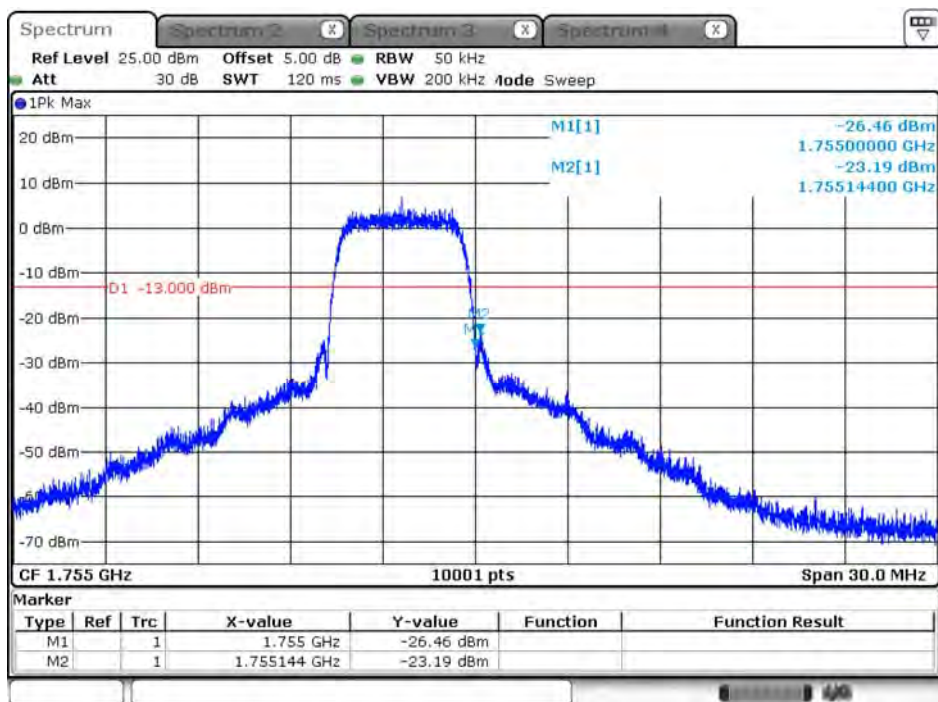
Date: 2.APR.2019 16:47:56

**WCDMA\_Band 4\_RMC\_1752.6MHz**

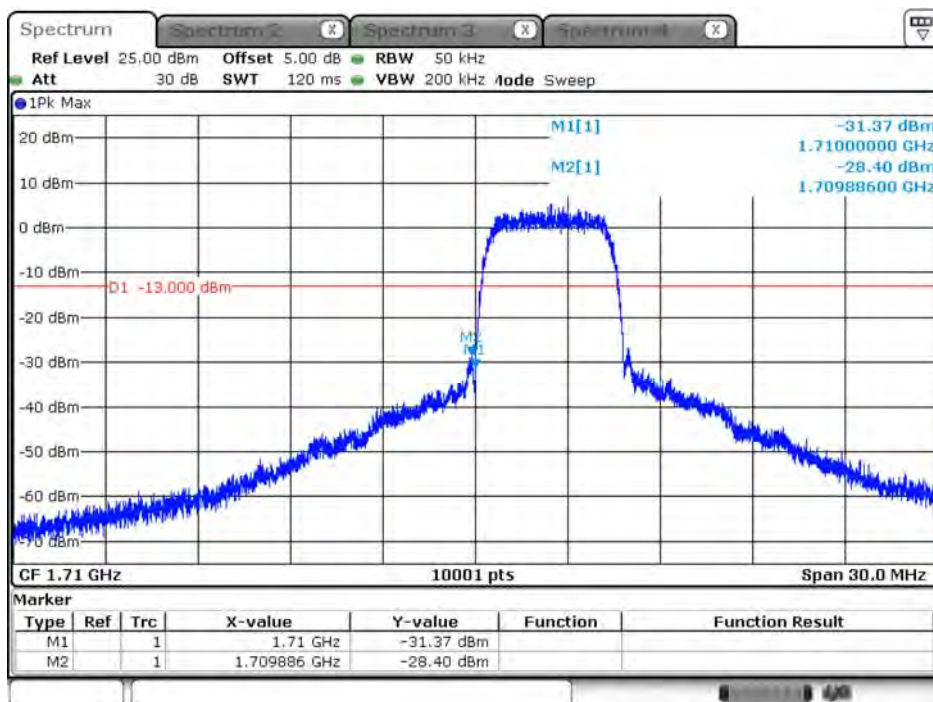
Date: 2.APR.2019 16:50:04

**WCDMA\_Band 4\_HSDPA\_1712.4MHz**

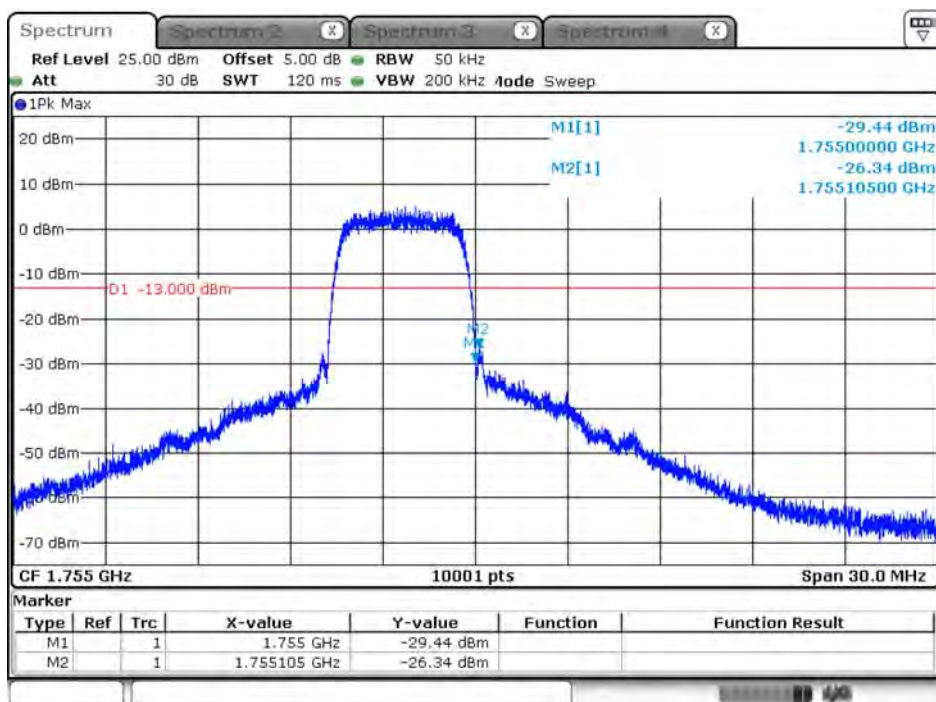
Date: 2.APR.2019 17:04:42

**WCDMA\_Band 4\_HSDPA\_1752.6MHz**

Date: 2.APR.2019 17:02:14

**WCDMA\_Band 4\_HSUPA\_1712.4MHz**

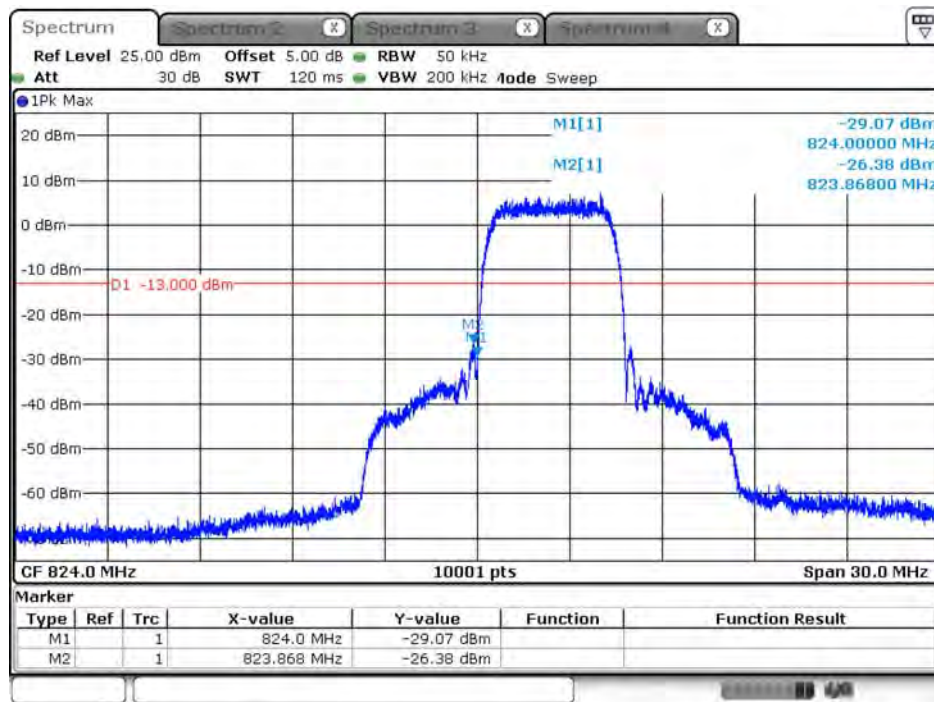
Date: 2.APR.2019 17:18:00

**WCDMA\_Band 4\_HSUPA\_1752.6MHz**

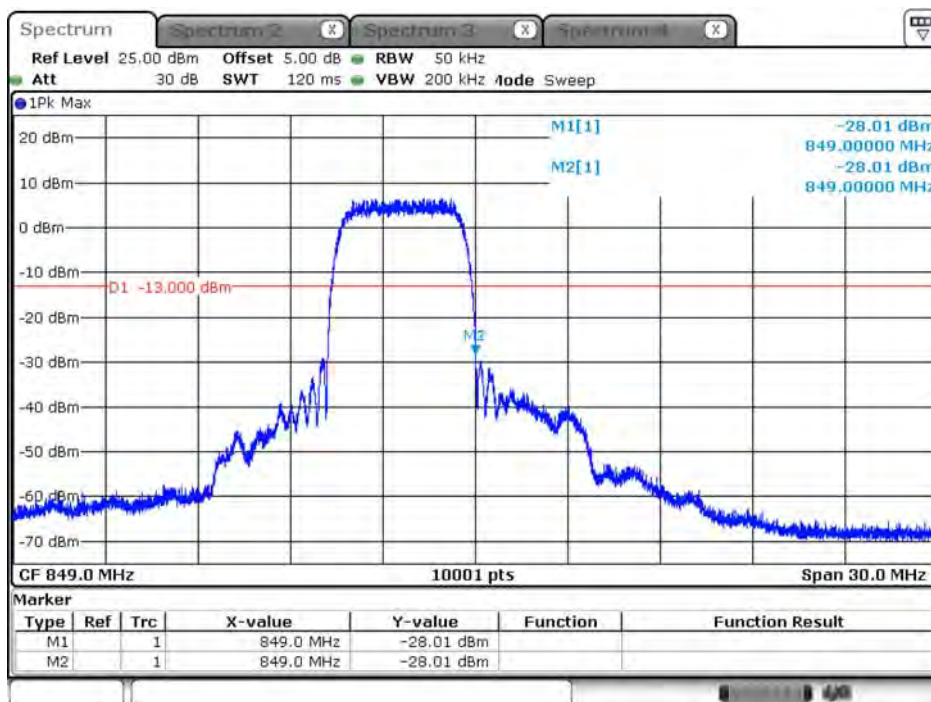
Date: 2.APR.2019 17:19:10

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Conducted Band Edge  |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

