



# FCC/IC Test Report

FOR

Sony Mobile Communication AB

Type Number: PM-0745-BV

Smart Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/II/IV/V/VIII;  
LTE FDD1/2/3/4/5/7/8; WLAN b/g/n/a/ac; BT 4.0; RFID; ANT+; A-GPS

FCC ID: PY7PM-0745

IC ID:

47 CFR Part 2, 22, 24, 27

RSS-GEN Issue 3, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 2, RSS-199  
Issue 1

TEST REPORT #: EMC\_CETEC\_063\_13001\_WWAN

DATE: 2014-01-21



FCC:  
A2LA Accredited

IC recognized #  
3462B-1

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## 1 Assessment

The following device was tested against the applicable criteria specified in FCC rules parts 2, 22, 24 and 27 of Title 47 of the Code of Federal Regulations and Industry Canada Standards RSS-GEN Issue 3, RSS-132 Issue 3, RSS-133 Issue 6 and RSS-139 Issue 2, RSS-199 Issue 1.

No deviations were ascertained during the course of the tests performed.

| Company                      | Description                                                                                                                                      | Type #     |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Sony Mobile Communication AB | Smart Phone GPRS/EGPRS 850/900/1800/1900;<br>UMTS HSPA FDDI/II/IV/V/VIII; LTE<br>FDD1/2/3/4/5/7/8; WLAN b/g/n/a/ac; BT 4.0;<br>RFID; ANT+; A-GPS | PM-0745-BV |

### Responsible for Testing Laboratory:

| 2014-01-21 | Compliance | Franz Engert<br>(Manager Compliance) |           |
|------------|------------|--------------------------------------|-----------|
| Date       | Section    | Name                                 | Signature |

### Responsible for the Report:

| 2014-01-21 | Compliance | Josie Sabado<br>(Test Lab Manager) |           |
|------------|------------|------------------------------------|-----------|
| Date       | Section    | Name                               | Signature |

The test results of this test report relate exclusively to the test item specified in Section 3. CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the Test Report

|                                    |                                                        |
|------------------------------------|--------------------------------------------------------|
| <b>Company Name:</b>               | CETECOM Inc.                                           |
| <b>Department:</b>                 | Compliance                                             |
| <b>Address:</b>                    | 411 Dixon Landing Road<br>Milpitas, CA 95035<br>U.S.A. |
| <b>Telephone:</b>                  | +1 (408) 586 6200                                      |
| <b>Fax:</b>                        | +1 (408) 586 6299                                      |
| <b>Test Lab Manager:</b>           | Franz Engert                                           |
| <b>Responsible Project Leader:</b> | Kenneth Reyes                                          |

### 2.2 Identification of the Client

|                          |                                       |
|--------------------------|---------------------------------------|
| <b>Applicant's Name:</b> | Sony Mobile Communication AB          |
| <b>Address:</b>          | Nya Vattentornet<br>22188 Lund/SWEDEN |
| <b>Contact Person:</b>   | Mikael Nilsson                        |
| <b>Phone No.</b>         | +46 7 03 22 75 03                     |
| <b>E-mail:</b>           | Micke.nilsson@sonymobile.com          |

### 2.3 Identification of the Manufacturer

|                               |                 |
|-------------------------------|-----------------|
| <b>Manufacturer's Name:</b>   | Same as client. |
| <b>Manufacturers Address:</b> |                 |
| <b>City/Zip Code</b>          |                 |
| <b>Country</b>                |                 |

### 3 Equipment under Test (EUT)

#### 3.1 Specification of the Equipment under Assessment

|                                                     |                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Description:</b>                         | Smart Phone GPRS/EGPRS 850/900/1800/1900; UMTS HSPA FDDI/II/IV/V/VIII; LTE FDD1/2/3/4/5/7/8; WLAN b/g/n/a/ac; BT 4.0; RFID; ANT+; A-GPS                                                                                                                                                                       |
| <b>Type Number:</b>                                 | PM-0745-BV                                                                                                                                                                                                                                                                                                    |
| <b>FCC-ID:</b>                                      | PY7PM-0745                                                                                                                                                                                                                                                                                                    |
| <b>IC ID:</b>                                       |                                                                                                                                                                                                                                                                                                               |
| <b>Technology / Type(s) of Modulation:</b>          | GMSK; 8-PSK, QPSK, 16-QAM                                                                                                                                                                                                                                                                                     |
| <b>Integrated Module Info:</b>                      | <ol style="list-style-type: none"> <li>Cellular Radio Module <ul style="list-style-type: none"> <li>GSM/EGPRS 850 / 900 / 1800 / 1900</li> <li>UMTS HSPA FDD II/IV/V</li> <li>LTE FDD 2/4/5/7</li> </ul> </li> </ol>                                                                                          |
| <b>Operating Frequency Ranges (MHz) / Channels:</b> | GSM 850: 824.2 MHz -848.8 MHz;<br>PCS 1900: 1850.2 MHz -1909.8 MHz;<br>FDD II: 826.4 MHz - 846.6 MHz;<br>FDD V: 1852.4 MHz -1907.6 MHz;<br>FDD IV: 1712.4 MHz -1752.5 MHz;<br>LTE 2: 1850.7 MHz -1909.3 MHz;<br>LTE 4: 1710.7 MHz-1754.3 MHz;<br>LTE 5: 824.7 MHz-848.3 MHz;<br>LTE 7: 2502.5 MHz-2567.5 MHz; |
| <b>Antenna info:</b>                                | Integrated antenna                                                                                                                                                                                                                                                                                            |
| <b>Rated Operating Voltage Range:</b>               | Vmin: 3.3V/ Vnom: 3.7V/ Vmax: 4.2V<br><br>Li-polymer Battery                                                                                                                                                                                                                                                  |
| <b>Rated Operating Temperature Range:</b>           | -30°C ~ +60°C                                                                                                                                                                                                                                                                                                 |
| <b>Other Radios included:</b>                       | <ol style="list-style-type: none"> <li>WLAN 802.11 b/g/n/a/ac<br/>2.4 and 5.0 GHz bands of operation</li> <li>Bluetooth 2.1+ EDR</li> <li>Bluetooth 4.0 (LE)</li> <li>ANT+</li> <li>GPS 1575.42 MHz</li> <li>NFC (13.56 MHz)</li> </ol>                                                                       |

### **3.2 Identification of the Equipment under Test (EUT)**

| EUT # | IMEI            | Type             | HW/SW Version        | Sample   |
|-------|-----------------|------------------|----------------------|----------|
| 1     | 004402451808277 | 40YD36JI180V58B1 | AP1.1 / 17.0.A.0.276 | Radiated |

### **3.3 Accessories of the EUT**

| AC # | Type          | Manufacturer  | Type             | S/N                         |
|------|---------------|---------------|------------------|-----------------------------|
| 1    | AC/DC Adapter | Sony Ericsson | CAA-0002016-JP B | 11 11W 27 408396<br>SEM0205 |

### **3.4 Environmental conditions during Test:**

The following environmental conditions were maintained during the course of testing:  
Ambient Temperature: 20-25°C  
Relative Humidity: 40-60%

### **3.5 Dates of Testing:**

12/23/2013 – 12/27/2013

### **3.6 Other Testing Notes:**

1. The different cellular operation modes of the EUT as required for testing are controlled through the link with the Digital Radio Communication Tester (R&S CMU200/CMW500).
2. The EUT is tested on the low, mid and high channel of each of the supported cellular operation modes.
3. This test report only contains **radiated data result** as applicable to the specified rule parts.

#### **4 Subject of Investigation**

The objective of the measurements applied by CETECOM Inc. was to establish compliance of the EUT as described under Ch. 3 of this Test Report, with the applicable criteria specified in

- 47 CFR Part 2: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission Frequency allocations and radio treaty matters; general rules and regulations.
- 47 CFR Part 22: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 22- Public mobile services
- 47 CFR Part 24: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 24- Personal communication services
- 47 CFR Part 27: Title 47 of the Code of Federal Regulations: Chapter I-Federal Communications Commission subchapter B- common carrier services; Part 27- Miscellaneous wireless communication services
- RSS-GEN- Issue 3: General Requirements and Information for the Certification of Radio Apparatus
- RSS-132- Issue 3: Spectrum management and telecommunication policy- Radio Standards Specifications Cellular telephones employing new technologies operating in the bands 824-849MHz and 869-894MHz
- RSS-133- Issue 6: Spectrum management and telecommunication policy- Radio Standards Specifications- 2GHz personal communication services
- RSS-139- Issue 2: Spectrum management and telecommunication policy- Radio Standards Specifications- Advance wireless services equipment operating in the bands 1710-1755MHz and 2110-2155MHz
- RSS-199 Issue 1: Broadband Radio Service (BRS) equipment operating in the band 2500-2690MHz.

This test report is to support requests for new FCC and IC equipment authorizations under:

**FCC ID: PY7PM-0745**

**IC ID:**

**Type Number: PM-0745-BV**

## 5 Summary of Measurement Results

GSM 850  
UMTS Band V  
LTE Band 5

| Specifications                                         | Test Case                    | Temperature and Voltage Conditions | Mode        | Pass                     | Fail                     | NA                       | NP                       | Result   |
|--------------------------------------------------------|------------------------------|------------------------------------|-------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|
| §2.1046<br>§22.913 (a)<br>RSS-GEN, 4.8<br>RSS-132, 5.4 | RF Output Power              | Nominal                            | GSM 850     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band V | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| RSS-132 6.4                                            | Peak-to-Average Ratio        | Nominal                            | GSM 850     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band V | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1055<br>§22.355<br>RSS-GEN, 4.7<br>RSS-132 5.3      | Frequency Stability          | Nominal                            | GSM 850     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band V | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1049<br>§22.917(b)<br>RSS-GEN, 4.6                  | Occupied Bandwidth           | Nominal                            | GSM 850     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band V | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1051<br>§22.917<br>RSS-GEN, 4.9<br>RSS-132, 5.5     | Band Edge Compliance         | Nominal                            | GSM 850     | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | UMTS Band V | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | LTE Band 5  | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
| §2.1051<br>§22.917<br>RSS-GEN, 4.9<br>RSS-132, 5.5     | Conducted Spurious Emissions | Nominal                            | GSM 850     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band V | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 5  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1053<br>§22.917<br>RSS-GEN, 4.9<br>RSS-132, 5.5     | Radiated Spurious Emissions  | Nominal                            | GSM 850     | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | UMTS Band V | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | LTE Band 5  | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |

**Note:** NA= Not Applicable; NP= Not Performed.  
Note 1: Testing not performed by CETECOM Inc.

**GSM 1900  
UMTS Band II  
LTE Band 2**

| Specifications                                         | Test Case                    | Temperature and Voltage Conditions | Mode         | Pass                     | Fail                     | NA                       | NP                       | Result   |
|--------------------------------------------------------|------------------------------|------------------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|
| §2.1046<br>§24.232 (a)<br>RSS-GEN, 4.8<br>RSS-133, 6.4 | RF Output Power              | Nominal                            | GSM 1900     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §24.232 (d)<br>RSS-133 6.4                             | Peak-to-Average Ratio        | Nominal                            | GSM 1900     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1055<br>§24.235<br>RSS-GEN, 4.7<br>RSS-133, 6.3     | Frequency Stability          | Nominal                            | GSM 1900     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1049<br>RSS-GEN, 4.6                                | Occupied Bandwidth           | Nominal                            | GSM 1900     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1051<br>§24.238<br>RSS-GEN, 4.9<br>RSS-133, 6.5     | Band Edge Compliance         | Nominal                            | GSM 1900     | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | UMTS Band II | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | LTE Band 2   | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
| §2.1051<br>§24.238<br>RSS-GEN, 4.9<br>RSS-133, 6.5     | Conducted Spurious Emissions | Nominal                            | GSM 1900     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | UMTS Band II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
|                                                        |                              |                                    | LTE Band 2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | Note 1   |
| §2.1053<br>§24.238<br>RSS-GEN, 4.9<br>RSS-133, 6.5     | Radiated Spurious Emissions  | Nominal                            | GSM 1900     | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | UMTS Band II | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |
|                                                        |                              |                                    | LTE Band 2   | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies |

**Note:** NA= Not Applicable; NP= Not Performed.  
Note 1: Testing not performed by CETECOM Inc.

**UMTS Band IV**  
**LTE Band 4**  
**LTE Band 7**

| Specifications                                          | Test Case                    | Temperature and Voltage Conditions | Mode         | Pass                     | Fail                     | NA                       | NP                       | Result    |
|---------------------------------------------------------|------------------------------|------------------------------------|--------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| §2.1046<br>§27.50(d)(4)<br>RSS-GEN, 4.8<br>RSS-139(6.4) | RF Output Power              | Nominal                            | UMTS Band IV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
|                                                         |                              |                                    | LTE Band 4/7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
| §27.50(d)(5)<br>RSS-GEN, 4.8<br>RSS-139(6.4)            | Peak-to-average Ratio        | Nominal                            | UMTS Band IV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
|                                                         |                              |                                    | LTE Band 4/7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
| §2.1055<br>§27.54<br>RSS-GEN, 4.7<br>RSS-139(6.3)       | Frequency Stability          | Nominal                            | UMTS Band IV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
|                                                         |                              |                                    | LTE Band 4/7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
| §2.1049<br>§27.53(h)<br>RSS-Gen, 4.6                    | Occupied Bandwidth           | Nominal                            | UMTS Band IV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
|                                                         |                              |                                    | LTE Band 4/7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
| §2.1051<br>§27.53(h)<br>RSS-GEN, 4.9<br>RSS-139 6.5.1   | Band Edge Compliance         | Nominal                            | UMTS Band IV | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies  |
|                                                         |                              |                                    | LTE Band 4/7 | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies  |
| §2.1051<br>§27.53(h)<br>RSS-GEN, 4.9<br>RSS-139 6.5     | Conducted Spurious Emissions | Nominal                            | UMTS Band IV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
|                                                         |                              |                                    | LTE Band 4/7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ■                        | See Note1 |
| §2.1053<br>§27.53(h)<br>RSS-GEN, 4.9<br>RSS-139 6.5     | Radiated Spurious Emissions  | Nominal                            | UMTS Band IV | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies  |
|                                                         |                              |                                    | LTE Band 4/7 | ■                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Complies  |

**Note:** NA= Not Applicable;

Note 1: Testing not performed by CETECOM Inc.

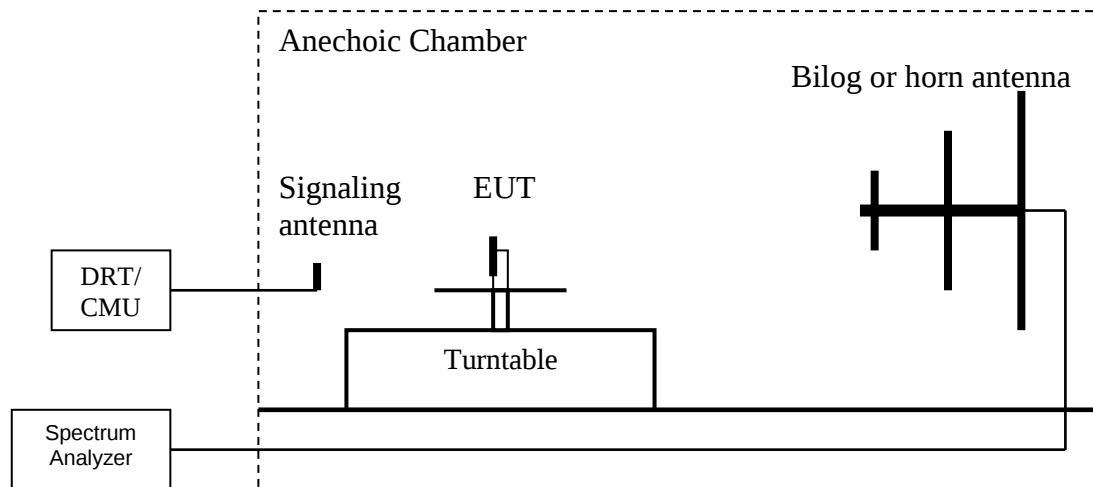
## 6 Measurements

Testing is performed according to the guidelines provided in *FCC publication (KDB) 971168 D01 Power Meas License Digital Systems v02r01: Measurement Guidance for Certification of Licensed Digital Transmitters June 2013* and according to relevant parts of TIA-603C 2004 as detailed below.

### 6.1 Radiated Output Power Measurement

#### 6.1.1 Radiated Output Power Measurement procedure

Ref: TIA-603C 2004 -2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in center of the turn table.
2. Adjust the settings of the Digital Radio Communication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:  
**ERP (dBm) = LVL (dBm) + LOSS (dB)**
8. Determine the EIRP using the following equation:  
**EIRP (dBm) = ERP (dBm) + 2.14 (dB)**
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.
10. Radiated emission measurements were made in GMSK (1 uplink slot) and UMTS RMC 12.2k

11. For LTE, EIRP measurement were made on 10MHz bandwidth with Resource Block #1 and Resource Block Start 0 as this was determined to be the worst case settings.

**6.1.2 Measurement Uncertainty**

+/- 3 dB

**6.1.3 Test Conditions:**

Tnom: 20°C; Vnom: 3.7 V

## 6.1.4 Test Results

### 6.1.4.1 RF Power Output 850MHz band

**Limits:**

FCC: Peak Output Power  $\leq 38.45$  dBm (7W), ERP

IC: Average EIRP  $\leq 40.60$  dBm (11.5W)

| GSM 850: GMSK Mode |                |
|--------------------|----------------|
| Frequency (MHz)    | Radiated Power |
|                    | ERP (dBm) peak |
| 824.2              | 26.28          |
| 836.6              | 26.14          |
| 848.8              | 25.44          |

| EGPRS 850: 8PSK Mode |                |
|----------------------|----------------|
| Frequency (MHz)      | Radiated Power |
|                      | ERP (dBm) peak |
| 824.2                | 23.53          |
| 836.6                | 23.50          |
| 848.8                | 22.52          |

| FDD V: UMTS Mode |                |
|------------------|----------------|
| Frequency (MHz)  | Radiated Power |
|                  | ERP (dBm) peak |
| 826.4            | 18.50          |
| 836.6            | 18.86          |
| 846.6            | 19.41          |

| FDD 5: LTE Mode                                       |                 |                         |                       |                   |                       |                       |                   |
|-------------------------------------------------------|-----------------|-------------------------|-----------------------|-------------------|-----------------------|-----------------------|-------------------|
| RB Configuration: #RB = 1 / Start RB = 0 (worst case) |                 |                         |                       |                   |                       |                       |                   |
| Bandwidth (MHz)                                       | Frequency (MHz) | Radiated Power QPSK     |                       |                   | Radiated Power 16-QAM |                       |                   |
|                                                       |                 | ERP (dBm) peak measured | Peak to average ratio | ERP (dBm) average | ERP (dBm) measured    | Peak to average ratio | ERP (dBm) average |
| 1.4                                                   | 824.7           | 20.24                   | 4.68                  | 15.56             | 20.26                 | 5.32                  | 14.94             |
|                                                       | 836.5           | 20.33                   | 5.67                  | 14.66             | 20.74                 | 4.74                  | 16                |
|                                                       | 848.3           | 20.75                   | 4.49                  | 16.26             | 20.87                 | 5.68                  | 15.19             |
| 3                                                     | 825.5           | 19.54                   | 5.35                  | 14.19             | 19.35                 | 4.72                  | 14.63             |
|                                                       | 836.5           | 20.00                   | 4.71                  | 15.29             | 20.07                 | 5.64                  | 14.43             |
|                                                       | 847.5           | 20.97                   | 5.73                  | 15.24             | 21.00                 | 4.77                  | 16.23             |
| 5                                                     | 826.5           | 19.50                   | 4.71                  | 14.79             | 19.41                 | 5.50                  | 13.91             |
|                                                       | 836.5           | 19.50                   | 5.02                  | 14.48             | 19.65                 | 4.77                  | 14.88             |
|                                                       | 846.5           | 21.37                   | 4.87                  | 16.5              | 21.24                 | 5.88                  | 15.36             |
| 10                                                    | 829.0           | 19.21                   | 5.20                  | 14.01             | 19.10                 | 4.53                  | 14.57             |
|                                                       | 836.5           | 19.22                   | 4.50                  | 14.72             | 19.23                 | 5.06                  | 14.17             |
|                                                       | 844.0           | 20.28                   | 5.69                  | 14.59             | 20.41                 | 4.66                  | 15.75             |

**6.1.4.1.1 Test Verdict**  
Pass.

#### 6.1.4.2 RF Power Output 1900MHz band

**Limits:**

FCC: Peak Output Power  $\leq 33$  dBm (2W), EIRP

IC: Average EIRP  $\leq 30$  dBm (2W)

| GSM 1900: GMSK Mode |                 |
|---------------------|-----------------|
| Frequency (MHz)     | Radiated Power  |
|                     | EIRP (dBm) peak |
| 1850.2              | 27.81           |
| 1880                | 28.53           |
| 1909.8              | 28.59           |

| EGPRS 1900: 8PSK Mode |                 |
|-----------------------|-----------------|
| Frequency (MHz)       | Radiated Power  |
|                       | EIRP (dBm) peak |
| 1850.2                | 23.32           |
| 1880                  | 24.31           |
| 1909.8                | 24.76           |

| FDD II: UMTS Mode |                 |
|-------------------|-----------------|
| Frequency (MHz)   | Radiated Power  |
|                   | EIRP (dBm) peak |
| 1852.4            | 22.48           |
| 1880              | 24.11           |
| 1907.6            | 22.63           |

| FDD 2: LTE Mode                                       |                 |                         |                       |                    |                         |                       |                    |
|-------------------------------------------------------|-----------------|-------------------------|-----------------------|--------------------|-------------------------|-----------------------|--------------------|
| RB Configuration: #RB = 1 / Start RB = 0 (worst case) |                 |                         |                       |                    |                         |                       |                    |
| Bandwidth (MHz)                                       | Frequency (MHz) | Radiated Power QPSK     |                       |                    | Radiated Power 16-QAM   |                       |                    |
|                                                       |                 | ERP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average | ERP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average |
| 1.4                                                   | 1850.7          | 24                      | 4.3                   | 21.85              | 24.01                   | 5.12                  | 21.04              |
|                                                       | 1880            | 26.12                   | 5.6                   | 22.67              | 26.2                    | 4.74                  | 23.61              |
|                                                       | 1909.3          | 23.81                   | 4.47                  | 21.49              | 23.4                    | 5.48                  | 20.07              |
| 3                                                     | 1851.5          | 23.95                   | 5.09                  | 21.01              | 23.77                   | 4.17                  | 21.75              |
|                                                       | 1880            | 26                      | 4.51                  | 23.64              | 25.91                   | 5.25                  | 22.81              |
|                                                       | 1908.5          | 23.35                   | 5.77                  | 19.73              | 23.66                   | 4.56                  | 21.25              |
| 5                                                     | 1852.5          | 23.33                   | 4.19                  | 21.29              | 23.94                   | 5.72                  | 20.37              |
|                                                       | 1880            | 25.25                   | 4.26                  | 23.14              | 25.7                    | 4.73                  | 23.12              |
|                                                       | 1907.5          | 23.2                    | 4.69                  | 20.66              | 23.11                   | 5.61                  | 19.65              |
| 10                                                    | 1855            | 23.37                   | 5.20                  | 20.32              | 23.38                   | 4.28                  | 21.25              |
|                                                       | 1880            | 25.05                   | 4.55                  | 22.65              | 25.15                   | 5.49                  | 21.81              |
|                                                       | 1905            | 23.49                   | 5.44                  | 20.2               | 23.6                    | 4.52                  | 21.23              |
| 15                                                    | 1857.5          | 23.26                   | 4.38                  | 21.03              | 23.81                   | 5.22                  | 20.74              |
|                                                       | 1880            | 25.5                    | 5.43                  | 22.22              | 25.66                   | 4.78                  | 23.03              |
|                                                       | 1902.5          | 21.82                   | 4.80                  | 19.17              | 21.85                   | 5.83                  | 18.17              |
| 20                                                    | 1860            | 23.72                   | 5.40                  | 20.47              | 23.78                   | 4.55                  | 21.38              |
|                                                       | 1880            | 25.64                   | 5.02                  | 22.77              | 23.93                   | 5.66                  | 20.42              |
|                                                       | 1900            | 23.29                   | 5.30                  | 20.14              | 23.32                   | 4.93                  | 20.54              |

**6.1.4.2.1 Test Verdict:**  
Pass

#### 6.1.4.3 RF Power Output 1700MHz band

**Limits:**

FCC: Peak Output Power < 30 dBm (1W), EIRP

IC: Average EIRP <= 30 dBm (1W)

| FDD IV: UMTS Mode |                |
|-------------------|----------------|
| Frequency (MHz)   | Radiated Power |
|                   | EIRP (dBm)     |
| 1712.4            | 21.99          |
| 1732.6            | 22.15          |
| 1752.6            | 21.74          |

| FDD 4: LTE Mode                                       |                 |                         |                       |                    |                         |                       |                    |
|-------------------------------------------------------|-----------------|-------------------------|-----------------------|--------------------|-------------------------|-----------------------|--------------------|
| RB Configuration: #RB = 1 / Start RB = 0 (worst case) |                 |                         |                       |                    |                         |                       |                    |
| Bandwidth (MHz)                                       | Frequency (MHz) | Radiated Power QPSK     |                       |                    | Radiated Power 16-QAM   |                       |                    |
|                                                       |                 | ERP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average | ERP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average |
| 1.4                                                   | 1710.7          | 24.27                   | 4.86                  | 21.56              | 24.25                   | 5.54                  | 20.86              |
|                                                       | 1732.5          | 21.57                   | 4.87                  | 18.85              | 21.57                   | 3.64                  | 20.08              |
|                                                       | 1754.3          | 21.68                   | 4.55                  | 19.28              | 21.70                   | 5.54                  | 18.31              |
| 3                                                     | 1711.5          | 24.25                   | 5.55                  | 20.85              | 24.37                   | 4.80                  | 21.72              |
|                                                       | 1732.5          | 21.42                   | 3.59                  | 19.98              | 22.03                   | 4.78                  | 19.4               |
|                                                       | 1753.5          | 21.71                   | 5.97                  | 17.89              | 21.75                   | 4.89                  | 19.01              |
| 5                                                     | 1712.5          | 24.23                   | 4.85                  | 21.53              | 24.55                   | 5.68                  | 21.02              |
|                                                       | 1732.5          | 21.85                   | 4.27                  | 19.73              | 21.33                   | 3.7                   | 19.78              |
|                                                       | 1752.5          | 21.22                   | 4.98                  | 18.39              | 21.03                   | 5.98                  | 17.2               |
| 10                                                    | 1715            | 24.74                   | 5.56                  | 21.33              | 24.63                   | 4.93                  | 21.85              |
|                                                       | 1732.5          | 22.02                   | 3.91                  | 20.26              | 22.08                   | 5.13                  | 19.1               |
|                                                       | 1750            | 21.35                   | 5.96                  | 17.54              | 21.26                   | 4.88                  | 18.53              |
| 15                                                    | 1717.5          | 24.59                   | 4.99                  | 21.75              | 24.20                   | 5.62                  | 20.73              |
|                                                       | 1732.5          | 22.59                   | 4.88                  | 19.86              | 23.21                   | 4.17                  | 21.19              |

|           |               |       |      |       |       |      |       |
|-----------|---------------|-------|------|-------|-------|------|-------|
|           | <b>1747.5</b> | 21.56 | 4.53 | 19.18 | 21.68 | 5.71 | 18.12 |
| <b>20</b> | <b>1720</b>   | 24.48 | 5.76 | 20.87 | 24.01 | 4.91 | 21.25 |
|           | <b>1732.5</b> | 22.53 | 4.55 | 20.13 | 23.29 | 5.32 | 20.12 |
|           | <b>1745</b>   | 20.41 | 4.75 | 17.81 | 20.54 | 3.99 | 18.7  |

**Test Verdict**  
Pass.

#### 6.1.4.4 RF Power Output 2600MHz band

**Limits:**

FCC: Peak Output Power < 30 dBm (1W), EIRP

IC: Average EIRP <= 30 dBm (1W)

| FDD 7: LTE Mode                                       |                 |                          |                       |                    |                          |                       |                    |
|-------------------------------------------------------|-----------------|--------------------------|-----------------------|--------------------|--------------------------|-----------------------|--------------------|
| RB Configuration: #RB = 1 / Start RB = 0 (worst case) |                 |                          |                       |                    |                          |                       |                    |
| Bandwidth (MHz)                                       | Frequency (MHz) | Radiated Power QPSK      |                       |                    | Radiated Power 16-QAM    |                       |                    |
|                                                       |                 | EIRP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average | EIRP (dBm) peak measured | Peak to average ratio | EIRP (dBm) average |
| 5                                                     | 2502.5          | 26.05                    | 4.5                   | 21.55              | 27.74                    | 5.4                   | 22.34              |
|                                                       | 2535            | 26.87                    | 4.4                   | 22.47              | 27.00                    | 4.0                   | 23                 |
|                                                       | 2567.5          | 25.58                    | 4.7                   | 20.88              | 26.14                    | 4.7                   | 21.44              |
| 10                                                    | 2505            | 26.50                    | 5.4                   | 21.1               | 27.88                    | 4.7                   | 23.18              |
|                                                       | 2535            | 26.89                    | 4.1                   | 22.79              | 27.36                    | 5.2                   | 22.16              |
|                                                       | 2565            | 24.84                    | 4.9                   | 19.94              | 26.60                    | 4.7                   | 21.9               |
| 15                                                    | 2507.5          | 26.00                    | 4.6                   | 21.4               | 27.72                    | 5.4                   | 22.32              |
|                                                       | 2535            | 26.88                    | 4.7                   | 22.18              | 27.29                    | 4.1                   | 23.19              |
|                                                       | 2562.5          | 24.61                    | 4.7                   | 19.91              | 26.59                    | 4.7                   | 21.89              |
| 20                                                    | 2510            | 25.74                    | 5.4                   | 20.34              | 27.38                    | 4.5                   | 22.88              |
|                                                       | 2535            | 26.44                    | 3.9                   | 22.54              | 26.62                    | 4.7                   | 21.92              |
|                                                       | 2560            | 26.19                    | 4.3                   | 21.89              | 26.62                    | 4.7                   | 21.92              |

#### Test Verdict

Pass.

## **6.2 Spurious Emissions Radiated**

### **6.2.1 References**

FCC: CFR Part 2.1053, CFR Part 22.917, CFR Part 24.238, CFR Part 27.53

IC: RSS-Gen Section 4.9; RSS-132 Section 5.5; RSS-133 Section 6.5, RSS-139 Section 6.5, RSS-199 Section 4.5.

### **6.2.2 Measurement requirements:**

#### **6.2.2.1 FCC 2.1053: Field strength of spurious radiation.**

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

#### **6.2.2.2 RSS-Gen 4.9: Transmitter unwanted spurious emissions**

The same parameter, peak power or average power, used for the transmitter output power measurement shall be used for unwanted emission measurements.

The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate or carrier frequency), or from 30 MHz, whichever is the lower, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

### **6.2.3 Limits:**

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

For all power levels +30dBm to 0dBm, this becomes a constant specification of -13dBm.

#### **6.2.3.1 FCC 22.917 Emission limitations for cellular equipment.**

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### **6.2.3.2 FCC 24.238 Emission limitations for Broadband PCS equipment.**

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### **6.2.3.3 RSS-132 Section 5.5.1.1 and RSS-133 Section 6.5.1**

In the first 1.0 MHz band immediately outside and adjacent to the licensee's frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power  $P$  (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB. After the first 1.0 MHz, the power of emissions shall be attenuated below the transmitter output power by at least  $43 + 10 \log_{10}(P)$ , dB, in any 100 kHz bandwidth.

After the first 1.5 MHz, the power of emissions shall be attenuated below the transmitter output power by at least  $43 + 10 \log_{10}(P)$ , dB, in any MHz of bandwidth.

#### **6.2.3.4 RSS-139 Section 6.5**

In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power  $P$  (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB.

After the first 1.0 MHz outside the equipment's operating frequency block, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power  $P$  (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB.

#### **6.2.3.5 RSS-199 Section 4.5**

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

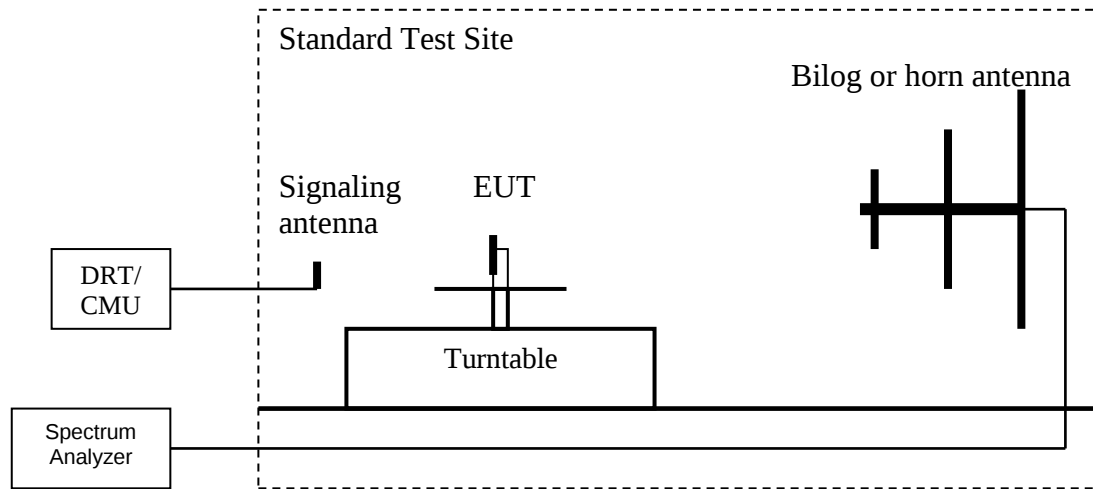
The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power,  $P$  (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB at the channel edges and  $55 + 10 \log_{10}(p)$  at 5.5 MHz away and beyond the channel edges

where  $p$  in (a) and (b) is the transmitter power measured in watts.

#### 6.2.4 Radiated out of band measurement procedure:

Ref: TIA-603C 2004- 2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital Radio Communication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation:  
**Spurious** (dBm) = **LVL** (dBm) + **LOSS** (dB):
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:  
**Spurious** (dBm) = **LVL** (dBm) + **LOSS** (dB):
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.  
(**Note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

## **6.2.5 Sample Calculations for Radiated Measurements**

### **6.2.5.1 Power Measurements using Substitution Procedure:**

The measurement on the Spectrum Analyzer is used as a basis for the Substitution procedure. The EUT is replaced with a Signal Generator and an antenna. The setting on the Signal Generator is varied until the Spectrum Analyzer displays the original reading. EIRP is calculated as-

$$\text{EIRP (dBm)} = \text{Signal Generator setting (dBm)} - \text{Cable Loss (dB)} + \text{Antenna Gain (dBi)}$$

Example:

| Frequency (MHz) | Measured SA (dBμV) | Signal Generator setting (dBm) | Antenna Gain (dBi) | Dipole Gain (dBd) | Cable Loss (dB) | EIRP (dBm) |
|-----------------|--------------------|--------------------------------|--------------------|-------------------|-----------------|------------|
| 1000            | 95.5               | 24.5                           | 6.5                | 0                 | 3.5             | 27.5       |

### **6.2.6 Measurement Survey:**

The site is constructed in accordance with ANSI C63.4 requirements and is recognized by the FCC to be in compliance for a 3m site. The spectrum is scanned from 9kHz to the 10<sup>th</sup> harmonic of the highest frequency generated by the EUT.

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the 850 MHz and 1900 MHz bands of operation.

It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the GSM-850 MHz and the PCS-1900 MHz band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

Radiated emission measurements were made in GMSK (1 uplink slot) and UMTS RMC 12.2k. Additional spot checks in mid channel of operation for all modes were performed with the slimmer battery option of the device.

For radiated measurements, all data in this report shows the worst case emissions data between H/V antenna polarizations and for all 3 orthogonal orientations of the EUT.

Unless mentioned otherwise, the emission signals above the limit line in the plots are from the carrier.

### **6.2.7 Test Conditions:**

Tnom: 20°C; Vnom: 3.6 V

## 6.2.8 Test Results:

### 6.2.8.1 Test Results Transmitter Spurious Emission GSM850

| Harmonic                                                | Tx ch-128<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-190<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-251<br>Freq.<br>(MHz) | Level<br>(dBm) |
|---------------------------------------------------------|-----------------------------|----------------|-----------------------------|----------------|-----------------------------|----------------|
| 2                                                       | 1648.4                      | NF             | 1673.2                      | NF             | 1697.6                      | NF             |
| 3                                                       | 2472.6                      | NF             | 2509.8                      | NF             | 2546.4                      | NF             |
| 4                                                       | 3296.8                      | NF             | 3346.4                      | NF             | 3395.2                      | NF             |
| 5                                                       | 4121                        | NF             | 4183                        | NF             | 4244                        | NF             |
| 6                                                       | 4945.2                      | NF             | 5019.6                      | NF             | 5092.8                      | NF             |
| 7                                                       | 5769.4                      | NF             | 5856.2                      | NF             | 5941.6                      | NF             |
| 8                                                       | 6593.6                      | NF             | 6692.8                      | NF             | 6790.4                      | NF             |
| 9                                                       | 7417.8                      | NF             | 7529.4                      | NF             | 7639.2                      | NF             |
| 10                                                      | 8242                        | NF             | 8366                        | NF             | 8488                        | NF             |
| NF = Noise Floor<br>Measurement Uncertainty: $\pm 3$ dB |                             |                |                             |                |                             |                |

### 6.2.8.2 Test Results Transmitter Spurious Emission UMTS FDD V

| Harmonic                                         | Tx ch-4132<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-4183<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-4233<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|------------------------------|----------------|------------------------------|----------------|------------------------------|----------------|
| 2                                                | 1652.8                       | NF             | 1673.2                       | NF             | 1693.2                       | NF             |
| 3                                                | 2479.2                       | NF             | 2509.8                       | NF             | 2539.8                       | NF             |
| 4                                                | 3305.6                       | NF             | 3346.4                       | NF             | 3386.4                       | NF             |
| 5                                                | 4132                         | NF             | 4183                         | NF             | 4233                         | NF             |
| 6                                                | 4958.4                       | NF             | 5019.6                       | NF             | 5079.6                       | NF             |
| 7                                                | 5784.8                       | NF             | 5856.2                       | NF             | 5926.2                       | NF             |
| 8                                                | 6611.2                       | NF             | 6692.8                       | NF             | 6772.8                       | NF             |
| 9                                                | 7437.6                       | NF             | 7529.4                       | NF             | 7619.4                       | NF             |
| 10                                               | 8264                         | NF             | 8366                         | NF             | 8466                         | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                              |                |                              |                |                              |                |

### 6.2.8.3 Test Results Transmitter Spurious Emission LTE FDD 5 QPSK; 10MHz BW

| Harmonic                                         | Tx ch-<br>20450<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20525<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20600<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                | 1658.0                            | NF             | 1673.0                            | NF             | 1688.0                            | NF             |
| 3                                                | 2487.0                            | NF             | 2509.5                            | NF             | 2532.0                            | NF             |
| 4                                                | 3316.0                            | NF             | 3346.0                            | NF             | 3376.0                            | NF             |
| 5                                                | 4145.0                            | NF             | 4182.5                            | NF             | 4220.0                            | NF             |
| 6                                                | 4974.0                            | NF             | 5019.0                            | NF             | 5064.0                            | NF             |
| 7                                                | 5803.0                            | NF             | 5855.5                            | NF             | 5908.0                            | NF             |
| 8                                                | 6632.0                            | NF             | 6692.0                            | NF             | 6752.0                            | NF             |
| 9                                                | 7461.0                            | NF             | 7528.5                            | NF             | 7596.0                            | NF             |
| 10                                               | 8290.0                            | NF             | 8365.0                            | NF             | 8440.0                            | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                                   |                |                                   |                |                                   |                |

#### 6.2.8.4 Test Results Transmitter Spurious Emission LTE FDD 5 16-QAM; 10MHz BW

| Harmonic                                         | Tx ch-<br>20450<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20525<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20600<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                | 1658.0                            | NF             | 1673.0                            | NF             | 1688.0                            | NF             |
| 3                                                | 2487.0                            | NF             | 2509.5                            | NF             | 2532.0                            | NF             |
| 4                                                | 3316.0                            | NF             | 3346.0                            | NF             | 3376.0                            | NF             |
| 5                                                | 4145.0                            | NF             | 4182.5                            | NF             | 4220.0                            | NF             |
| 6                                                | 4974.0                            | NF             | 5019.0                            | NF             | 5064.0                            | NF             |
| 7                                                | 5803.0                            | NF             | 5855.5                            | NF             | 5908.0                            | NF             |
| 8                                                | 6632.0                            | NF             | 6692.0                            | NF             | 6752.0                            | NF             |
| 9                                                | 7461.0                            | NF             | 7528.5                            | NF             | 7596.0                            | NF             |
| 10                                               | 8290.0                            | NF             | 8365.0                            | NF             | 8440.0                            | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                                   |                |                                   |                |                                   |                |

#### 6.2.8.5 Test Results Transmitter Spurious Emission PCS-1900

| Harmonic                                                      | Tx ch-512<br>Freq.(MHz) | Level<br>(dBm) | Tx ch-661<br>Freq. (MHz) | Level<br>(dBm) | Tx ch-810<br>Freq. (MHz) | Level<br>(dBm) |
|---------------------------------------------------------------|-------------------------|----------------|--------------------------|----------------|--------------------------|----------------|
| 2                                                             | 3700.4                  | NF             | 3760                     | NF             | 3819.6                   | NF             |
| 3                                                             | 5550.6                  | NF             | 5640                     | NF             | 5729.4                   | NF             |
| 4                                                             | 7400.8                  | NF             | 7520                     | NF             | 7639.2                   | NF             |
| 5                                                             | 9251                    | NF             | 9400                     | NF             | 9549                     | NF             |
| 6                                                             | 11101.2                 | NF             | 11280                    | NF             | 11458.8                  | NF             |
| 7                                                             | 12951.4                 | NF             | 13160                    | NF             | 13368.6                  | NF             |
| 8                                                             | 14801.6                 | NF             | 15040                    | NF             | 15278.4                  | NF             |
| 9                                                             | 16651.8                 | NF             | 16920                    | NF             | 17188.2                  | NF             |
| 10                                                            | 18502                   | NF             | 18800                    | NF             | 19098                    | NF             |
| NF = Noise Floor<br>Measurement Uncertainty: $\pm 3\text{dB}$ |                         |                |                          |                |                          |                |

#### 6.2.8.6 Test Results Transmitter Spurious Emission UMTS FDD II

| Harmonic                                               | Tx ch-9262<br>Freq. (MHz) | Level<br>(dBm) | Tx ch-9400<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-9538<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------------|---------------------------|----------------|------------------------------|----------------|------------------------------|----------------|
| 2                                                      | 3704.8                    | NF             | 3760                         | NF             | 3815.2                       | NF             |
| 3                                                      | 5557.2                    | NF             | 5640                         | NF             | 5722.8                       | NF             |
| 4                                                      | 7409.6                    | NF             | 7520                         | NF             | 7630.4                       | NF             |
| 5                                                      | 9262                      | NF             | 9400                         | NF             | 9538                         | NF             |
| 6                                                      | 11114.4                   | NF             | 11280                        | NF             | 11445.6                      | NF             |
| 7                                                      | 12966.8                   | NF             | 13160                        | NF             | 13353.2                      | NF             |
| 8                                                      | 14819.2                   | NF             | 15040                        | NF             | 15260.8                      | NF             |
| 9                                                      | 16671.6                   | NF             | 16920                        | NF             | 17168.4                      | NF             |
| 10                                                     | 18524                     | NF             | 18800                        | NF             | 19076                        | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: $\pm 3$ dB |                           |                |                              |                |                              |                |

### 6.2.8.7 Test Results Transmitter Spurious Emission LTE FDD 2 QPSK; 10MHz BW

| Harmonic                                         | Tx ch-<br>18650<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>18900<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>19150<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                | 5565.0                            | NF             | 5640.0                            | NF             | 5715.0                            | NF             |
| 3                                                | 7420.0                            | NF             | 7520.0                            | NF             | 7620.0                            | NF             |
| 4                                                | 9275.0                            | NF             | 9400.0                            | NF             | 9525.0                            | NF             |
| 5                                                | 11130.0                           | NF             | 11280.0                           | NF             | 11430.0                           | NF             |
| 6                                                | 12985.0                           | NF             | 13160.0                           | NF             | 13335.0                           | NF             |
| 7                                                | 14840.0                           | NF             | 15040.0                           | NF             | 15240.0                           | NF             |
| 8                                                | 16695.0                           | NF             | 16920.0                           | NF             | 17145.0                           | NF             |
| 9                                                | 18550.0                           | NF             | 18800.0                           | NF             | 19050.0                           | NF             |
| 10                                               | 3710.0                            | NF             | 3760.0                            | NF             | 3810.0                            | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                                   |                |                                   |                |                                   |                |

### 6.2.8.8 Test Results Transmitter Spurious Emission LTE FDD 2 16-QAM; 10MHz BW

| Harmonic                                               | Tx ch-<br>18650<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>18900<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>19150<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                      | 5565.0                            | NF             | 5640.0                            | NF             | 5715.0                            | NF             |
| 3                                                      | 7420.0                            | NF             | 7520.0                            | NF             | 7620.0                            | NF             |
| 4                                                      | 9275.0                            | NF             | 9400.0                            | NF             | 9525.0                            | NF             |
| 5                                                      | 11130.0                           | NF             | 11280.0                           | NF             | 11430.0                           | NF             |
| 6                                                      | 12985.0                           | NF             | 13160.0                           | NF             | 13335.0                           | NF             |
| 7                                                      | 14840.0                           | NF             | 15040.0                           | NF             | 15240.0                           | NF             |
| 8                                                      | 16695.0                           | NF             | 16920.0                           | NF             | 17145.0                           | NF             |
| 9                                                      | 18550.0                           | NF             | 18800.0                           | NF             | 19050.0                           | NF             |
| 10                                                     | 3710.0                            | NF             | 3760.0                            | NF             | 3810.0                            | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: $\pm 3$ dB |                                   |                |                                   |                |                                   |                |

#### 6.2.8.9 Test Results Transmitter Spurious Emission UMTS FDD IV

| Harmonic                                         | Tx ch-1312<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-1413<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-1513<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|------------------------------|----------------|------------------------------|----------------|------------------------------|----------------|
| 2                                                | 3424.8                       | NF             | 3465.2                       | NF             | 3505.2                       | NF             |
| 3                                                | 5137.2                       | NF             | 5197.8                       | NF             | 5257.8                       | NF             |
| 4                                                | 6849.6                       | NF             | 6930.4                       | NF             | 7010.4                       | NF             |
| 5                                                | 8562                         | NF             | 8663                         | NF             | 8763                         | NF             |
| 6                                                | 10274.4                      | NF             | 10395.6                      | NF             | 10515.6                      | NF             |
| 7                                                | 11986.8                      | NF             | 12128.2                      | NF             | 12268.2                      | NF             |
| 8                                                | 13699.2                      | NF             | 13860.8                      | NF             | 14020.8                      | NF             |
| 9                                                | 15411.6                      | NF             | 15593.4                      | NF             | 15773.4                      | NF             |
| 10                                               | 17124                        | NF             | 17326                        | NF             | 17526                        | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                              |                |                              |                |                              |                |

#### 6.2.8.10 Test Results Transmitter Spurious Emission LTE FDD 4 QPSK 10MHz BW

| Harmonic                                               | Tx ch-<br>20000<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20175<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20350<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                      | 3430                              | NF             | 3465                              | NF             | 3500                              | NF             |
| 3                                                      | 5145                              | NF             | 5197.5                            | NF             | 5250                              | NF             |
| 4                                                      | 6860                              | NF             | 6930                              | NF             | 7000                              | NF             |
| 5                                                      | 8575                              | NF             | 8662.5                            | NF             | 8750                              | NF             |
| 6                                                      | 10290                             | NF             | 10395                             | NF             | 10500                             | NF             |
| 7                                                      | 12005                             | NF             | 12127.5                           | NF             | 12250                             | NF             |
| 8                                                      | 13720                             | NF             | 13860                             | NF             | 14000                             | NF             |
| 9                                                      | 15435                             | NF             | 15592.5                           | NF             | 15750                             | NF             |
| 10                                                     | 17150                             | NF             | 17325                             | NF             | 17500                             | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: $\pm 3$ dB |                                   |                |                                   |                |                                   |                |

#### 6.2.8.11 Test Results Transmitter Spurious Emission LTE FDD 4 16-QAM 10MHz BW

| Harmonic                                         | Tx ch-<br>20000<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20175<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>20350<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                | 3430                              | NF             | 3465                              | NF             | 3500                              | NF             |
| 3                                                | 5145                              | NF             | 5197.5                            | NF             | 5250                              | NF             |
| 4                                                | 6860                              | NF             | 6930                              | NF             | 7000                              | NF             |
| 5                                                | 8575                              | NF             | 8662.5                            | NF             | 8750                              | NF             |
| 6                                                | 10290                             | NF             | 10395                             | NF             | 10500                             | NF             |
| 7                                                | 12005                             | NF             | 12127.5                           | NF             | 12250                             | NF             |
| 8                                                | 13720                             | NF             | 13860                             | NF             | 14000                             | NF             |
| 9                                                | 15435                             | NF             | 15592.5                           | NF             | 15750                             | NF             |
| 10                                               | 17150                             | NF             | 17325                             | NF             | 17500                             | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                                   |                |                                   |                |                                   |                |

### 6.2.8.12 Test Results Transmitter Spurious Emission LTE FDD 7 QPSK 10MHz BW

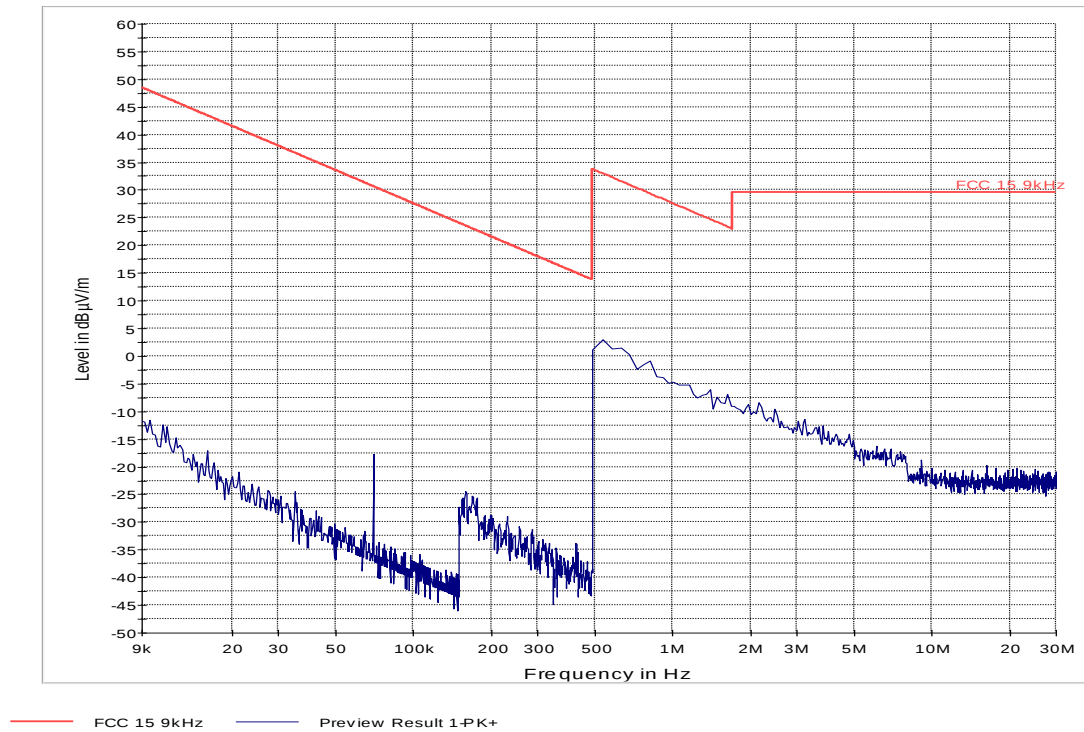
| Harmonic                                         | Tx ch-<br>20800<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>21100<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>21400<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                | 5010                              | NF             | 5070                              | NF             | 5130                              | NF             |
| 3                                                | 7515                              | NF             | 7605                              | NF             | 7695                              | NF             |
| 4                                                | 10020                             | NF             | 10140                             | NF             | 10260                             | NF             |
| 5                                                | 12525                             | NF             | 12675                             | NF             | 12825                             | NF             |
| 6                                                | 15030                             | NF             | 15210                             | NF             | 15390                             | NF             |
| 7                                                | 17535                             | NF             | 17745                             | NF             | 17955                             | NF             |
| 8                                                | 20040                             | NF             | 20280                             | NF             | 20520                             | NF             |
| 9                                                | 22545                             | NF             | 22815                             | NF             | 23085                             | NF             |
| 10                                               | 25050                             | NF             | 25350                             | NF             | 25650                             | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: ±3dB |                                   |                |                                   |                |                                   |                |

### 6.2.8.13 Test Results Transmitter Spurious Emission LTE FDD 7 16-QAM 10MHz BW

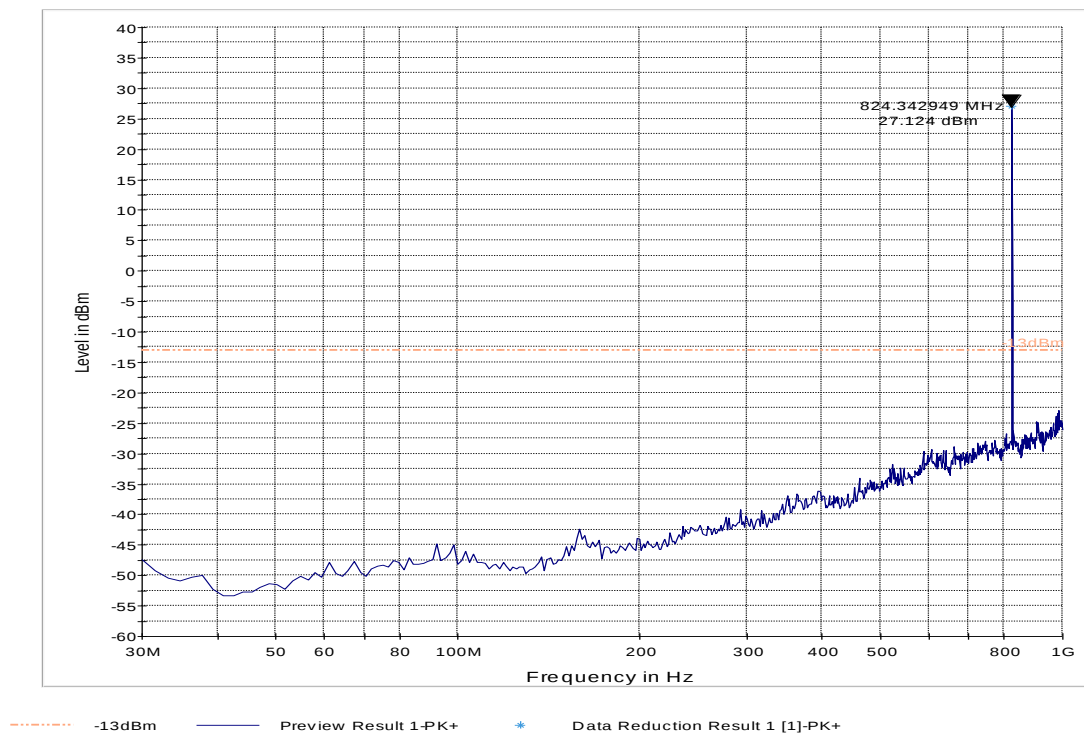
| Harmonic                                               | Tx ch-<br>20800<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>21100<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch-<br>21400<br>Freq.<br>(MHz) | Level<br>(dBm) |
|--------------------------------------------------------|-----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 2                                                      | 5010                              | NF             | 5070                              | NF             | 5130                              | NF             |
| 3                                                      | 7515                              | NF             | 7605                              | NF             | 7695                              | NF             |
| 4                                                      | 10020                             | NF             | 10140                             | NF             | 10260                             | NF             |
| 5                                                      | 12525                             | NF             | 12675                             | NF             | 12825                             | NF             |
| 6                                                      | 15030                             | NF             | 15210                             | NF             | 15390                             | NF             |
| 7                                                      | 17535                             | NF             | 17745                             | NF             | 17955                             | NF             |
| 8                                                      | 20040                             | NF             | 20280                             | NF             | 20520                             | NF             |
| 9                                                      | 22545                             | NF             | 22815                             | NF             | 23085                             | NF             |
| 10                                                     | 25050                             | NF             | 25350                             | NF             | 25650                             | NF             |
| NF= Noise Floor<br>Measurement Uncertainty: $\pm 3$ dB |                                   |                |                                   |                |                                   |                |

#### 6.2.8.14 Plots:

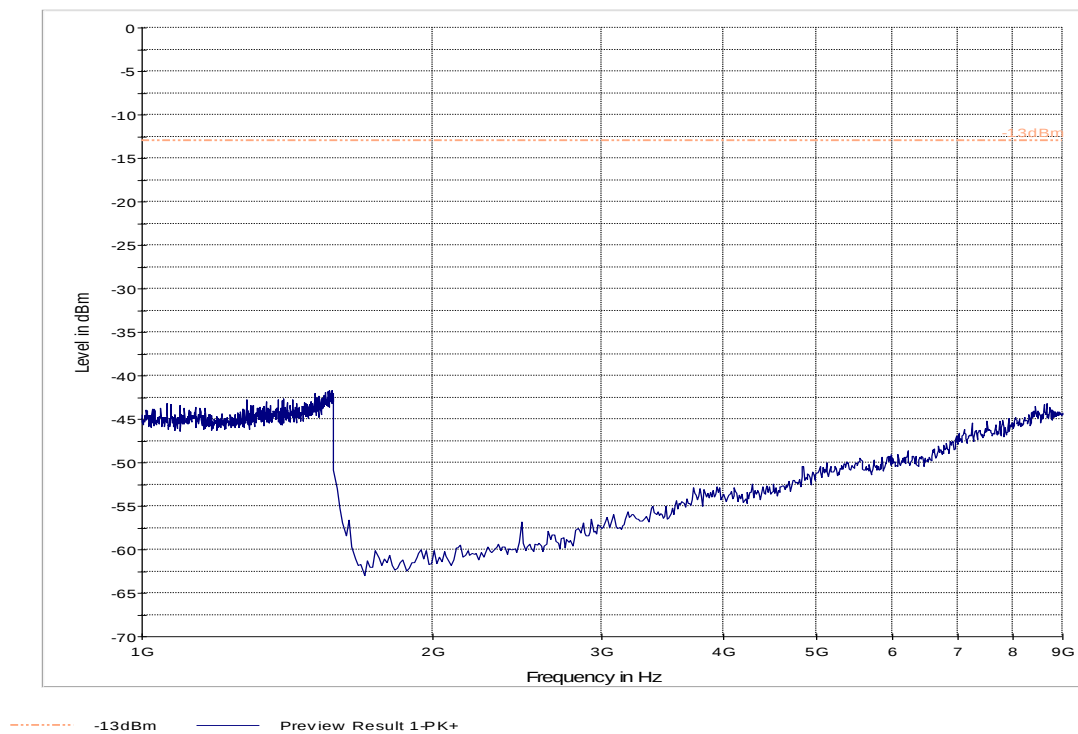
##### Radiated Spurious Emissions (GSM-850) Tx: Low Channel Test results 9kHz-30MHz



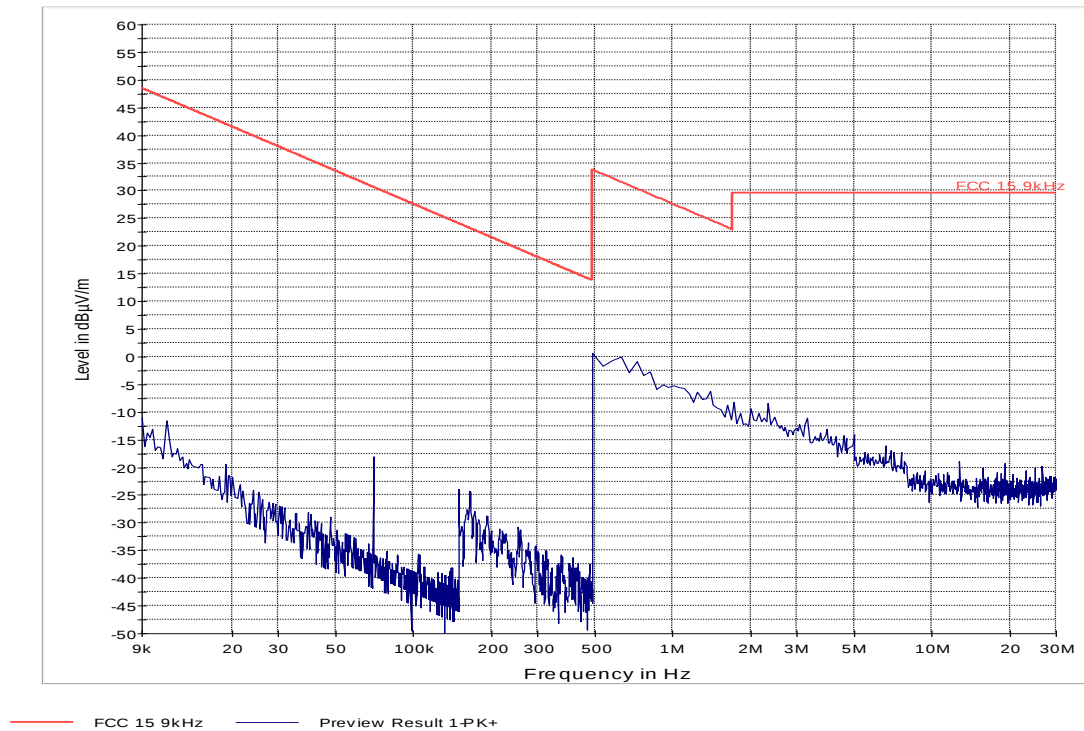
##### Test results 30MHz-1GHz



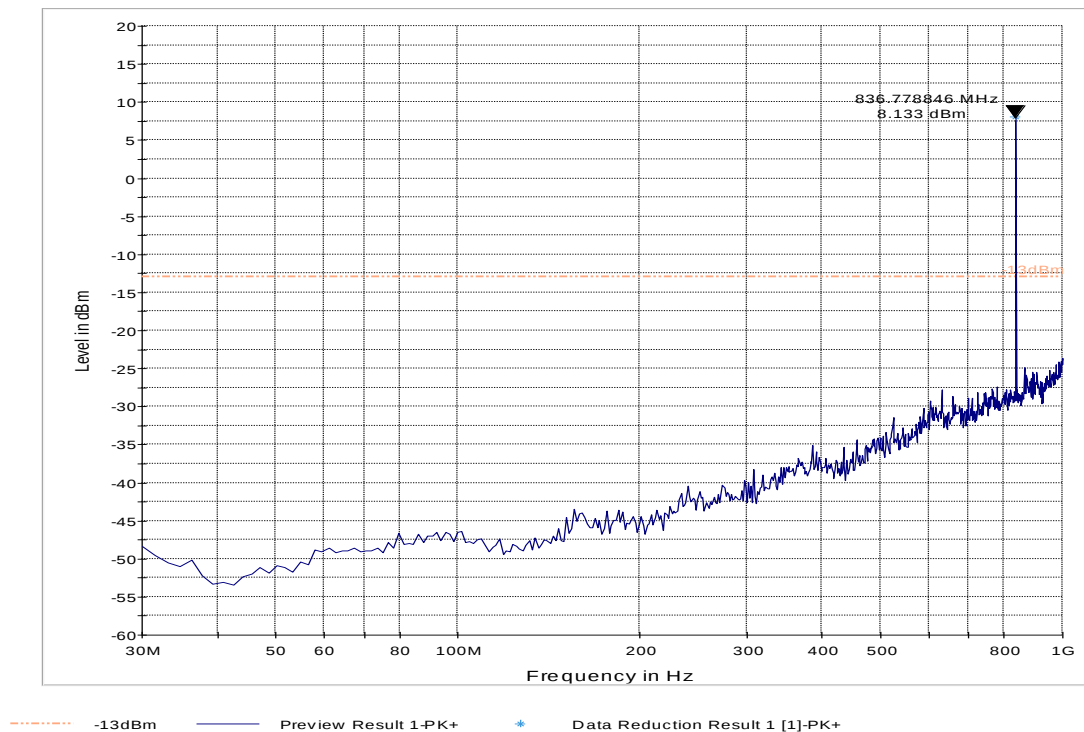
## Test results 1GHz-9GHz



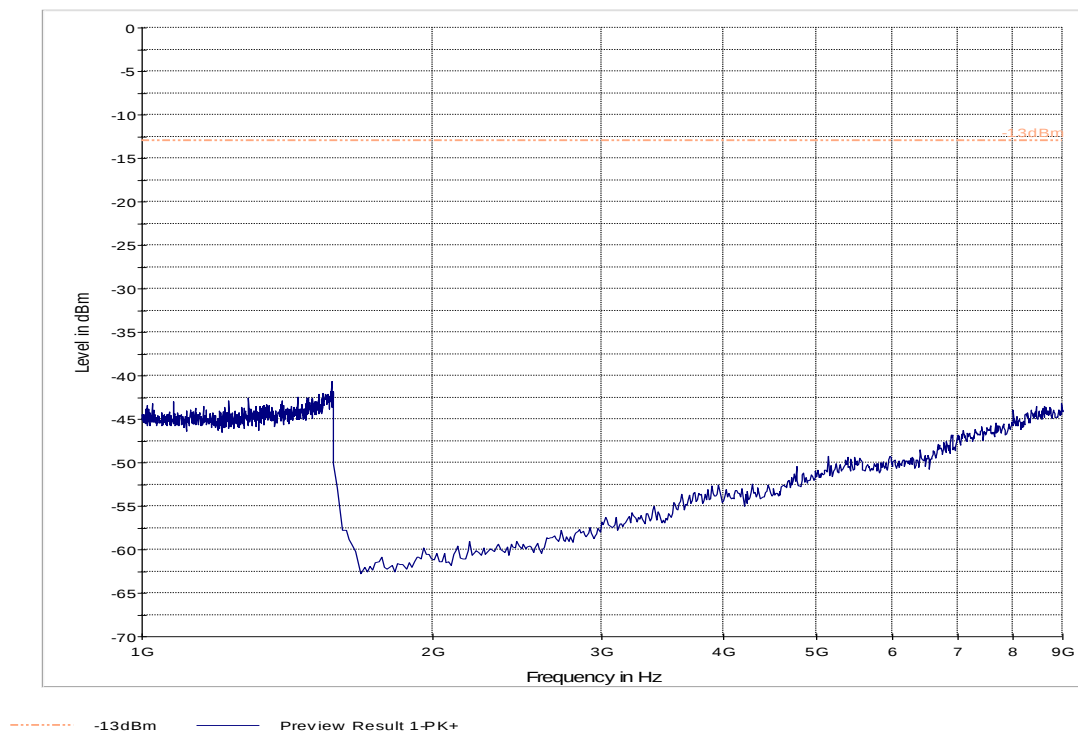
**Radiated Spurious Emissions (GSM-850) Tx: Mid Channel**  
**Test results 9kHz-30MHz**



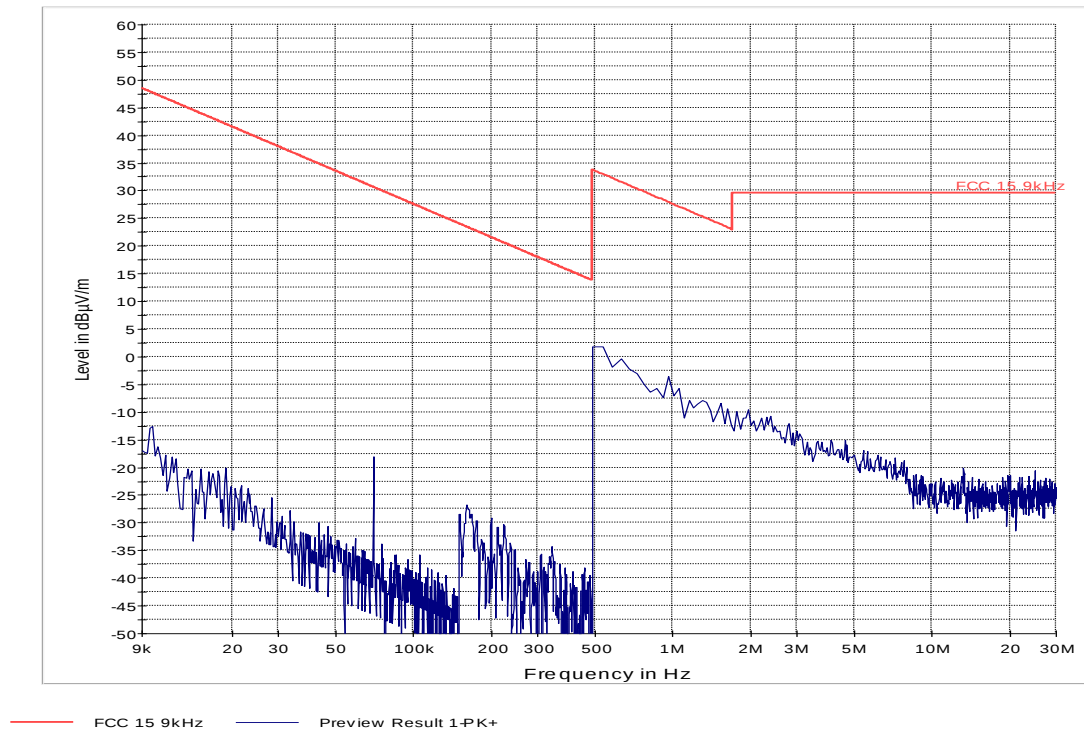
**Test results 30MHz-1GHz**



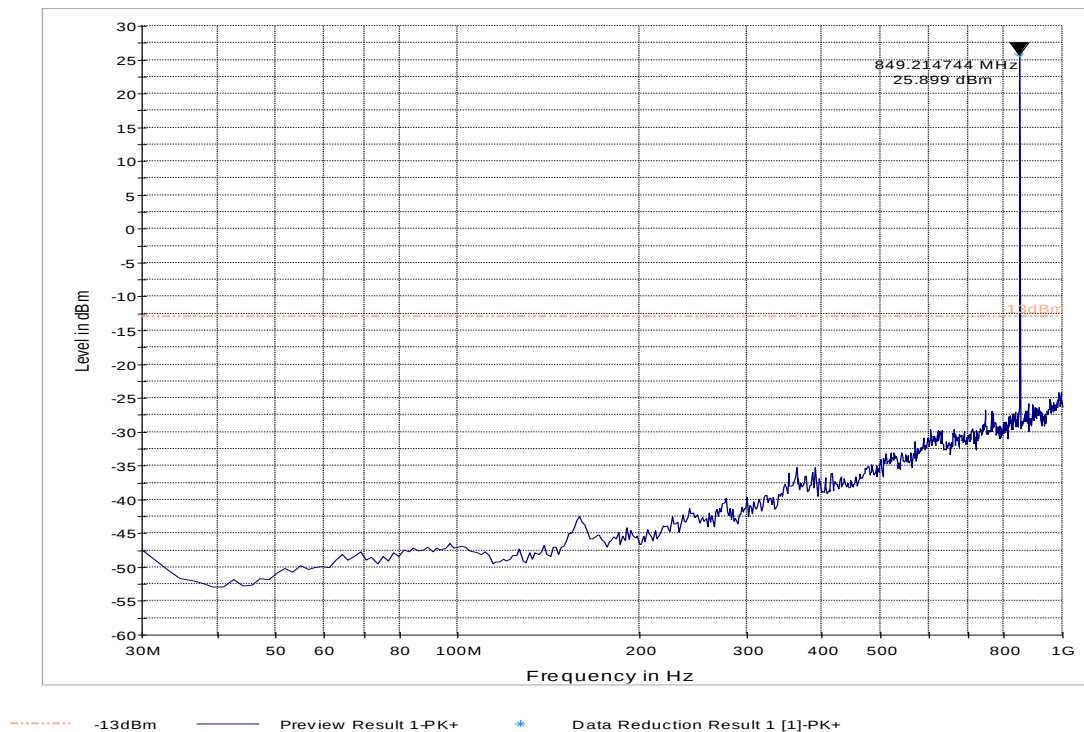
## Test results 1GHz-9GHz



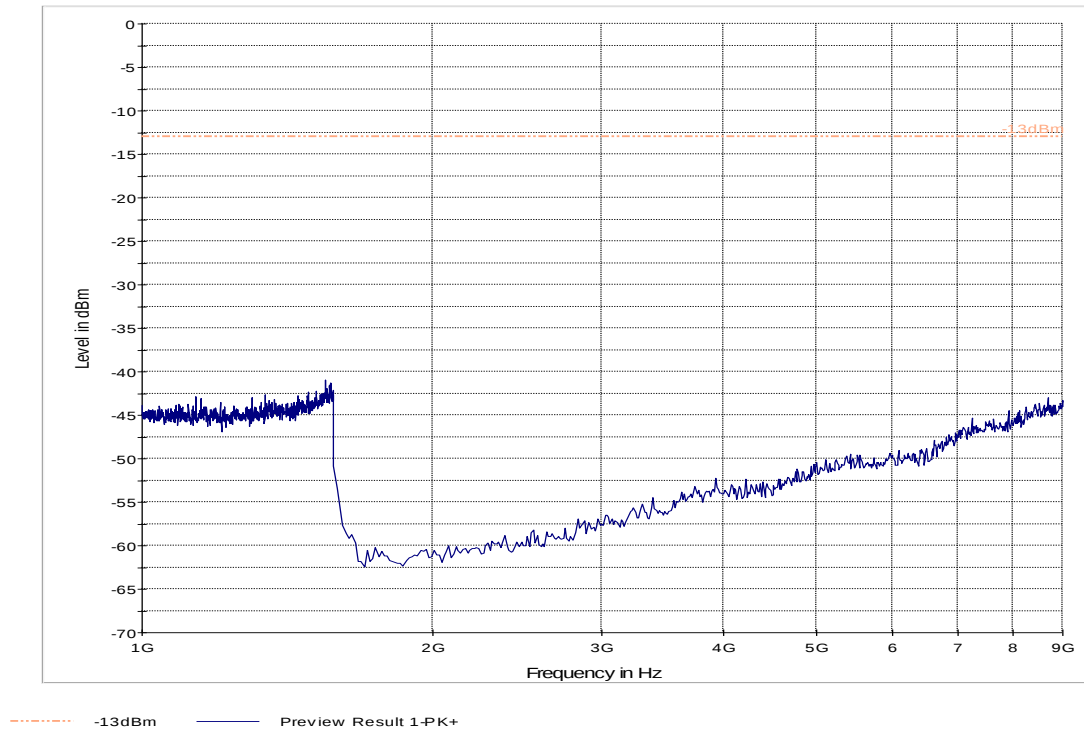
**Radiated Spurious Emissions (GSM-850) Tx: High Channel**  
**Test results 9kHz-30MHz**



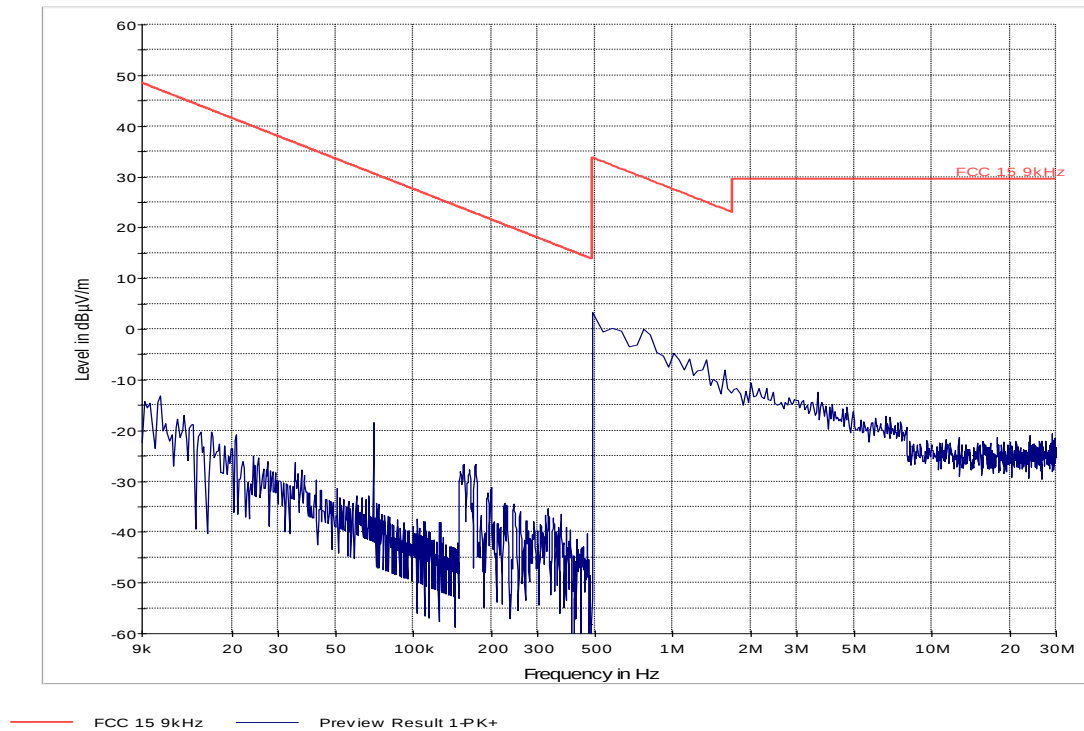
**Test results 30MHz-1GHz**



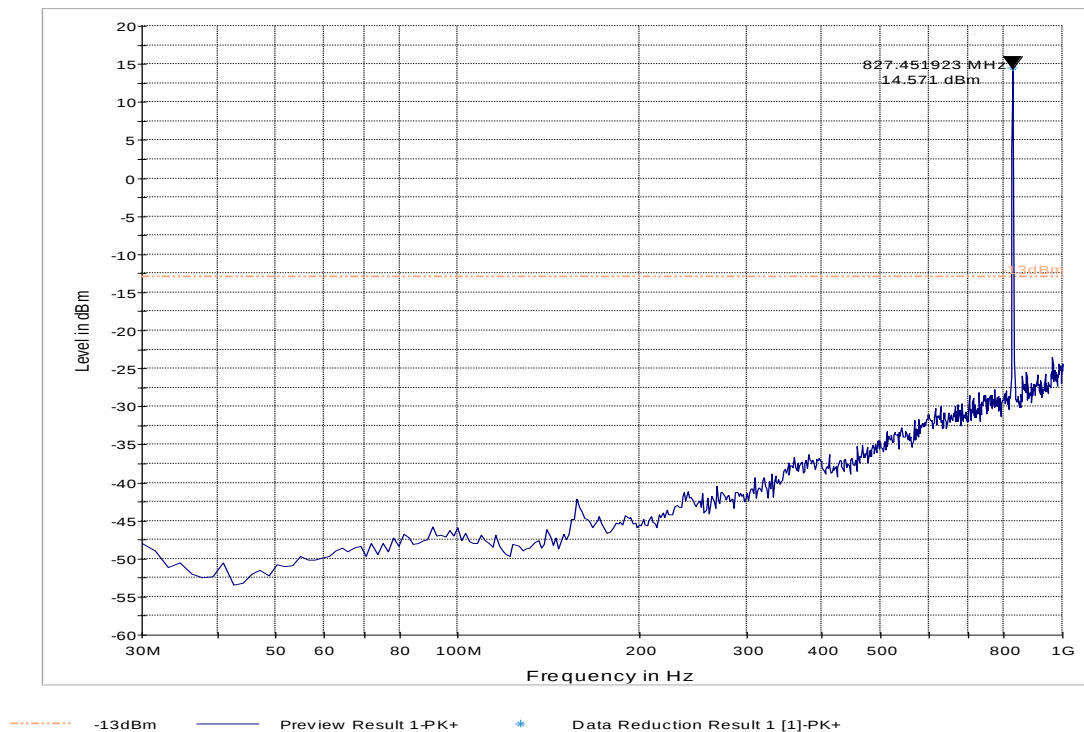
## Test results 1GHz-9GHz



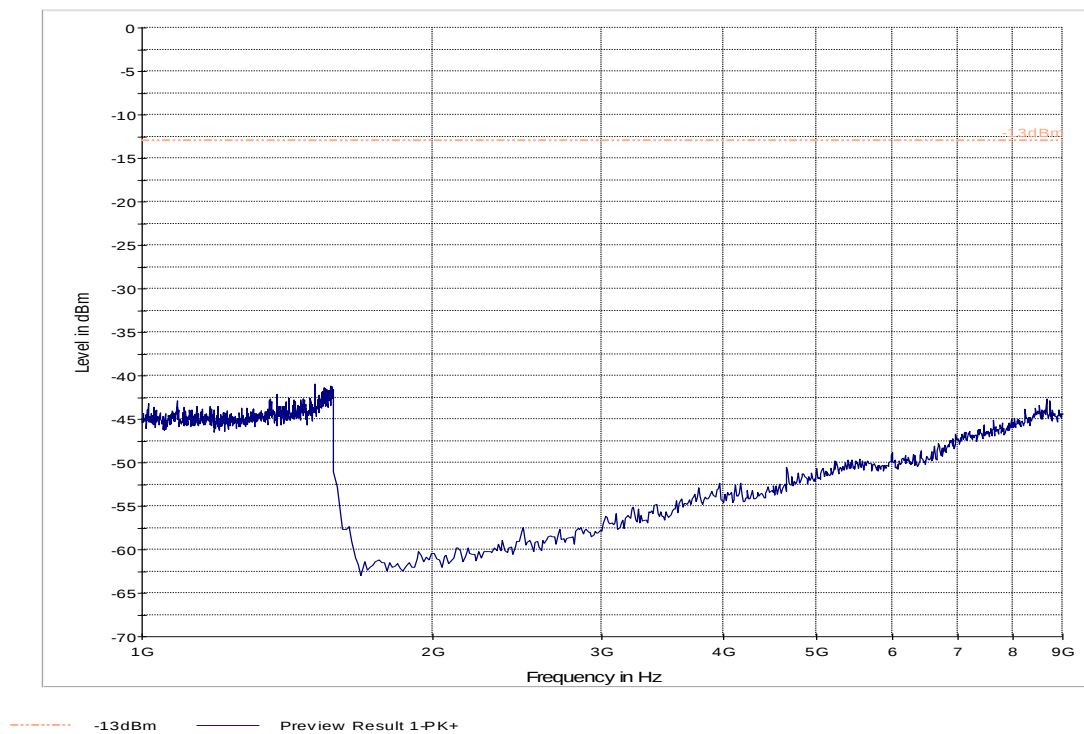
**Radiated Spurious Emissions (UMTS Band V) Tx: Low Channel**  
**Test results 9kHz-30MHz**