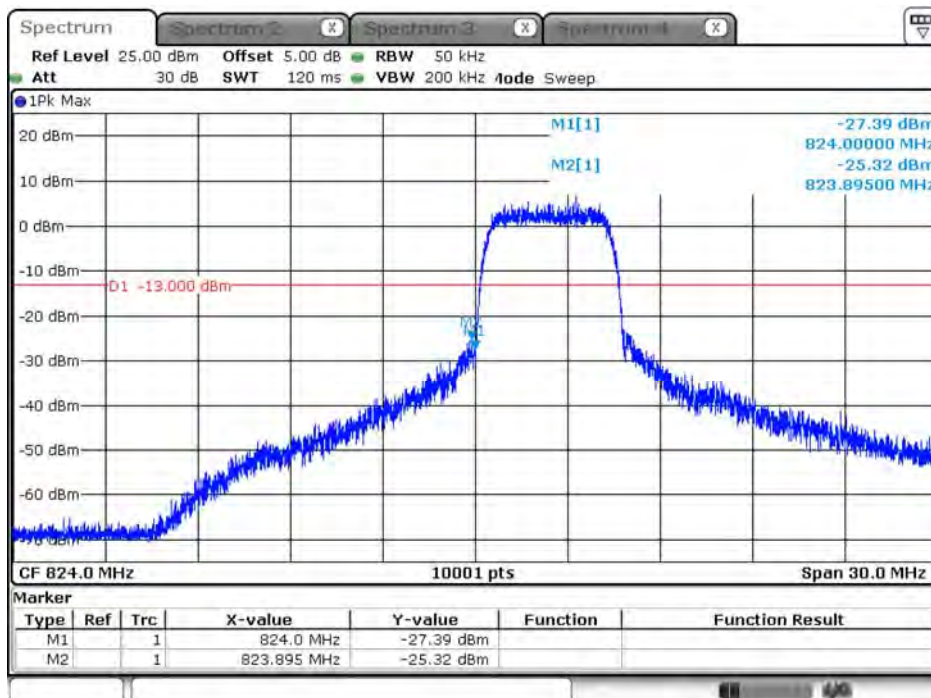
### WCDMA\_Band 5\_RMC\_826.4MHz



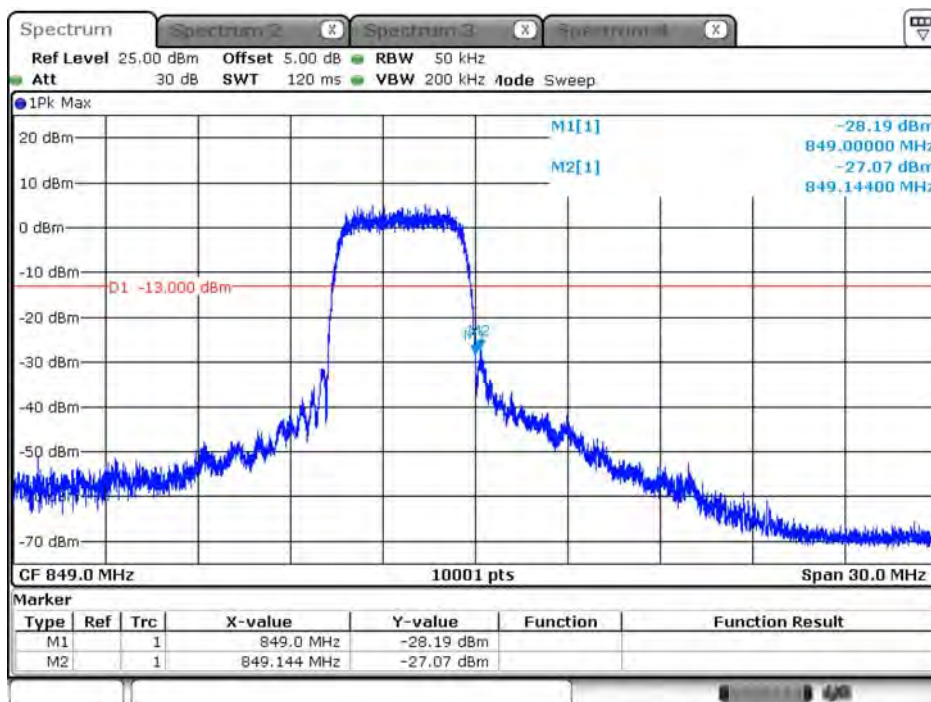
Date: 2.APR 2019 16:51:00

**WCDMA\_Band 5\_RMC\_846.6MHz**

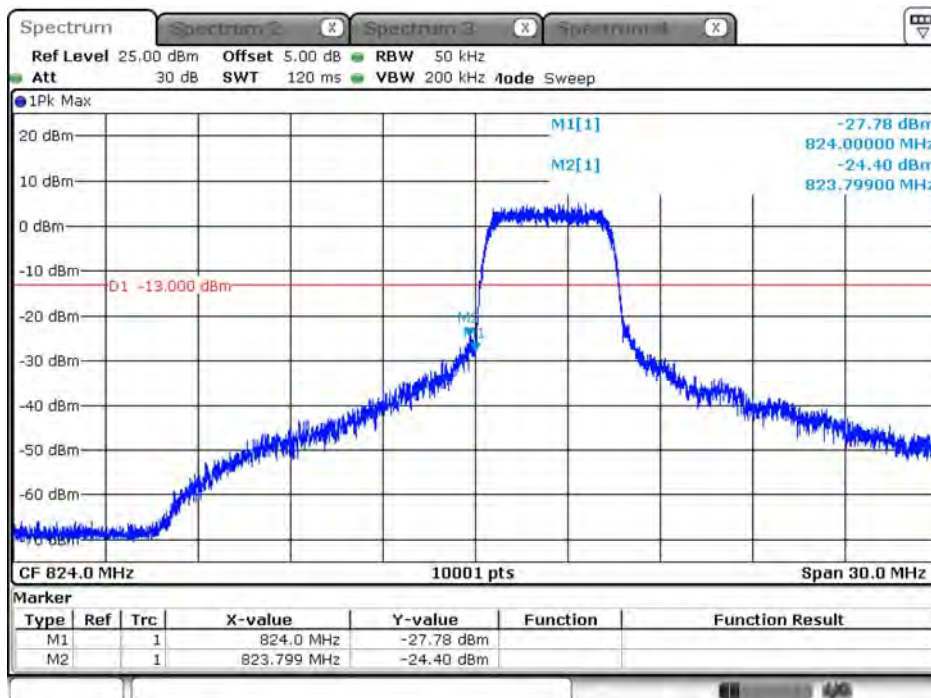
Date: 2.APR.2019 16:53:07

**WCDMA\_Band 5\_HSDPA\_826.4MHz**

Date: 2.APR.2019 17:01:02

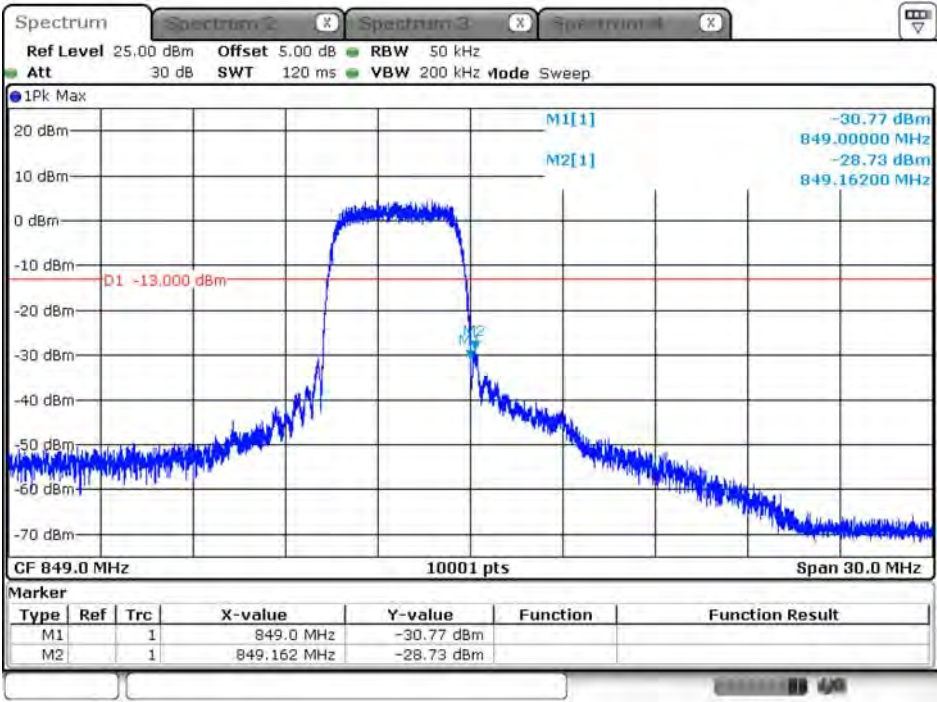
**WCDMA\_Band 5\_HSDPA\_846.6MHz**

Date: 2.APR.2019 16:59:22

**WCDMA\_Band 5\_HSUPA\_826.4MHz**

Date: 2.APR.2019 17:20:53

WCDMA\_Band 5\_HSUPA\_846.6MHz

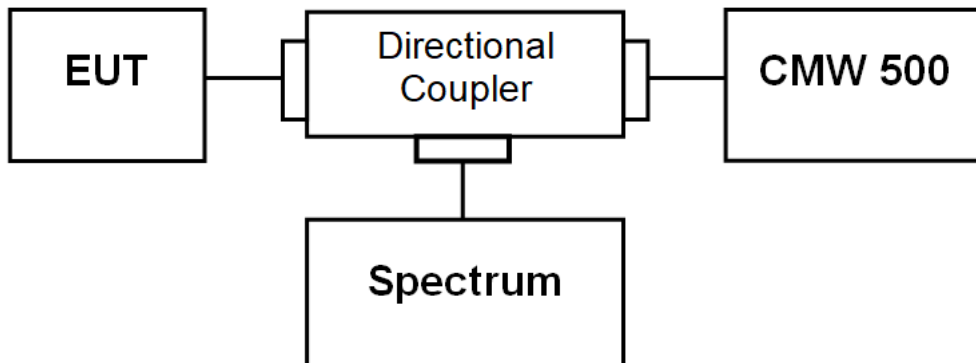


Date: 2.APR 2019 17:21.45

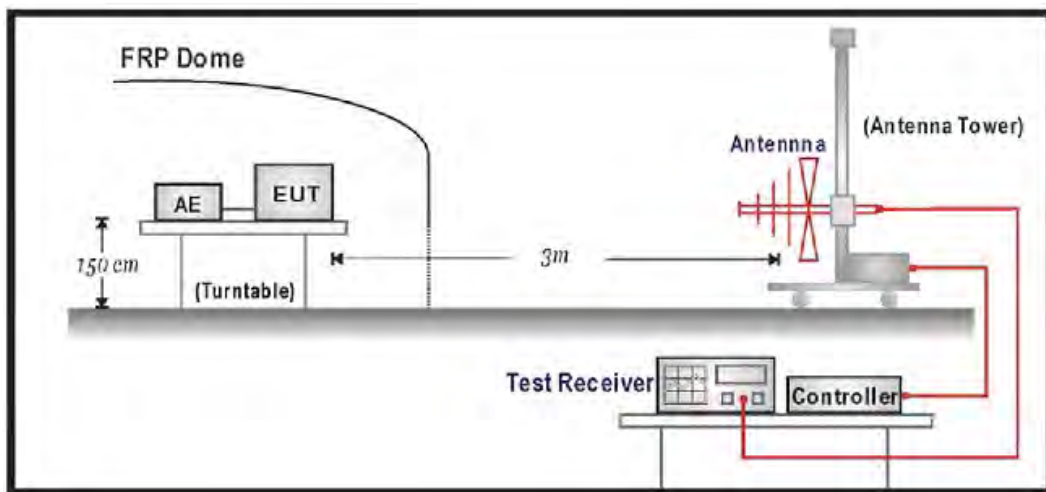
## 7. Spurious Emission

### 7.1. Test Setup

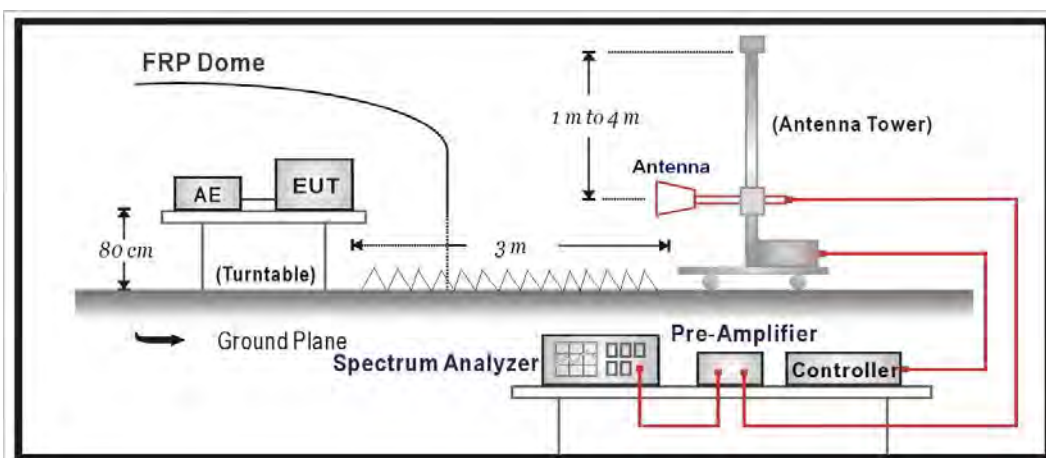
Conducted Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (above 1GHz)



## 7.2. Test Procedure

### Conducted Spurious Measurement:

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- c) EUT Communicate with CMU200, then select a channel for testing.
- d) Add a correction factor to the display of spectrum, and then test.
- e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10<sup>th</sup> harmonic.

### Radiated Spurious Measurement:

- a) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
- b) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- c) The table was rotated 360 degrees to determine the position of the highest spurious emission.
- d) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- e) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
- f) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- g) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- h) Taking the record of output power at antenna port
- i) Repeat step 7 to step 8 for another polarization.
- j)  $EIRP = SG - \text{Cable loss} + \text{Antenna Gain}$

## 7.3. Test Method

### Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1  
ANSI C63.26-2015 Sub-clause 5.7

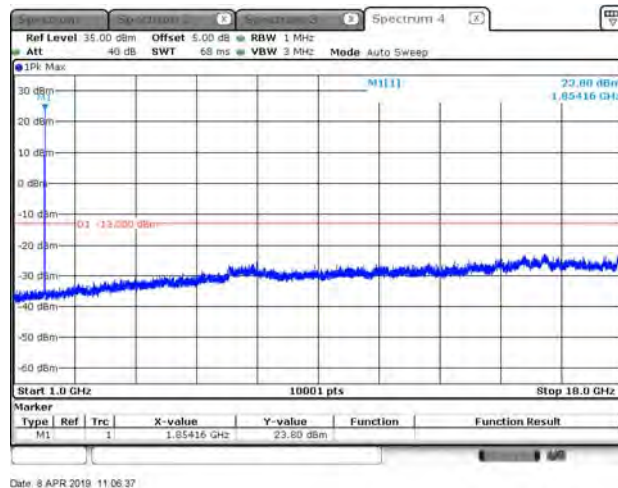
### Radiated Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8  
ANSI C63.26-2015 Sub-clause 5.5.3.2

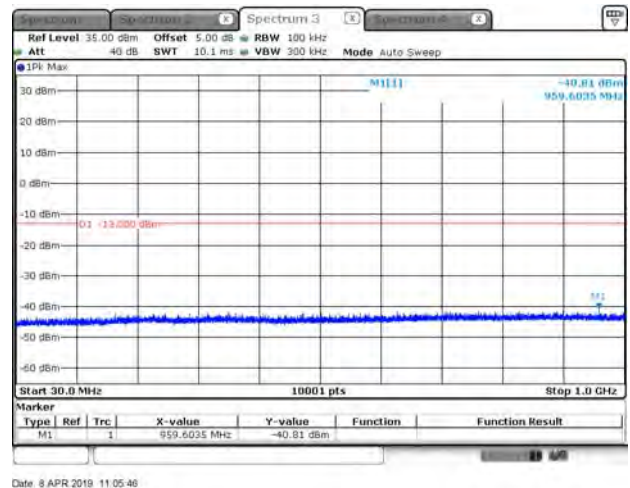
## 7.4. Test Result

|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | Conducted Spurious Emission |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2        |           |        |
| Date of Test | 2019/04/08                  | Test Site | SR10-H |

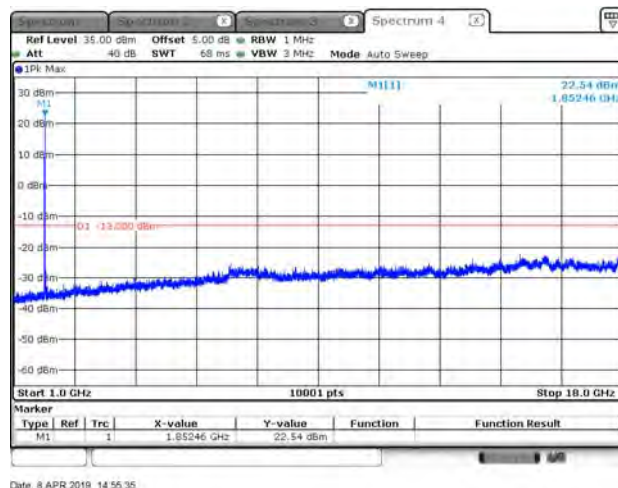
WCDMA\_Band2\_1852.4MHz\_RMC\_above 1G



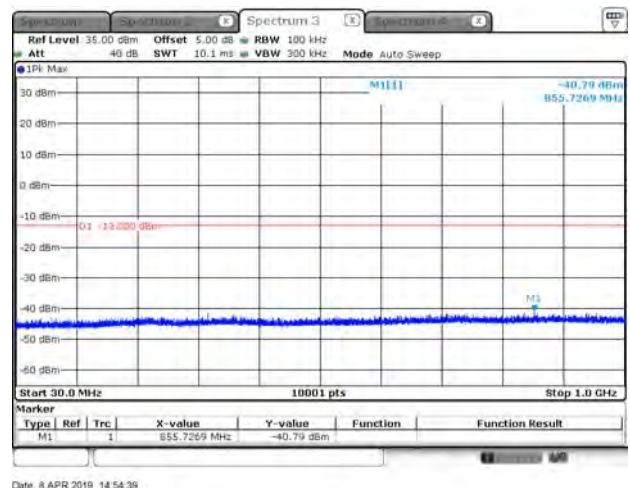
WCDMA\_Band2\_1852.4MHz\_RMC\_under 1G



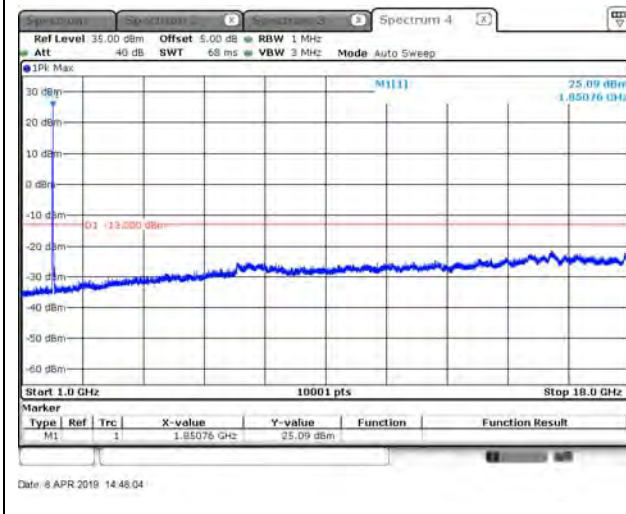
WCDMA\_Band2\_1852.4MHz\_HSDPA\_above 1G



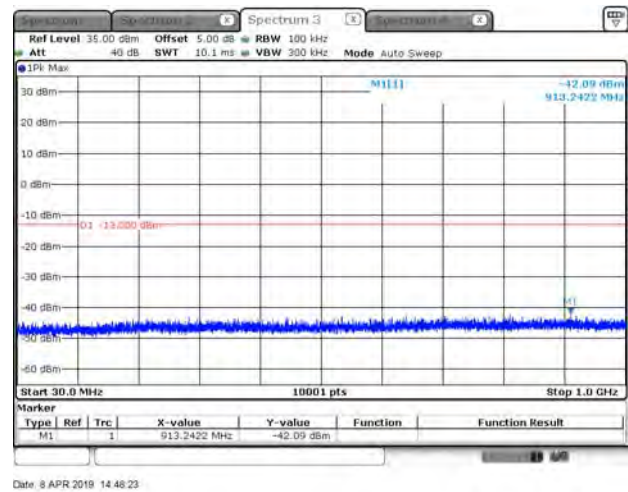
WCDMA\_Band2\_1852.4MHz\_HSDPA\_under 1G



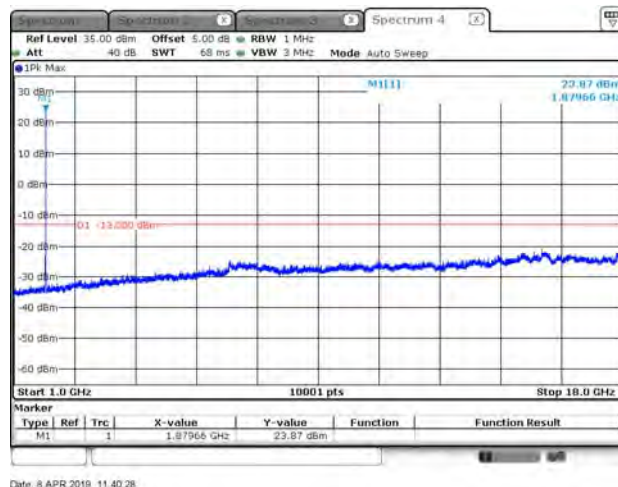
WCDMA\_Band2\_1852.4MHz\_HSUPA\_above 1G



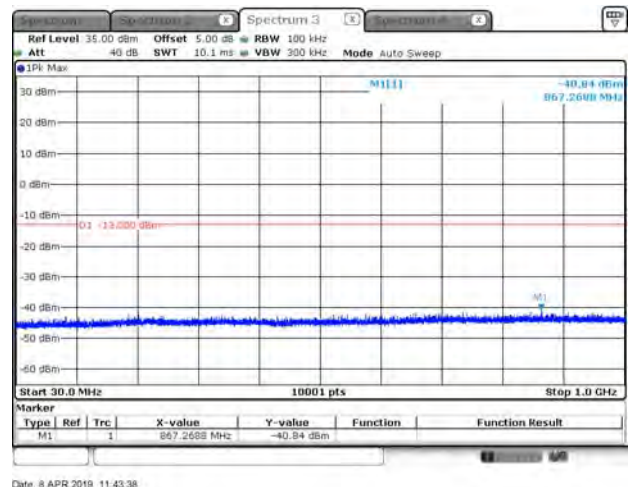
WCDMA\_Band2\_1852.4MHz\_HSUPA\_under 1G