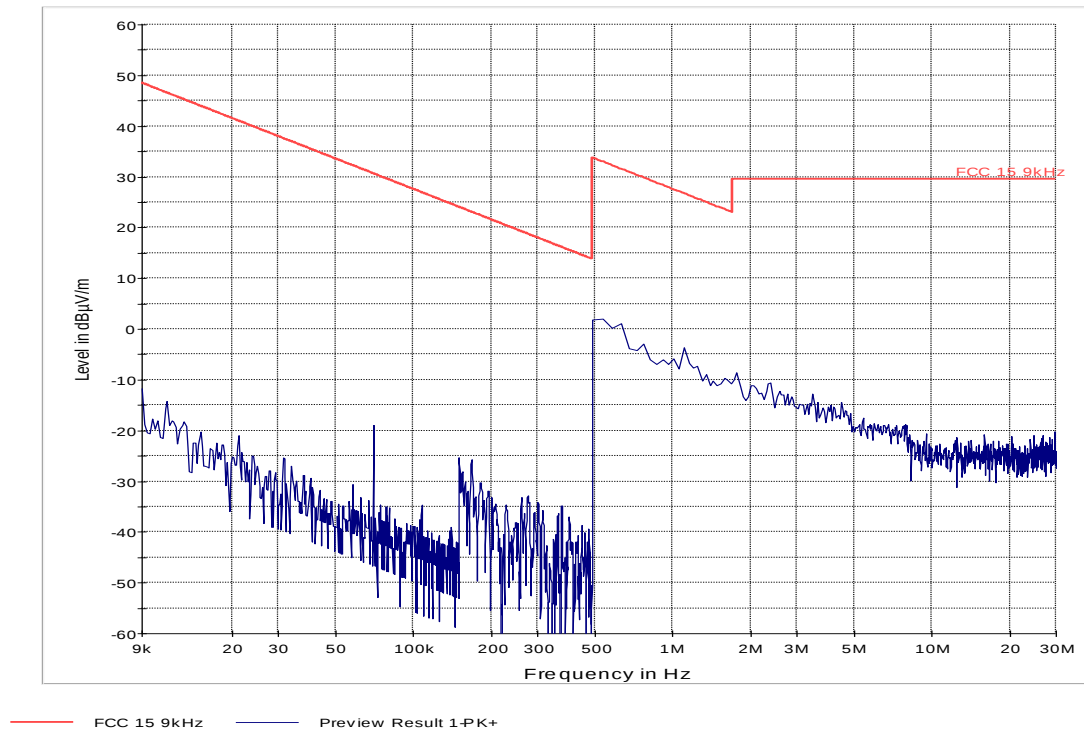
**Test results 30MHz-1GHz**



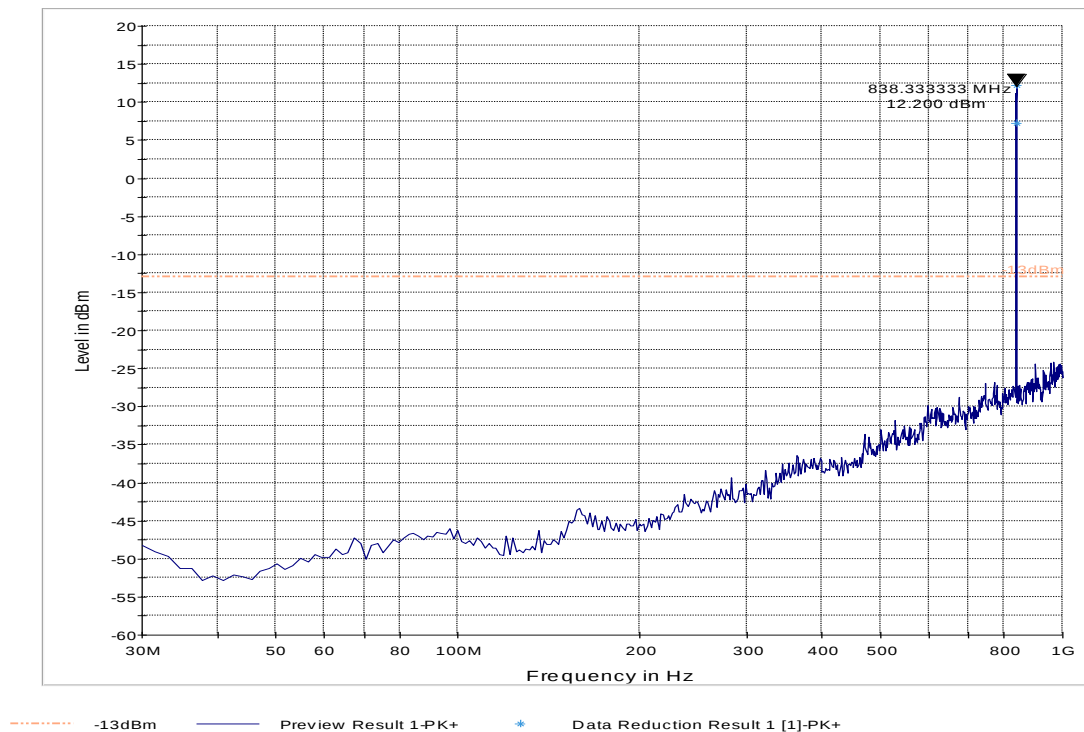
## Test results 1GHz-9GHz



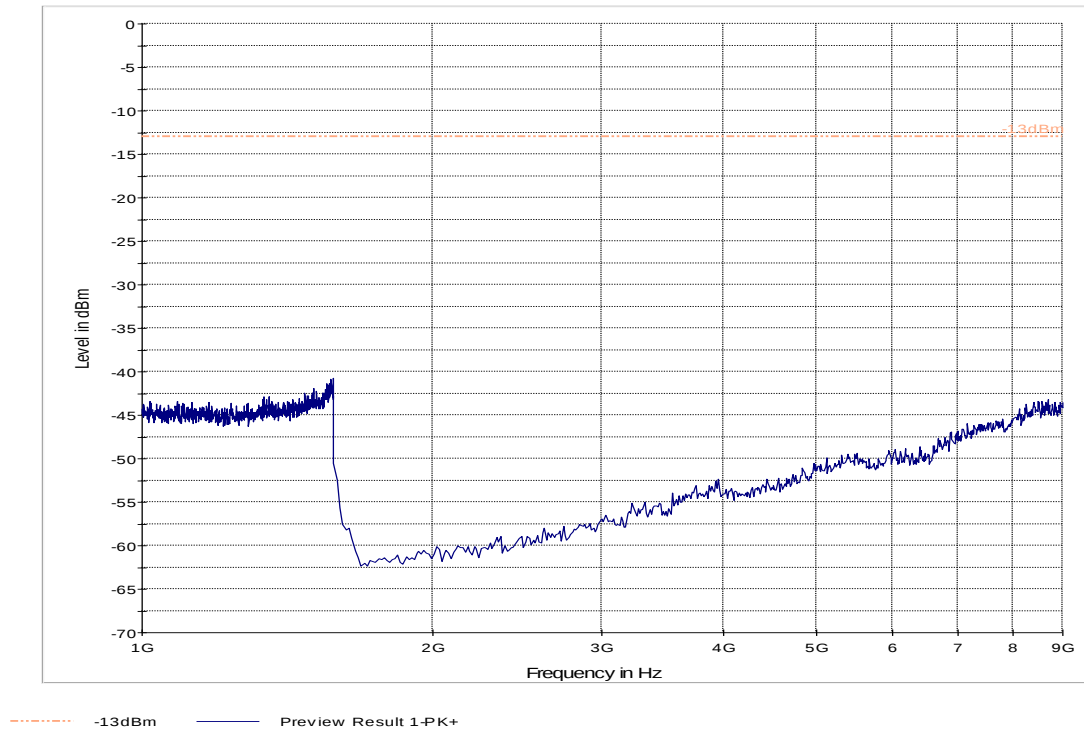
**Radiated Spurious Emissions (UMTS Band V) Tx: Mid Channel**  
**Test results 9kHz-30MHz**



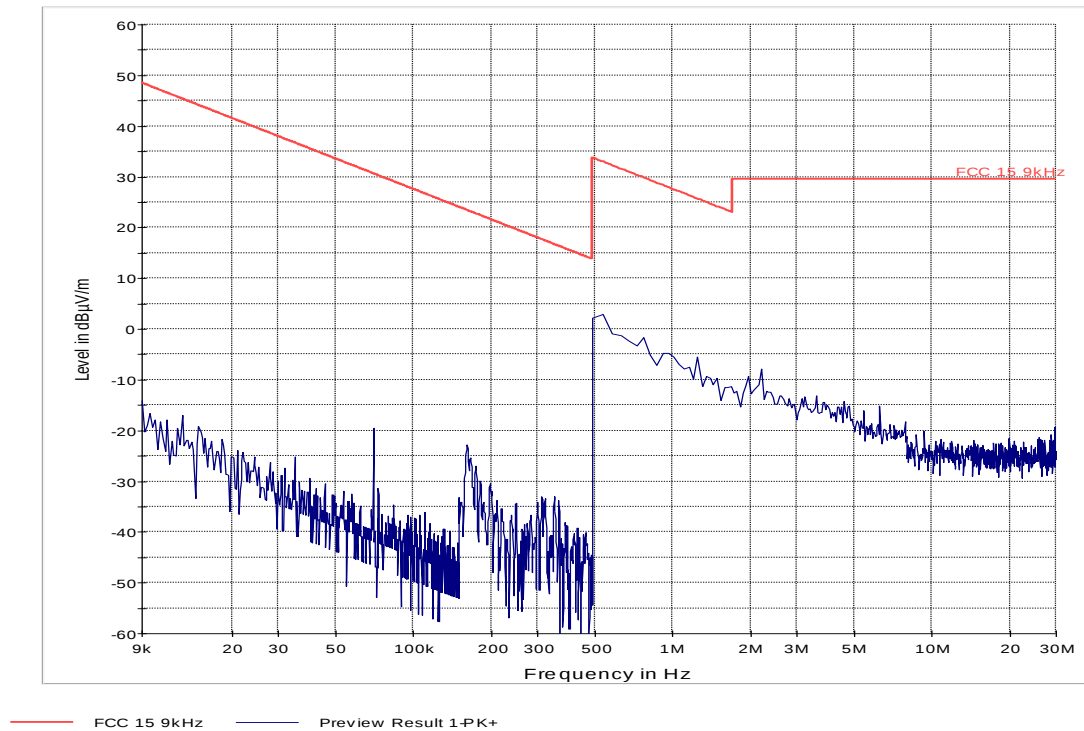
**Test results 30MHz-1GHz**



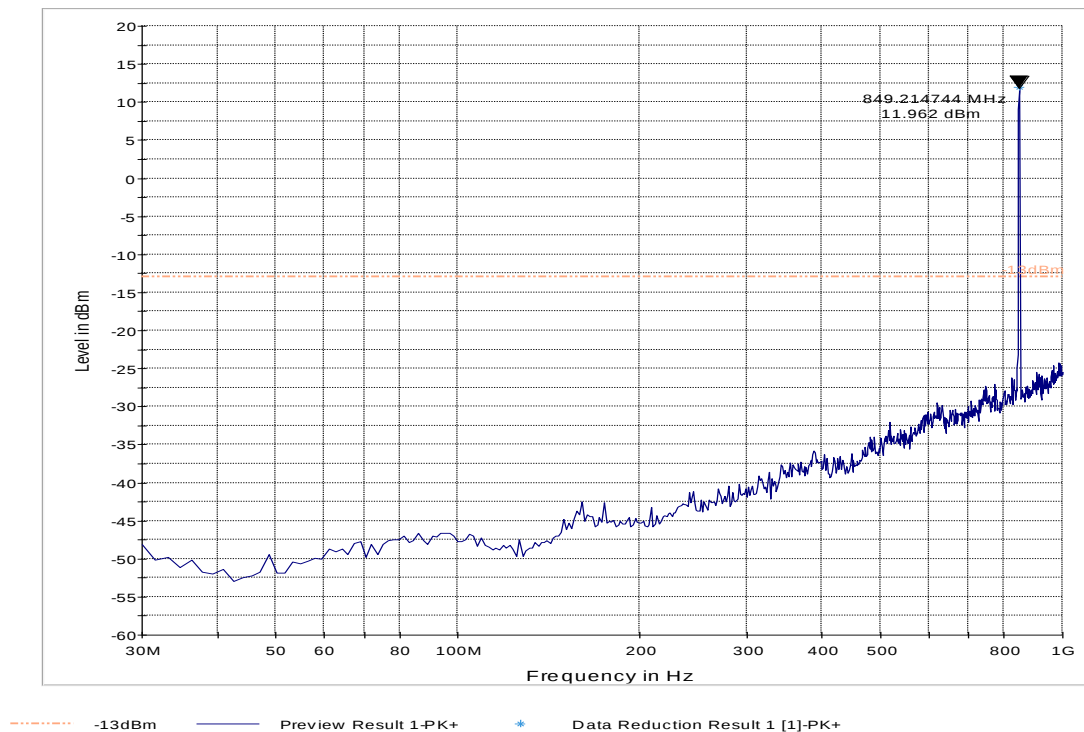
## Test results 1GHz-9GHz



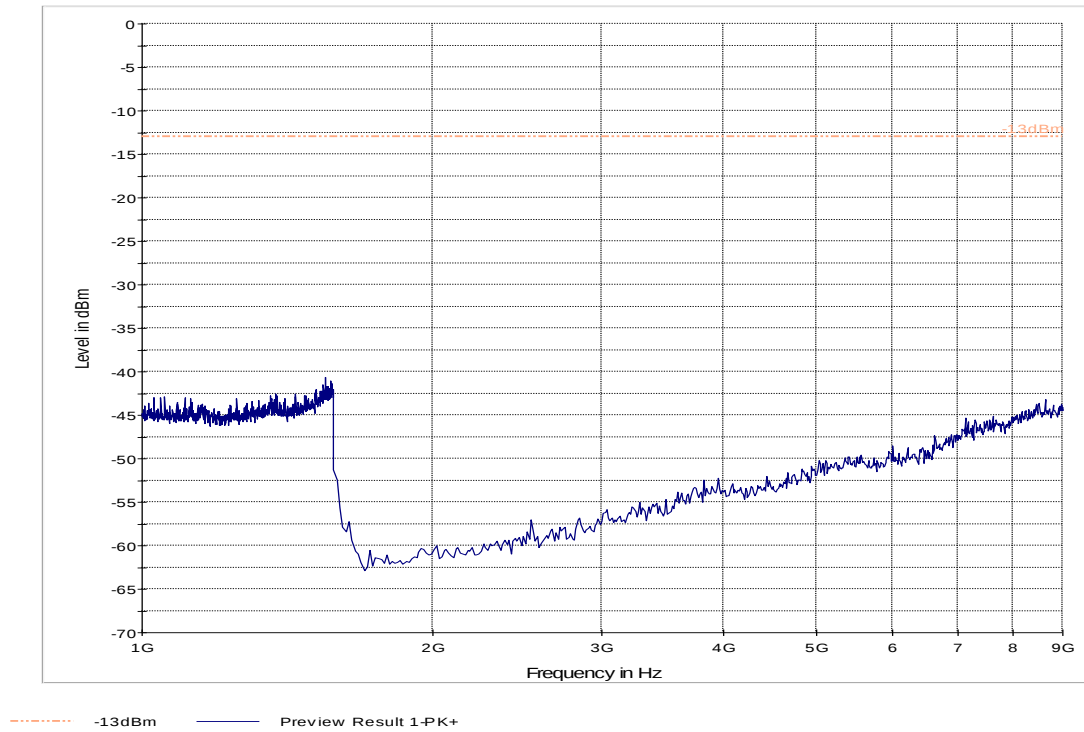
**Radiated Spurious Emissions (UMTS Band V) Tx: High Channel**  
**Test results 9kHz-30MHz**



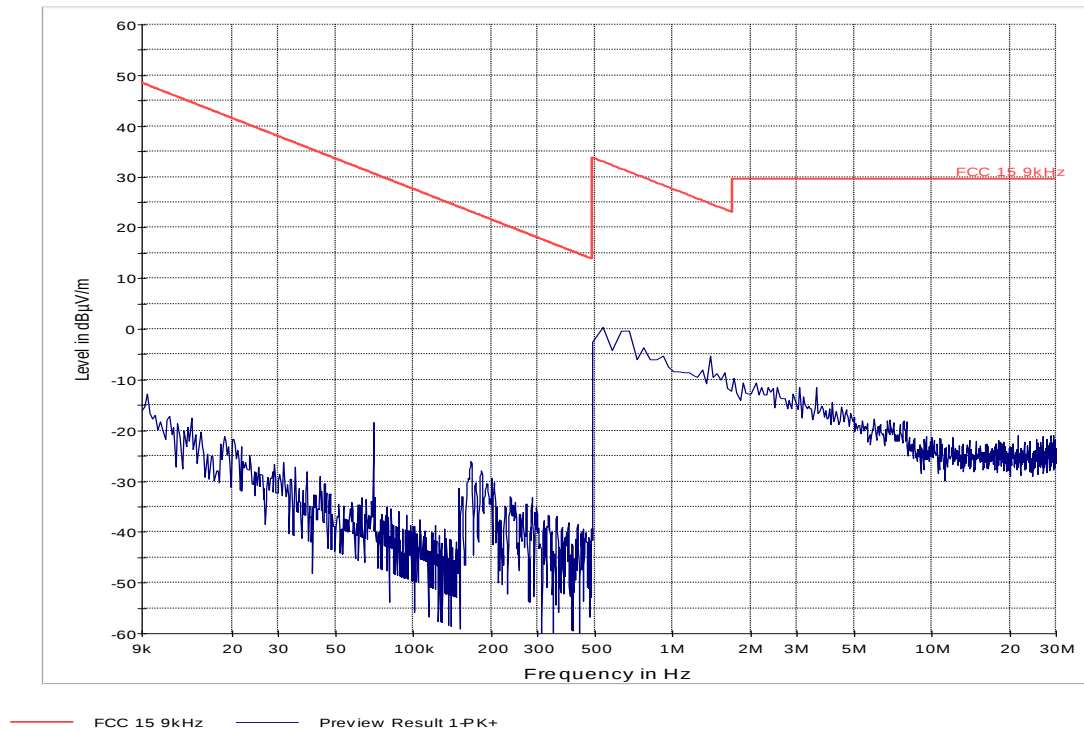
**Test results 30MHz-1GHz**



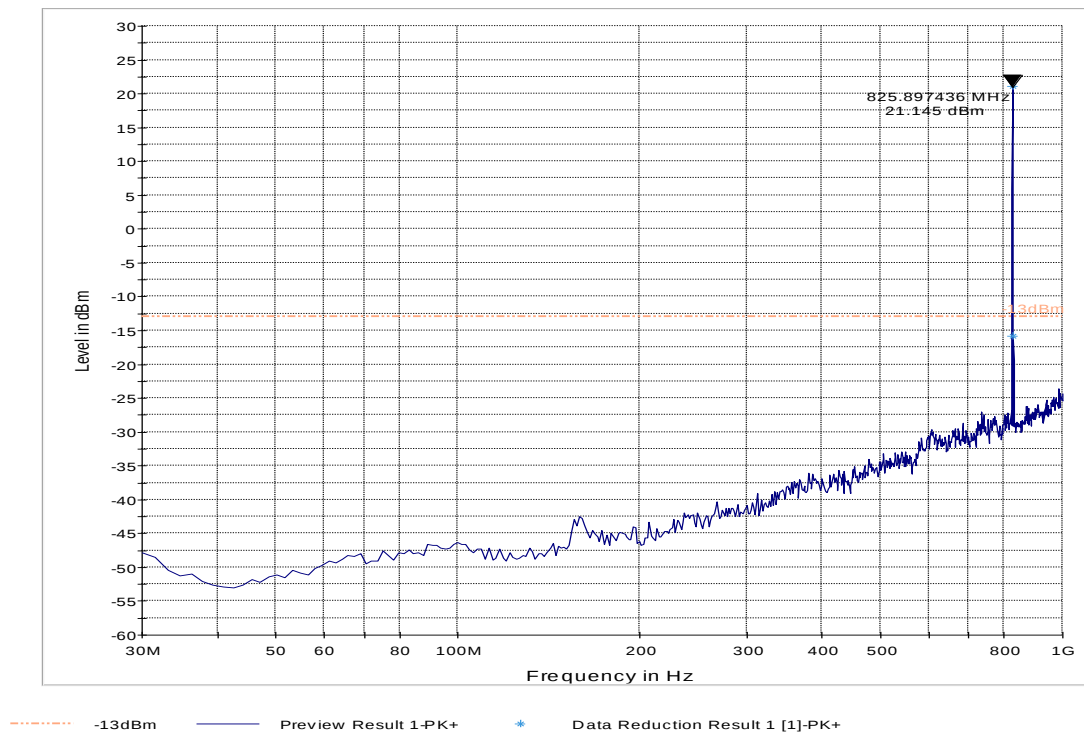
## Test results 1GHz-9GHz



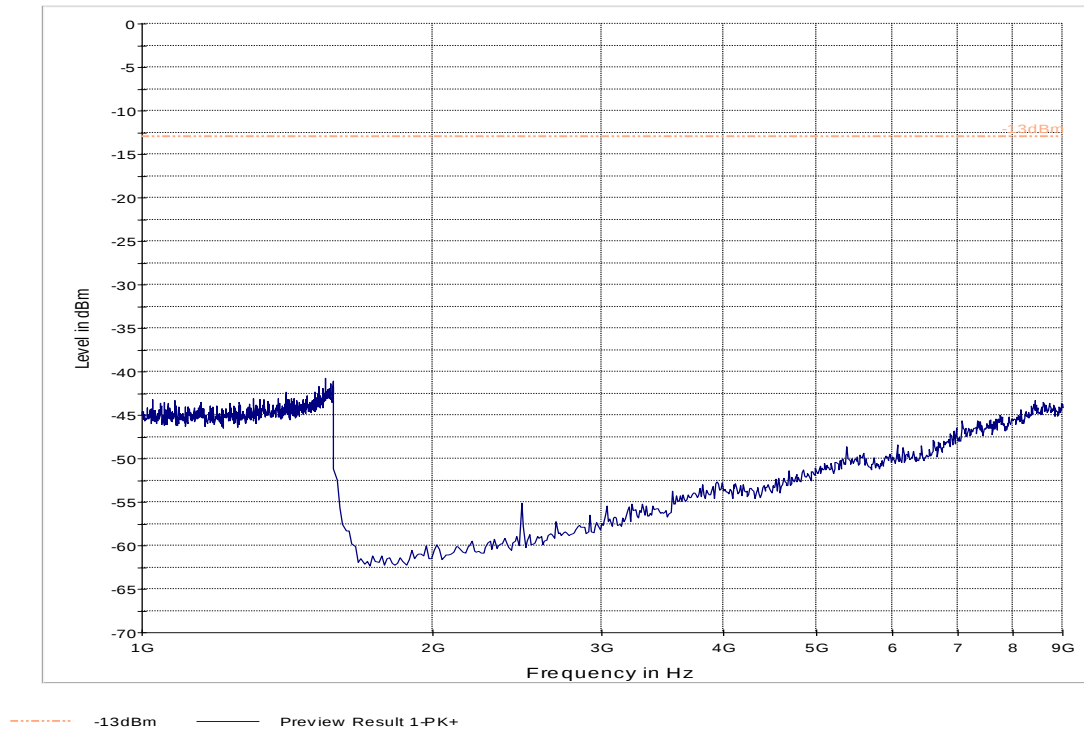
**Radiated Spurious Emissions (LTE Band 5) Tx: QPSK; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



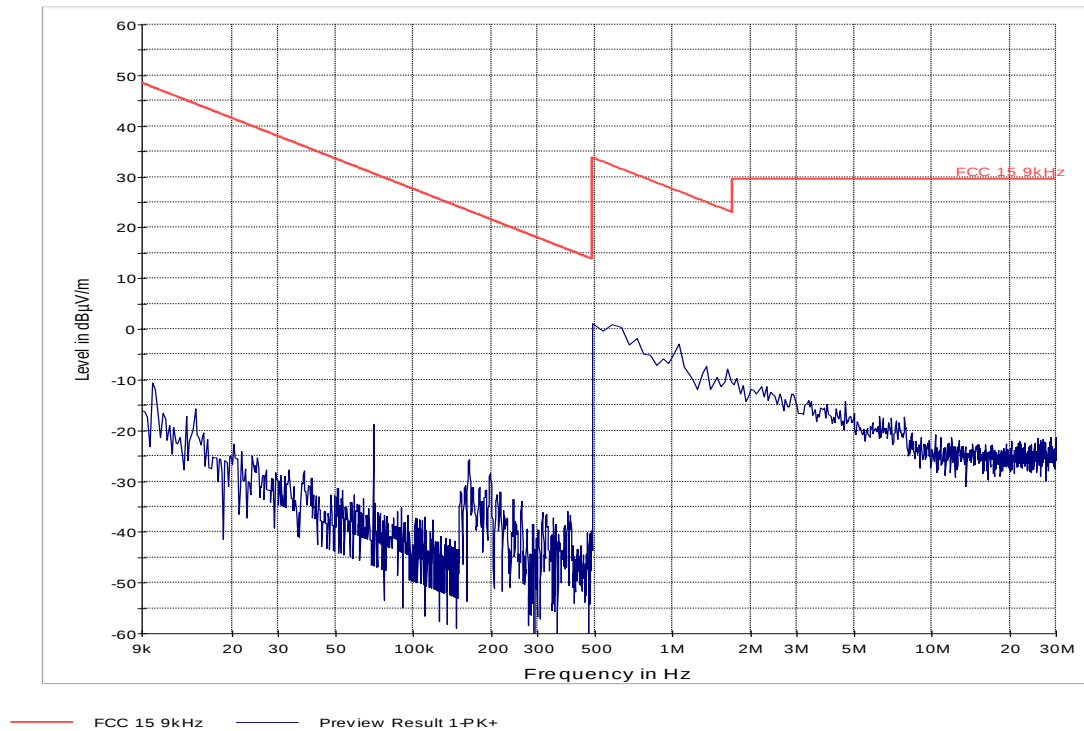
**Test results 30MHz-1GHz**



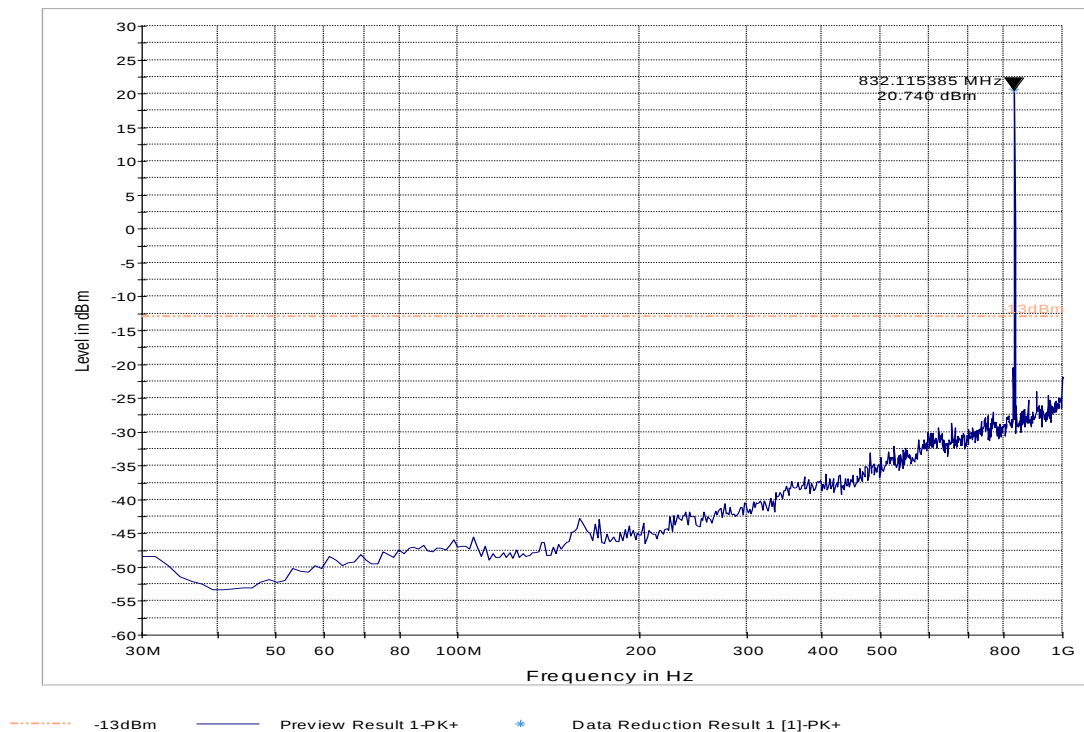
## Test results 1GHz-9GHz



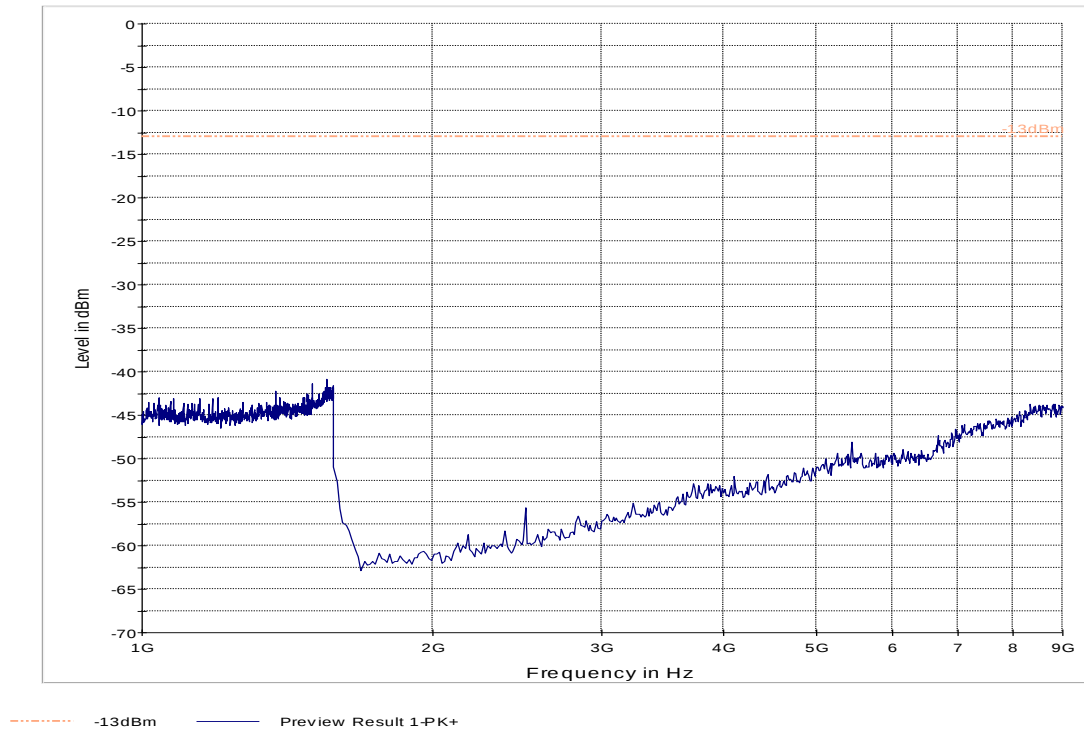
**Radiated Spurious Emissions (LTE Band 5) Tx: QPSK; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



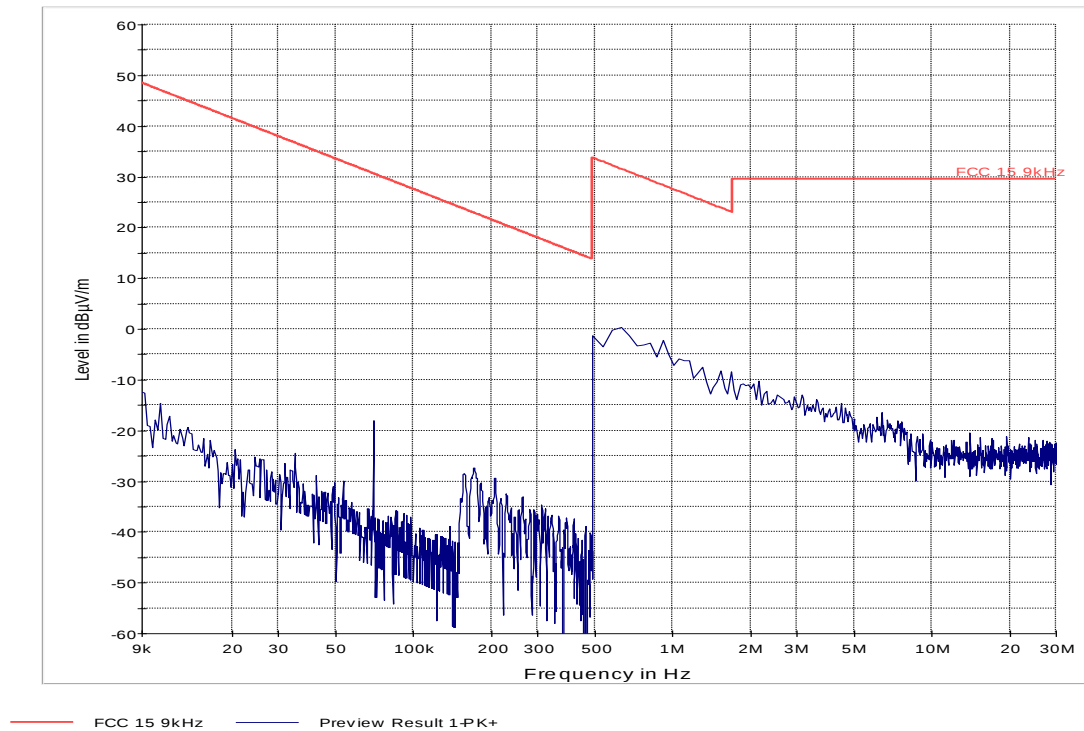
**Test results 30MHz-1GHz**



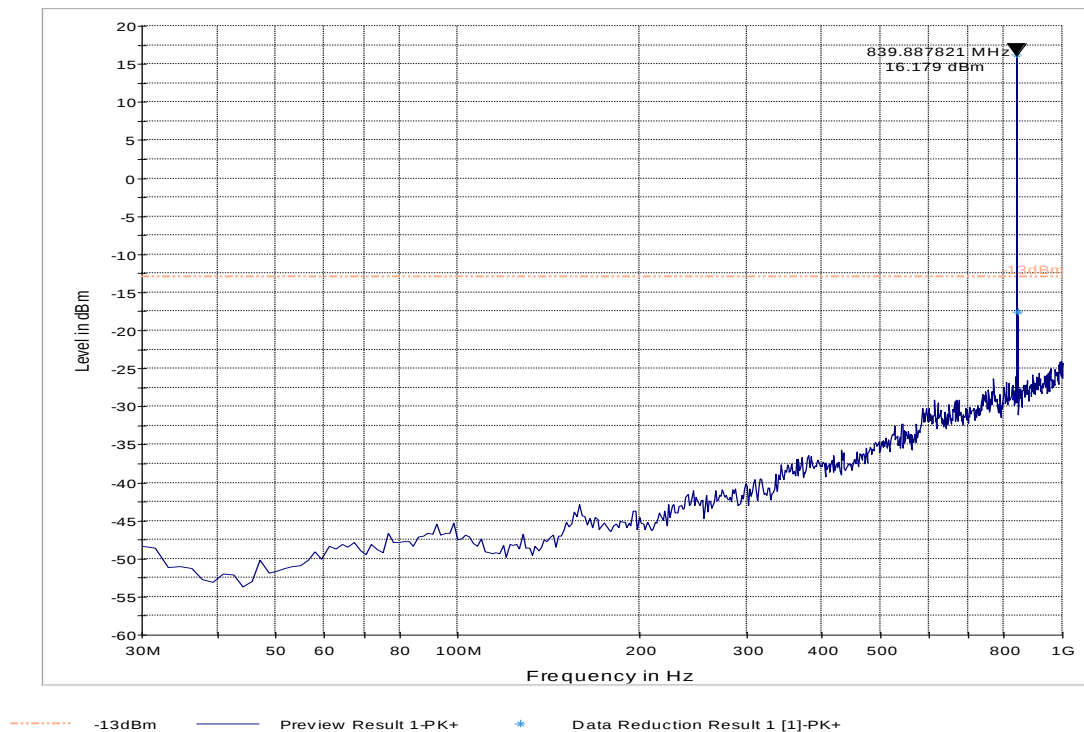
## Test results 1GHz-9GHz



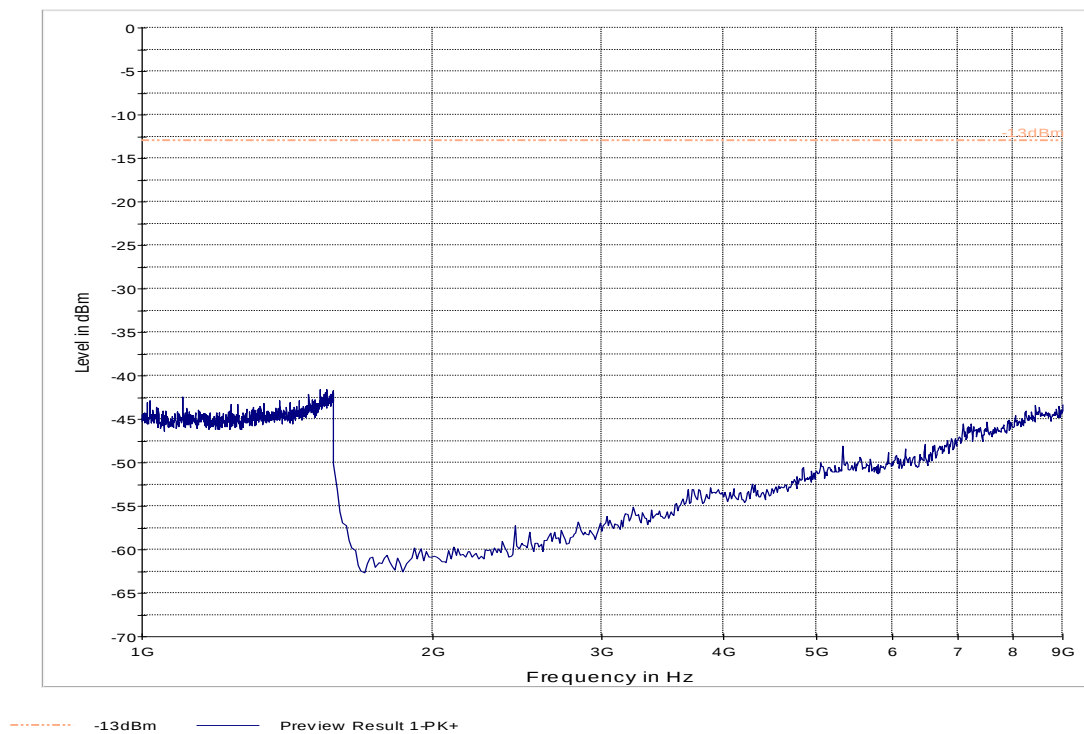
**Radiated Spurious Emissions (LTE Band 5) Tx: QPSK; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



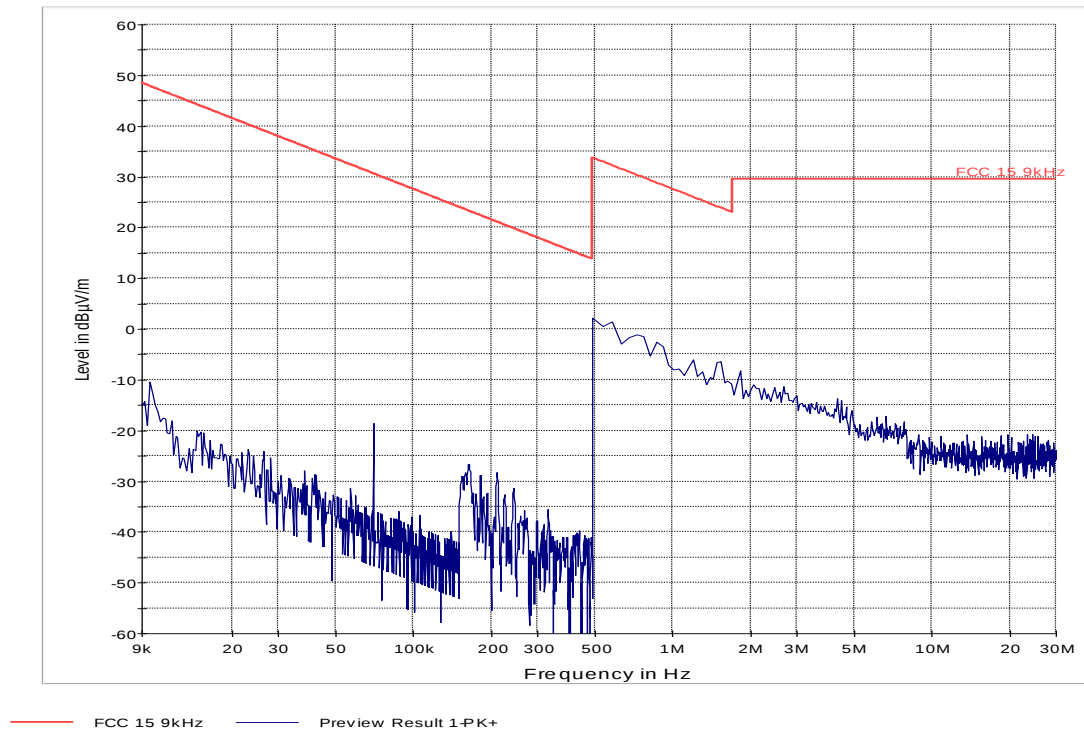
**Test results 30MHz-1GHz**



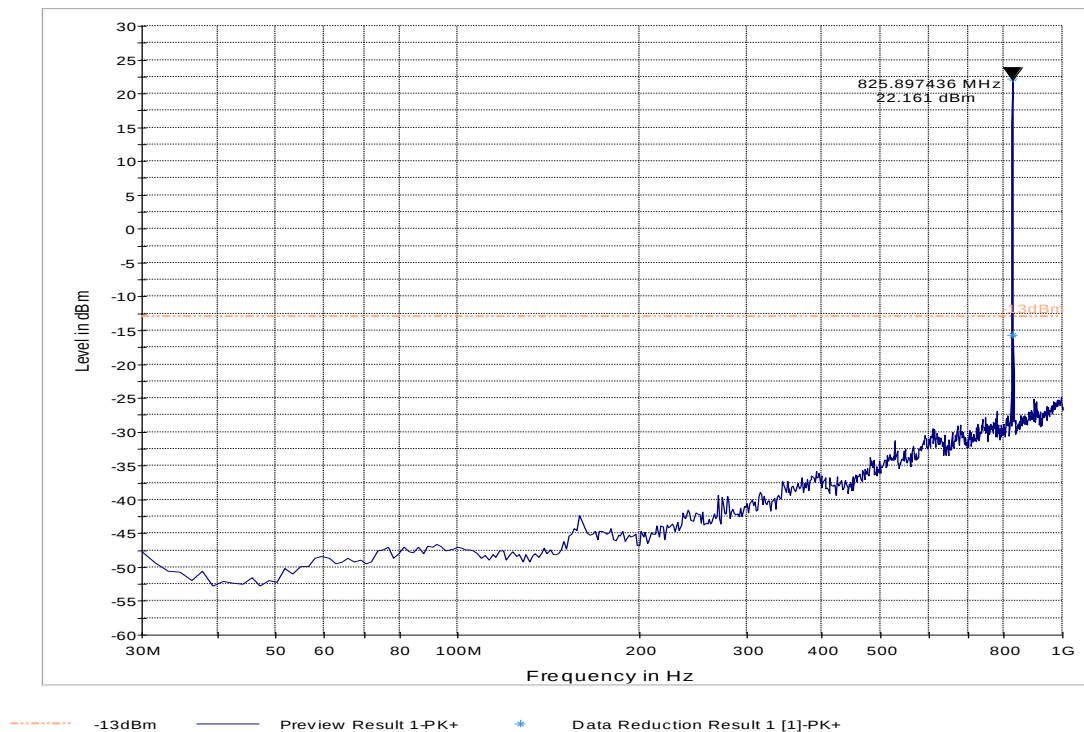
## Test results 1GHz-9GHz



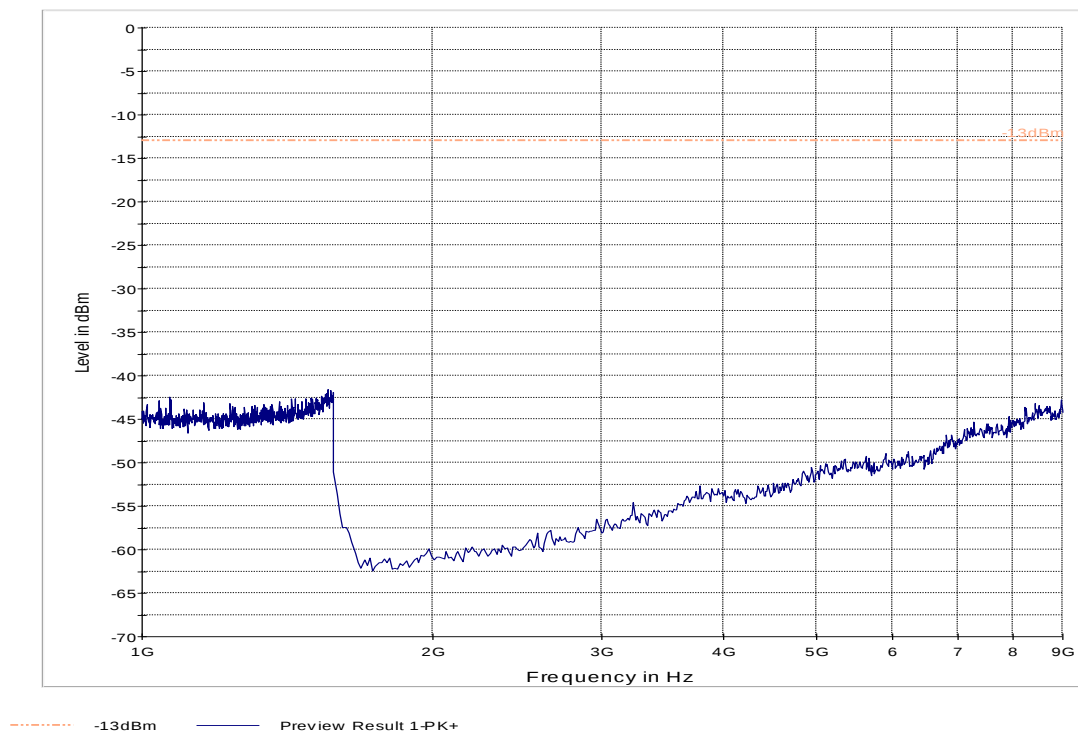
**Radiated Spurious Emissions (LTE Band 5) Tx: 16-QAM; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



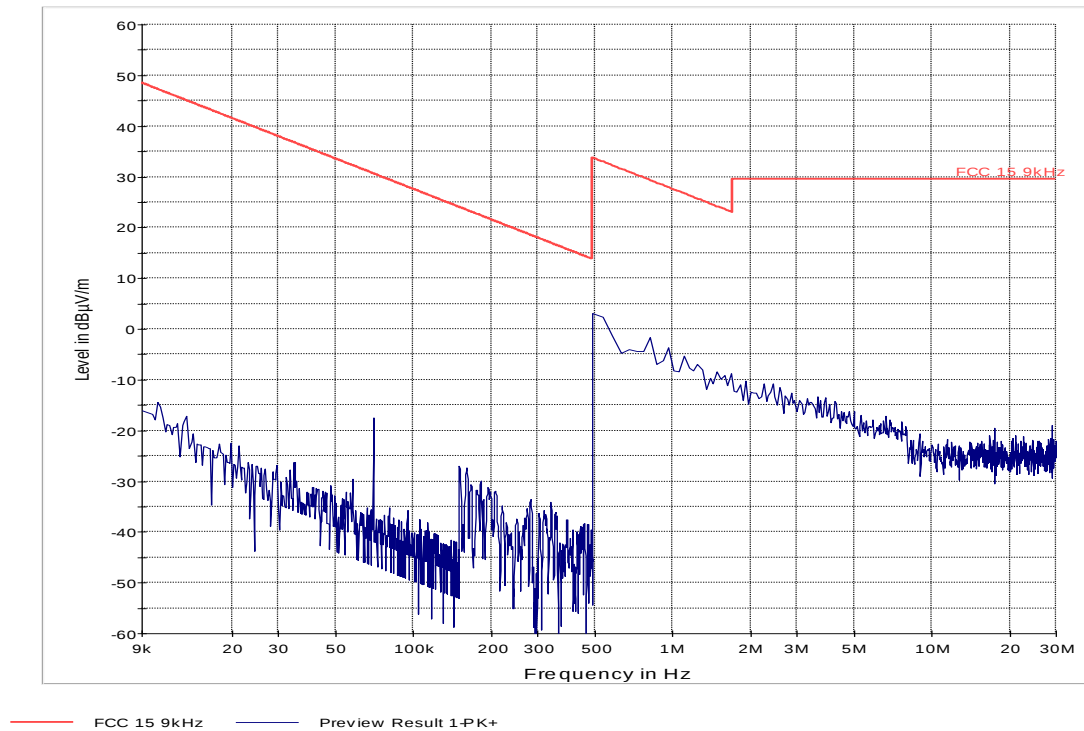
**Test results 30MHz-1GHz**



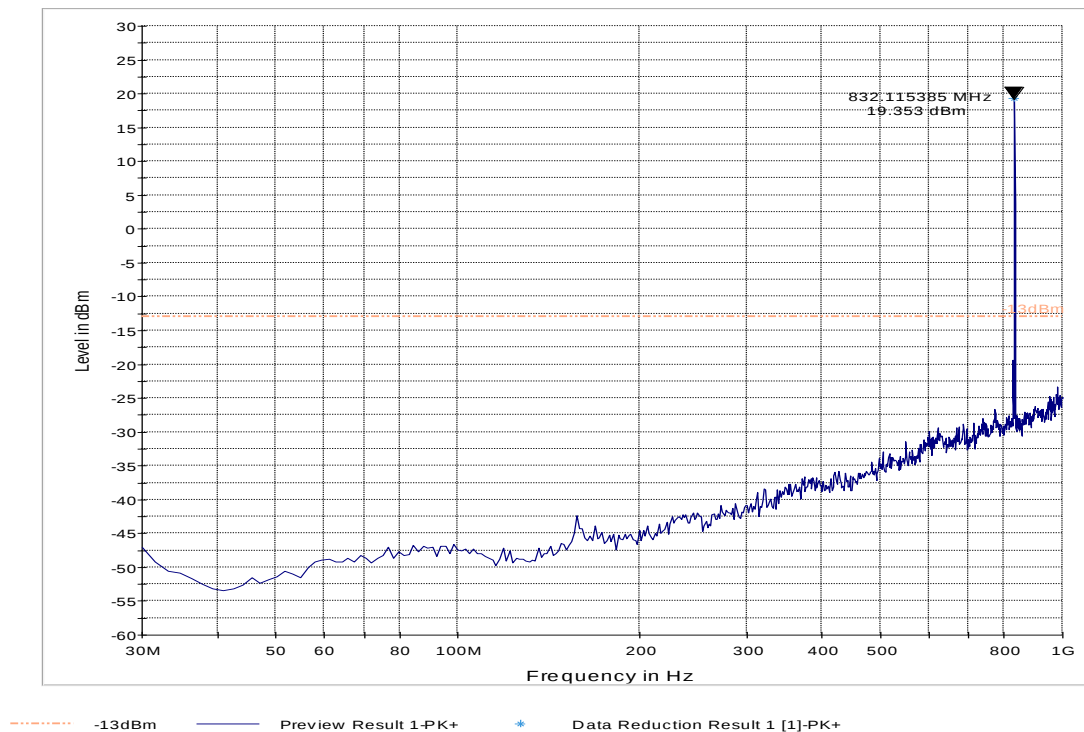
## Test results 1GHz-9GHz



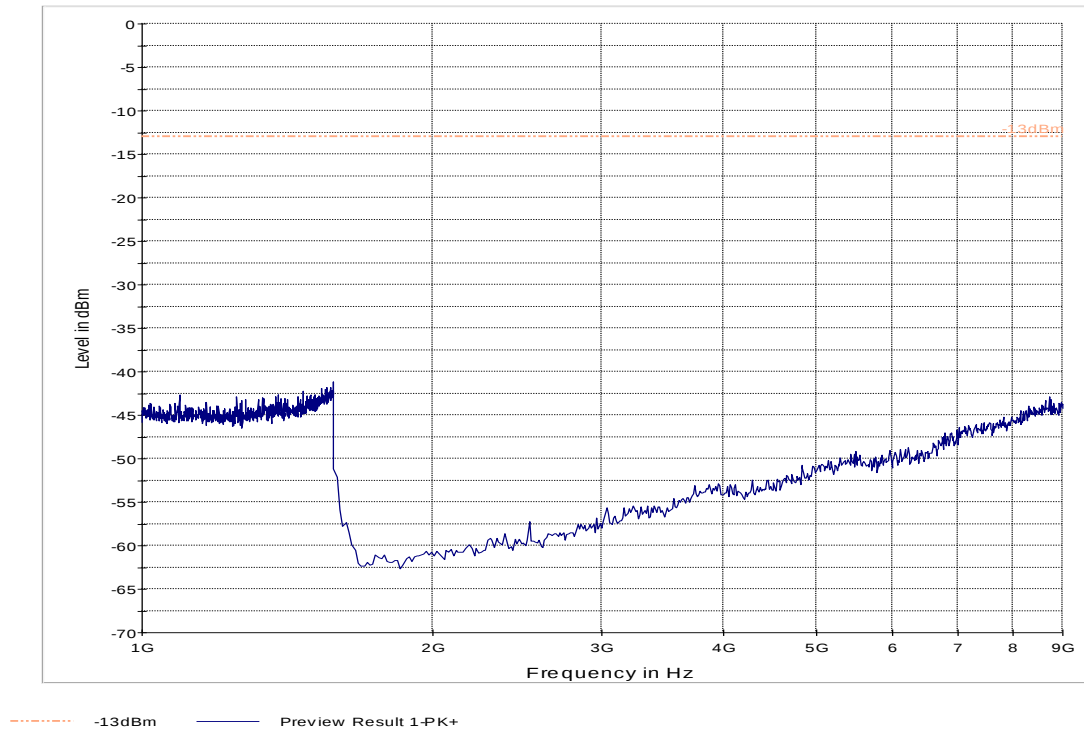
**Radiated Spurious Emissions (LTE Band 5) Tx: 16-QAM; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



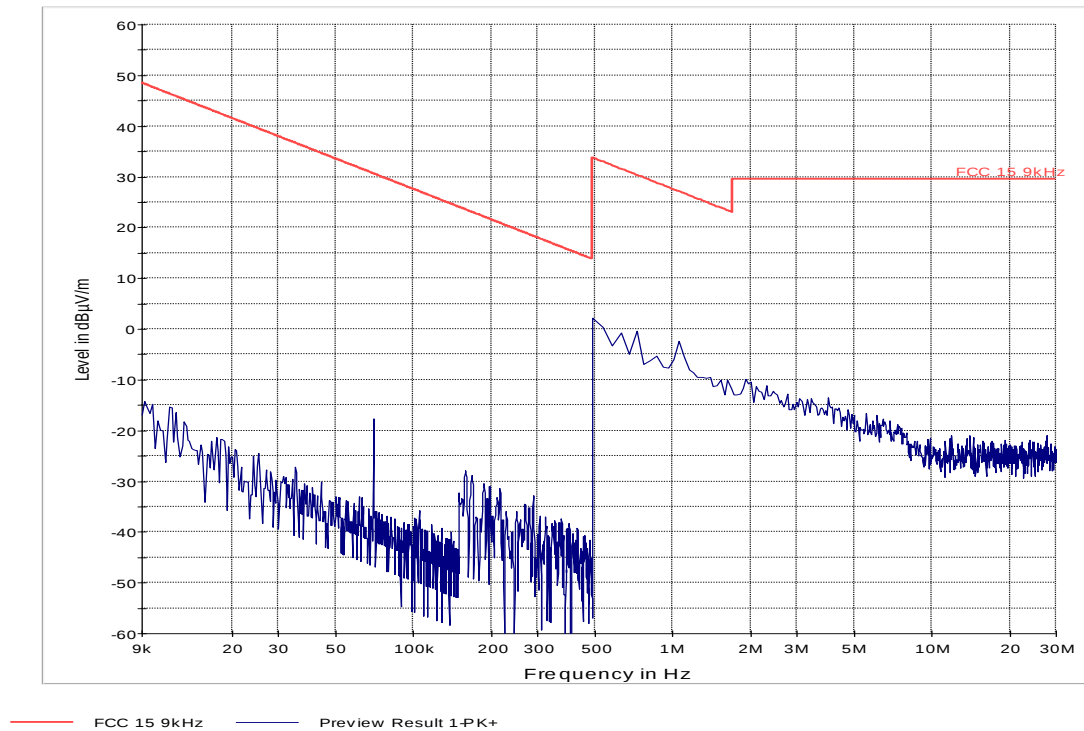
**Test results 30MHz-1GHz**



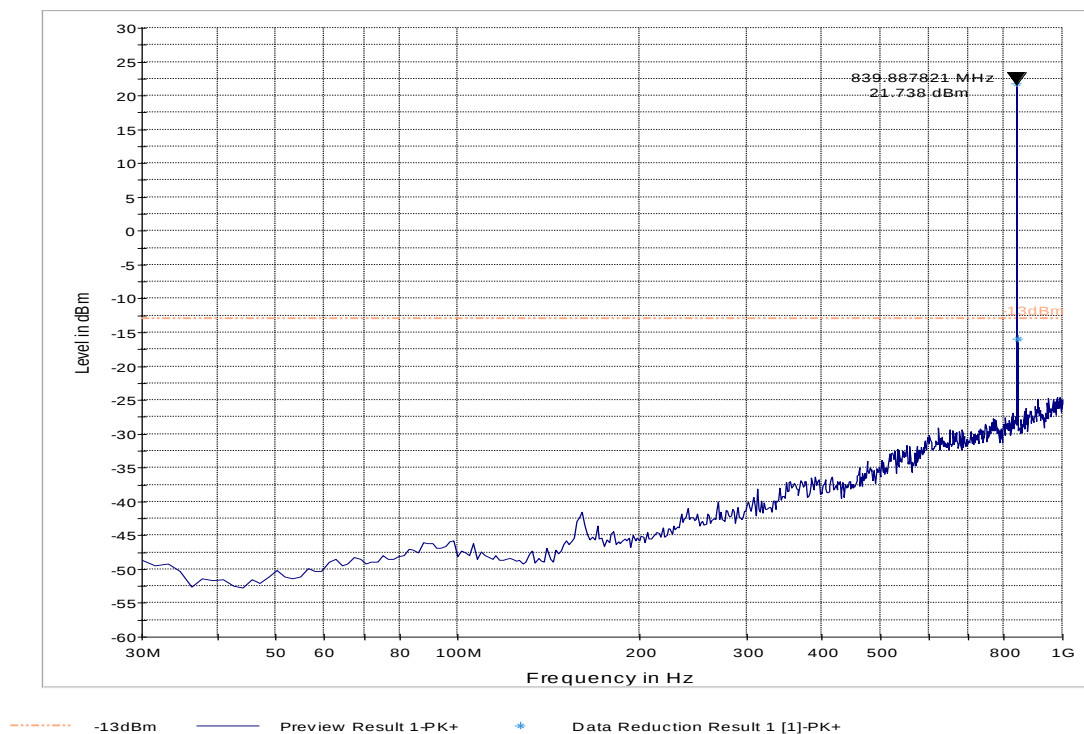
## Test results 1GHz-9GHz



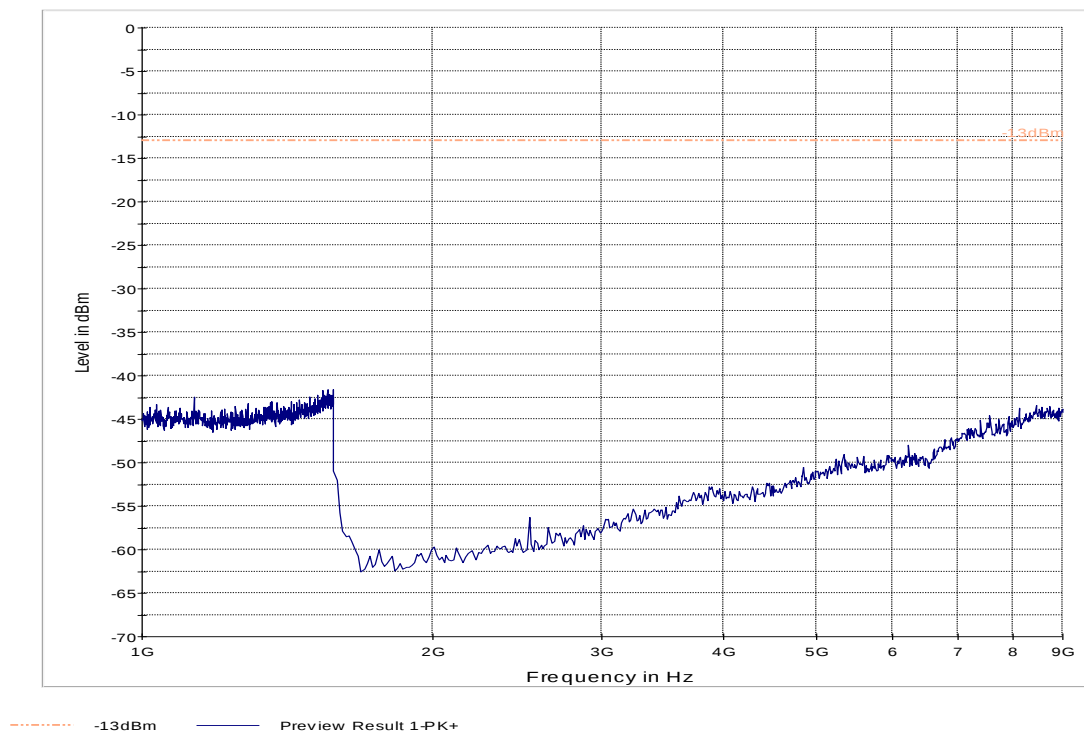
**Radiated Spurious Emissions (LTE Band 5) Tx: 16-QAM; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



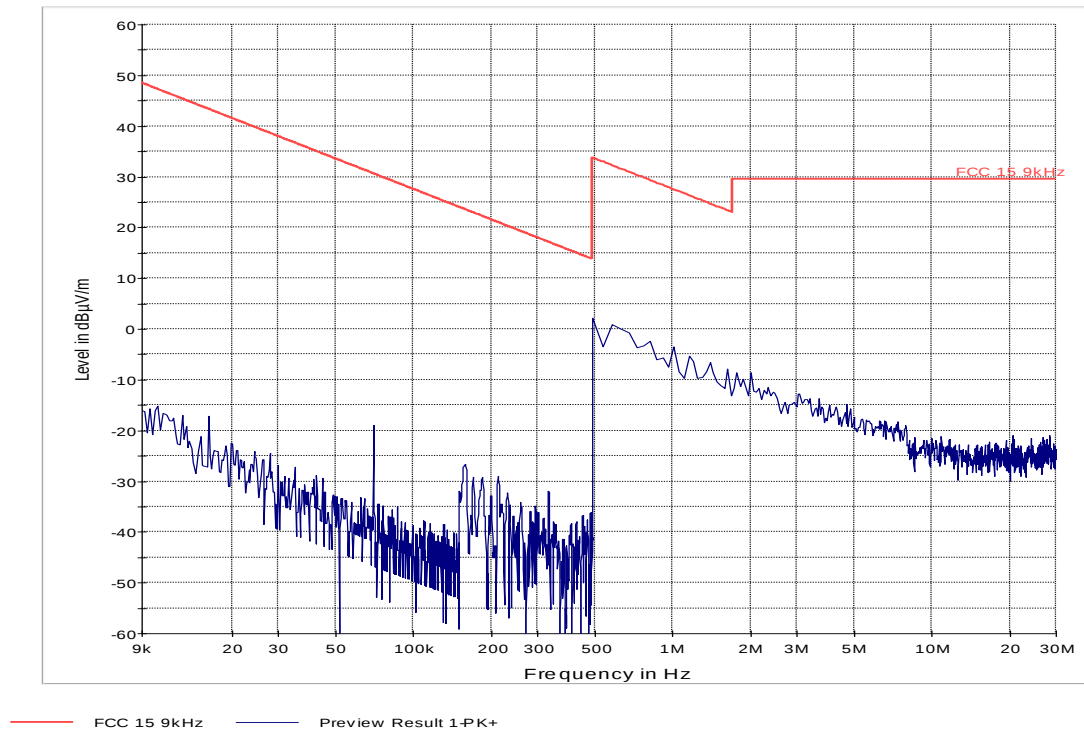
**Test results 30MHz-1GHz**



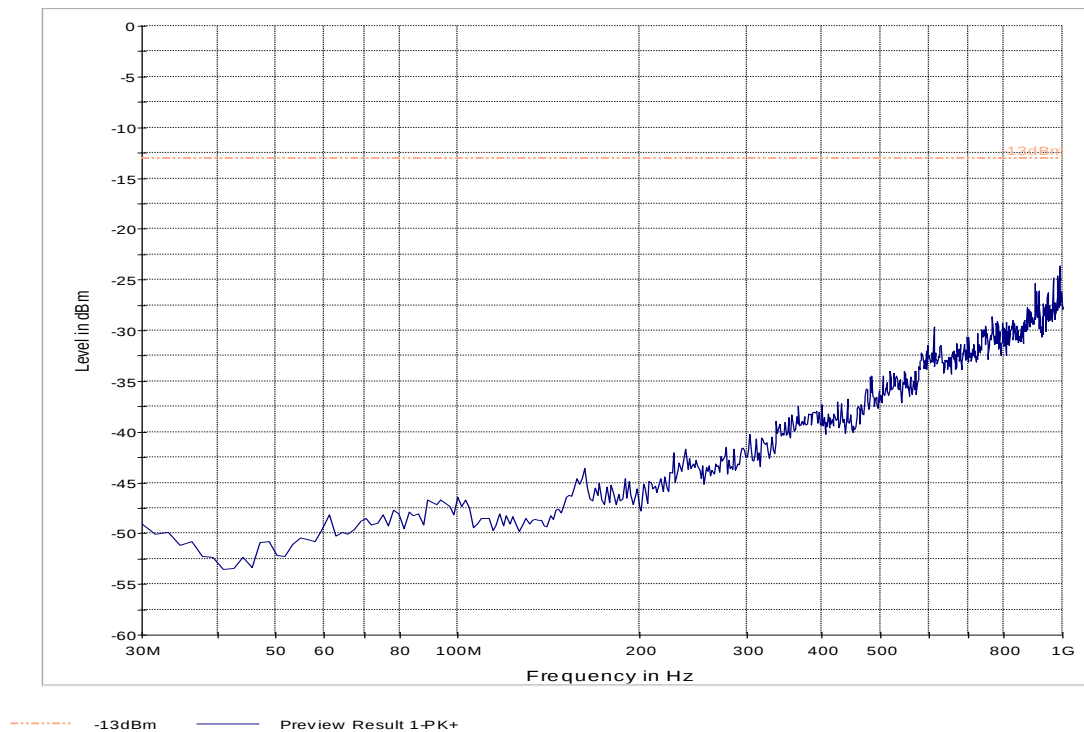
## Test results 1GHz-9GHz



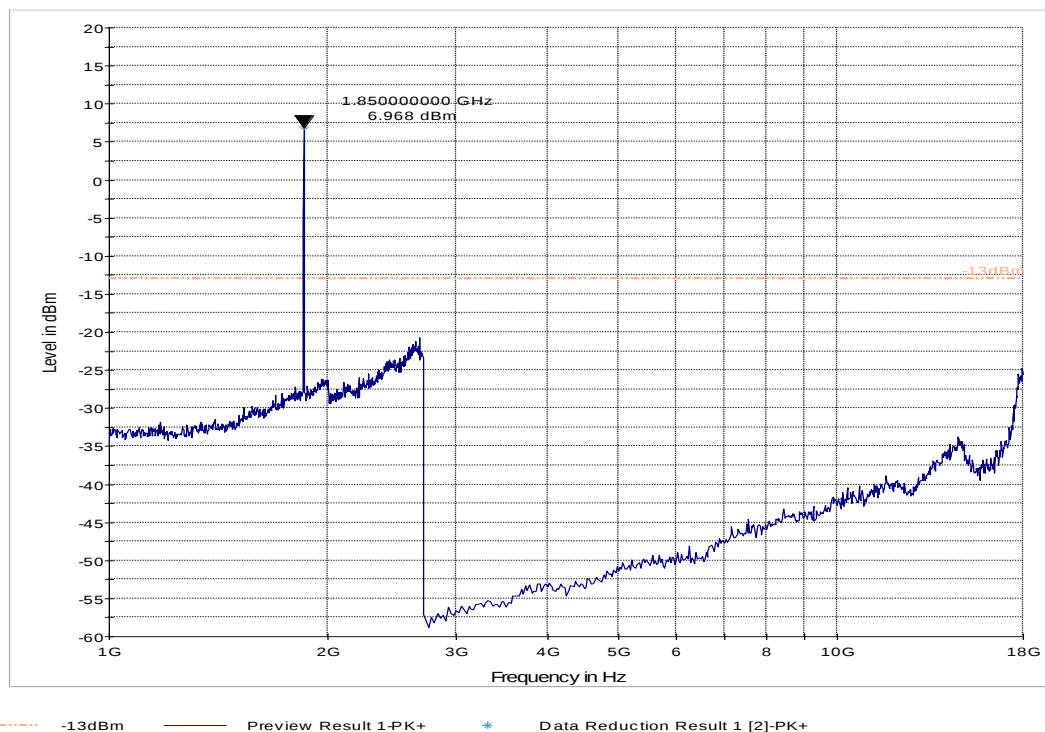
**Radiated Spurious Emissions (GSM-1900) Tx: Low Channel**  
**Test results 9kHz-30MHz**



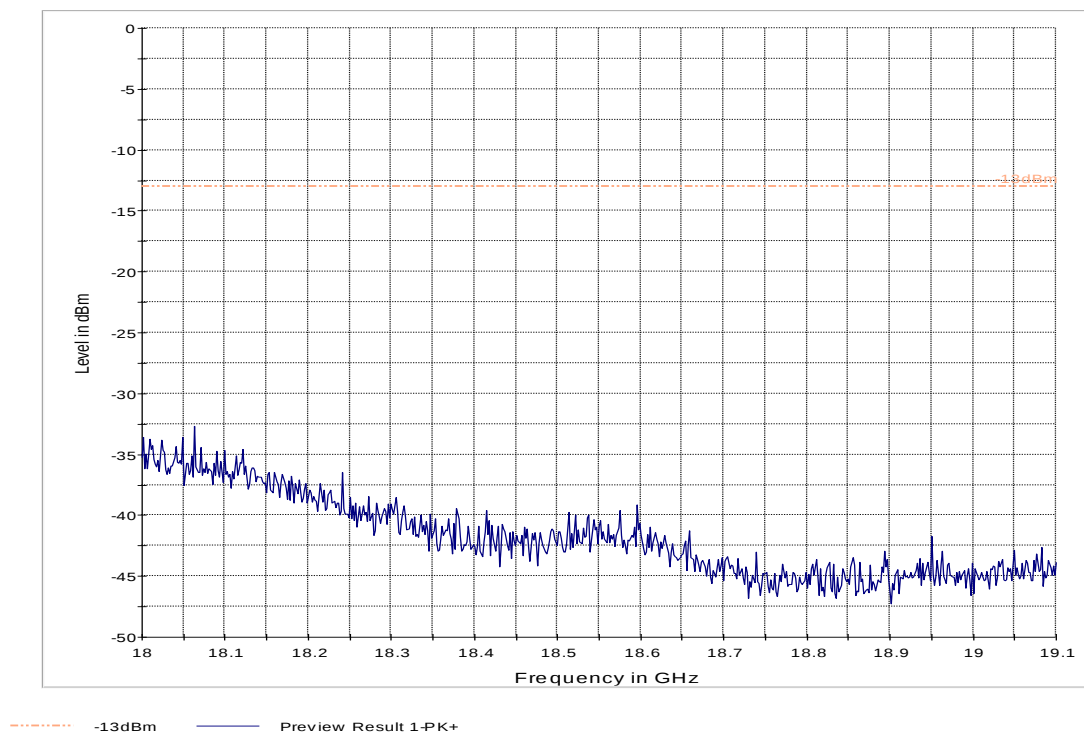
**Test results 30MHz-1GHz**



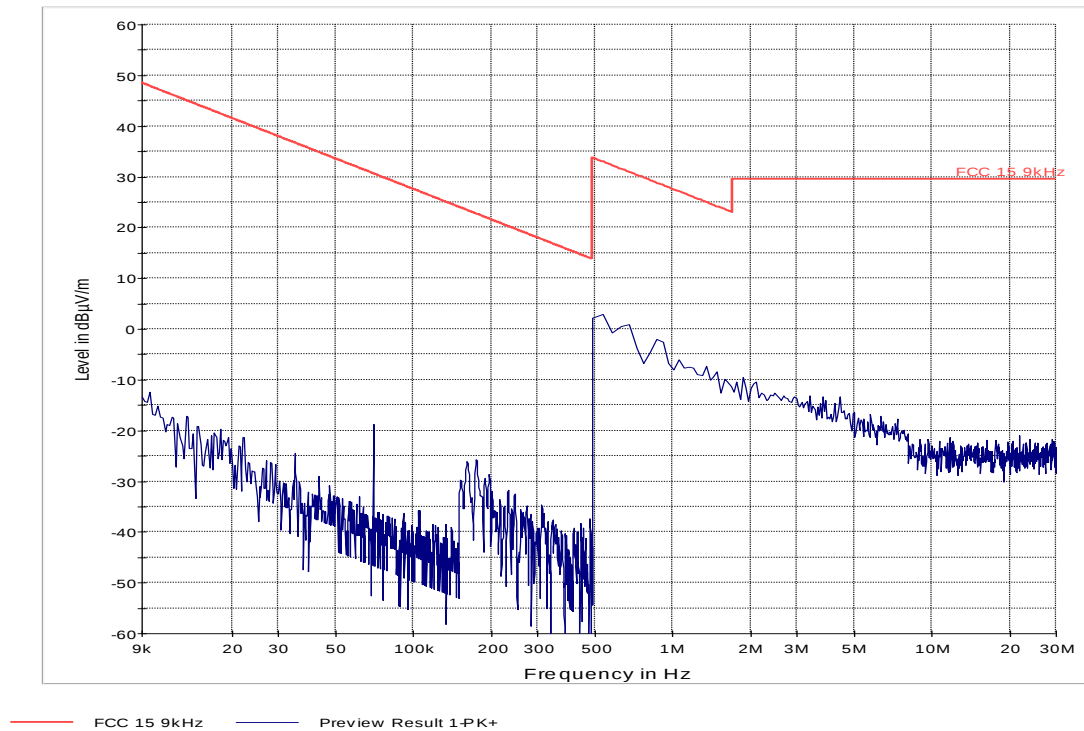
## Test results 1GHz-18GHz



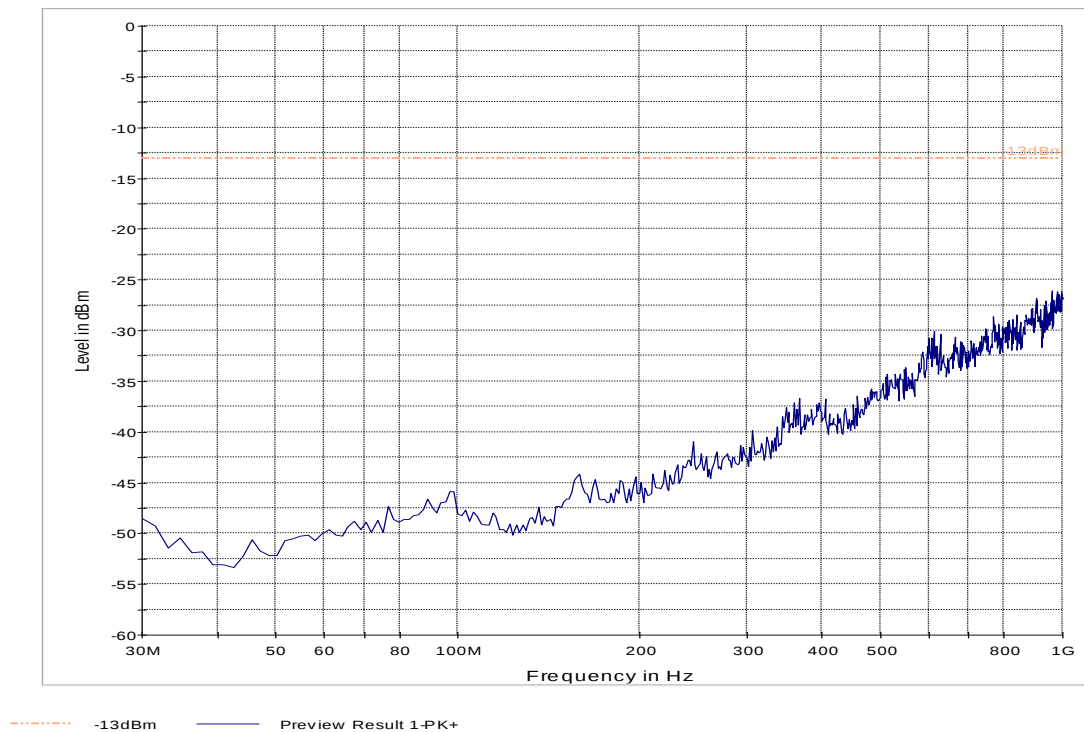
## Test results 18GHz-19.1GHz



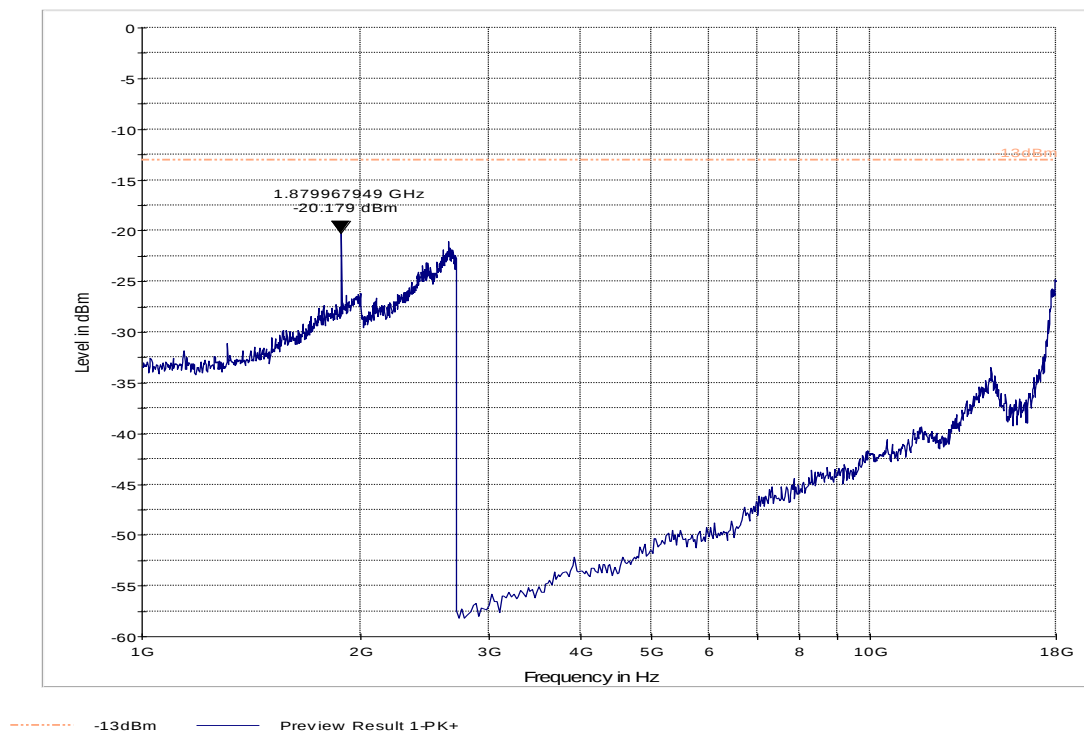
**Radiated Spurious Emissions (GSM-1900) Tx: Mid Channel**  
**Test results 9kHz-30MHz**