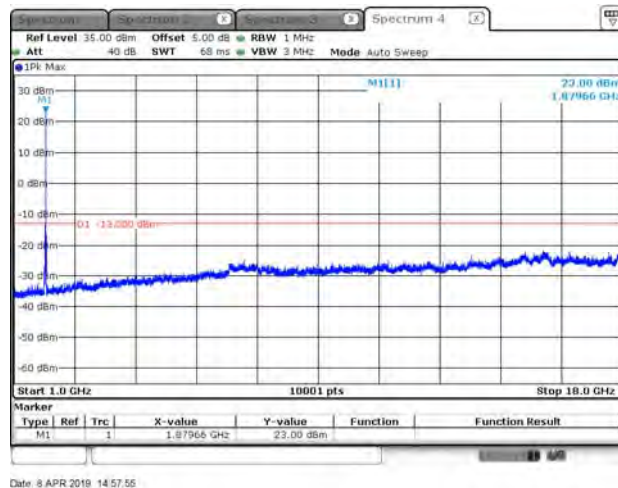
WCDMA\_Band2\_1880MHz\_RMC\_above 1G



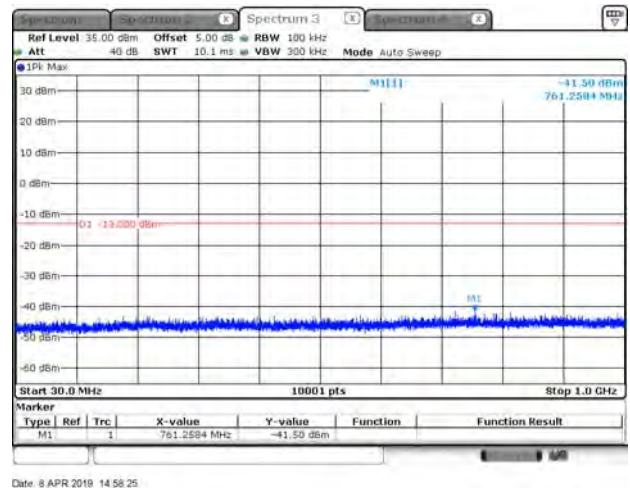
WCDMA\_Band2\_1880MHz\_RMC\_under 1G



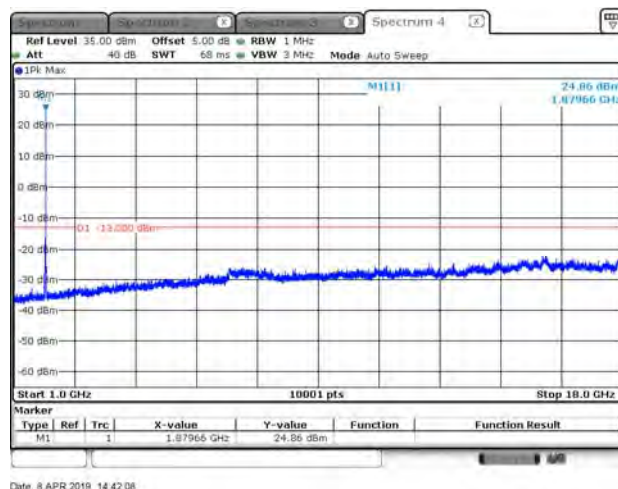
WCDMA\_Band2\_1880MHz\_HSDPA\_above 1G



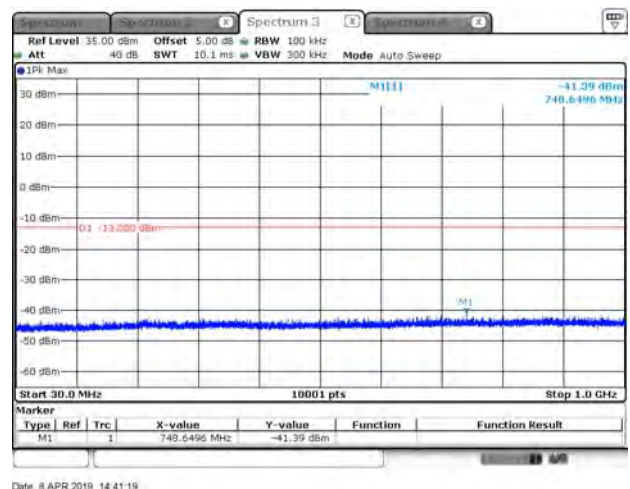
WCDMA\_Band2\_1880MHz\_HSDPA\_under 1G



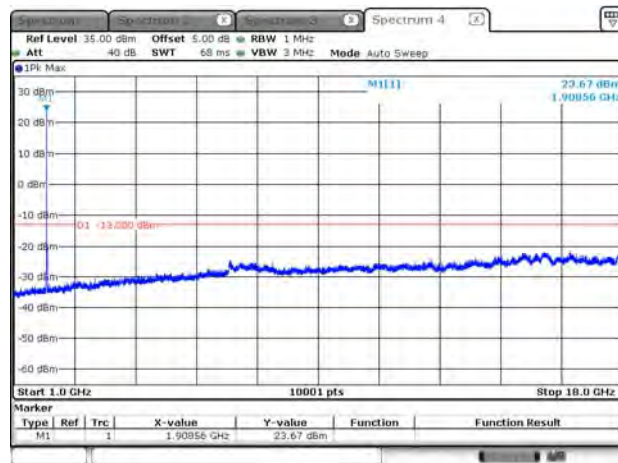
WCDMA\_Band2\_1880MHz\_HSUPA\_above 1G



WCDMA\_Band2\_1880MHz\_HSUPA\_under 1G

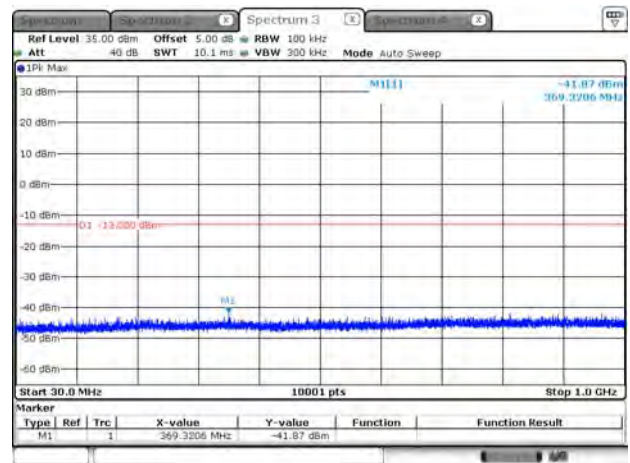


WCDMA\_Band2\_1907.6MHz\_RMC\_above 1G



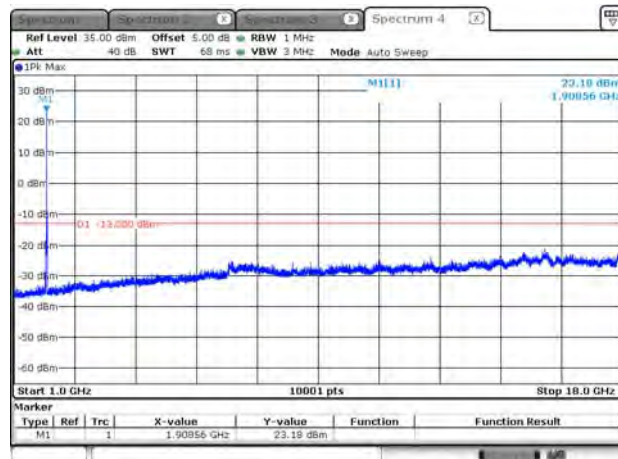
Date: 8 APR 2019 11:49:58

WCDMA\_Band2\_1907.6MHz\_RMC\_under 1G



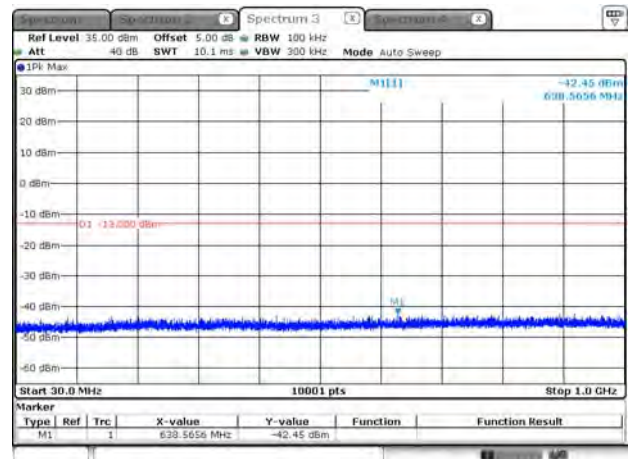
Date: 8 APR 2019 11:44:43

WCDMA\_Band2\_1907.6MHz\_HSDPA\_above 1G



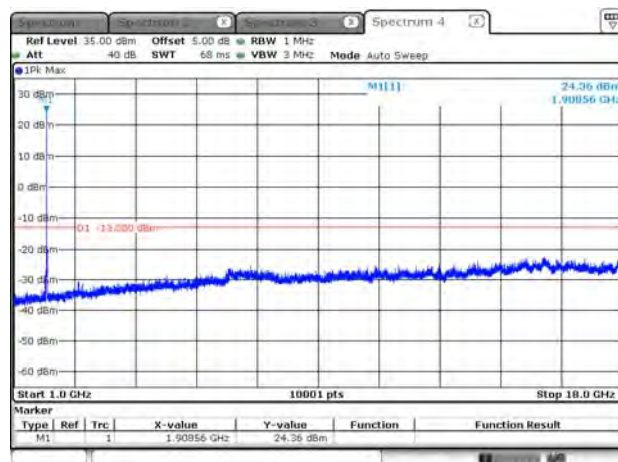
Date: 8 APR 2019 15:02:10

WCDMA\_Band2\_1907.6MHz\_HSDPA\_under 1G



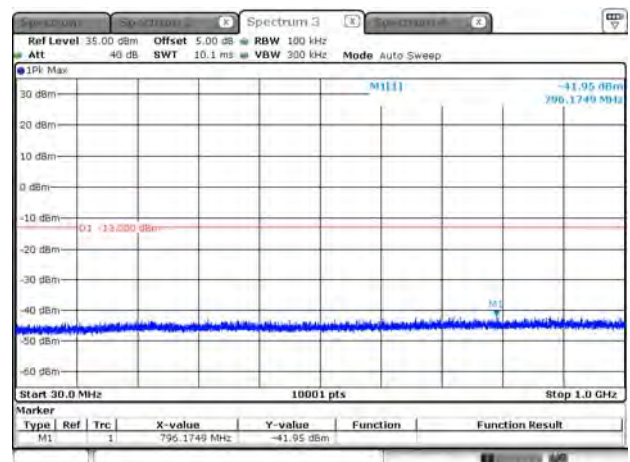
Date: 8 APR 2019 15:00:25

WCDMA\_Band2\_1907.6MHz\_HSUPA\_above 1G



Date: 8 APR 2019 14:34:29

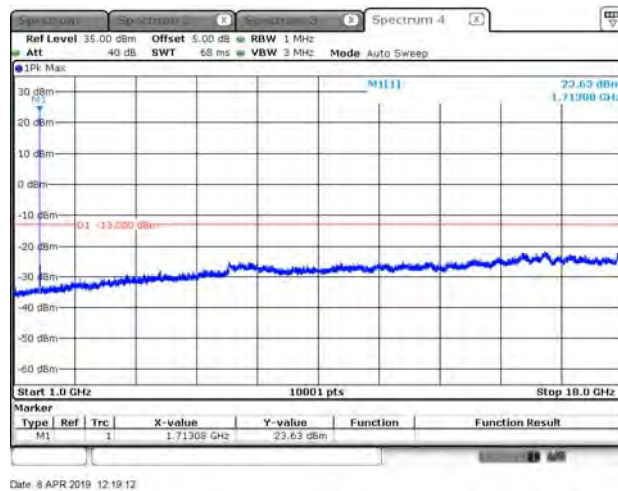
WCDMA\_Band2\_1907.6MHz\_HSUPA\_under 1G



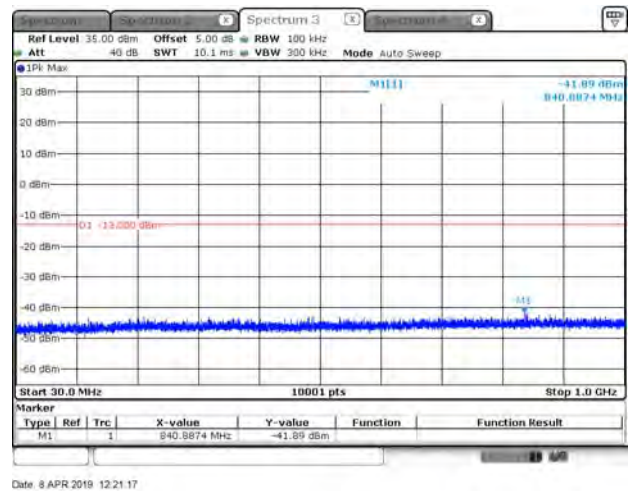
Date: 8 APR 2019 14:38:15

|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | Conducted Spurious Emission |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4        |           |        |
| Date of Test | 2019/04/08                  | Test Site | SR10-H |

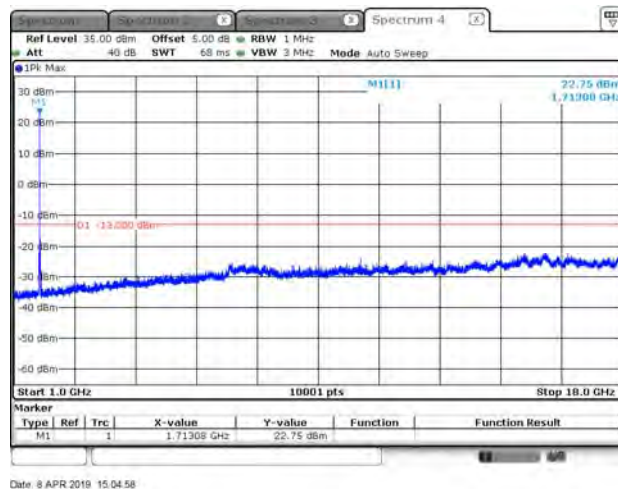
WCDMA\_Band4\_1712.4MHz\_RMC\_above 1G



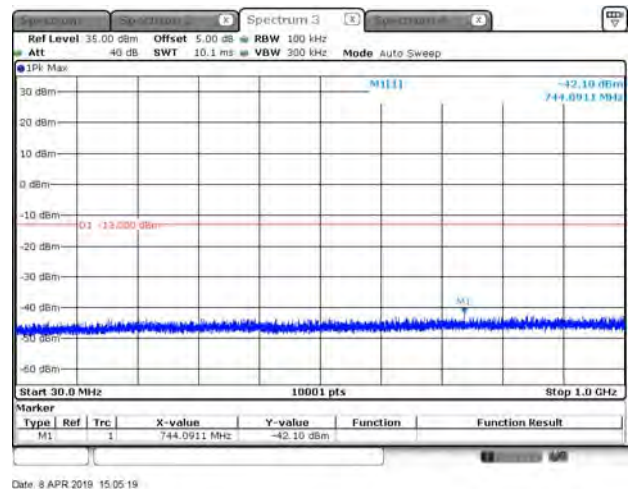
WCDMA\_Band4\_1712.4MHz\_RMC\_under 1G



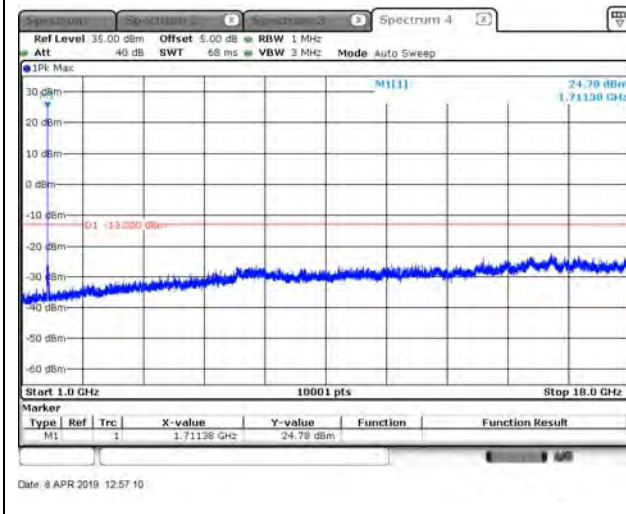
WCDMA\_Band4\_1712.4MHz\_HSDPA\_above 1G



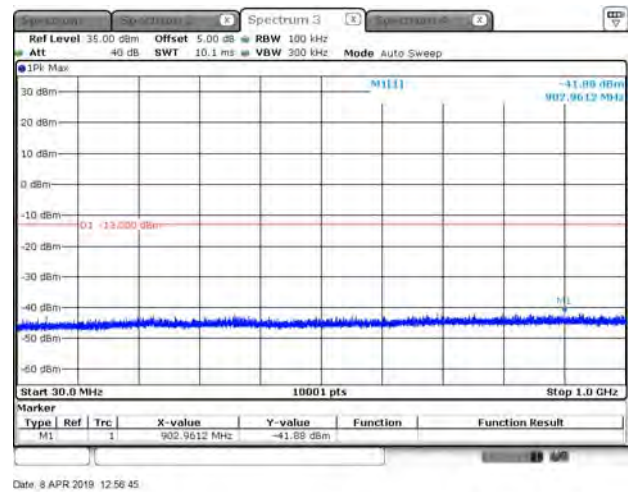
WCDMA\_Band4\_1712.4MHz\_HSDPA\_under 1G



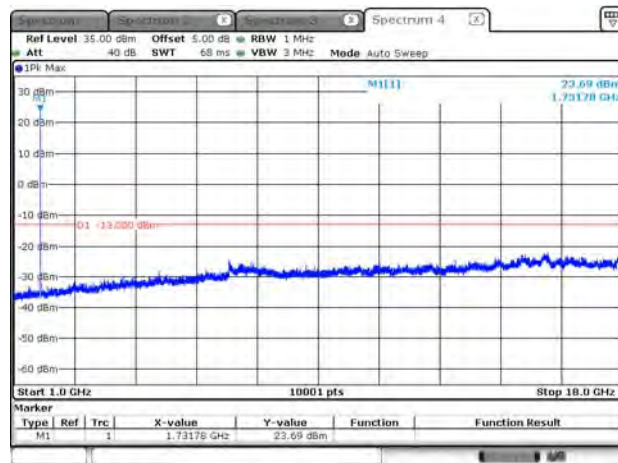
WCDMA\_Band4\_1712.4MHz\_HSUPA\_above 1G