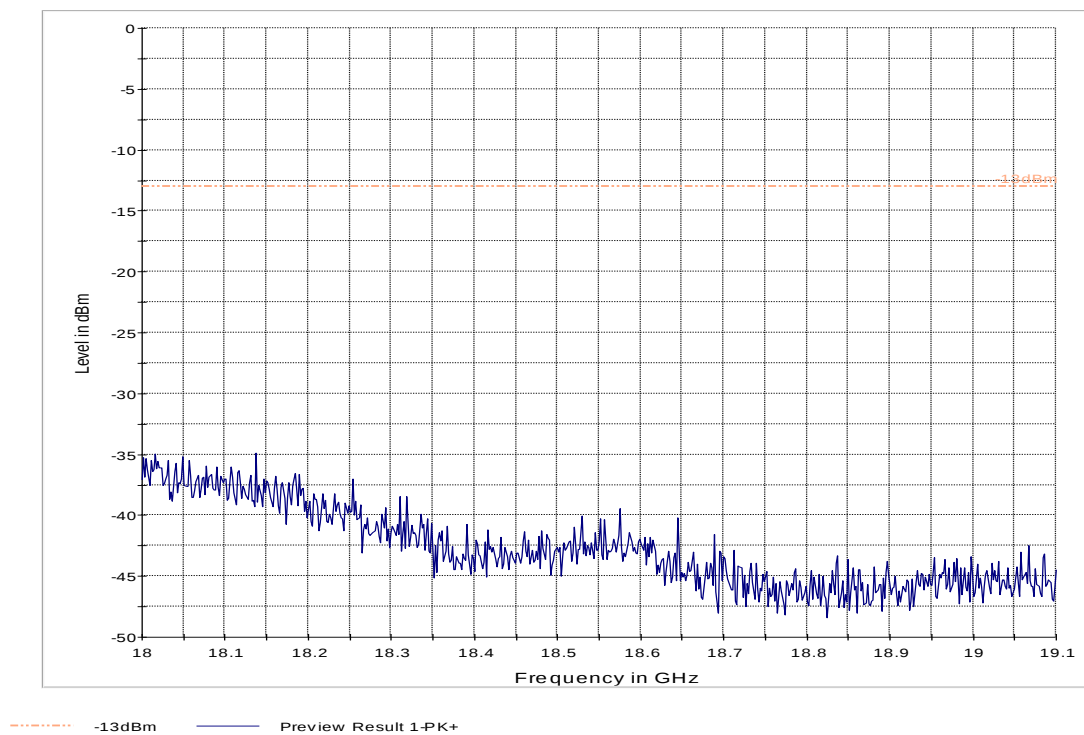
**Test results 30MHz-1GHz**



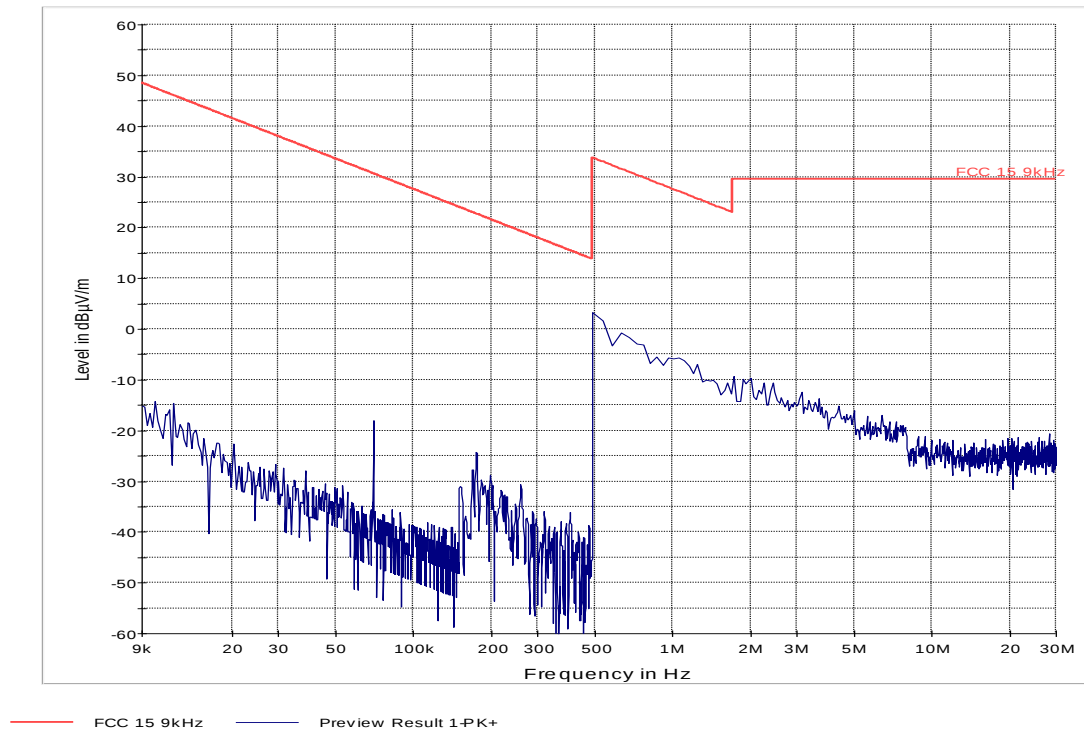
## Test results 1GHz-18GHz



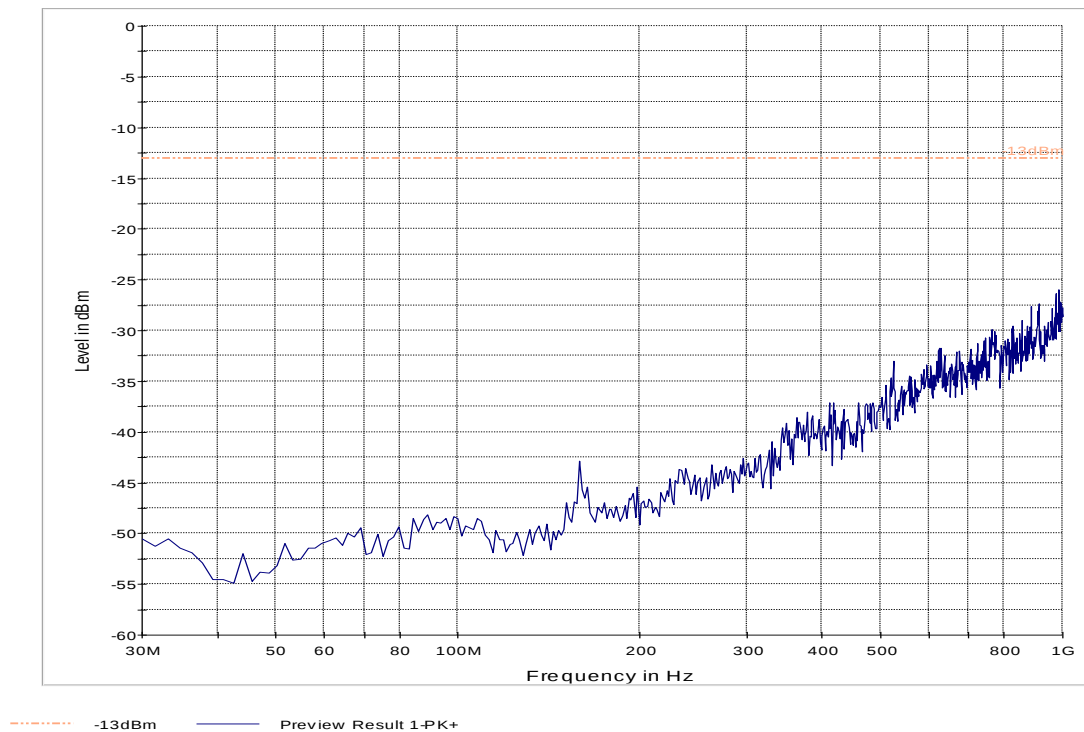
## Test results 18GHz-19.1GHz



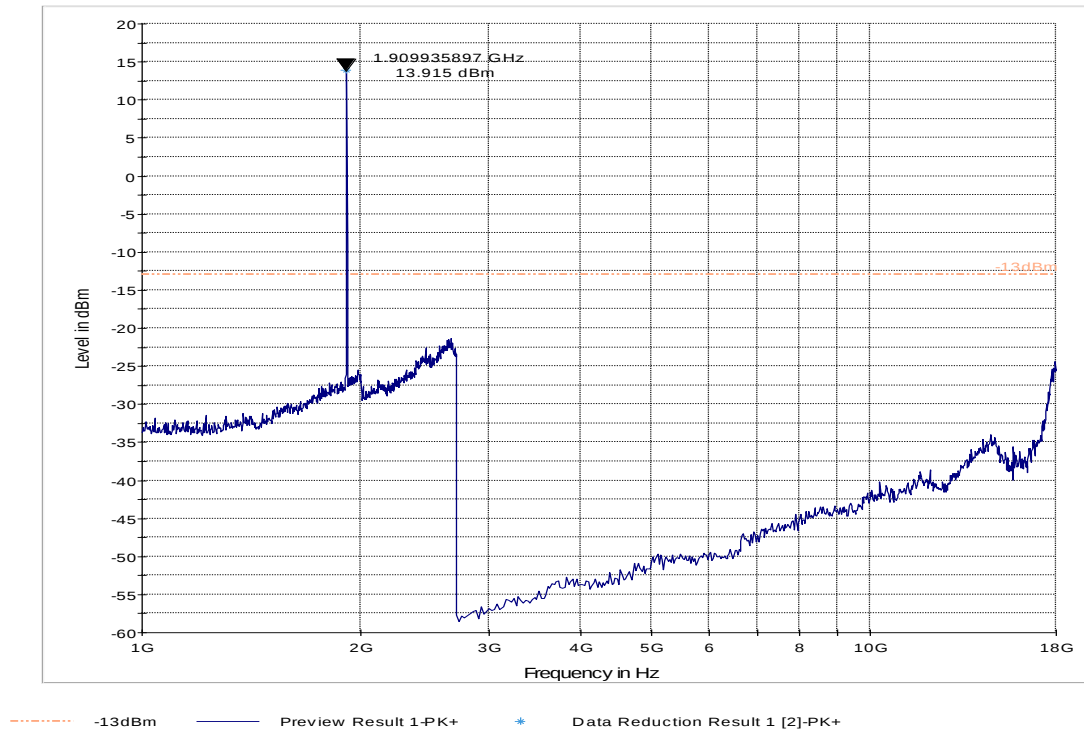
**Radiated Spurious Emissions (GSM-1900) Tx: High Channel**  
**Test results 9kHz-30MHz**



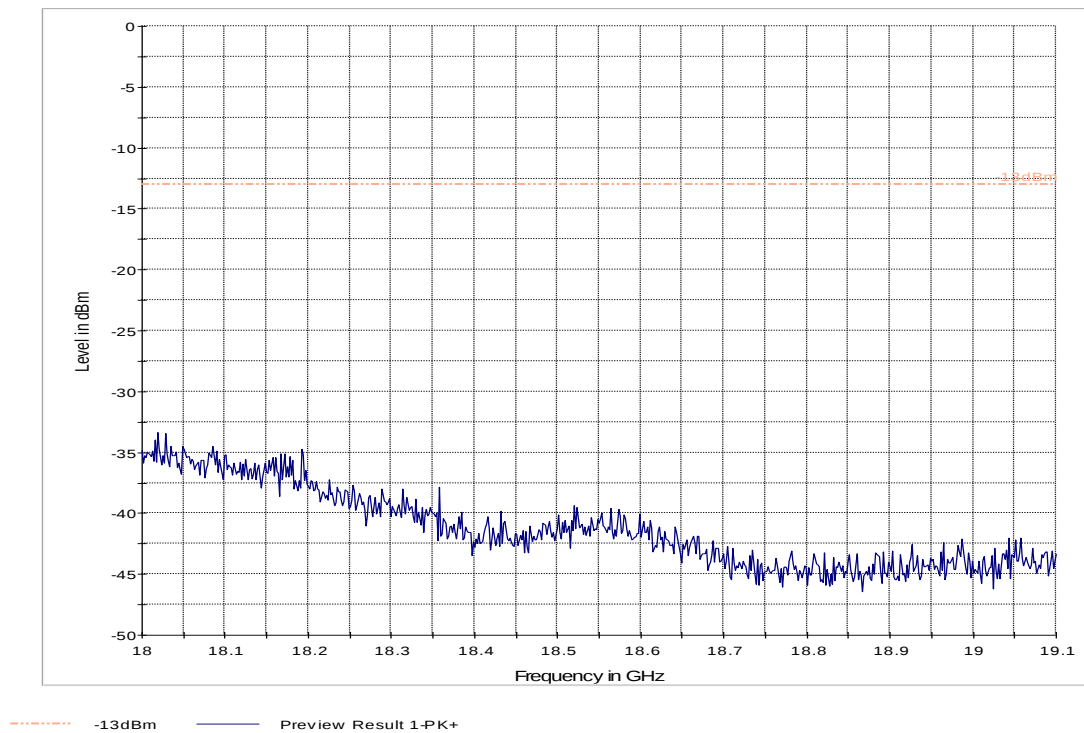
**Test results 30MHz-1GHz**



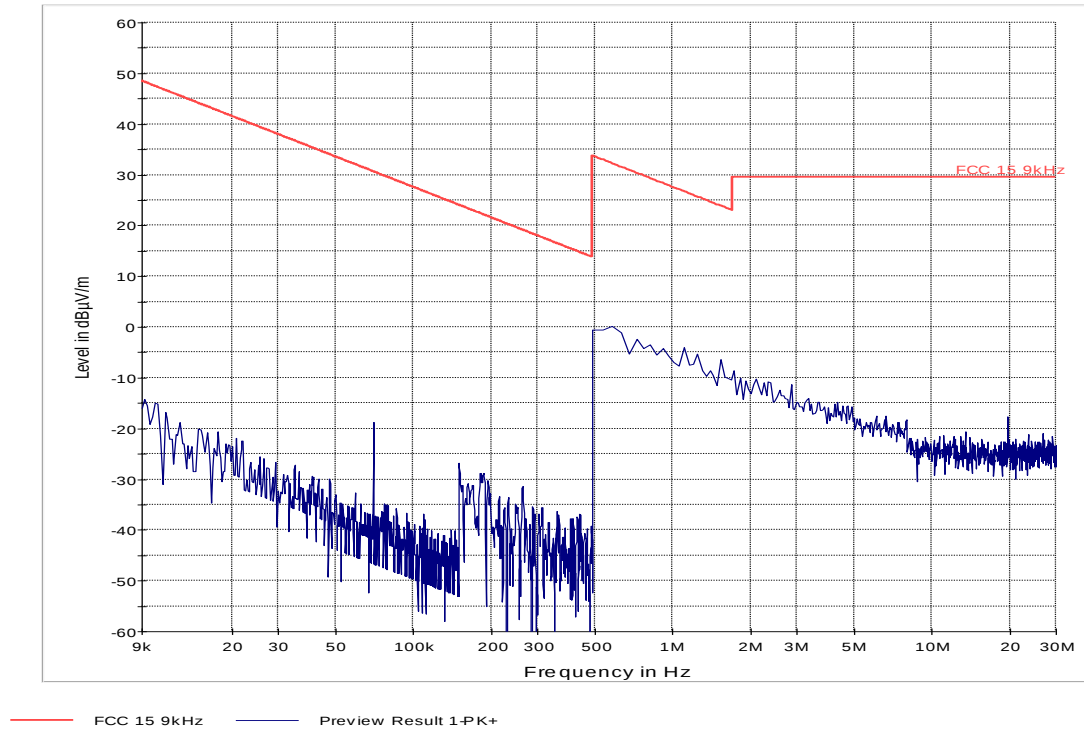
## Test results 1GHz-18GHz



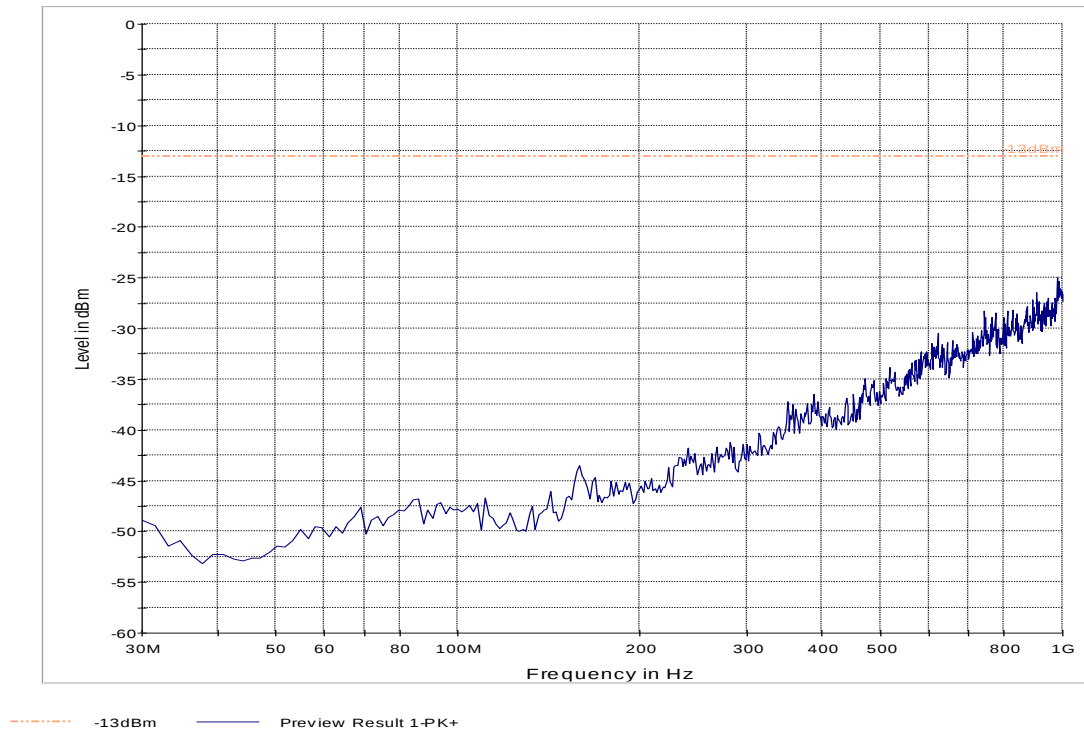
## Test results 18GHz-19.1GHz



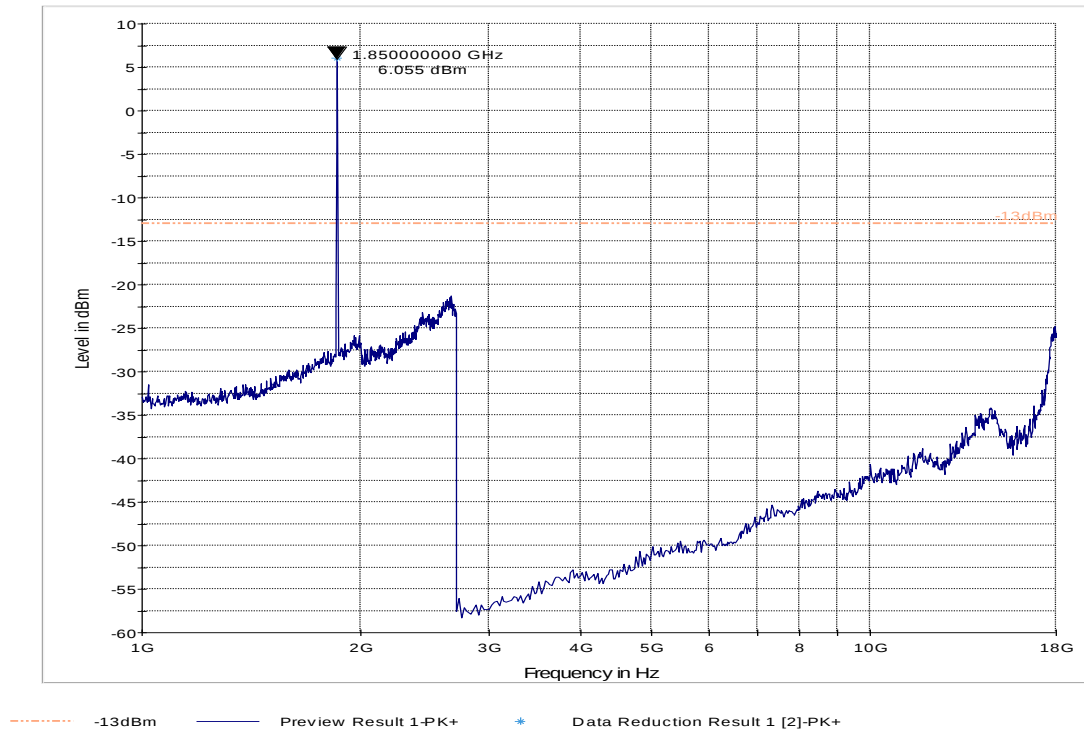
**Radiated Spurious Emissions (UMTS Band II) Tx: Low Channel**  
**Test results 9kHz-30MHz**



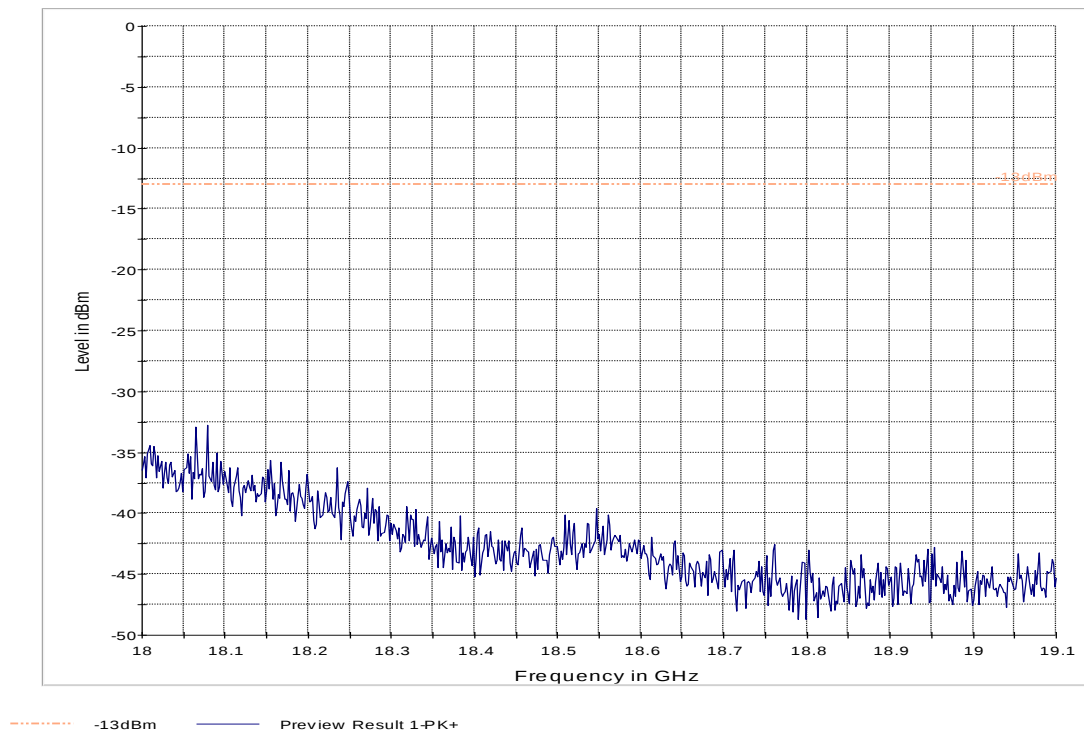
**Test results 30MHz-1GHz**



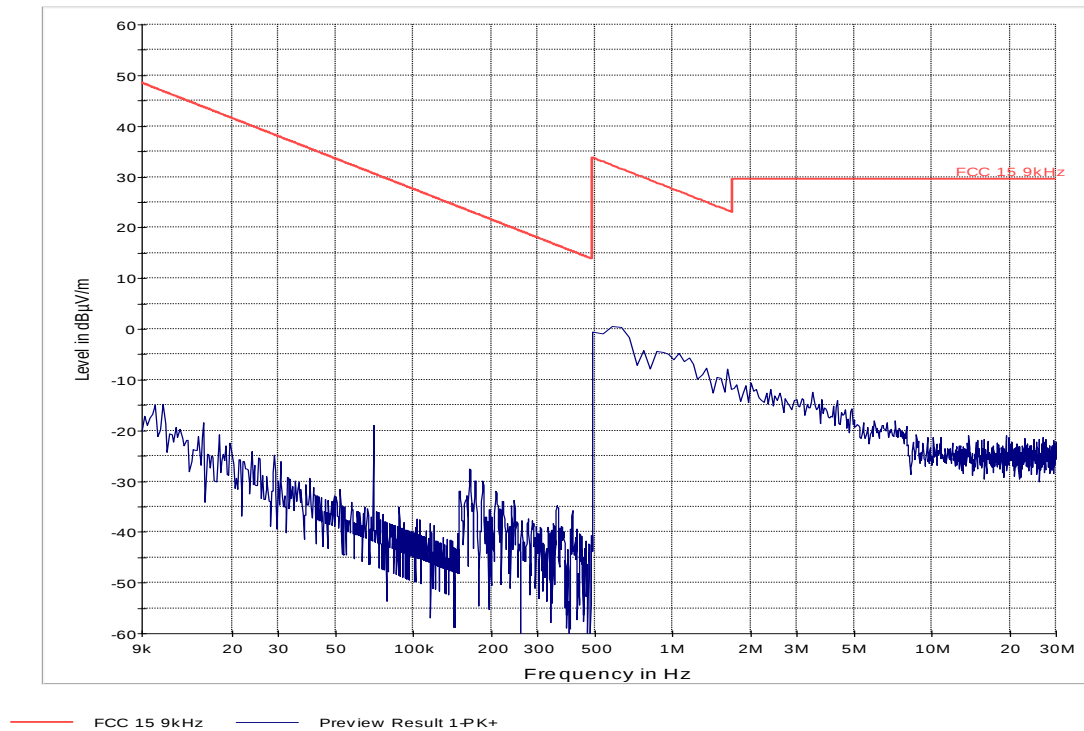
## Test results 1GHz-18GHz



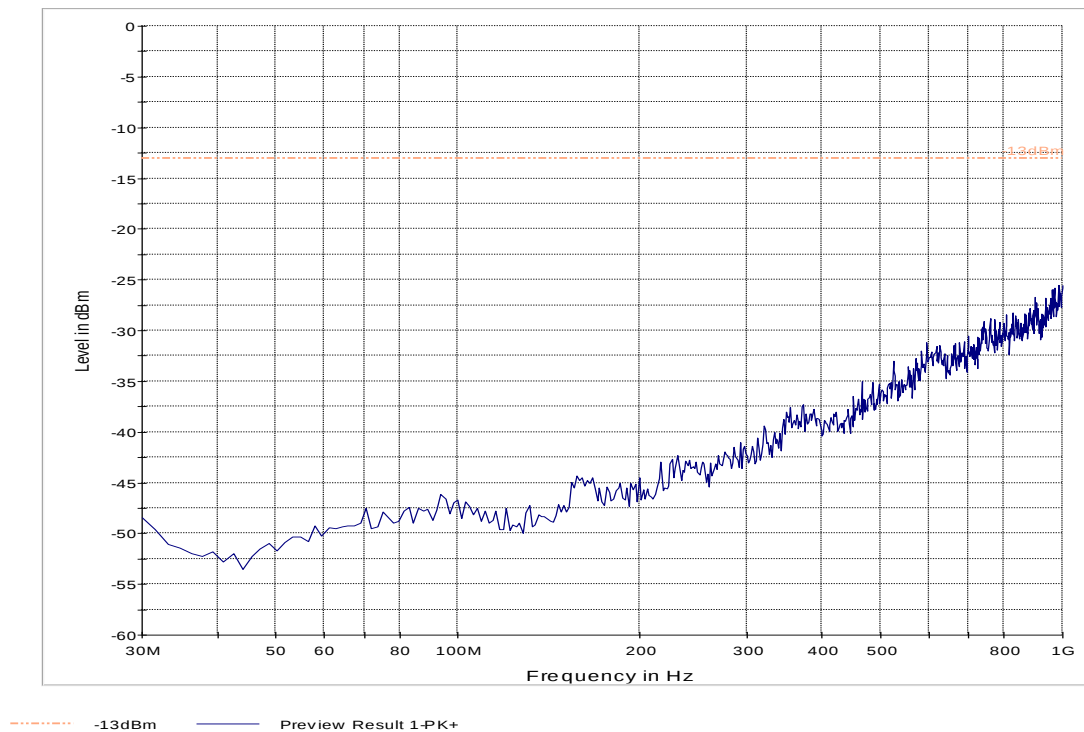
## Test results 18GHz-19.1GHz



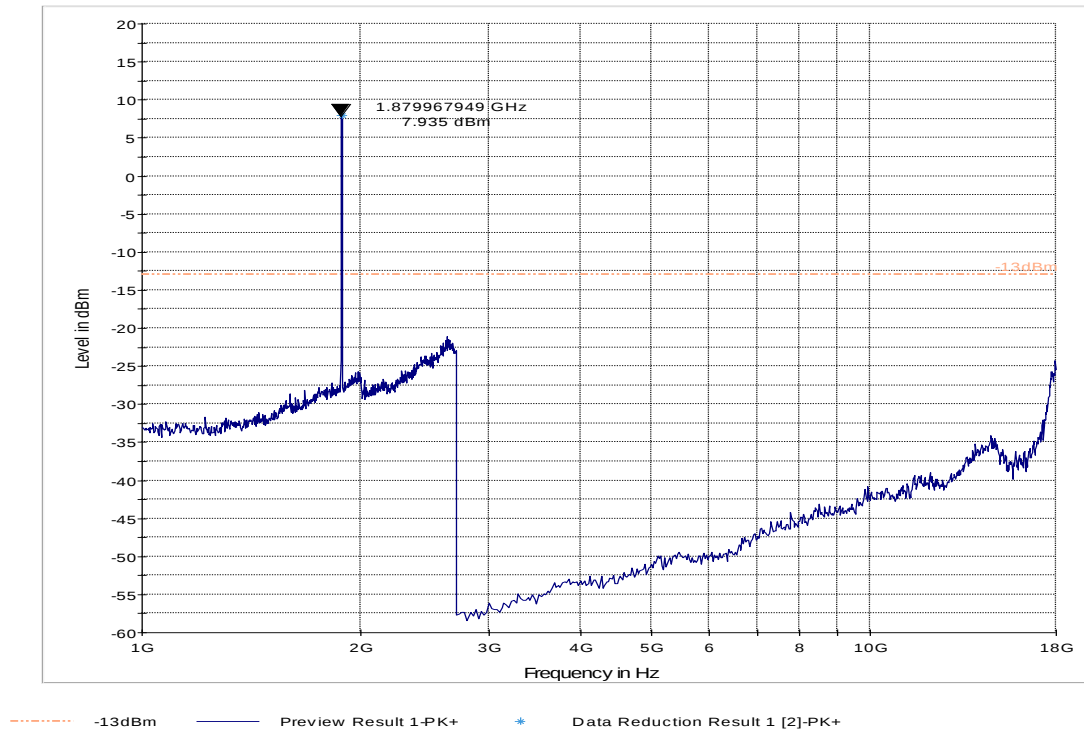
**Radiated Spurious Emissions (UMTS Band II) Tx: Mid Channel**  
**Test results 9kHz-30MHz**



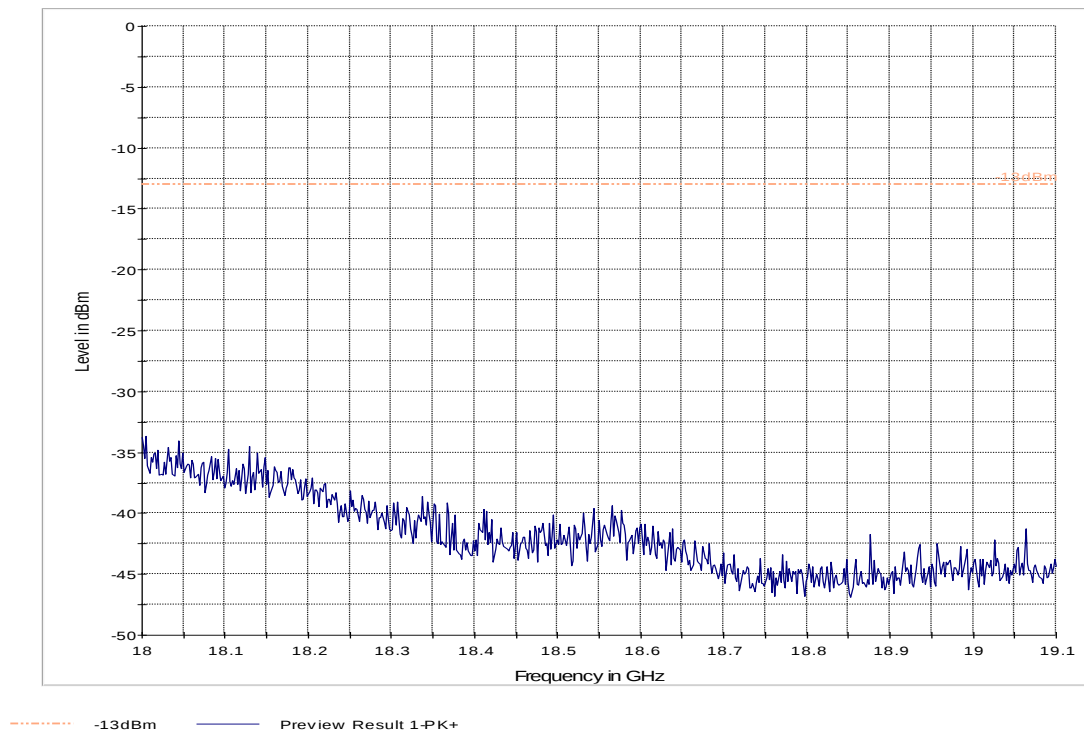
**Test results 30MHz-1GHz**



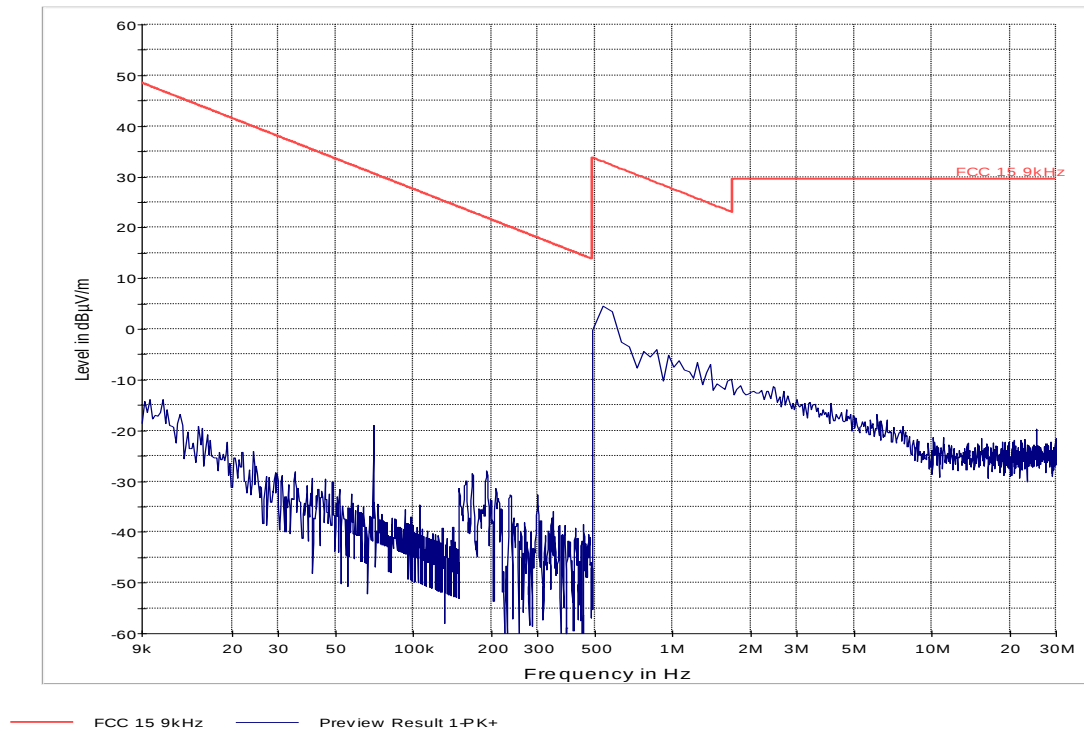
## Test results 1GHz-18GHz



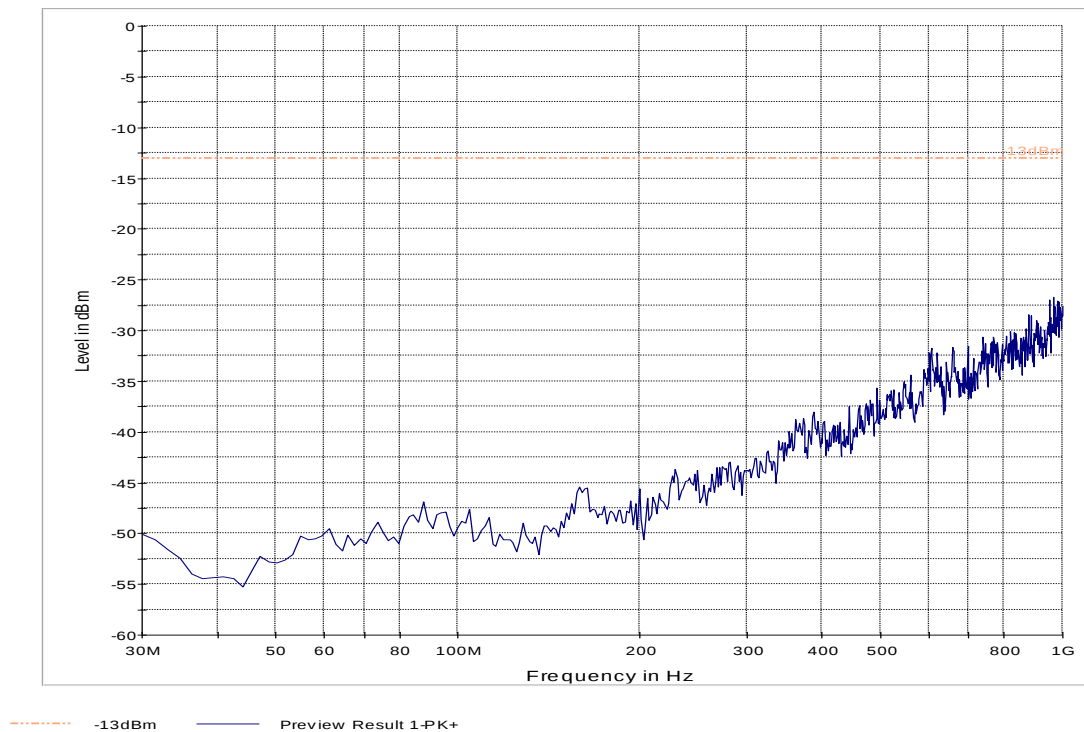
## Test results 18GHz-19.1GHz



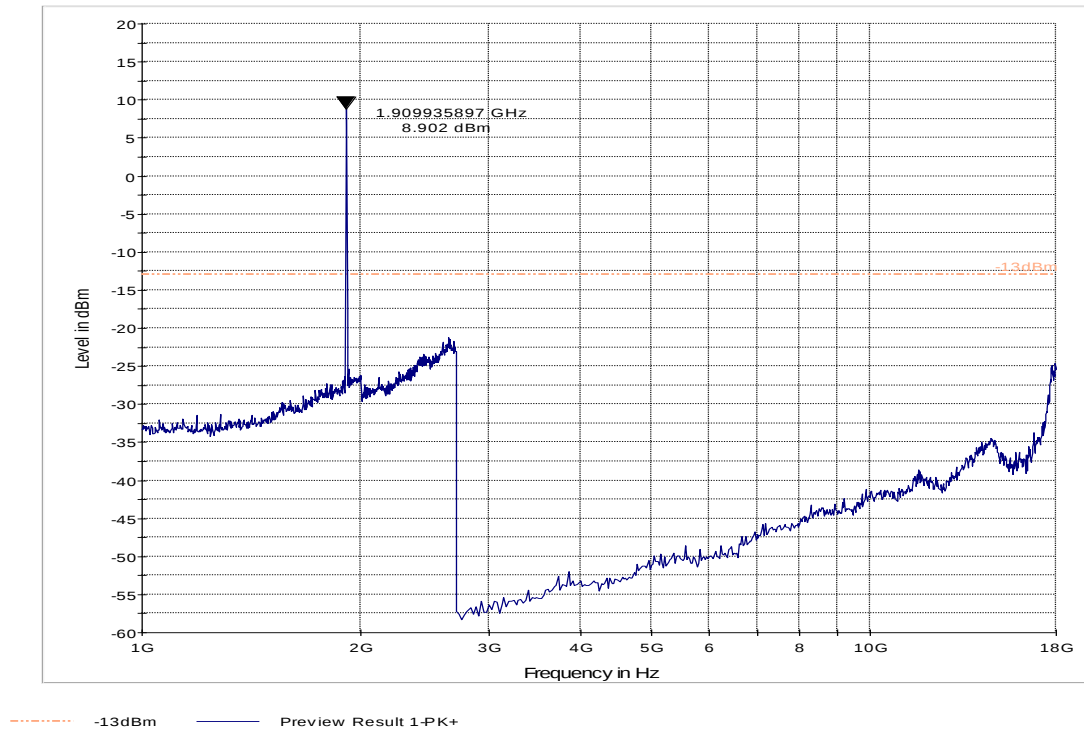
**Radiated Spurious Emissions (UMTS Band II) Tx: High Channel**  
**Test results 9kHz-30MHz**