WCDMA\_Band4\_1712.4MHz\_HSUPA\_under 1G

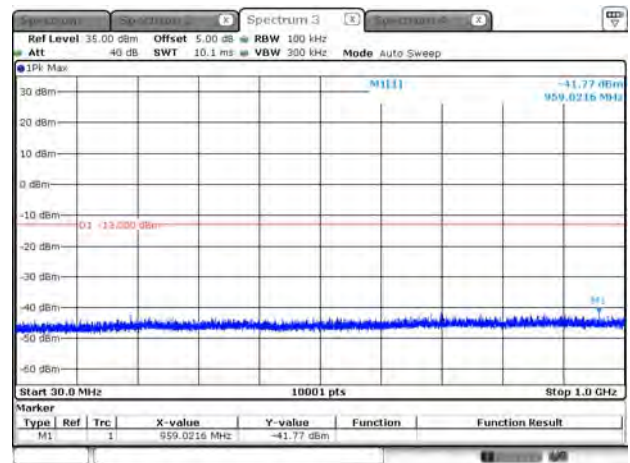


WCDMA\_Band4\_1732.6MHz\_RMC\_above 1G



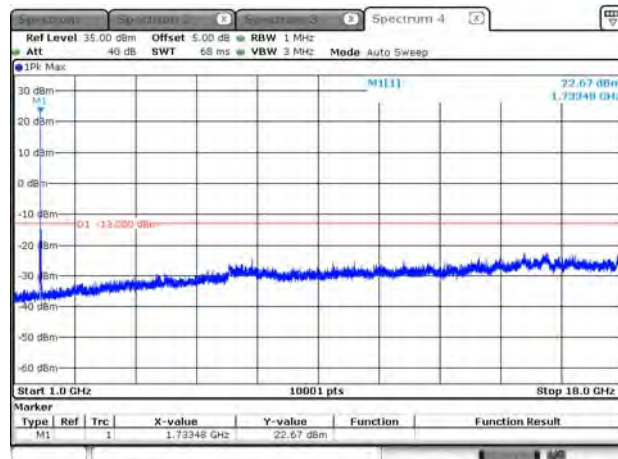
Date: 8 APR 2019 12:13:53

WCDMA\_Band4\_1732.6MHz\_RMC\_under 1G



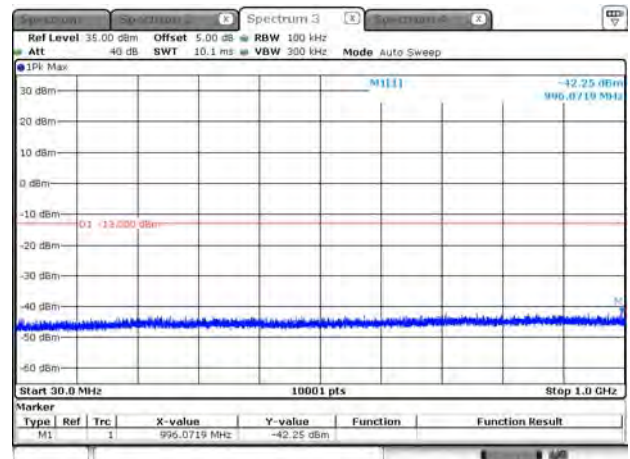
Date: 8 APR 2019 12:12:02

WCDMA\_Band4\_1732.6MHz\_HSDPA\_above 1G



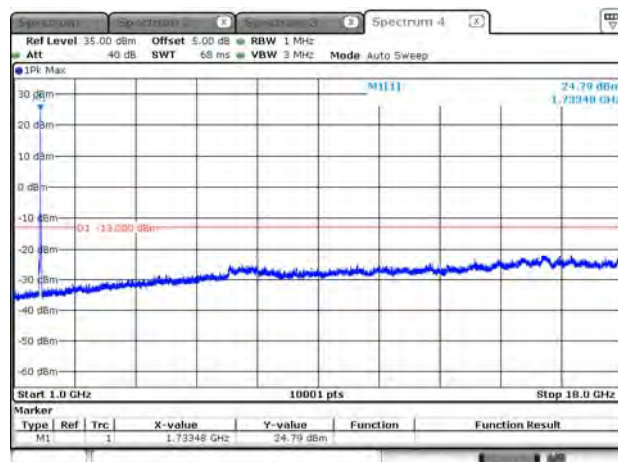
Date: 8 APR 2019 15:06:41

WCDMA\_Band4\_1732.6MHz\_HSDPA\_under 1G



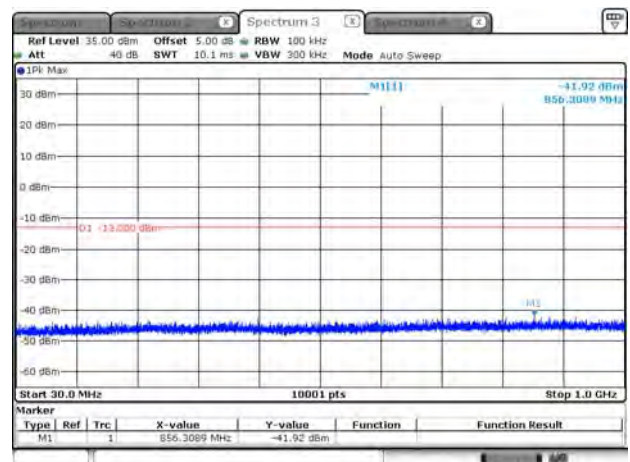
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WCDMA\_Band4\_1732.6MHz\_HSUPA\_above 1G



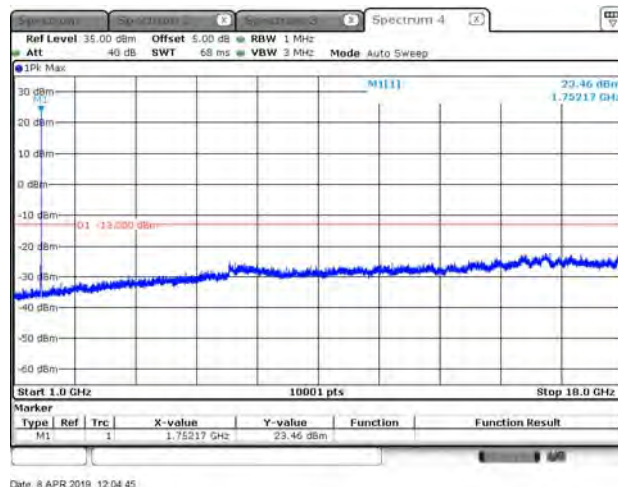
Date: 8 APR 2019 14:26:46

WCDMA\_Band4\_1732.6MHz\_HSUPA\_under 1G

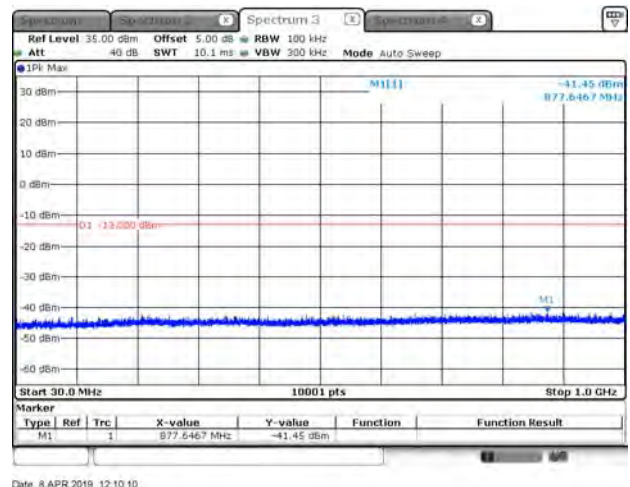


Date: 8 APR 2019 14:27:27

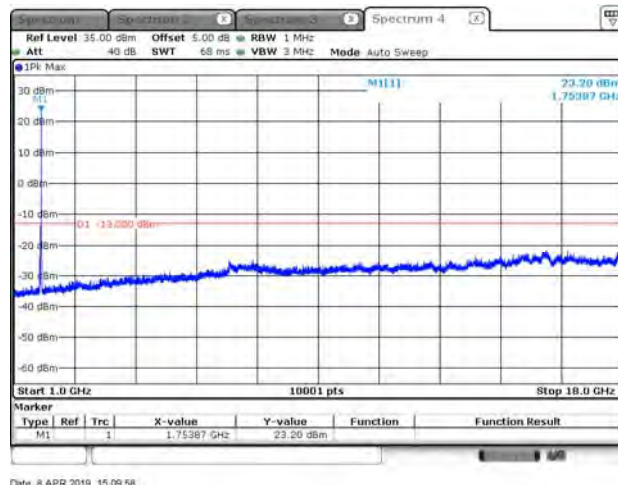
WCDMA\_Band4\_1752.6MHz\_RMC\_above 1G



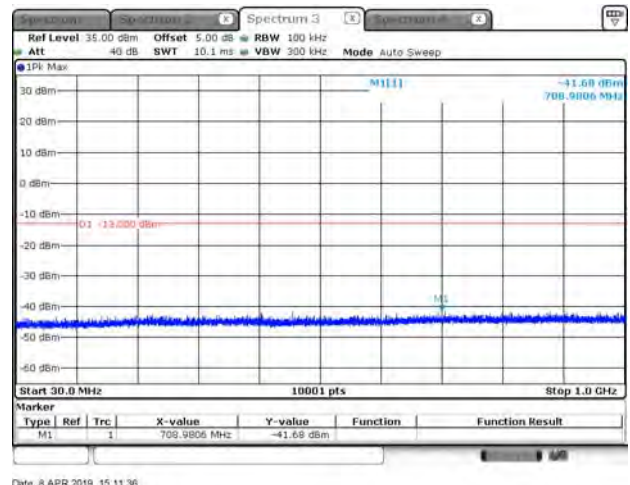
WCDMA\_Band4\_1752.6MHz\_RMC\_under 1G



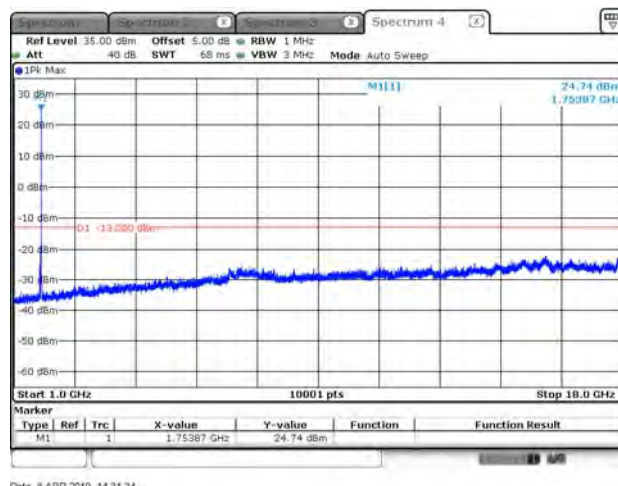
WCDMA\_Band4\_1752.6MHz\_HSDPA\_above 1G



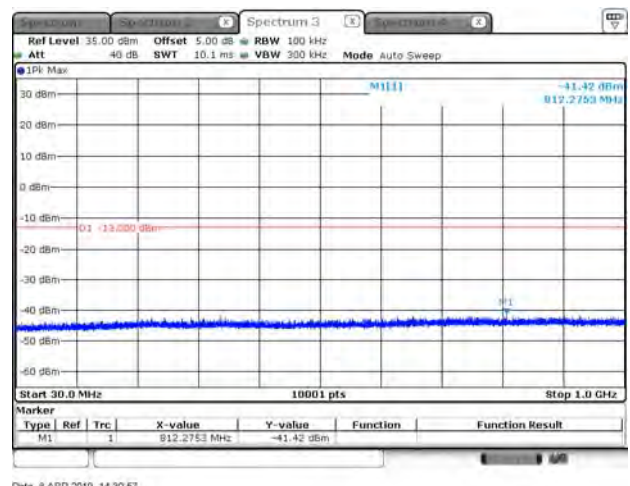
WCDMA\_Band4\_1752.6MHz\_HSDPA\_under 1G



WCDMA\_Band4\_1752.6MHz\_HSUPA\_above 1G

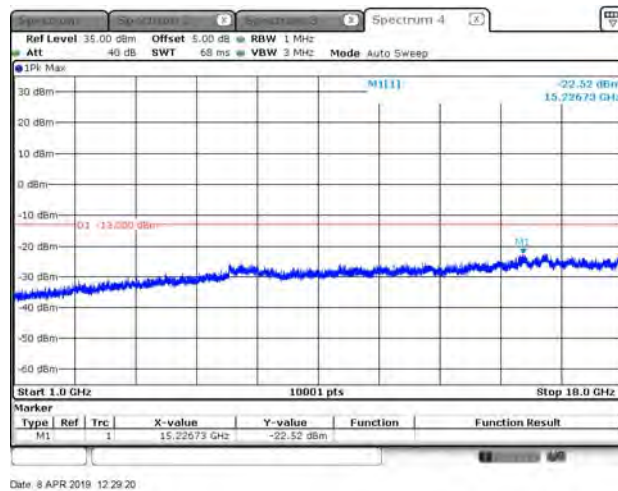


WCDMA\_Band4\_1752.6MHz\_HSUPA\_under 1G

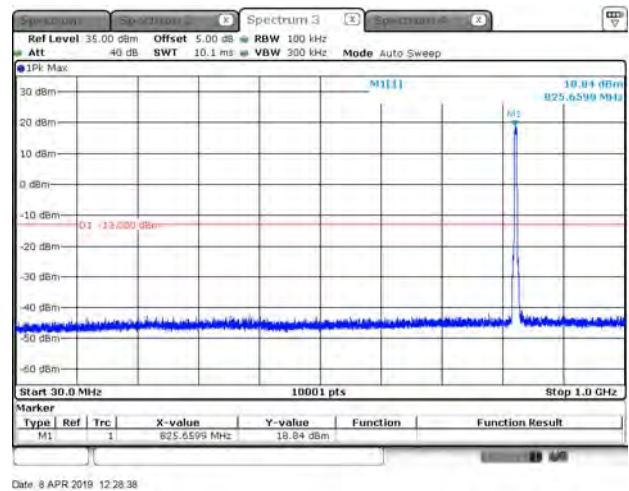


|              |                             |           |        |
|--------------|-----------------------------|-----------|--------|
| Product      | Module                      |           |        |
| Test Item    | Conducted Spurious Emission |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5        |           |        |
| Date of Test | 2019/04/08                  | Test Site | SR10-H |

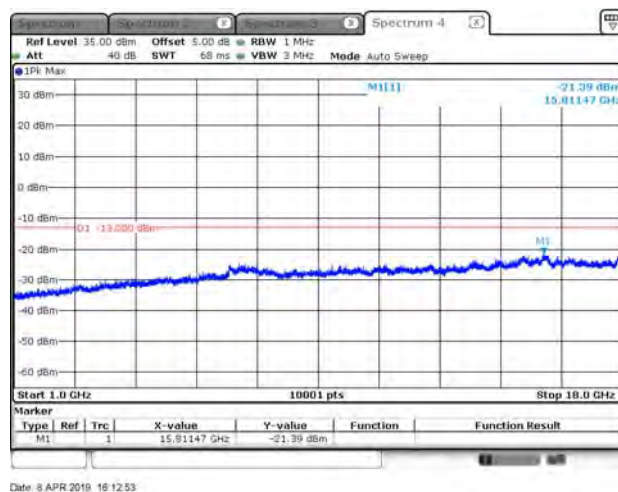
WCDMA\_Band5\_826.4MHz\_RMC\_above 1G



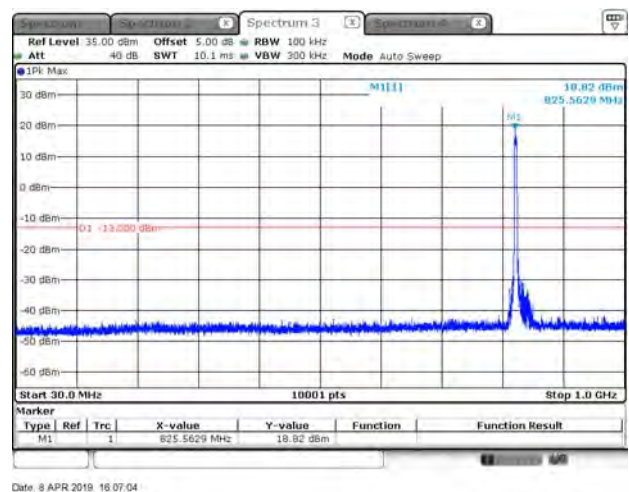
WCDMA\_Band5\_826.4MHz\_RMC\_under 1G



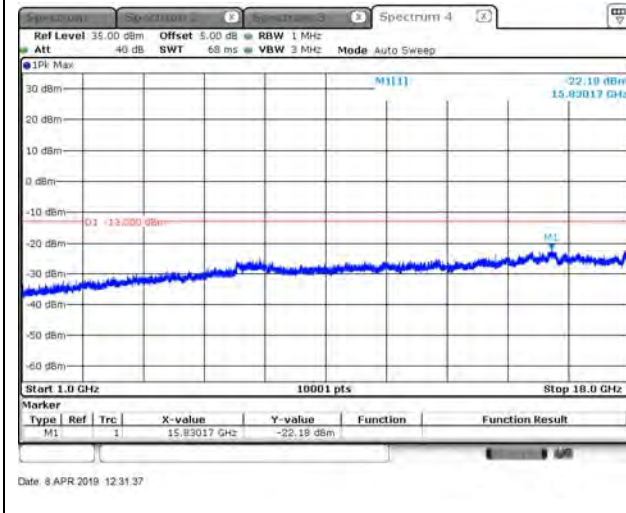
WCDMA\_Band5\_826.4MHz\_HSDPA\_above 1G



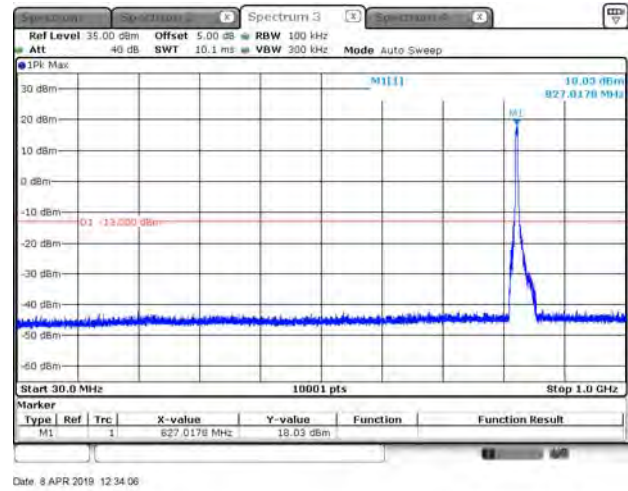
WCDMA\_Band5\_826.4MHz\_HSDPA\_under 1G



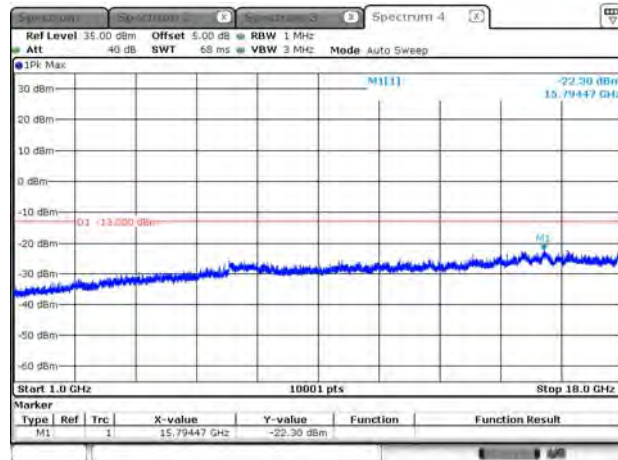
WCDMA\_Band5\_826.4MHz\_HSUPA\_above 1G



WCDMA\_Band5\_826.4MHz\_HSUPA\_under 1G

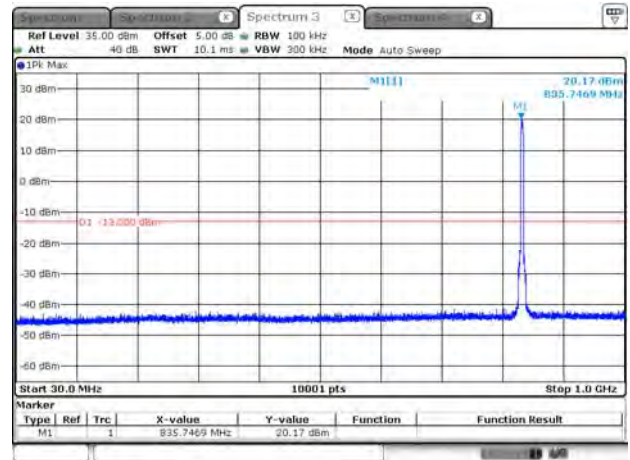


WCDMA\_Band5\_836.6MHz\_RMC\_above 1G



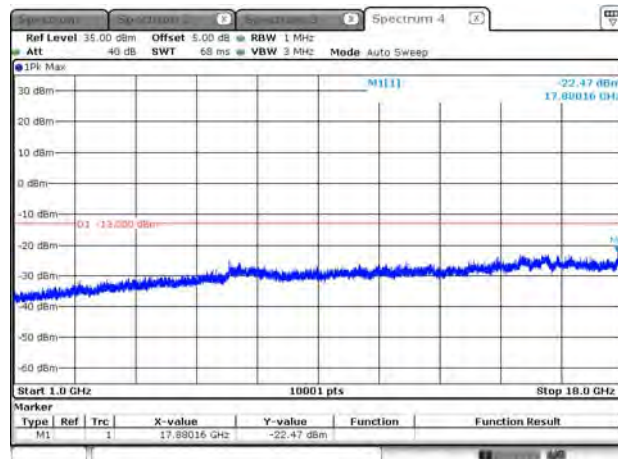
Date: 8 APR 2019 12:24:16

WCDMA\_Band5\_836.6MHz\_RMC\_under 1G



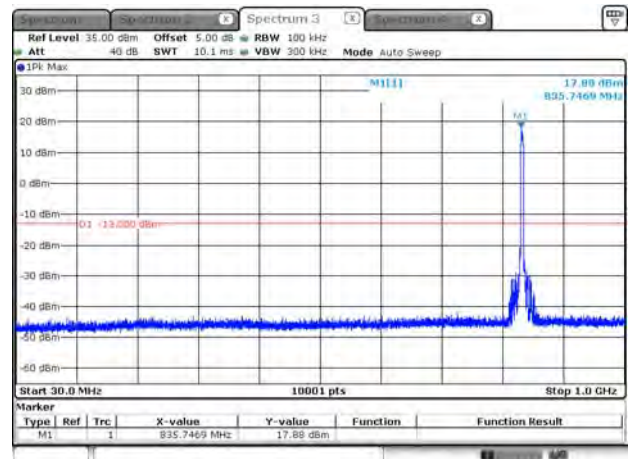
Date: 8 APR 2019 12:27:58

WCDMA\_Band5\_836.6MHz\_HSDPA\_above 1G



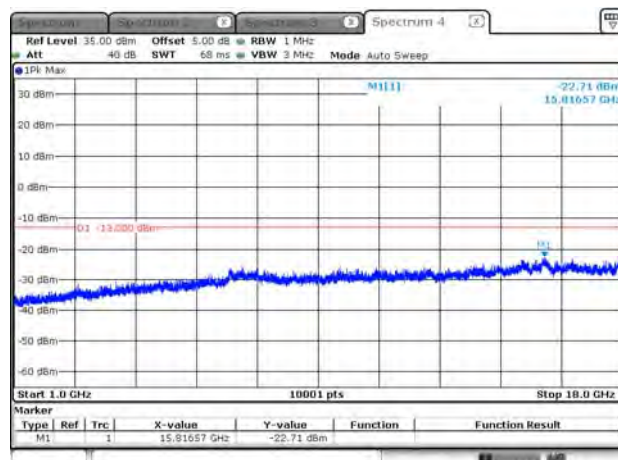
Date: 8 APR 2019 16:38:42

WCDMA\_Band5\_836.6MHz\_HSDPA\_under 1G



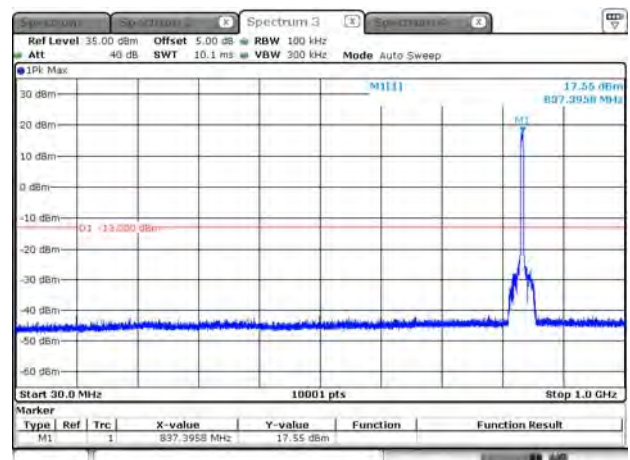
Date: 8 APR 2019 16:37:12

WCDMA\_Band5\_836.6MHz\_HSUPA\_above 1G



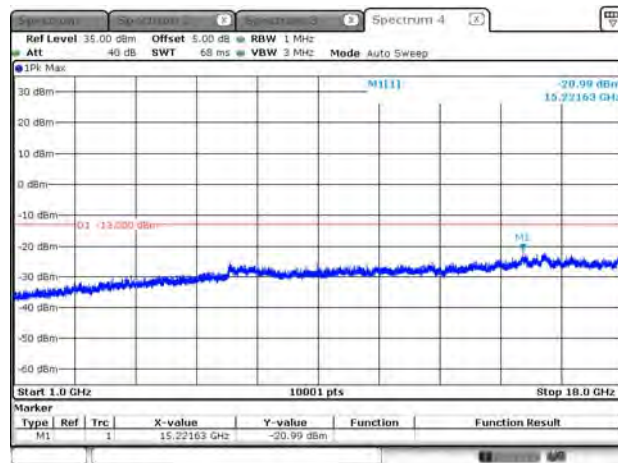
Date: 8 APR 2019 12:40:29

WCDMA\_Band5\_836.6MHz\_HSUPA\_under 1G



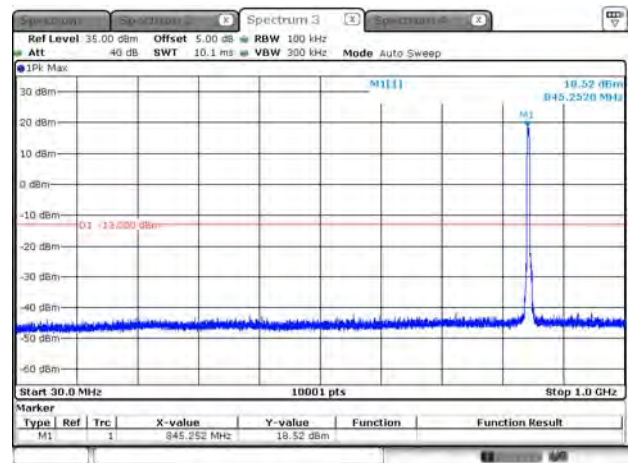
Date: 8 APR 2019 12:38:35

WCDMA\_Band5\_846.6MHz\_RMC\_above 1G



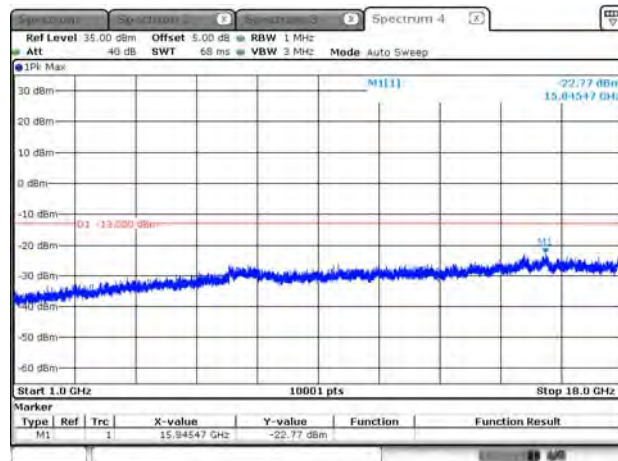
Date: 8 APR 2019 12:23:05

WCDMA\_Band5\_846.6MHz\_RMC\_under 1G



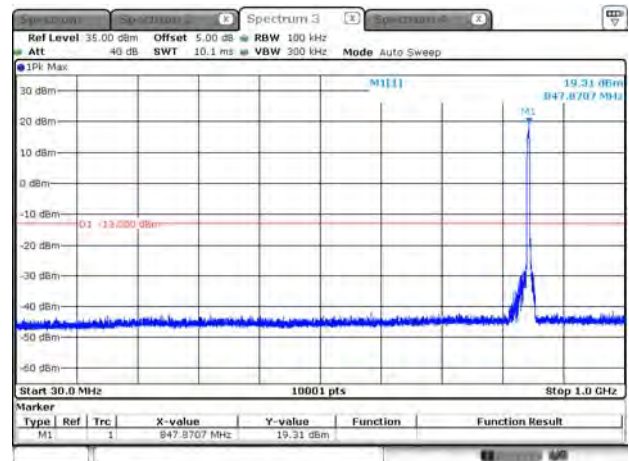
Date: 8 APR 2019 12:22:21

WCDMA\_Band5\_846.6MHz\_HSDPA\_above 1G



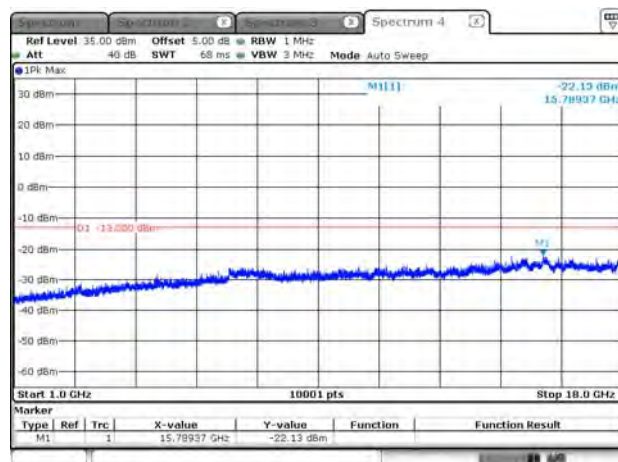
Date: 8 APR 2019 16:38:24

WCDMA\_Band5\_846.6MHz\_HSDPA\_under 1G



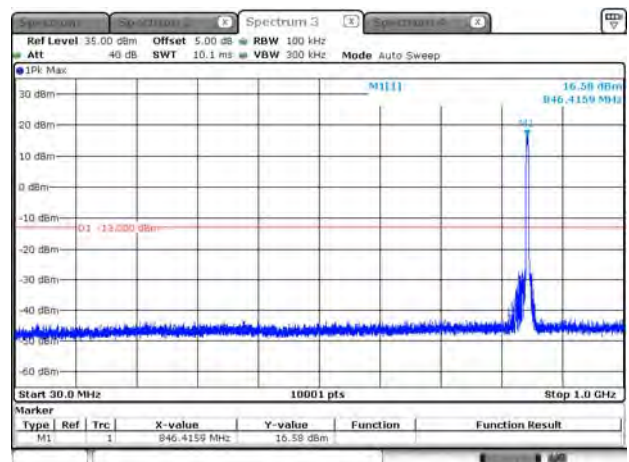
Date: 8 APR 2019 16:38:09

WCDMA\_Band5\_846.6MHz\_HSUPA\_above 1G



Date: 8 APR 2019 12:43:57

WCDMA\_Band5\_846.6MHz\_HSUPA\_under 1G



Date: 8 APR 2019 12:46:14

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 1: WCDMA_Band 2       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 2\_RMC\_Link

| Frequency (MHz)               | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 9262 (1852.4MHz)  |                  |                |                  |                 |            |            |             |             |
| 3704.80                       | -63.270          | H              | -64.684          | 4.287           | 11.931     | -57.040    | -13         | -44.040     |
| 5557.20                       | -61.250          | H              | -55.867          | 5.203           | 12.900     | -48.170    | -13         | -35.170     |
| 3704.80                       | -67.030          | V              | -66.494          | 4.287           | 11.931     | -58.850    | -13         | -45.850     |
| 5557.20                       | -53.500          | V              | -48.217          | 5.203           | 12.900     | -40.520    | -13         | -27.520     |
| Middle Channel 9400 (1880MHz) |                  |                |                  |                 |            |            |             |             |
| 3760.00                       | -65.100          | H              | -66.577          | 4.335           | 11.832     | -59.080    | -13         | -46.080     |
| 5640.00                       | -59.900          | H              | -54.755          | 5.235           | 12.900     | -47.090    | -13         | -34.090     |
| 3760.00                       | -62.410          | V              | -61.777          | 4.335           | 11.832     | -54.280    | -13         | -41.280     |
| 5640.00                       | -52.740          | V              | -47.865          | 5.235           | 12.900     | -40.200    | -13         | -27.200     |
| High Channel 9538 (1907.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3815.20                       | -65.670          | H              | -67.231          | 4.382           | 11.733     | -59.880    | -13         | -46.880     |
| 5722.80                       | -58.350          | H              | -53.443          | 5.267           | 12.900     | -45.810    | -13         | -32.810     |
| 3815.20                       | -67.240          | V              | -66.531          | 4.382           | 11.733     | -59.180    | -13         | -46.180     |
| 5722.80                       | -48.980          | V              | -44.503          | 5.267           | 12.900     | -36.870    | -13         | -23.870     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 1: WCDMA_Band 2       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 2\_HSDPA\_Link

| Frequency (MHz)               | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 9262 (1852.4MHz)  |                  |                |                  |                 |            |            |             |             |
| 3704.80                       | -65.630          | H              | -67.044          | 4.287           | 11.931     | -59.400    | -13         | -46.400     |
| 5557.20                       | -61.590          | H              | -56.207          | 5.203           | 12.900     | -48.510    | -13         | -35.510     |
| 3704.80                       | -65.690          | V              | -65.154          | 4.287           | 11.931     | -57.510    | -13         | -44.510     |
| 5557.20                       | -53.760          | V              | -48.477          | 5.203           | 12.900     | -40.780    | -13         | -27.780     |
| Middle Channel 9400 (1880MHz) |                  |                |                  |                 |            |            |             |             |
| 3760.00                       | -63.440          | H              | -64.917          | 4.335           | 11.832     | -57.420    | -13         | -44.420     |
| 5640.00                       | -60.900          | H              | -55.755          | 5.235           | 12.900     | -48.090    | -13         | -35.090     |
| 3760.00                       | -62.790          | V              | -62.157          | 4.335           | 11.832     | -54.660    | -13         | -41.660     |
| 5640.00                       | -53.500          | V              | -48.625          | 5.235           | 12.900     | -40.960    | -13         | -27.960     |
| High Channel 9538 (1907.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3815.20                       | -66.290          | H              | -67.851          | 4.382           | 11.733     | -60.500    | -13         | -47.500     |
| 5722.80                       | -58.470          | H              | -53.563          | 5.267           | 12.900     | -45.930    | -13         | -32.930     |
| 3815.20                       | -67.350          | V              | -66.641          | 4.382           | 11.733     | -59.290    | -13         | -46.290     |
| 5722.80                       | -48.940          | V              | -44.463          | 5.267           | 12.900     | -36.830    | -13         | -23.830     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 1: WCDMA_Band 2       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 2\_HSUPA\_Link

| Frequency (MHz)               | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 9262 (1852.4MHz)  |                  |                |                  |                 |            |            |             |             |
| 3704.80                       | -65.210          | H              | -66.624          | 4.287           | 11.931     | -58.980    | -13         | -45.980     |
| 5557.20                       | -61.060          | H              | -55.677          | 5.203           | 12.900     | -47.980    | -13         | -34.980     |
| 3704.80                       | -66.020          | V              | -65.484          | 4.287           | 11.931     | -57.840    | -13         | -44.840     |
| 5557.20                       | -54.810          | V              | -49.527          | 5.203           | 12.900     | -41.830    | -13         | -28.830     |
| Middle Channel 9400 (1880MHz) |                  |                |                  |                 |            |            |             |             |
| 3760.00                       | -64.960          | H              | -66.437          | 4.335           | 11.832     | -58.940    | -13         | -45.940     |
| 5640.00                       | -58.020          | H              | -52.875          | 5.235           | 12.900     | -45.210    | -13         | -32.210     |
| 3760.00                       | -61.820          | V              | -61.187          | 4.335           | 11.832     | -53.690    | -13         | -40.690     |
| 5640.00                       | -51.080          | V              | -46.205          | 5.235           | 12.900     | -38.540    | -13         | -25.540     |
| High Channel 9538 (1907.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3815.20                       | -65.160          | H              | -66.721          | 4.382           | 11.733     | -59.370    | -13         | -46.370     |
| 5722.80                       | -58.190          | H              | -53.283          | 5.267           | 12.900     | -45.650    | -13         | -32.650     |
| 3815.20                       | -67.520          | V              | -66.811          | 4.382           | 11.733     | -59.460    | -13         | -46.460     |
| 5722.80                       | -49.390          | V              | -44.913          | 5.267           | 12.900     | -37.280    | -13         | -24.280     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 2: WCDMA_Band 4       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 4\_RMC\_Link

| Frequency (MHz)                 | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 1312 (1712.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 3424.80                         | -63.510          | H              | -64.718          | 4.066           | 12.104     | -56.680    | -13         | -43.680     |