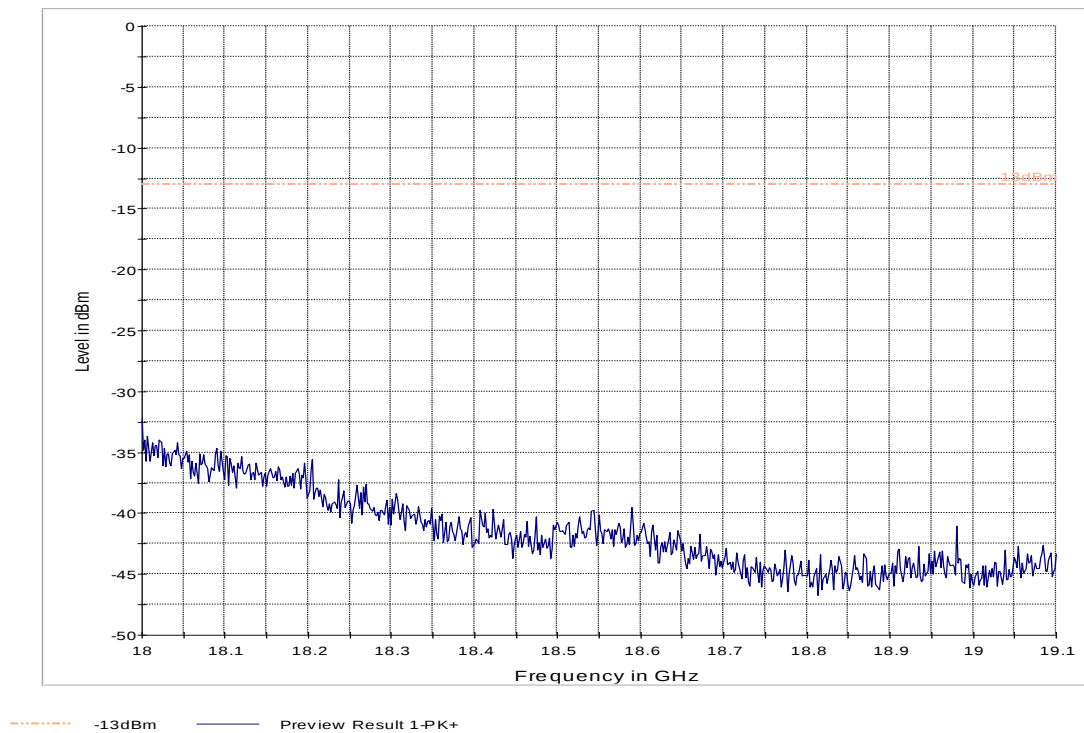
**Test results 30MHz-1GHz**



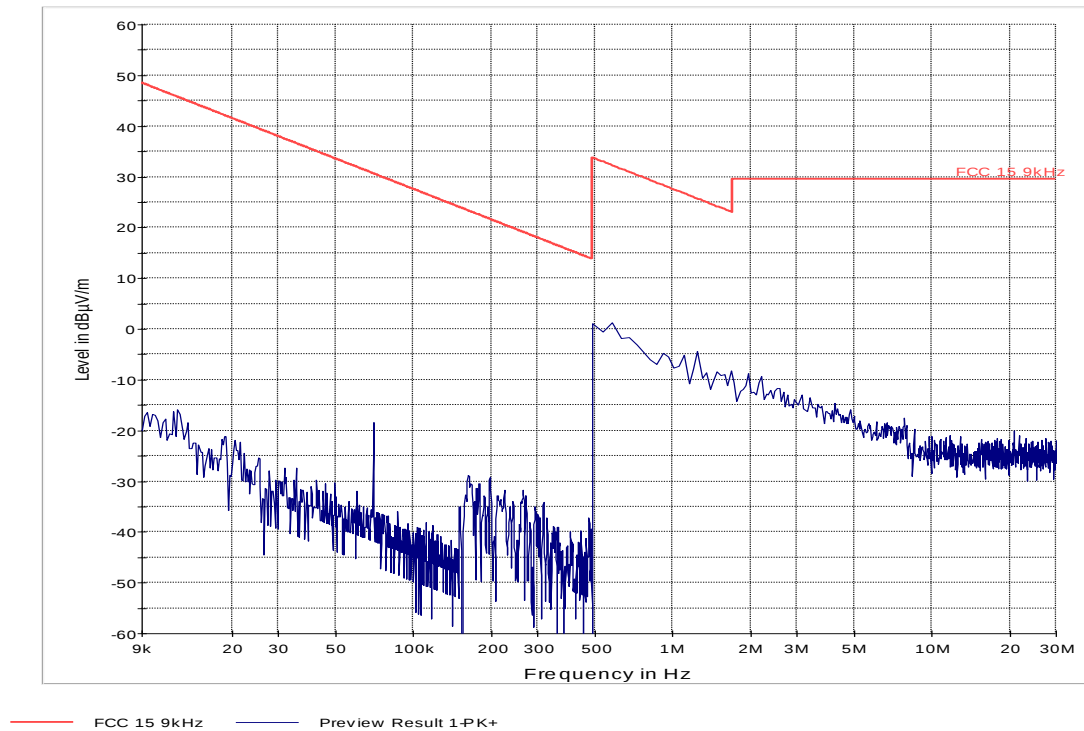
## Test results 1GHz-18GHz



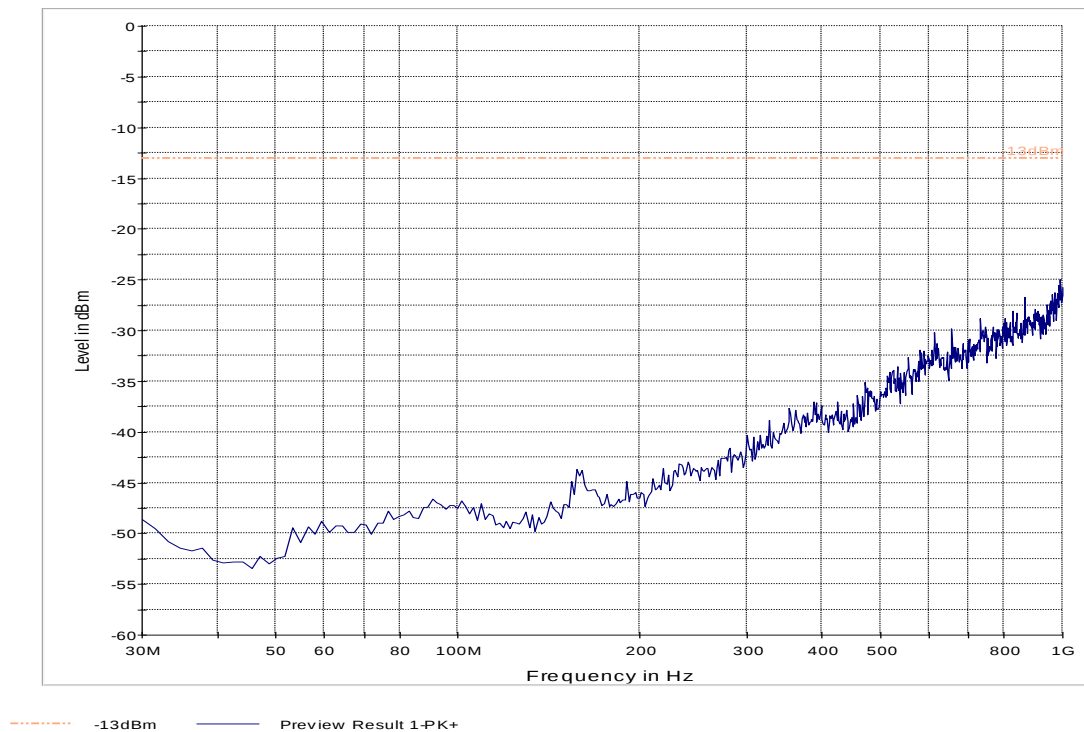
## Test results 18GHz-19.1GHz



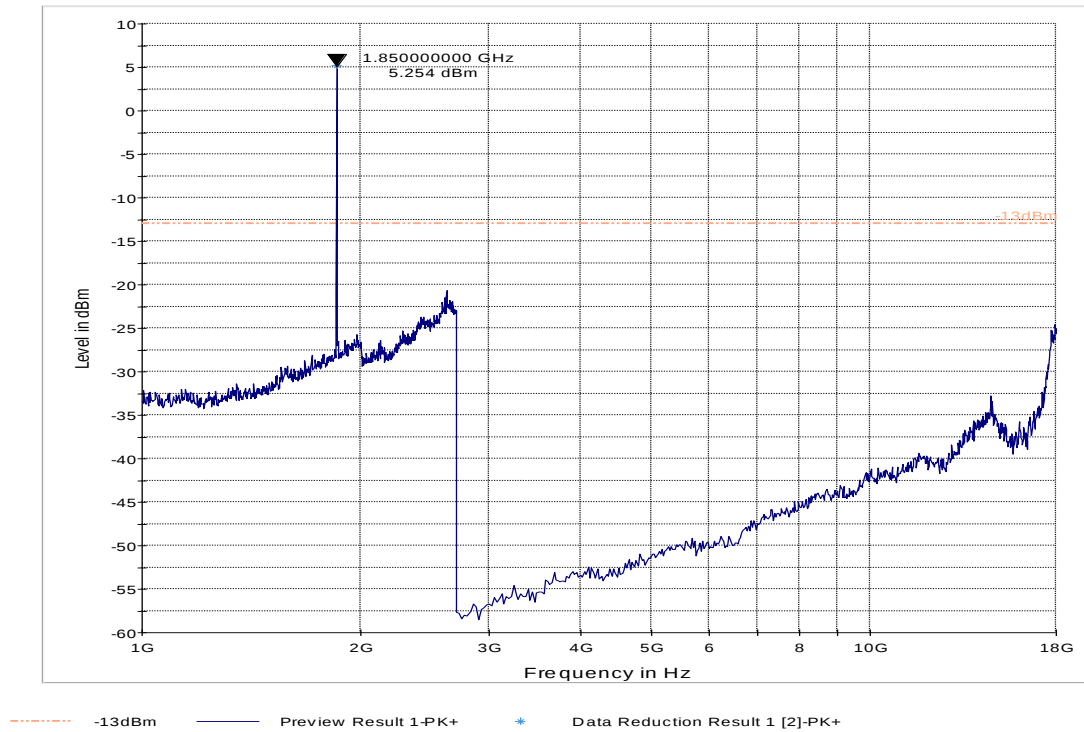
**Radiated Spurious Emissions (LTE Band 2) Tx: QPSK; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



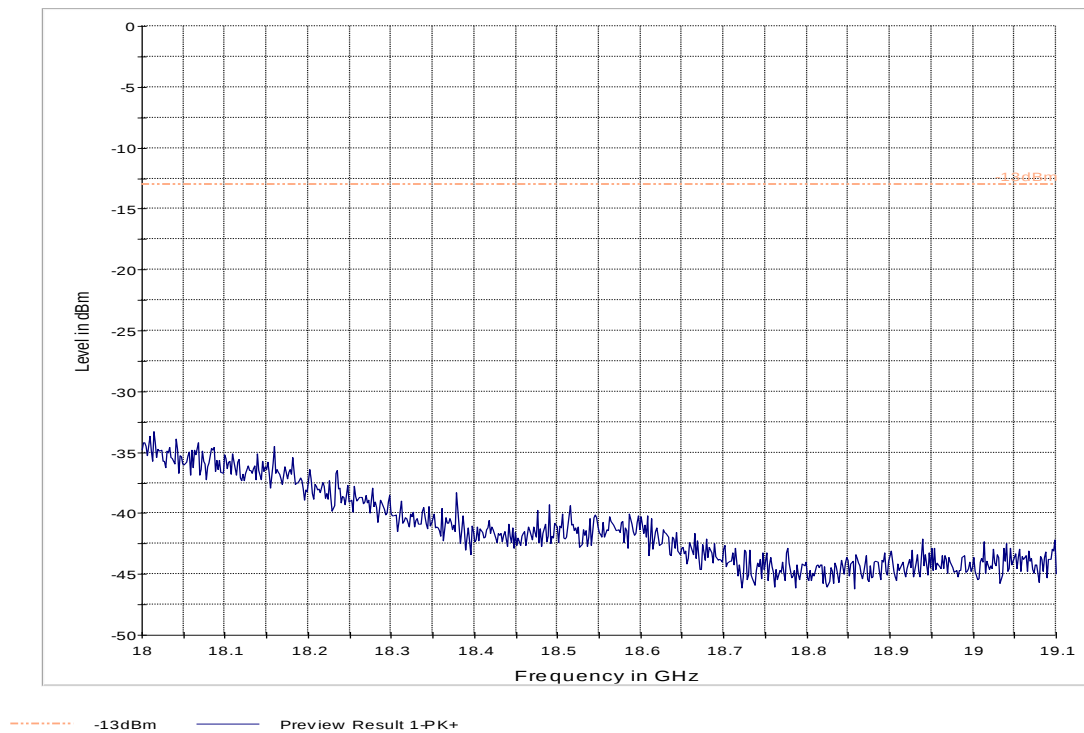
**Test results 30MHz-1GHz**



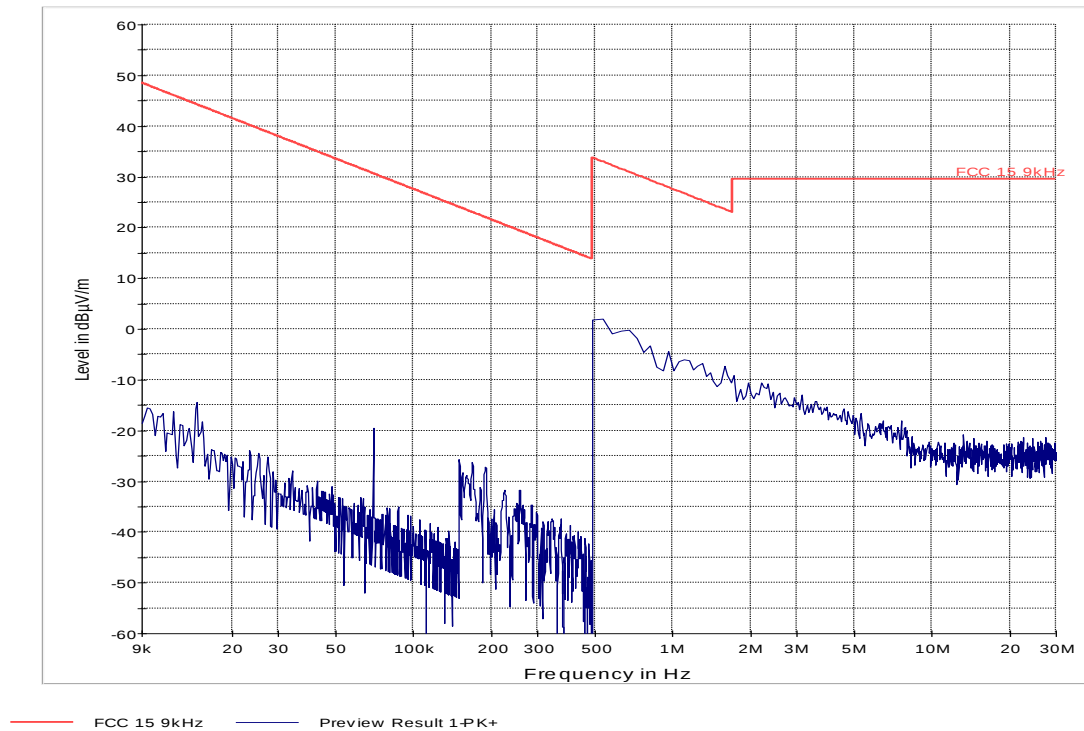
## Test results 1GHz-18GHz



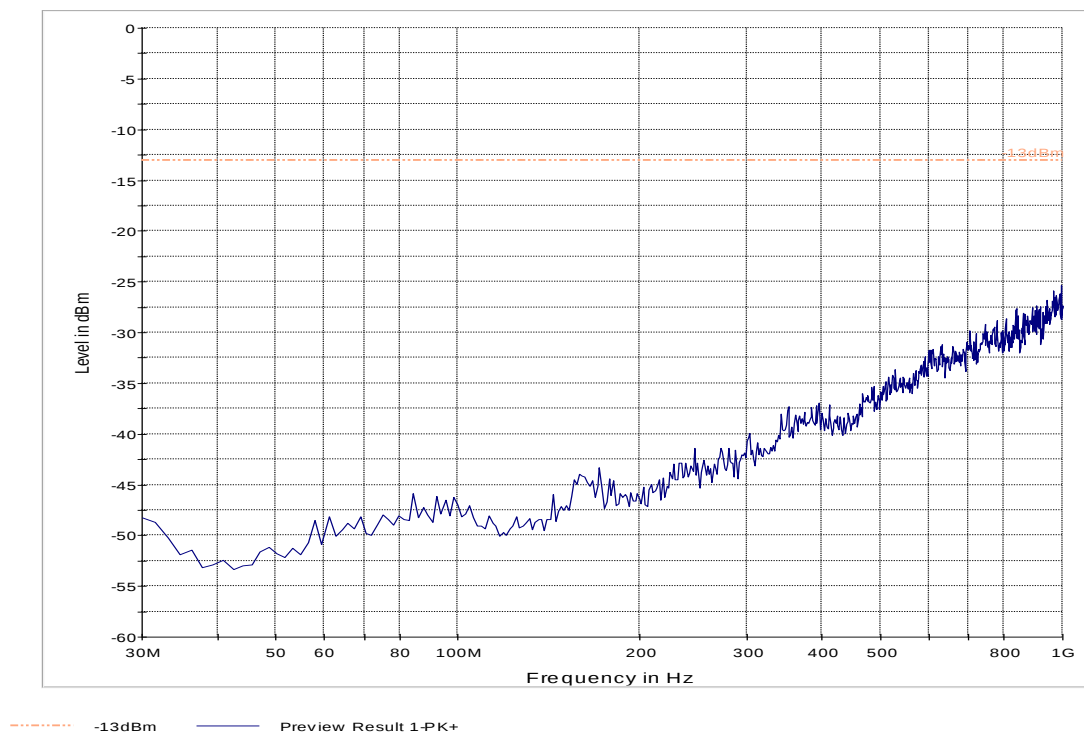
## Test results 18GHz-19.1GHz



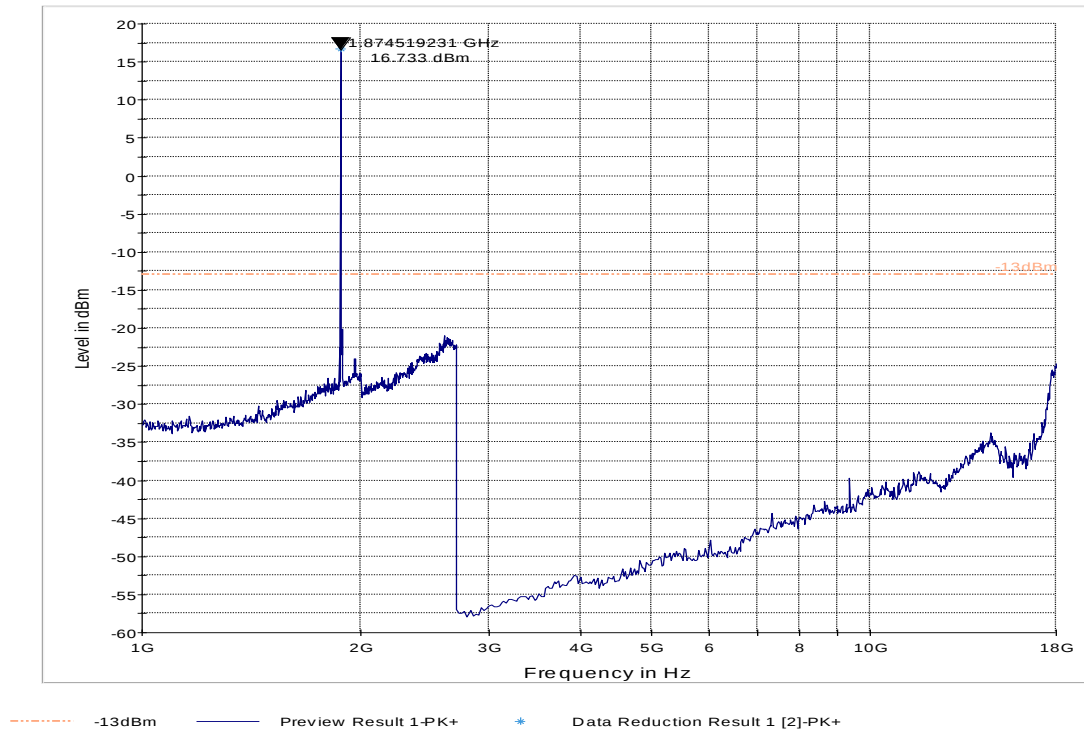
**Radiated Spurious Emissions (LTE Band 2) Tx: QPSK; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



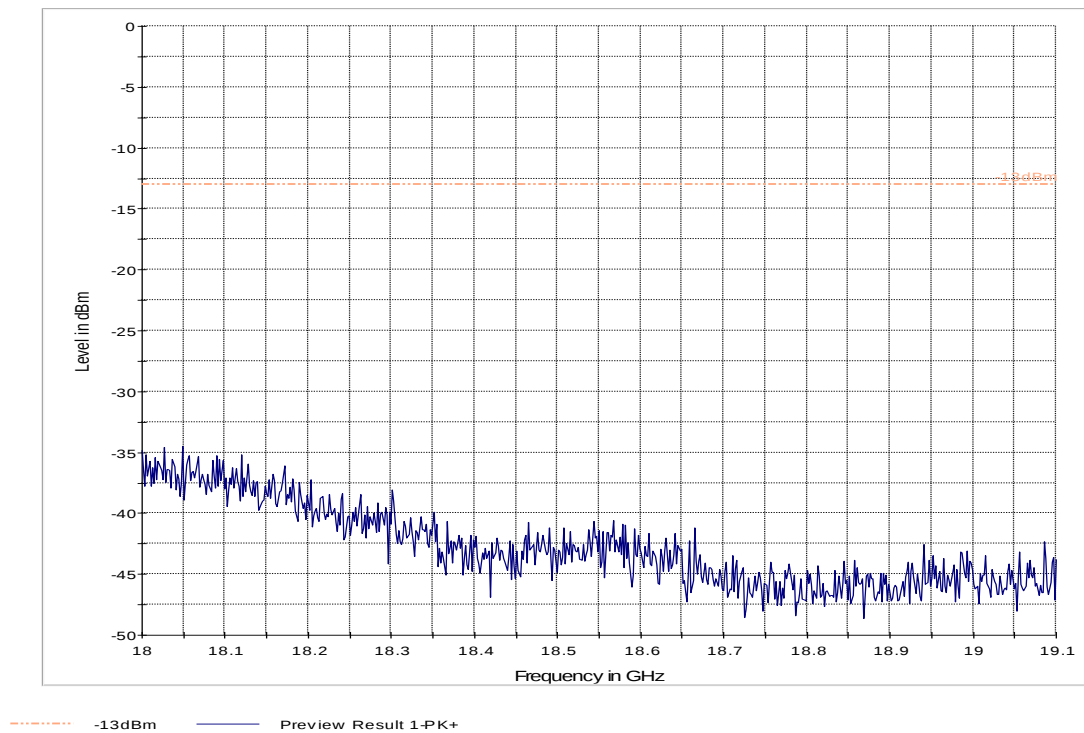
**Test results 30MHz-1GHz**



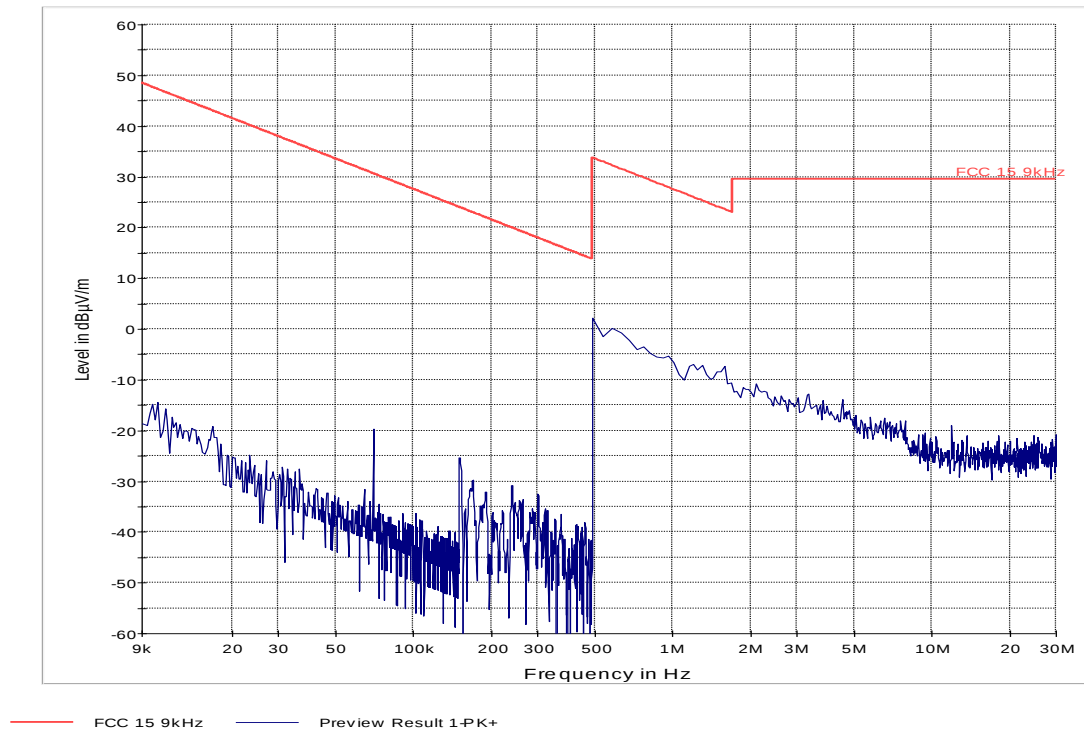
## Test results 1GHz-18GHz



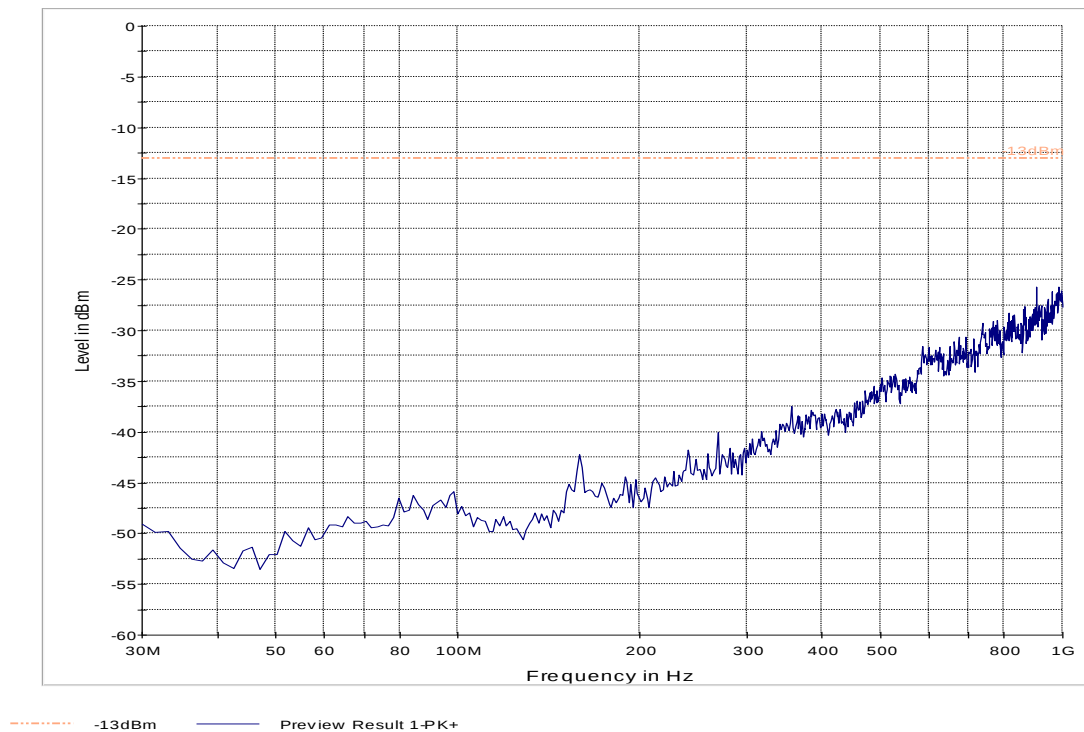
## Test results 18GHz-19.1GHz



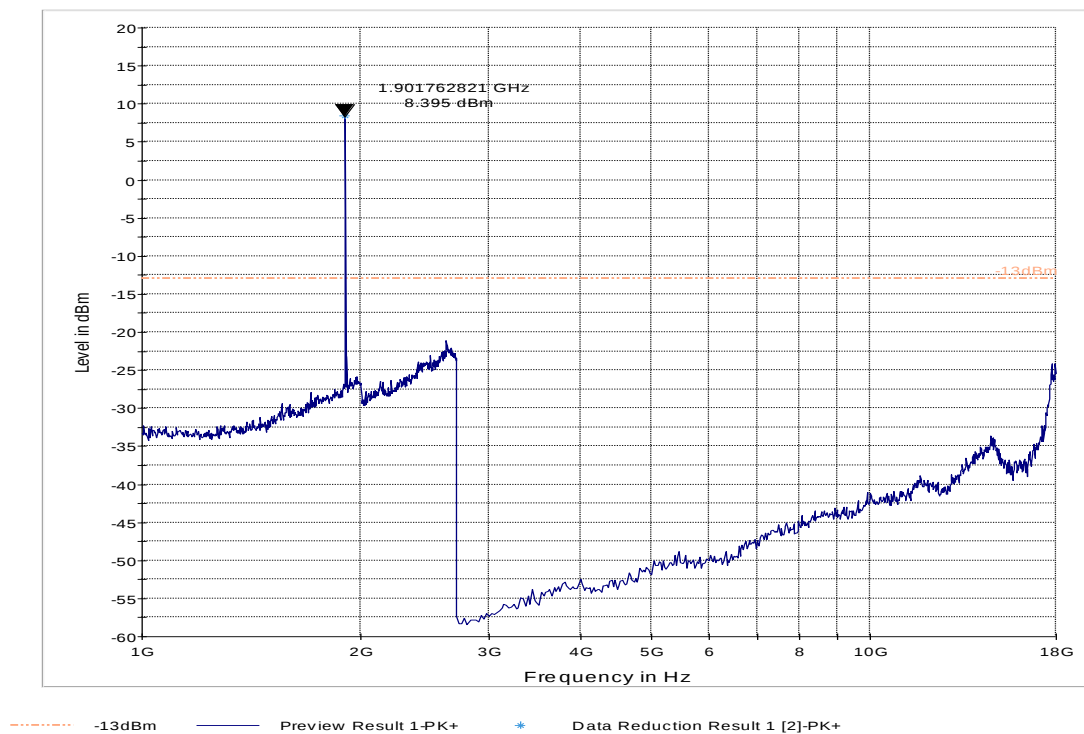
**Radiated Spurious Emissions (LTE Band 2) Tx: QPSK; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



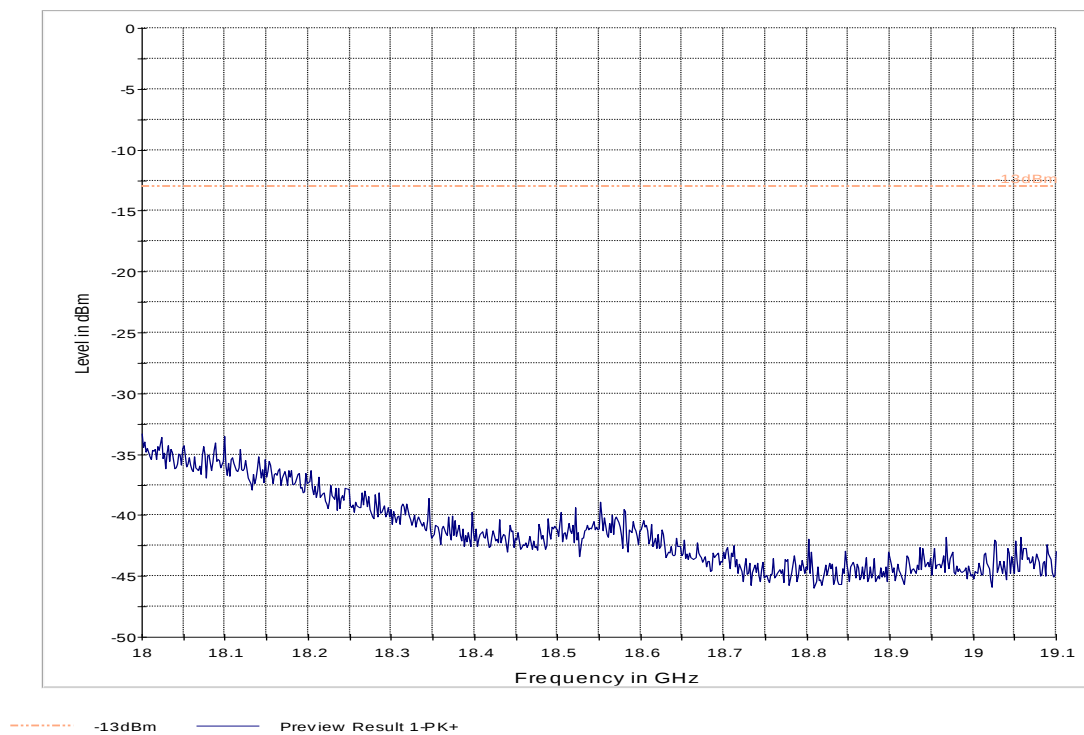
**Test results 30MHz-1GHz**



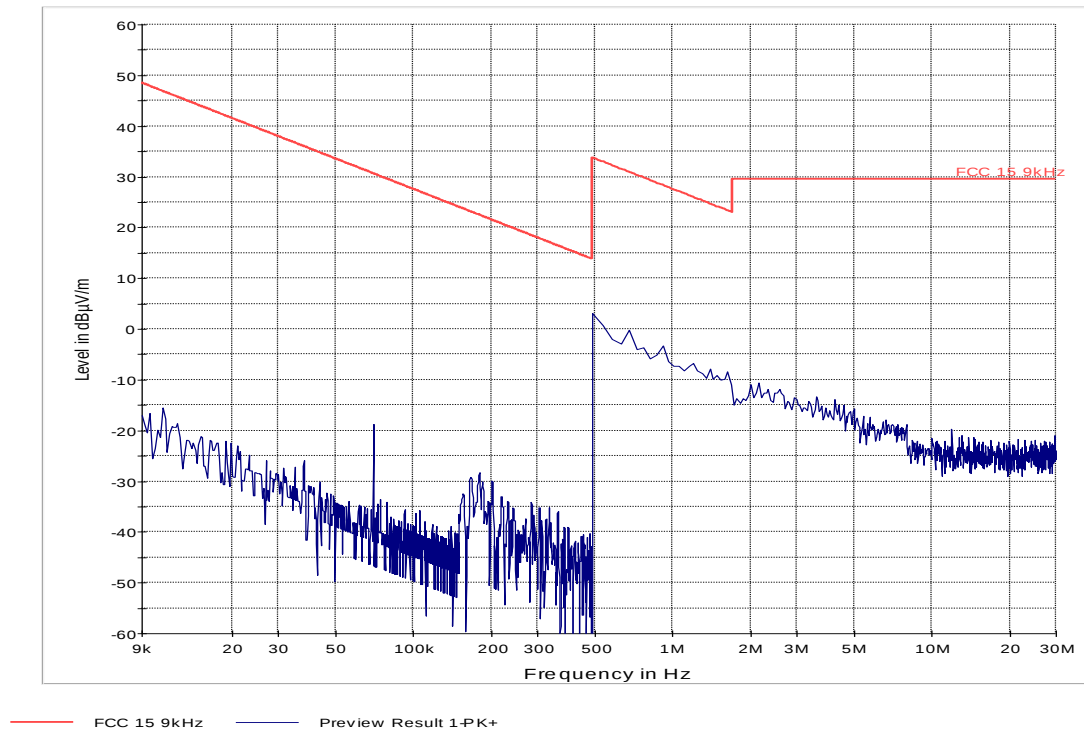
## Test results 1GHz-18GHz



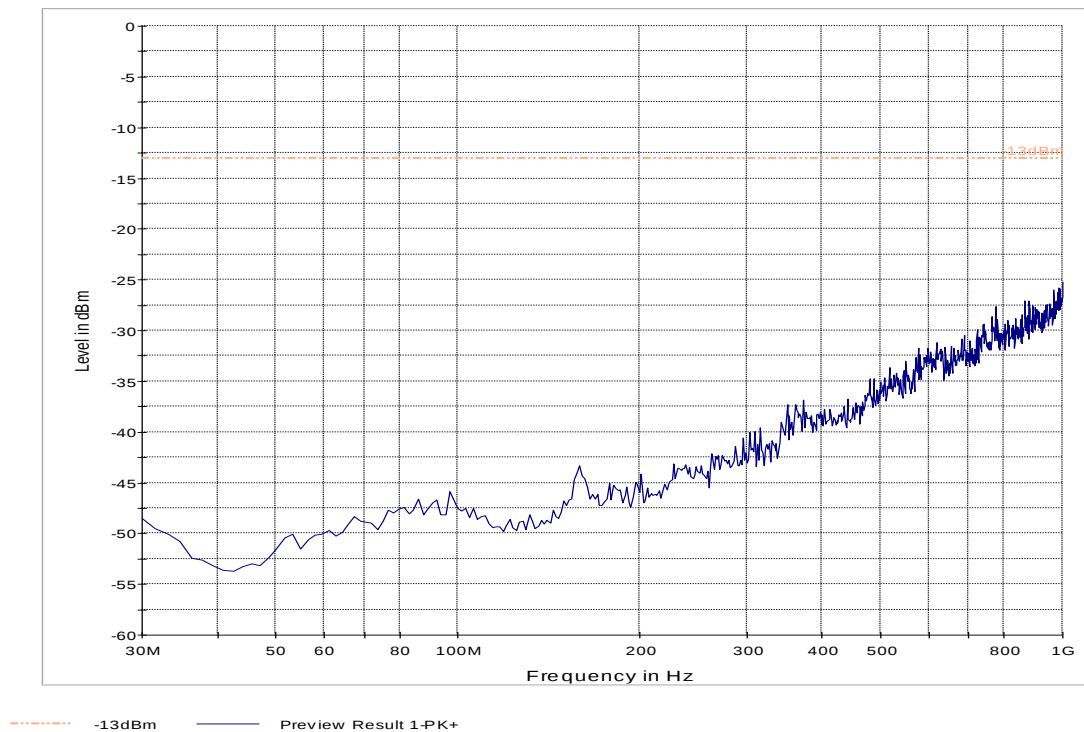
## Test results 18GHz-19.1GHz



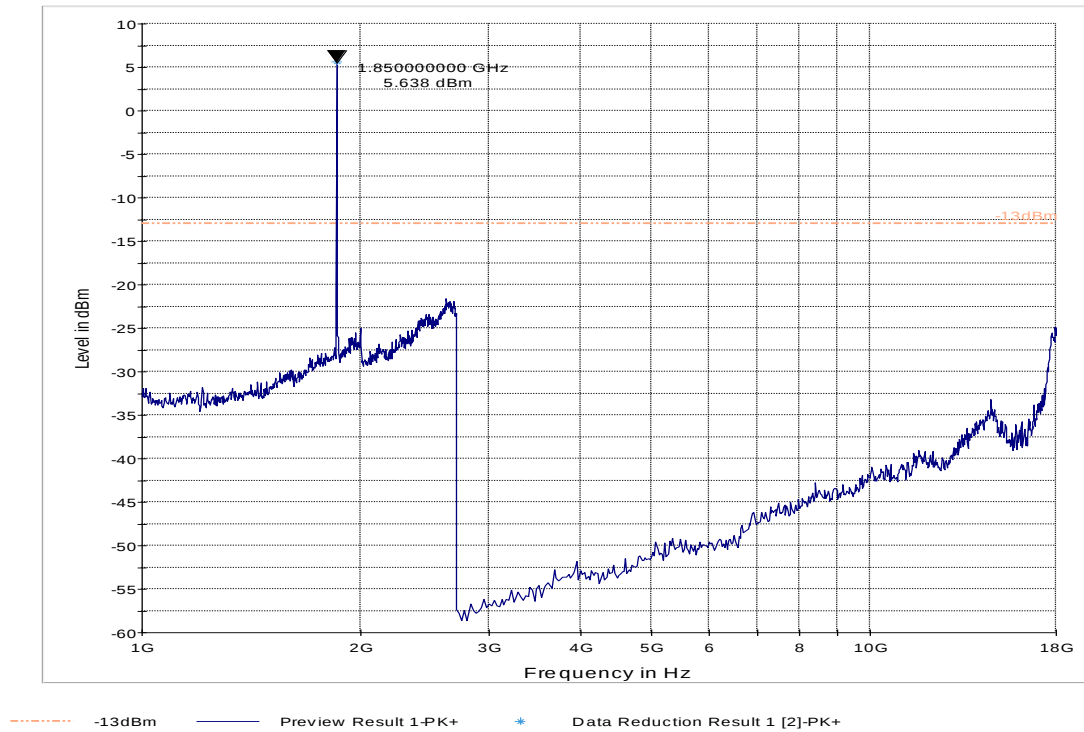
**Radiated Spurious Emissions (LTE Band 2) Tx: 16-QAM; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