| 5137.20                         | -58.410          | H              | -55.880          | 5.077           | 12.247     | -48.710    | -13         | -35.710     |
| 3424.80                         | -60.080          | V              | -60.008          | 4.066           | 12.104     | -51.970    | -13         | -38.970     |
| 5137.20                         | -56.810          | V              | -53.740          | 5.077           | 12.247     | -46.570    | -13         | -33.570     |
| Middle Channel 1413 (1732.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3465.20                         | -65.620          | H              | -66.539          | 4.090           | 12.210     | -58.420    | -13         | -45.420     |
| 5197.80                         | -60.550          | H              | -57.522          | 5.094           | 12.356     | -50.260    | -13         | -37.260     |
| 3465.20                         | -64.180          | V              | -63.829          | 4.090           | 12.210     | -55.710    | -13         | -42.710     |
| 5197.80                         | -56.610          | V              | -53.142          | 5.094           | 12.356     | -45.880    | -13         | -32.880     |
| High Channel 1513 (1752.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 3505.20                         | -62.960          | H              | -64.115          | 4.115           | 12.291     | -55.940    | -13         | -42.940     |
| 5257.80                         | -57.050          | H              | -53.533          | 5.111           | 12.464     | -46.180    | -13         | -33.180     |
| 3505.20                         | -62.740          | V              | -62.515          | 4.115           | 12.291     | -54.340    | -13         | -41.340     |
| 5257.80                         | -51.260          | V              | -47.393          | 5.111           | 12.464     | -40.040    | -13         | -27.040     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 2: WCDMA_Band 4       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 4\_HSDPA\_Link

| Frequency (MHz)                 | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 1312 (1712.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 3424.80                         | -63.950          | H              | -65.158          | 4.066           | 12.104     | -57.120    | -13         | -44.120     |
| 5137.20                         | -58.440          | H              | -55.910          | 5.077           | 12.247     | -48.740    | -13         | -35.740     |
| 3424.80                         | -60.150          | V              | -60.078          | 4.066           | 12.104     | -52.040    | -13         | -39.040     |
| 5137.20                         | -57.420          | V              | -54.350          | 5.077           | 12.247     | -47.180    | -13         | -34.180     |
| Middle Channel 1413 (1732.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3465.20                         | -65.570          | H              | -66.489          | 4.090           | 12.210     | -58.370    | -13         | -45.370     |
| 5197.80                         | -61.680          | H              | -58.652          | 5.094           | 12.356     | -51.390    | -13         | -38.390     |
| 3465.20                         | -64.290          | V              | -63.939          | 4.090           | 12.210     | -55.820    | -13         | -42.820     |
| 5197.80                         | -55.490          | V              | -52.022          | 5.094           | 12.356     | -44.760    | -13         | -31.760     |
| High Channel 1513 (1752.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 3505.20                         | -63.070          | H              | -64.225          | 4.115           | 12.291     | -56.050    | -13         | -43.050     |
| 5257.80                         | -57.140          | H              | -53.623          | 5.111           | 12.464     | -46.270    | -13         | -33.270     |
| 3505.20                         | -62.790          | V              | -62.565          | 4.115           | 12.291     | -54.390    | -13         | -41.390     |
| 5257.80                         | -53.370          | V              | -49.503          | 5.111           | 12.464     | -42.150    | -13         | -29.150     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 2: WCDMA_Band 4       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 4\_HSUPA\_Link

| Frequency (MHz)                 | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|---------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 1312 (1712.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 3424.80                         | -63.570          | H              | -64.778          | 4.066           | 12.104     | -56.740    | -13         | -43.740     |
| 5137.20                         | -58.460          | H              | -55.930          | 5.077           | 12.247     | -48.760    | -13         | -35.760     |
| 3424.80                         | -59.980          | V              | -59.908          | 4.066           | 12.104     | -51.870    | -13         | -38.870     |
| 5137.20                         | -56.410          | V              | -53.340          | 5.077           | 12.247     | -46.170    | -13         | -33.170     |
| Middle Channel 1413 (1732.6MHz) |                  |                |                  |                 |            |            |             |             |
| 3465.20                         | -66.250          | H              | -67.169          | 4.090           | 12.210     | -59.050    | -13         | -46.050     |
| 5197.80                         | -60.770          | H              | -57.742          | 5.094           | 12.356     | -50.480    | -13         | -37.480     |
| 3465.20                         | -64.350          | V              | -63.999          | 4.090           | 12.210     | -55.880    | -13         | -42.880     |
| 5197.80                         | -56.690          | V              | -53.222          | 5.094           | 12.356     | -45.960    | -13         | -32.960     |
| High Channel 1513 (1752.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 3505.20                         | -63.120          | H              | -64.275          | 4.115           | 12.291     | -56.100    | -13         | -43.100     |
| 5257.80                         | -58.580          | H              | -55.063          | 5.111           | 12.464     | -47.710    | -13         | -34.710     |
| 3505.20                         | -60.460          | V              | -60.235          | 4.115           | 12.291     | -52.060    | -13         | -39.060     |
| 5257.80                         | -51.570          | V              | -47.703          | 5.111           | 12.464     | -40.350    | -13         | -27.350     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 3: WCDMA_Band 5       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 5\_RMC\_Link

| Frequency (MHz)                | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|--------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 4132 (826.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 1652.80                        | -46.730          | H              | -60.314          | 2.794           | 8.758      | -54.350    | -13         | -41.350     |
| 2479.20                        | -65.320          | H              | -76.705          | 3.442           | 10.567     | -69.580    | -13         | -56.580     |
| 1652.80                        | -50.470          | V              | -63.494          | 2.794           | 8.758      | -57.530    | -13         | -44.530     |
| 2479.20                        | -67.650          | V              | -77.025          | 3.442           | 10.567     | -69.900    | -13         | -56.900     |
| Middle Channel 4183 (836.6MHz) |                  |                |                  |                 |            |            |             |             |
| 1673.20                        | -50.500          | H              | -64.127          | 2.813           | 8.820      | -58.120    | -13         | -45.120     |
| 2509.80                        | -65.290          | H              | -76.475          | 3.463           | 10.608     | -69.330    | -13         | -56.330     |
| 1673.20                        | -53.950          | V              | -67.057          | 2.813           | 8.820      | -61.050    | -13         | -48.050     |
| 2509.80                        | -67.580          | V              | -76.595          | 3.463           | 10.608     | -69.450    | -13         | -56.450     |
| High Channel 4233 (846.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 1693.20                        | -49.110          | H              | -62.789          | 2.831           | 8.880      | -56.740    | -13         | -43.740     |
| 2539.80                        | -65.060          | H              | -75.947          | 3.484           | 10.632     | -68.800    | -13         | -55.800     |
| 1693.20                        | -53.010          | V              | -66.219          | 2.831           | 8.880      | -60.170    | -13         | -47.170     |
| 2539.80                        | -66.960          | V              | -75.587          | 3.484           | 10.632     | -68.440    | -13         | -55.440     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 3: WCDMA_Band 5       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

## WCDMA\_Band 5\_HSDPA\_Link

| Frequency (MHz)                | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|--------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 4132 (826.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 1652.80                        | -46.840          | H              | -60.424          | 2.794           | 8.758      | -54.460    | -13         | -41.460     |
| 2479.20                        | -65.290          | H              | -76.675          | 3.442           | 10.567     | -69.550    | -13         | -56.550     |
| 1652.80                        | -50.580          | V              | -63.604          | 2.794           | 8.758      | -57.640    | -13         | -44.640     |
| 2479.20                        | -67.570          | V              | -76.945          | 3.442           | 10.567     | -69.820    | -13         | -56.820     |
| Middle Channel 4183 (836.6MHz) |                  |                |                  |                 |            |            |             |             |
| 1673.20                        | -50.570          | H              | -64.197          | 2.813           | 8.820      | -58.190    | -13         | -45.190     |
| 2509.80                        | -65.260          | H              | -76.445          | 3.463           | 10.608     | -69.300    | -13         | -56.300     |
| 1673.20                        | -53.640          | V              | -66.747          | 2.813           | 8.820      | -60.740    | -13         | -47.740     |
| 2509.80                        | -66.820          | V              | -75.835          | 3.463           | 10.608     | -68.690    | -13         | -55.690     |
| High Channel 4233 (846.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 1693.20                        | -49.200          | H              | -62.879          | 2.831           | 8.880      | -56.830    | -13         | -43.830     |
| 2539.80                        | -65.050          | H              | -75.937          | 3.484           | 10.632     | -68.790    | -13         | -55.790     |
| 1693.20                        | -53.230          | V              | -66.439          | 2.831           | 8.880      | -60.390    | -13         | -47.390     |
| 2539.80                        | -66.370          | V              | -74.997          | 3.484           | 10.632     | -67.850    | -13         | -54.850     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

|              |                            |           |       |
|--------------|----------------------------|-----------|-------|
| Product      | Module                     |           |       |
| Test Item    | Radiated Spurious Emission |           |       |
| Test Mode    | Mode 3: WCDMA_Band 5       |           |       |
| Date of Test | 2019/04/16                 | Test Site | CB4-H |

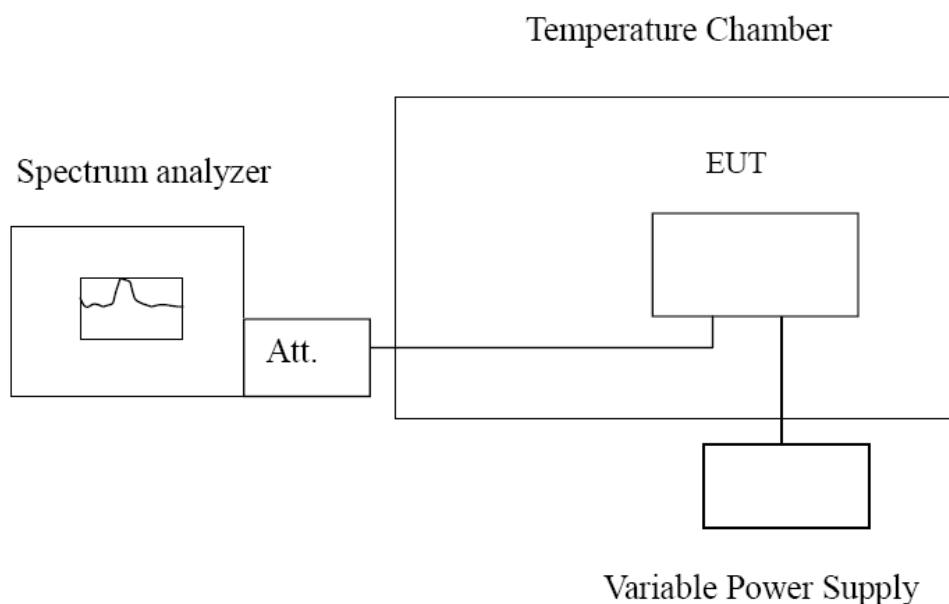
## WCDMA\_Band 5\_HSUPA\_Link

| Frequency (MHz)                | SA Reading (dBm) | Ant.Pol. (H/V) | SG Reading (dBm) | Cable Loss (dB) | Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
|--------------------------------|------------------|----------------|------------------|-----------------|------------|------------|-------------|-------------|
| Low Channel 4132 (826.4MHz)    |                  |                |                  |                 |            |            |             |             |
| 1652.80                        | -47.190          | H              | -60.774          | 2.794           | 8.758      | -54.810    | -13         | -41.810     |
| 2479.20                        | -65.130          | H              | -76.515          | 3.442           | 10.567     | -69.390    | -13         | -56.390     |
| 1652.80                        | -49.810          | V              | -62.834          | 2.794           | 8.758      | -56.870    | -13         | -43.870     |
| 2479.20                        | -66.170          | V              | -75.545          | 3.442           | 10.567     | -68.420    | -13         | -55.420     |
| Middle Channel 4183 (836.6MHz) |                  |                |                  |                 |            |            |             |             |
| 1673.20                        | -50.720          | H              | -64.347          | 2.813           | 8.820      | -58.340    | -13         | -45.340     |
| 2509.80                        | -64.410          | H              | -75.595          | 3.463           | 10.608     | -68.450    | -13         | -55.450     |
| 1673.20                        | -53.630          | V              | -66.737          | 2.813           | 8.820      | -60.730    | -13         | -47.730     |
| 2509.80                        | -68.560          | V              | -77.575          | 3.463           | 10.608     | -70.430    | -13         | -57.430     |
| High Channel 4233 (846.6MHz)   |                  |                |                  |                 |            |            |             |             |
| 1693.20                        | -49.230          | H              | -62.909          | 2.831           | 8.880      | -56.860    | -13         | -43.860     |
| 2539.80                        | -64.530          | H              | -75.417          | 3.484           | 10.632     | -68.270    | -13         | -55.270     |
| 1693.20                        | -53.230          | V              | -66.439          | 2.831           | 8.880      | -60.390    | -13         | -47.390     |
| 2539.80                        | -66.670          | V              | -75.297          | 3.484           | 10.632     | -68.150    | -13         | -55.150     |

Test Result (EIRP) = SG Level - Cable Loss + Antenna Gain

## 8. Frequency Stability

### 8.1. Test Setup



### 8.2. Test Procedure

#### Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

#### Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

### 8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9  
ANSI C63.26-2015 Sub-clause 5.6

#### 8.4. Test Result

|              |                       |           |        |
|--------------|-----------------------|-----------|--------|
| Product      | Module                |           |        |
| Test Item    | Frequency Stability   |           |        |
| Test Mode    | Mode 1: WCDMA _Band 2 |           |        |
| Date of Test | 2019/04/02            | Test Site | SR10-H |

WCDMA\_Band 2\_1852.4MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | 14                   | -0.0208               |
| 3.8            | 24                   | -0.0357               |
| 3.4            | 14                   | -0.0208               |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | 16                   | -0.0238               |
| -20         | 11                   | -0.0163               |
| -10         | 7                    | -0.0104               |
| 0           | -10                  | 0.0149                |
| 10          | 4                    | -0.0059               |
| 20          | -1                   | 0.0015                |
| 30          | 8                    | -0.0119               |
| 40          | 8                    | -0.0119               |
| 50          | 7                    | -0.0104               |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

WCDMA\_Band 2\_1880MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | -7                   | 0.0103                |
| 3.8            | -42                  | 0.0617                |
| 3.4            | -26                  | 0.0382                |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -1                   | 0.0015                |
| -20         | 1                    | -0.0015               |
| -10         | -36                  | 0.0529                |
| 0           | 21                   | -0.0309               |
| 10          | 20                   | -0.0294               |
| 20          | -22                  | 0.0323                |
| 30          | 4                    | -0.0059               |
| 40          | -26                  | 0.0382                |
| 50          | -35                  | 0.0514                |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 1: WCDMA_Band 2 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

WCDMA\_Band 2\_1907.6MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | -23                  | 0.0331                |
| 3.8            | 20                   | -0.0288               |
| 3.4            | 22                   | -0.0316               |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -3                   | 0.0043                |
| -20         | -5                   | 0.0072                |
| -10         | -21                  | 0.0302                |
| 0           | -23                  | 0.0331                |
| 10          | -4                   | 0.0058                |
| 20          | -15                  | 0.0216                |
| 30          | -20                  | 0.0288                |
| 40          | 9                    | -0.0129               |
| 50          | 22                   | -0.0316               |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

WCDMA\_Band 4\_1712.4MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | 1                    | -0.0015               |
| 3.8            | 18                   | -0.0267               |
| 3.4            | -4                   | 0.0059                |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | 24                   | -0.0357               |
| -20         | -24                  | 0.0357                |
| -10         | 3                    | -0.0045               |
| 0           | -36                  | 0.0535                |
| 10          | -4                   | 0.0059                |
| 20          | 4                    | -0.0059               |
| 30          | -29                  | 0.0431                |
| 40          | -35                  | 0.0520                |
| 50          | -35                  | 0.0520                |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

WCDMA\_Band 4\_1732.6MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | -22                  | 0.0323                |
| 3.8            | -37                  | 0.0544                |
| 3.4            | -28                  | 0.0411                |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -13                  | 0.0191                |
| -20         | -28                  | 0.0411                |
| -10         | 25                   | -0.0367               |
| 0           | -32                  | 0.0470                |
| 10          | 16                   | -0.0235               |
| 20          | -34                  | 0.0500                |
| 30          | -28                  | 0.0411                |
| 40          | -29                  | 0.0426                |
| 50          | -30                  | 0.0441                |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 2: WCDMA_Band 4 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

WCDMA\_Band 4\_1752.6MHz

Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | 5                    | -0.0072               |
| 3.8            | -34                  | 0.0489                |
| 3.4            | -10                  | 0.0144                |

Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -27                  | 0.0388                |
| -20         | 24                   | -0.0345               |
| -10         | -29                  | 0.0417                |
| 0           | -27                  | 0.0388                |
| 10          | -36                  | 0.0518                |
| 20          | 8                    | -0.0115               |
| 30          | 1                    | -0.0014               |
| 40          | -34                  | 0.0489                |
| 50          | 14                   | -0.0201               |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

## WCDMA\_Band 5\_826.4MHz

## Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | 5                    | -0.0072               |
| 3.8            | 5                    | -0.0072               |
| 3.4            | 2                    | -0.0029               |

## Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | 3                    | -0.0043               |
| -20         | -5                   | 0.0072                |
| -10         | -24                  | 0.0345                |
| 0           | -42                  | 0.0604                |
| 10          | -31                  | 0.0446                |
| 20          | 8                    | -0.0115               |
| 30          | -21                  | 0.0302                |
| 40          | 5                    | -0.0072               |
| 50          | -36                  | 0.0518                |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

## WCDMA\_Band 5\_836.6MHz

## Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | -13                  | 0.0193                |
| 3.8            | -31                  | 0.0461                |
| 3.4            | -7                   | 0.0104                |

## Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -11                  | 0.0163                |
| -20         | -15                  | 0.0223                |
| -10         | -31                  | 0.0461                |
| 0           | -34                  | 0.0505                |
| 10          | -15                  | 0.0223                |
| 20          | 1                    | -0.0015               |
| 30          | 7                    | -0.0104               |
| 40          | -36                  | 0.0535                |
| 50          | -20                  | 0.0297                |

|              |                      |           |        |
|--------------|----------------------|-----------|--------|
| Product      | Module               |           |        |
| Test Item    | Frequency Stability  |           |        |
| Test Mode    | Mode 3: WCDMA_Band 5 |           |        |
| Date of Test | 2019/04/02           | Test Site | SR10-H |

## WCDMA\_Band 5\_846.6MHz

## Voltage

| DC Voltage (V) | Frequency Error (Hz) | Frequency Error (ppm) |
|----------------|----------------------|-----------------------|
| 4.2            | 6                    | -0.0089               |
| 3.8            | -13                  | 0.0193                |
| 3.4            | -35                  | 0.0520                |

## Temperature

| Temperature | Frequency Error (Hz) | Frequency Error (ppm) |
|-------------|----------------------|-----------------------|
| -30         | -5                   | 0.0074                |
| -20         | -40                  | 0.0594                |
| -10         | 2                    | -0.0030               |
| 0           | 12                   | -0.0178               |
| 10          | 18                   | -0.0267               |
| 20          | -42                  | 0.0624                |
| 30          | -39                  | 0.0579                |
| 40          | -4                   | 0.0059                |
| 50          | 24                   | -0.0357               |