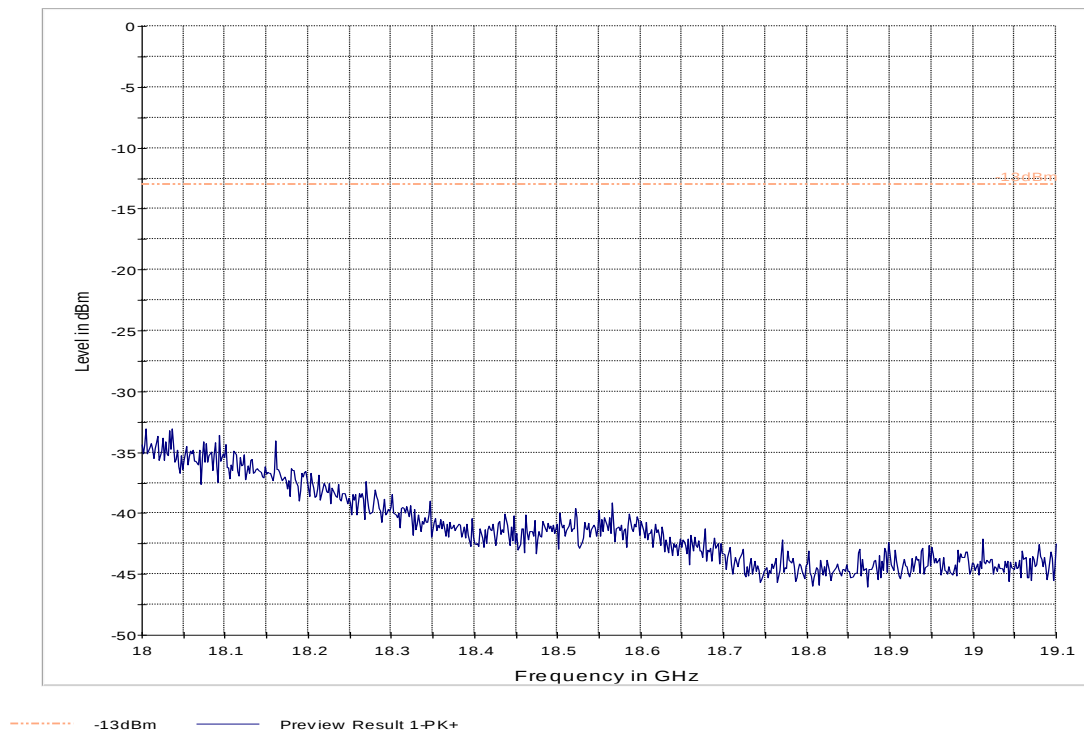
**Test results 30MHz-1GHz**



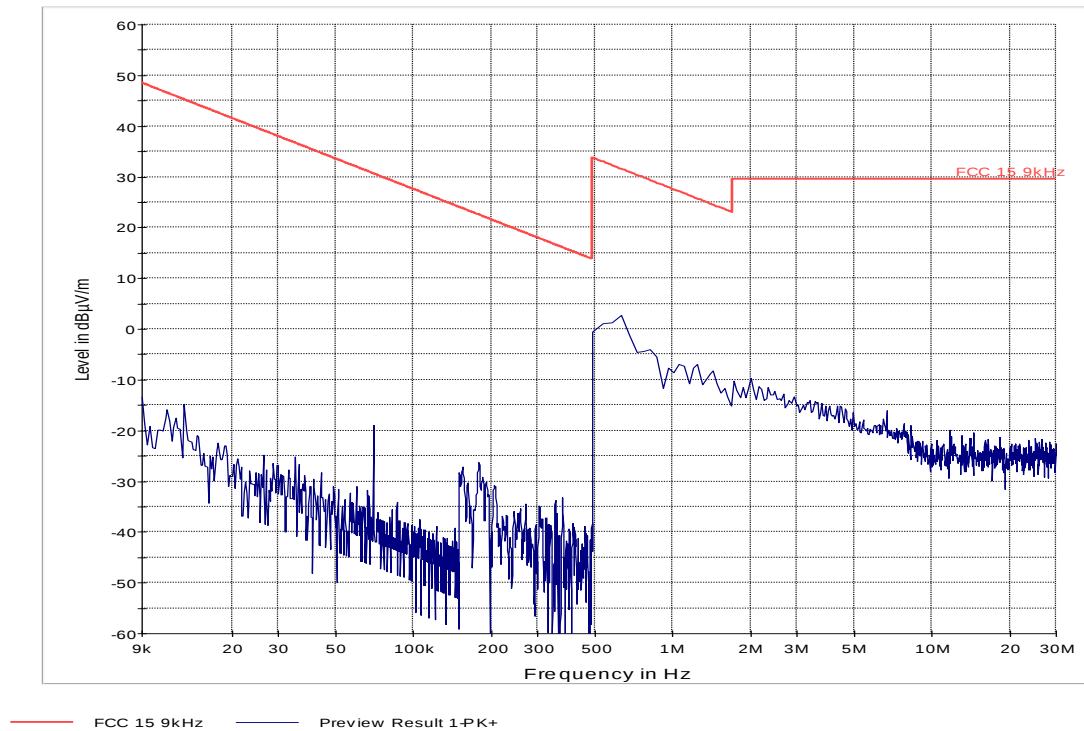
## Test results 1GHz-18GHz



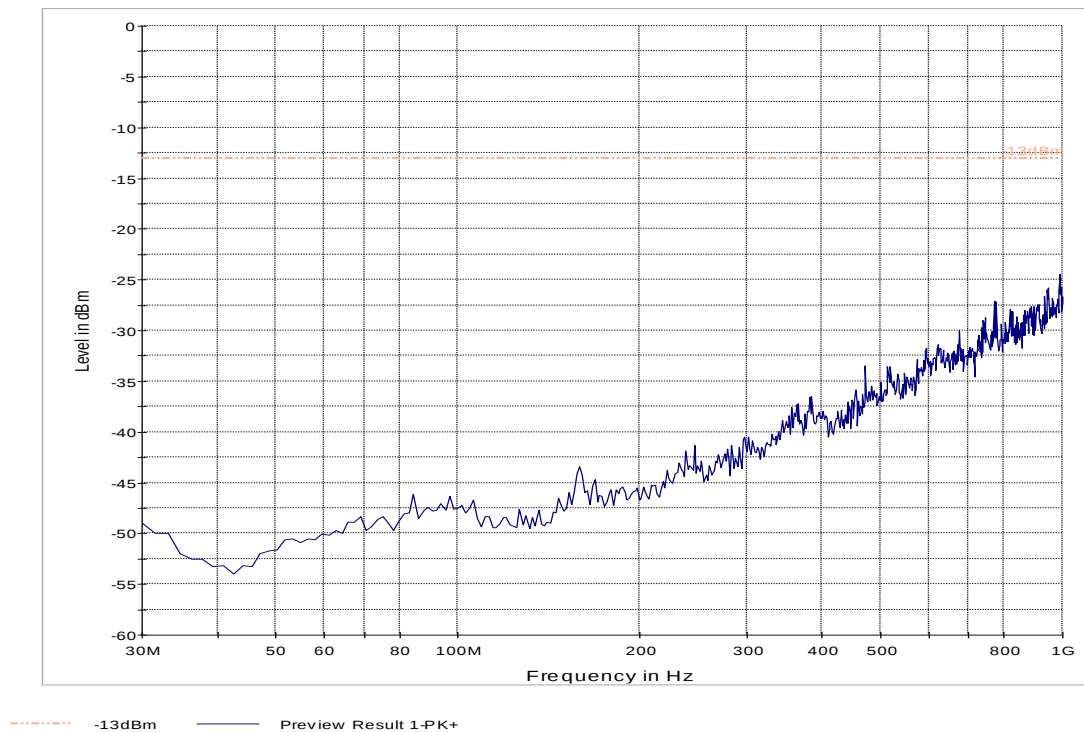
## Test results 18GHz-19.1GHz



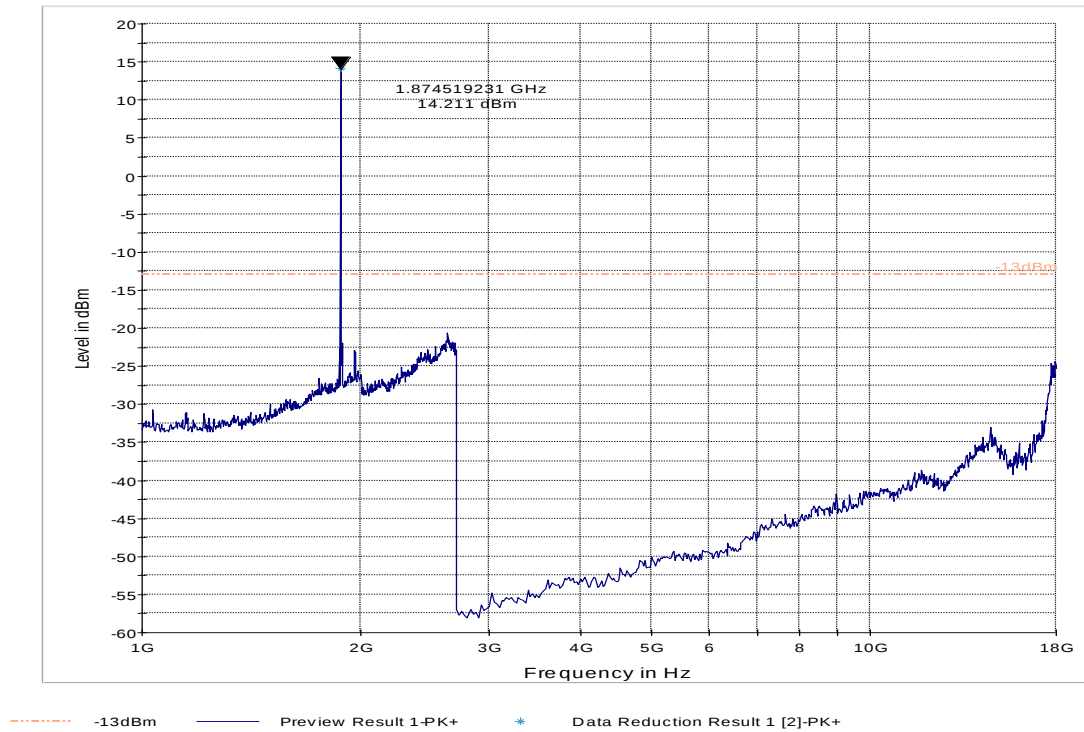
**Radiated Spurious Emissions (LTE Band 2) Tx: 16-QAM; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



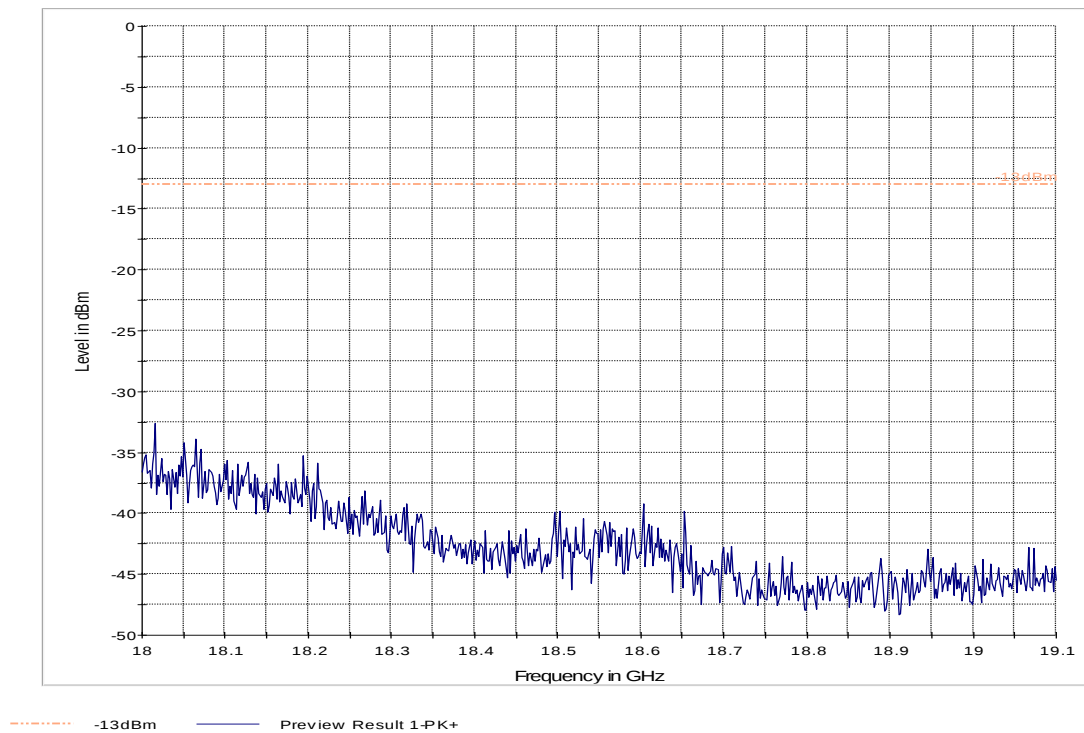
**Test results 30MHz-1GHz**



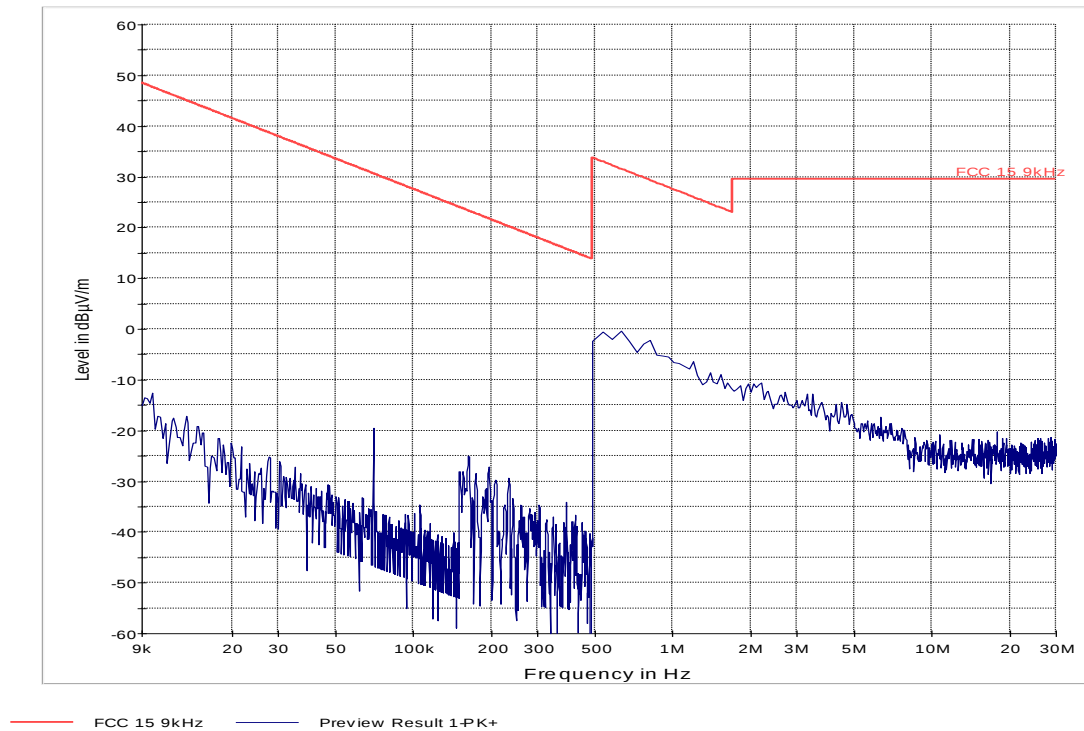
## Test results 1GHz-18GHz



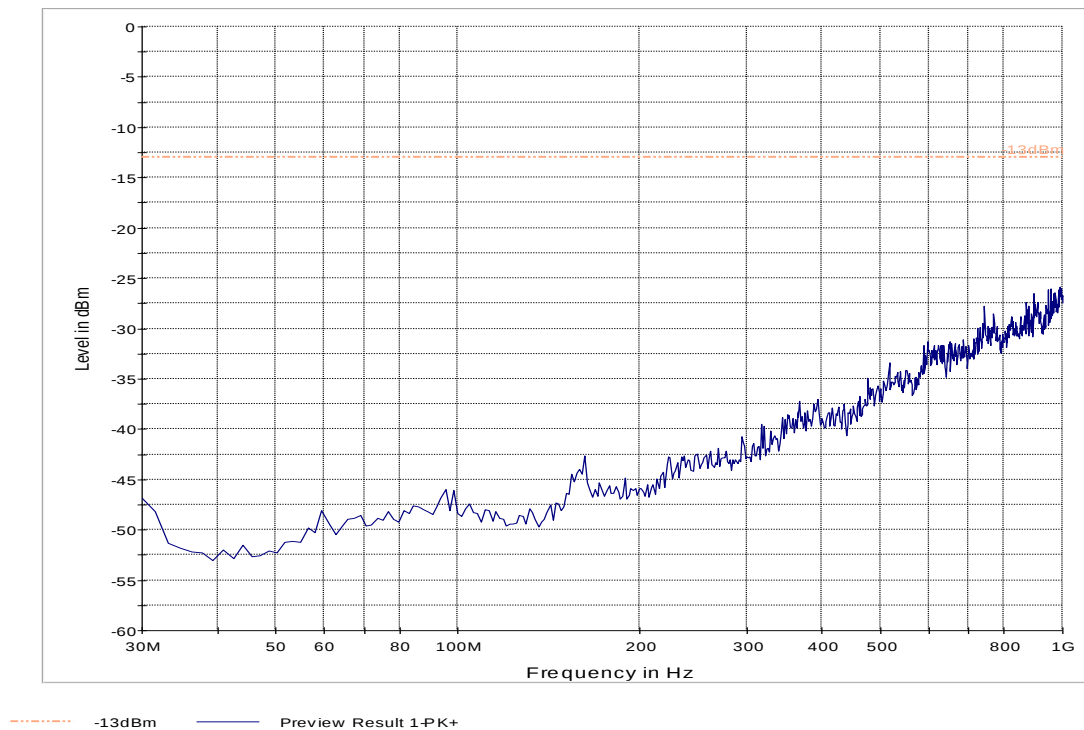
## Test results 18GHz-19.1GHz



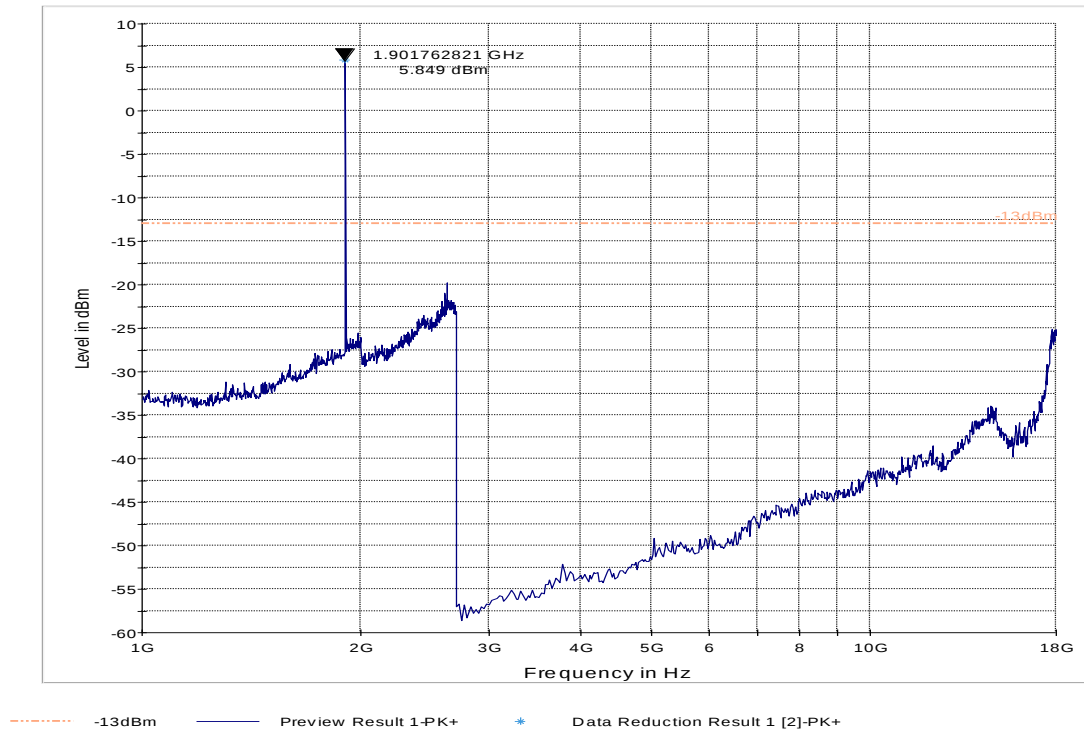
**Radiated Spurious Emissions (LTE Band 2) Tx: 16-QAM; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



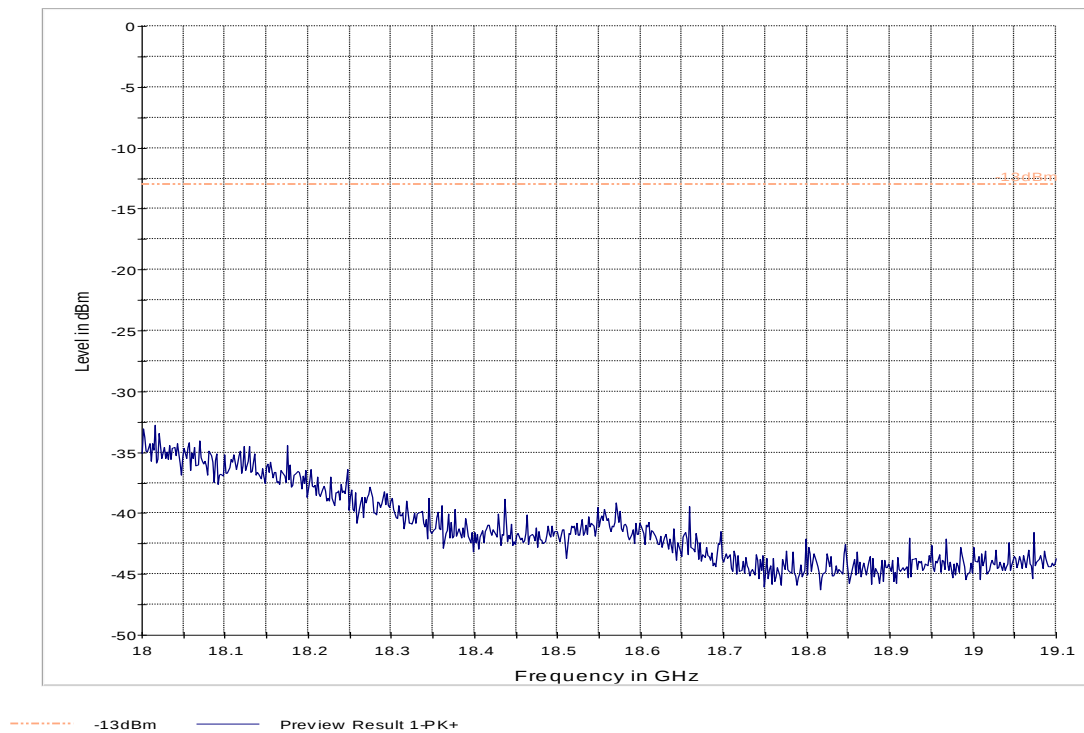
**Test results 30MHz-1GHz**



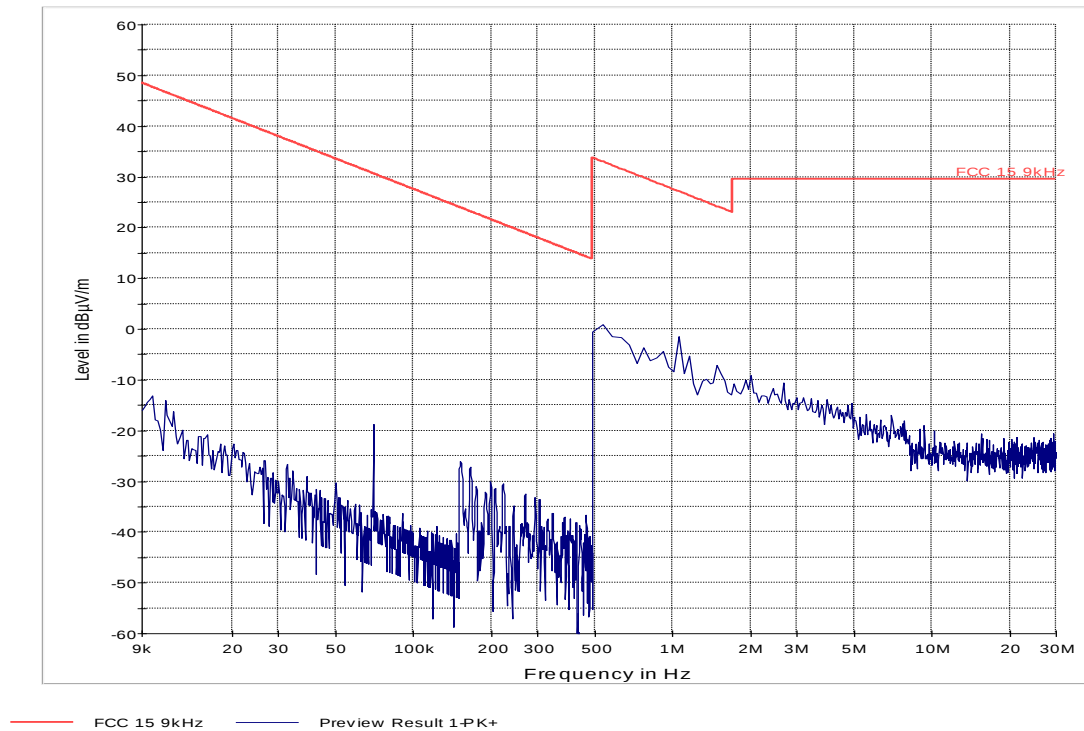
## Test results 1GHz-18GHz



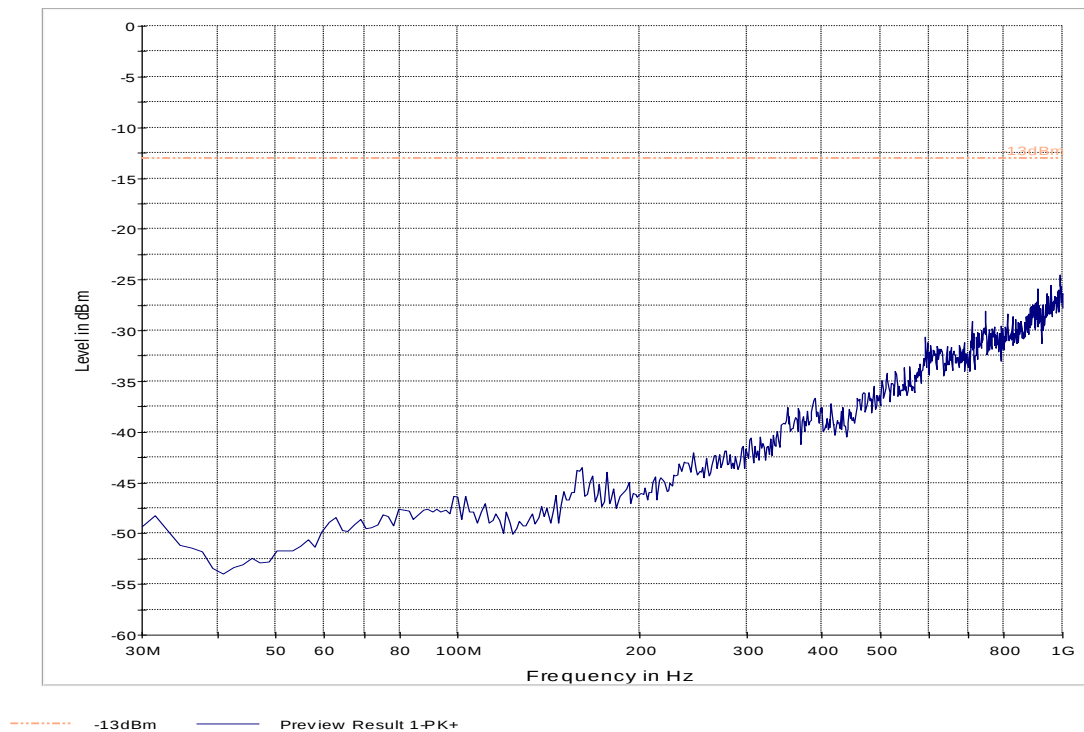
## Test results 18GHz-19.1GHz



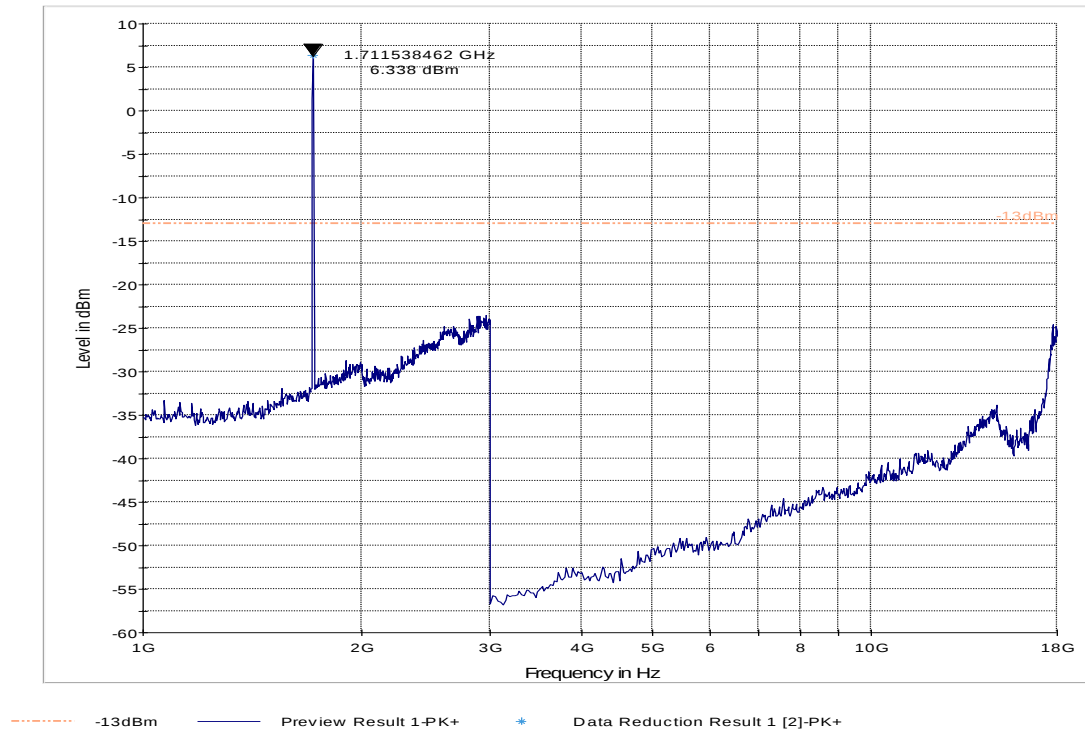
**Radiated Spurious Emissions (UMTS Band IV) Tx: Low Channel**  
**Test results 9kHz-30MHz**



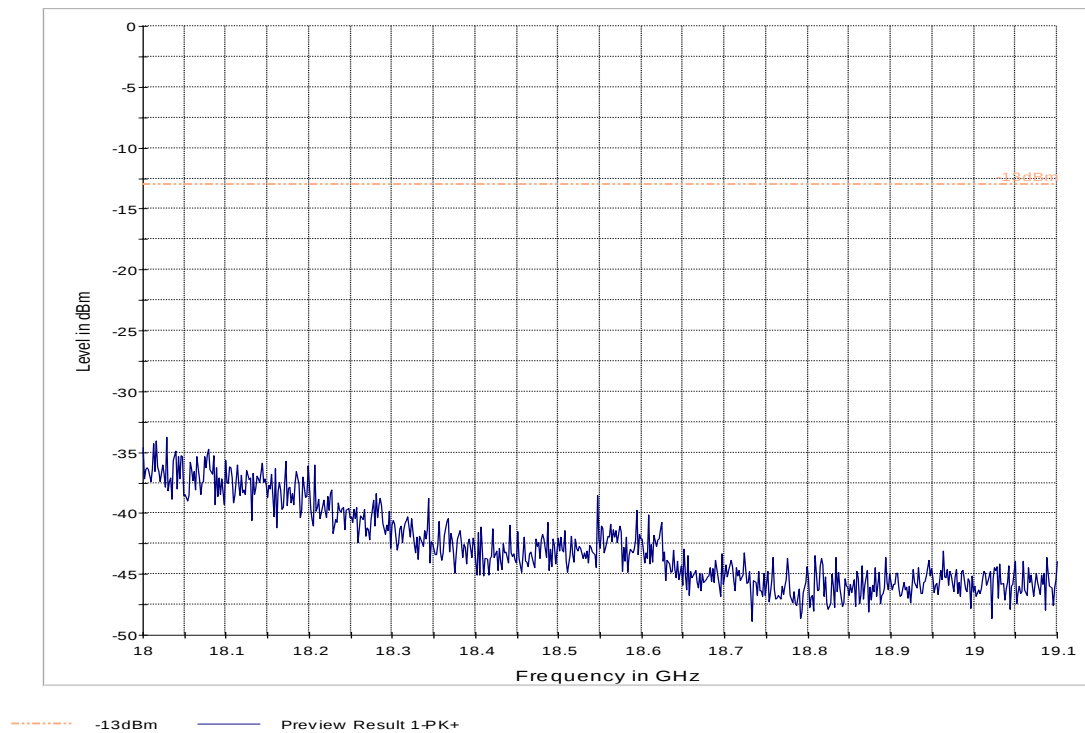
**Test results 30MHz-1GHz**



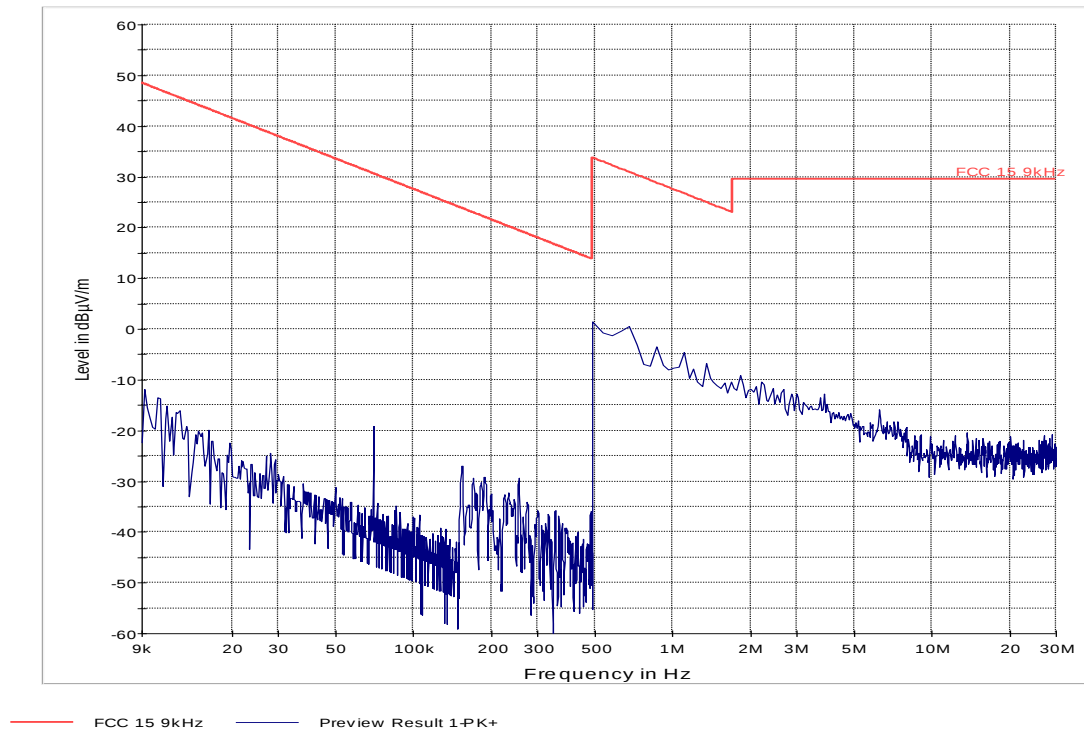
## Test results 1GHz-18GHz



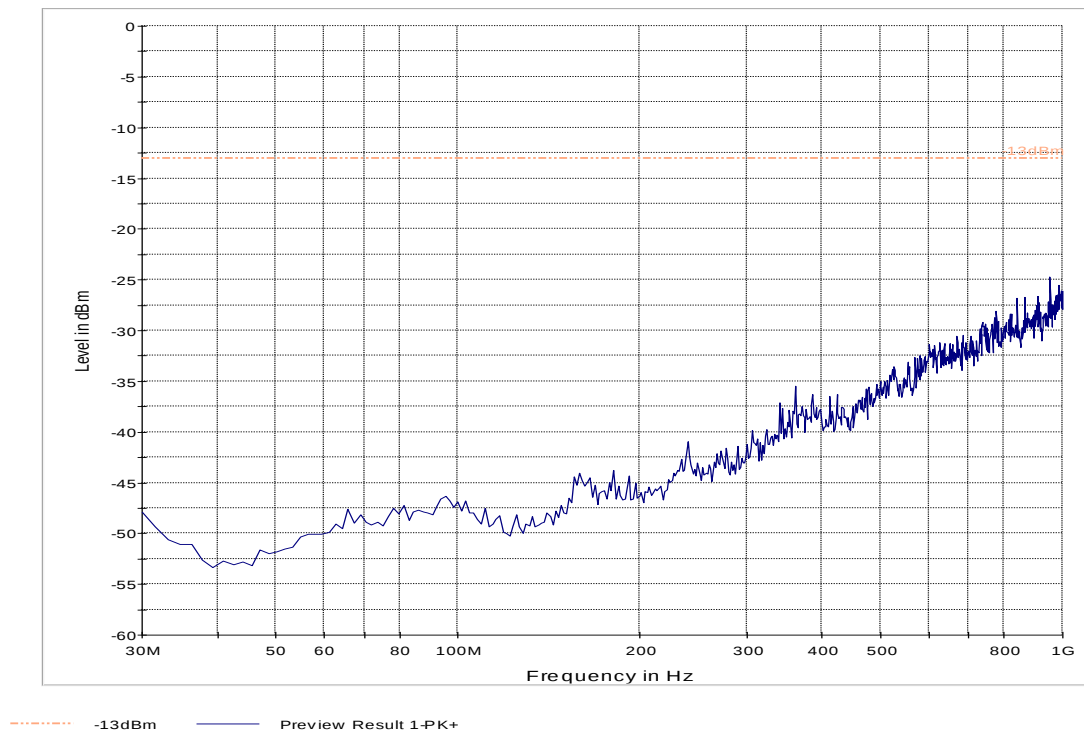
## Test results 18GHz-19.1GHz



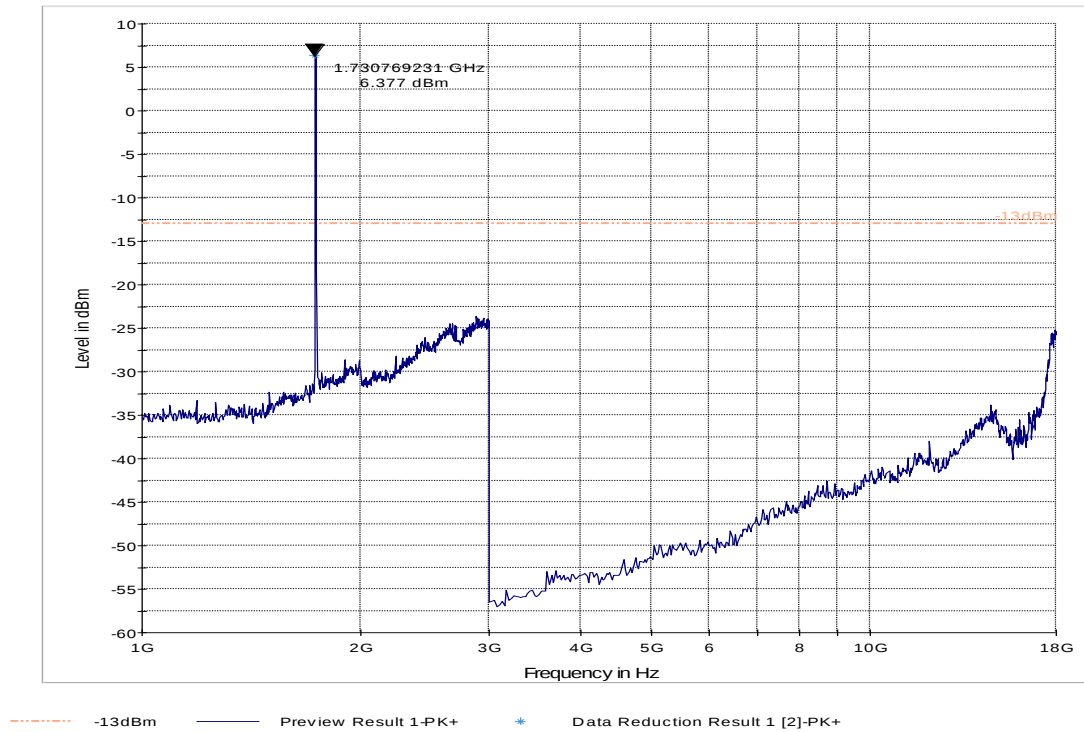
**Radiated Spurious Emissions (UMTS Band IV) Tx: Mid Channel**  
**Test results 9kHz-30MHz**



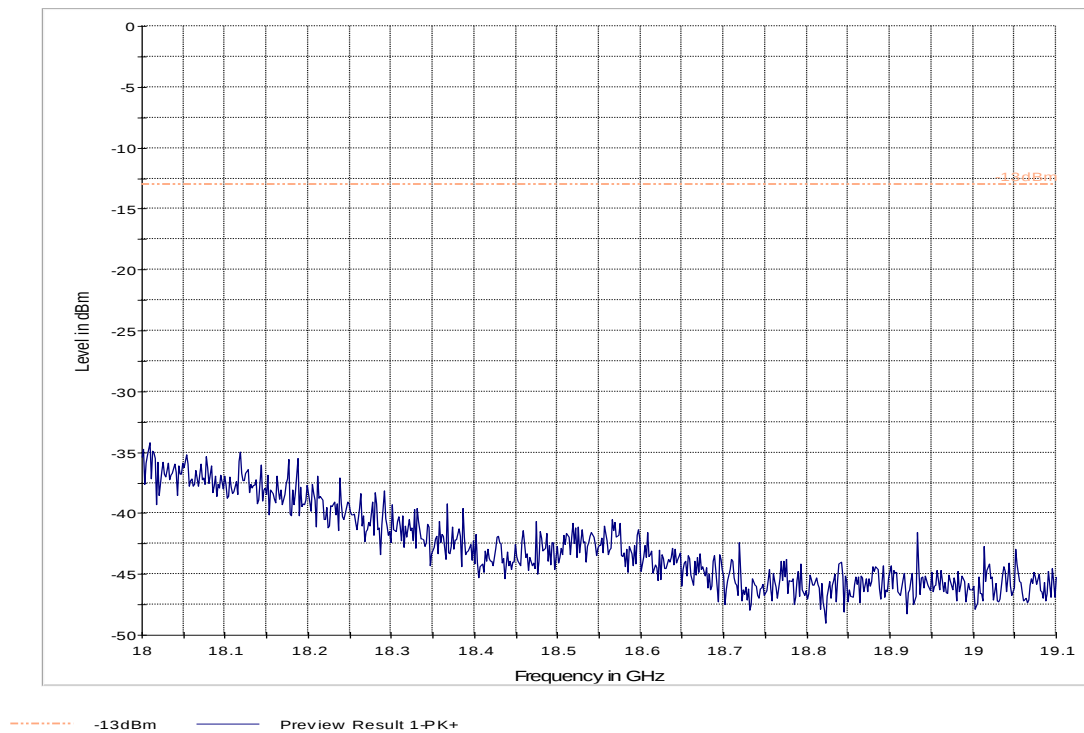
**Test results 30MHz-1GHz**



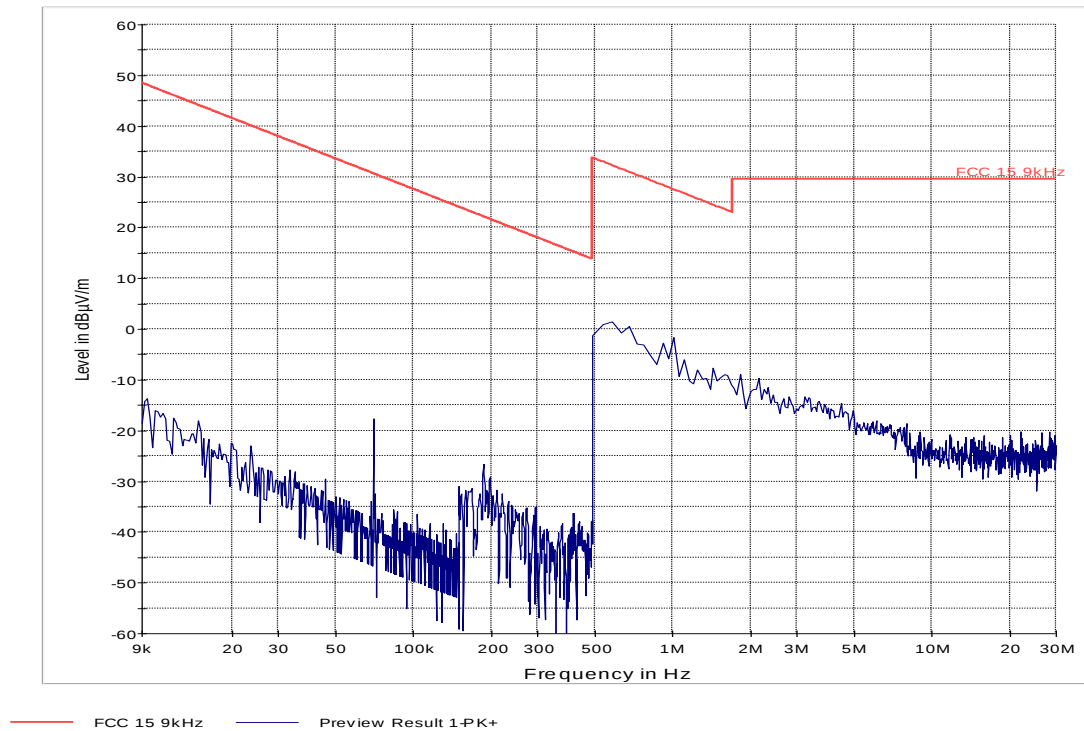
## Test results 1GHz-18GHz



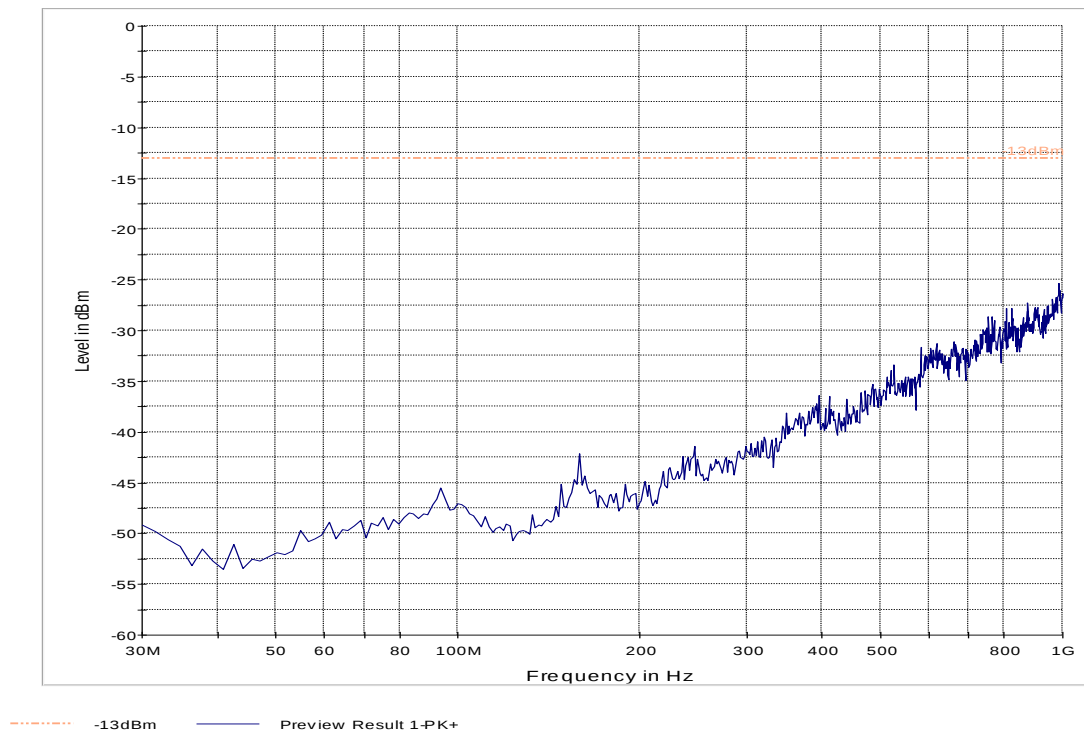
## Test results 18GHz-19.1GHz



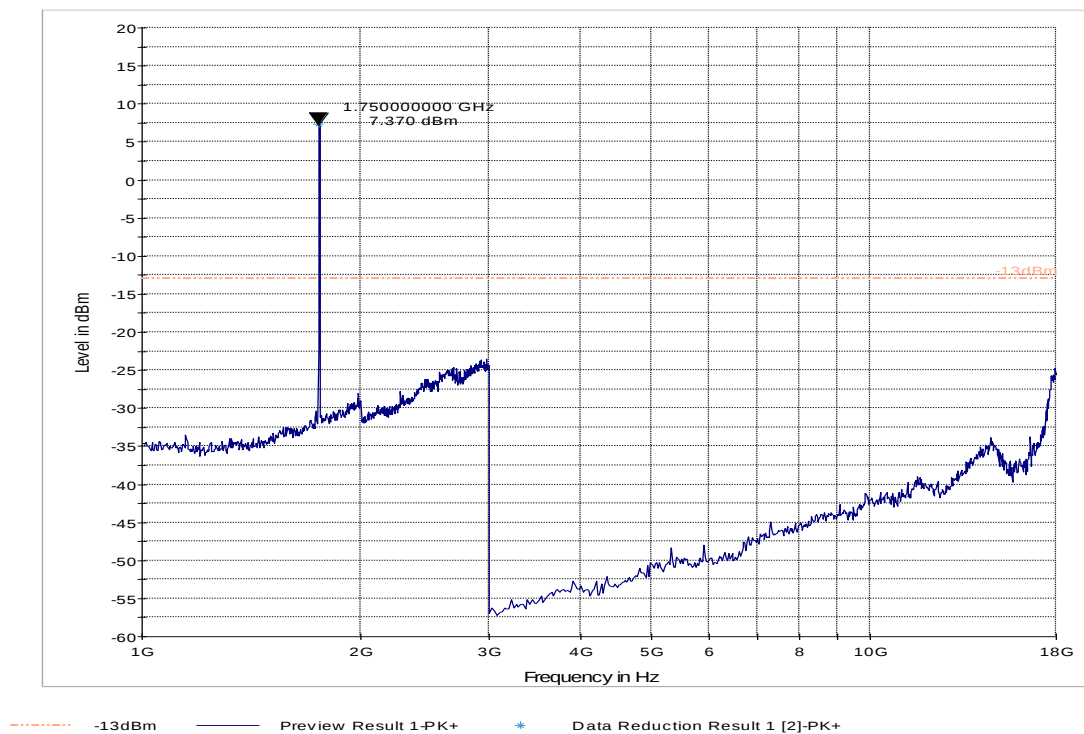
**Radiated Spurious Emissions (UMTS Band IV) Tx: High Channel**  
**Test results 9kHz-30MHz**



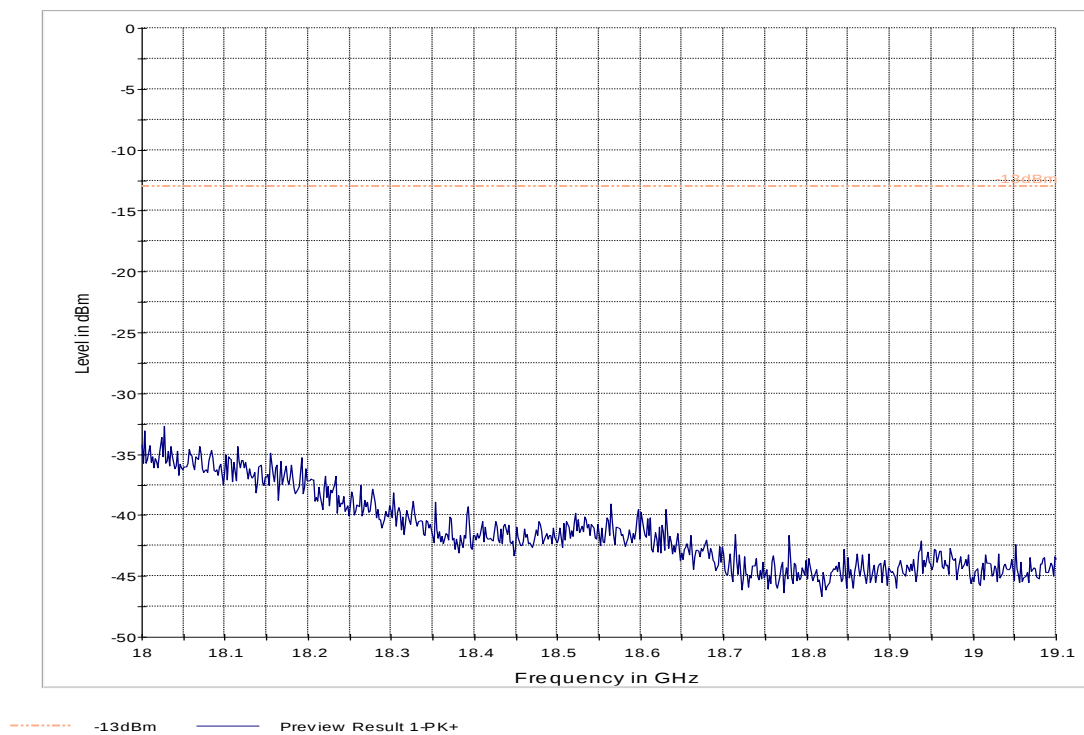
**Test results 30MHz-1GHz**



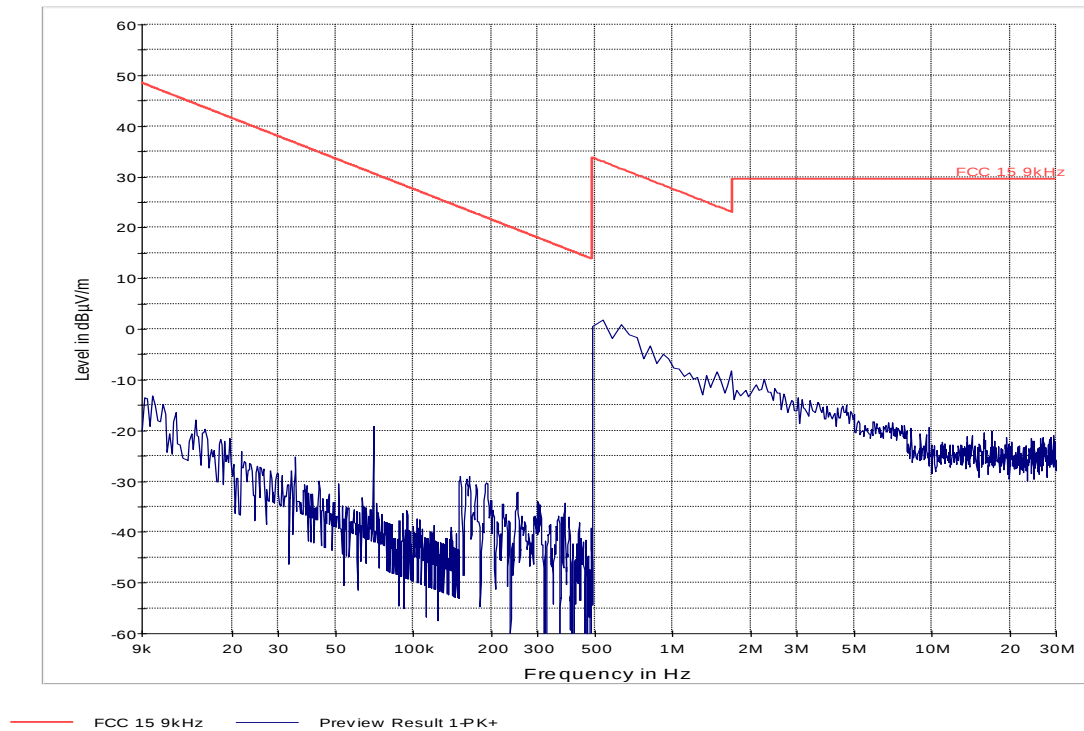
## Test results 1GHz-18GHz



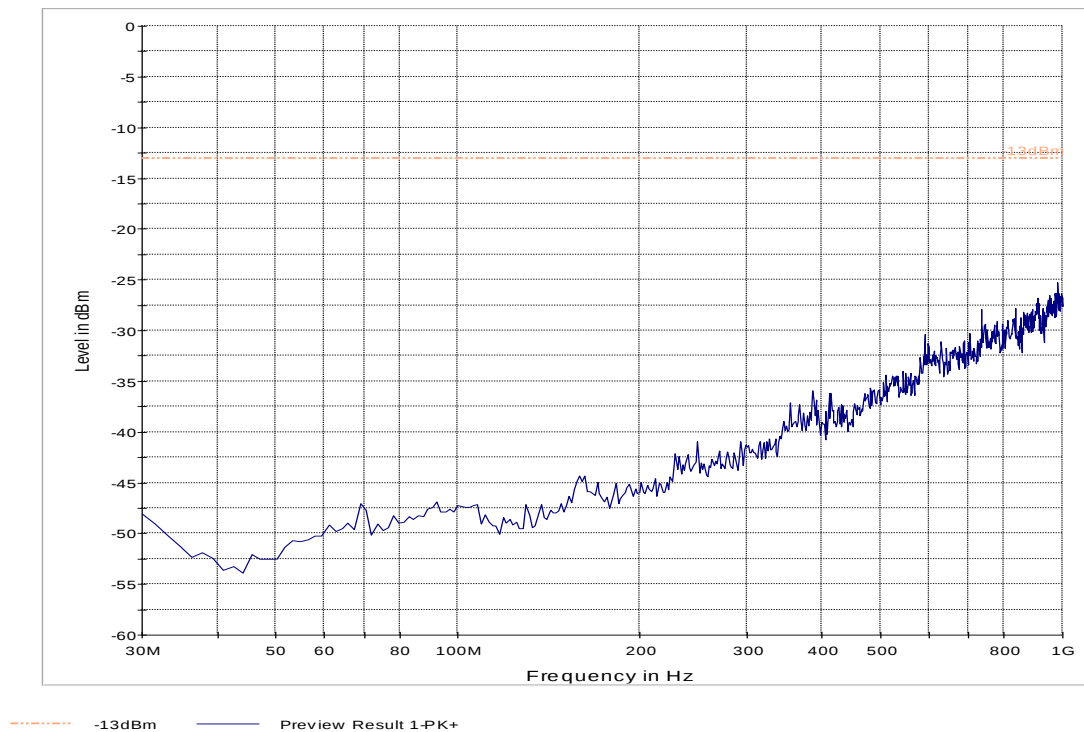
## Test results 18GHz-19.1GHz



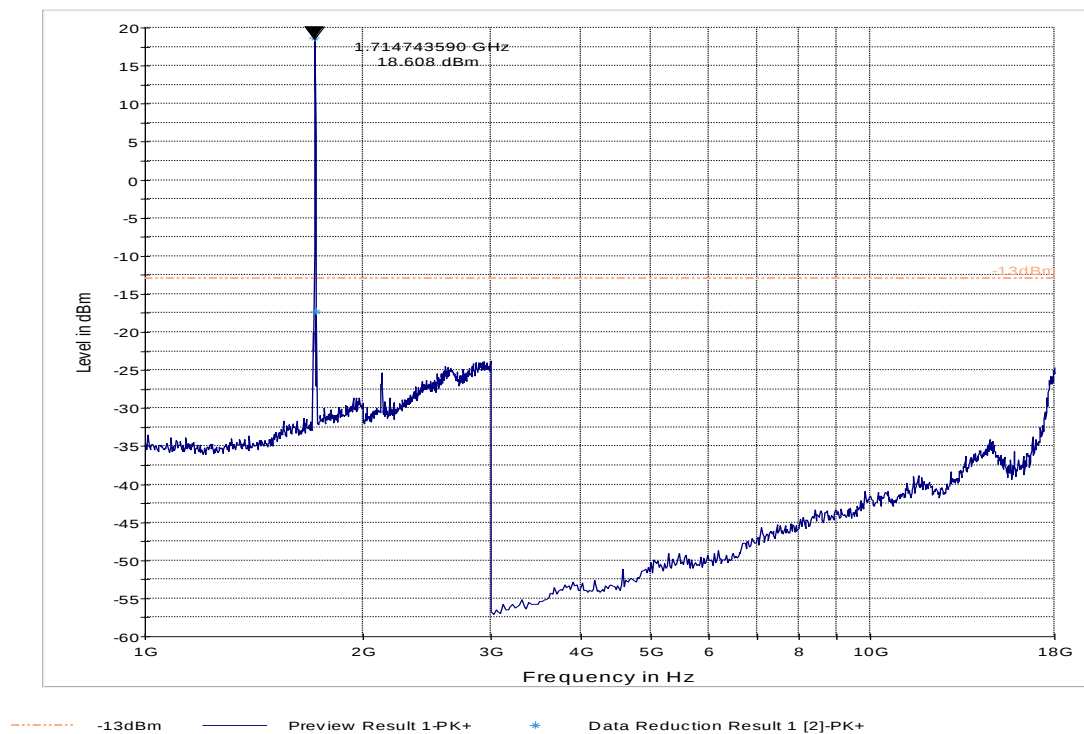
**Radiated Spurious Emissions (LTE Band 4) Tx: QPSK; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



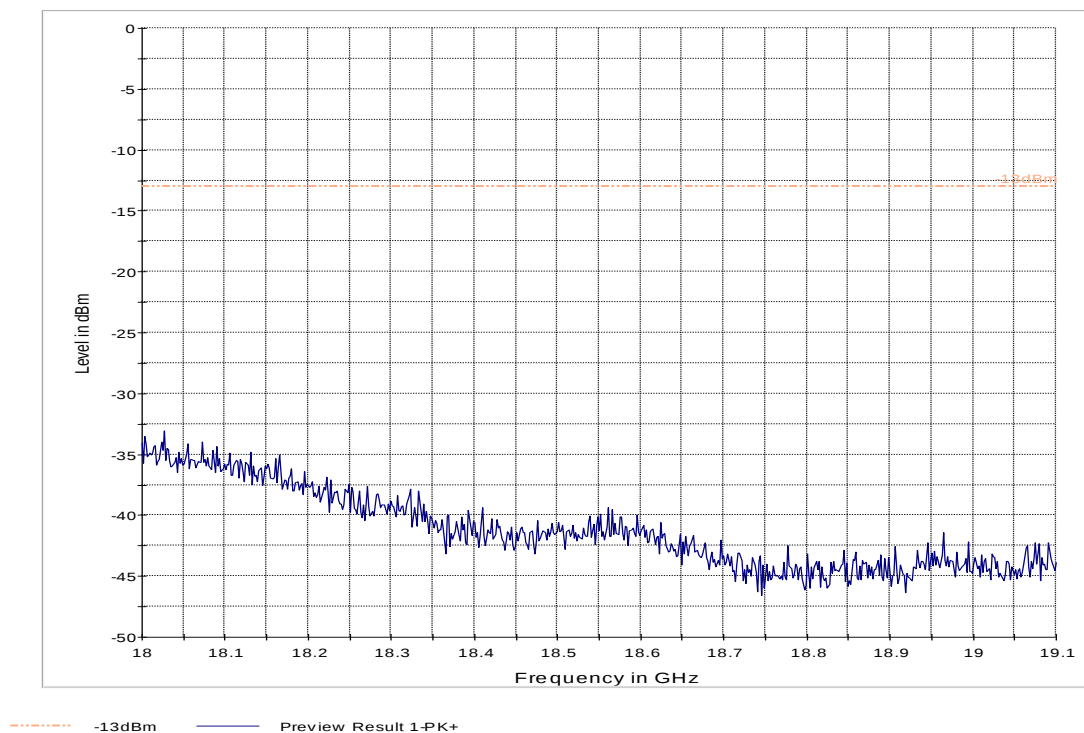
**Test results 30MHz-1GHz**



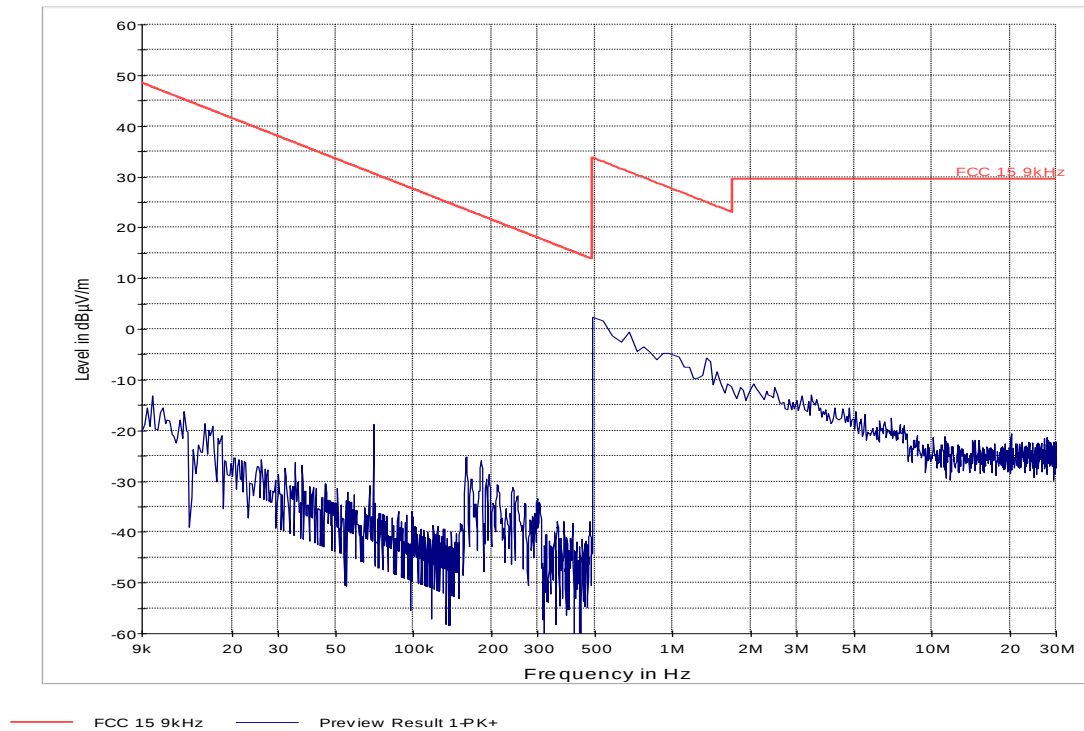
## Test results 1GHz-18GHz



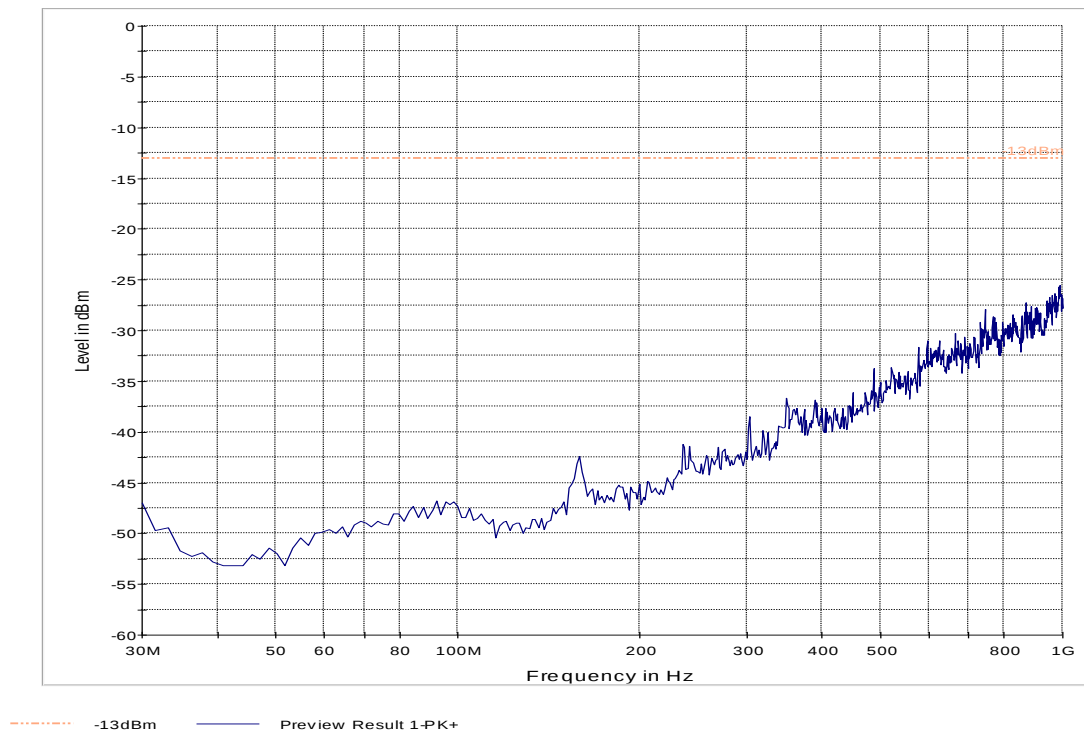
## Test results 18GHz-19.1GHz



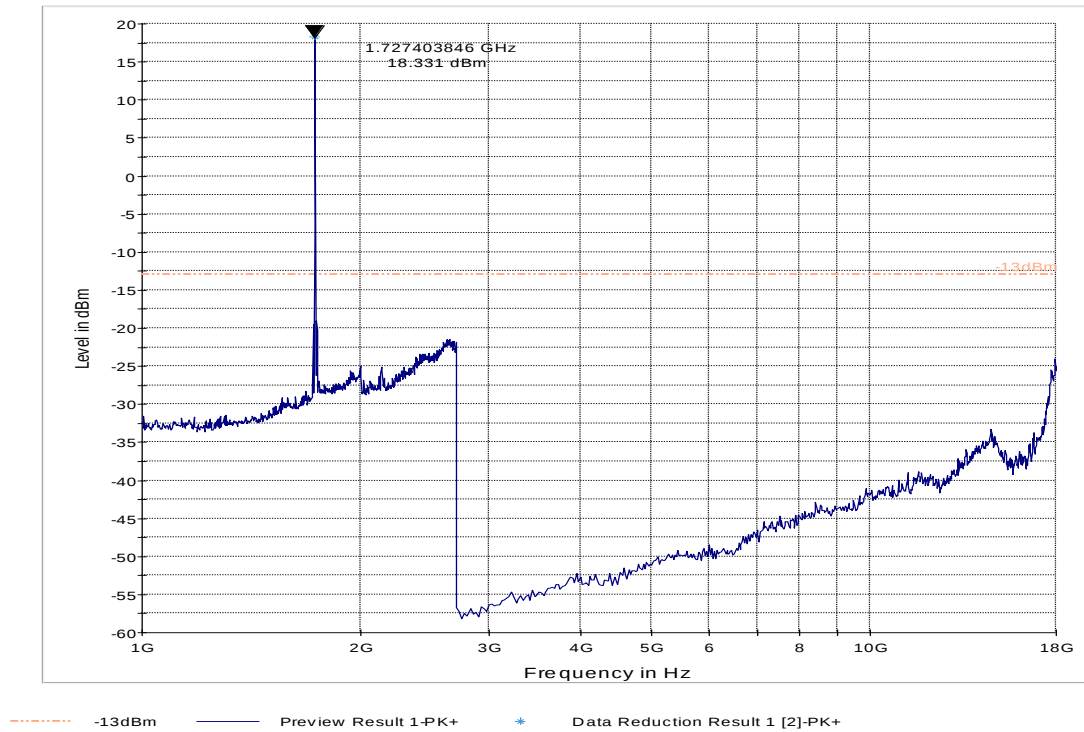
**Radiated Spurious Emissions (LTE Band 4) Tx: QPSK; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



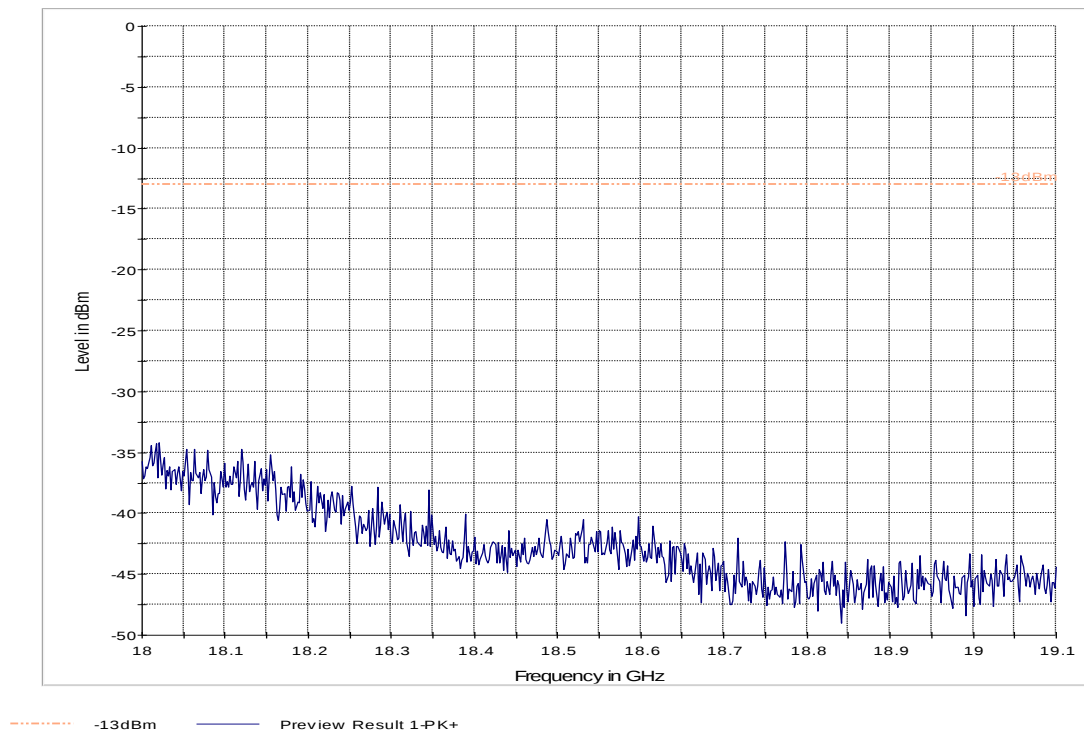
**Test results 30MHz-1GHz**



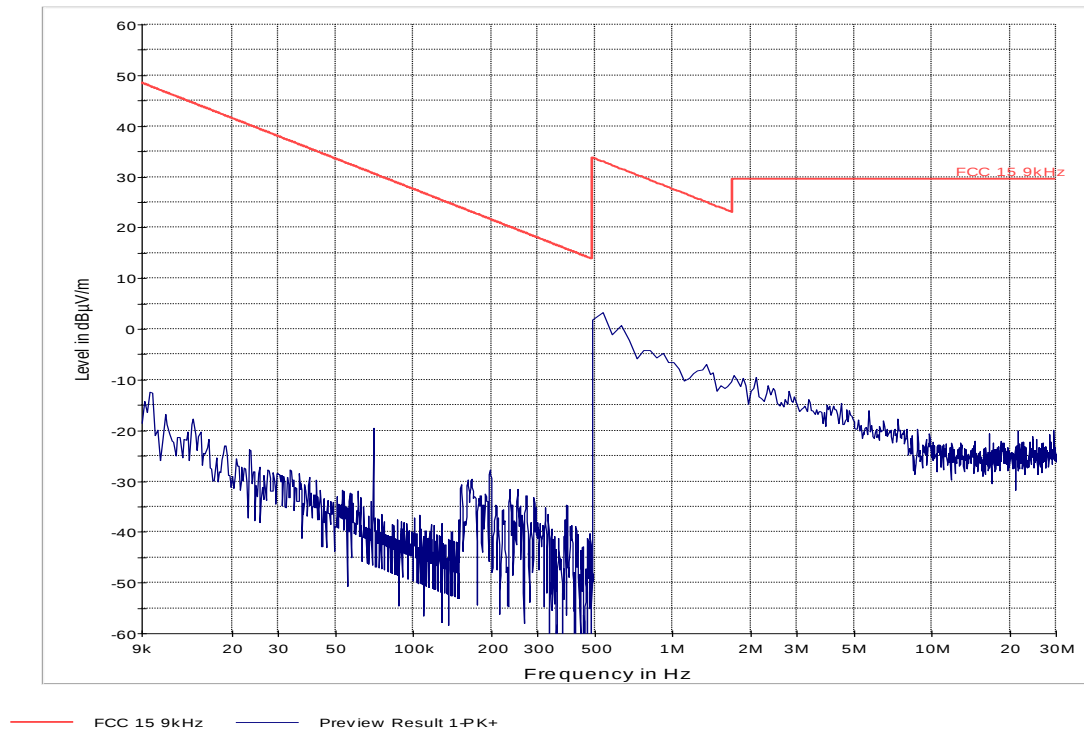
## Test results 1GHz-18GHz



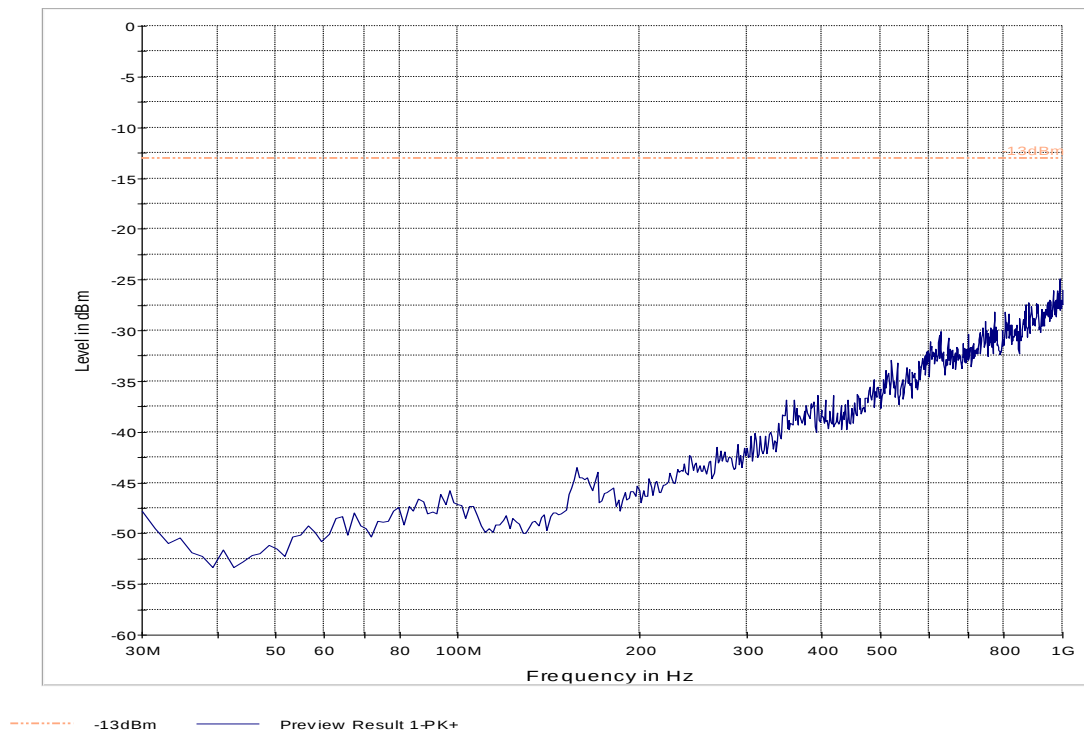
## Test results 18GHz-19.1GHz



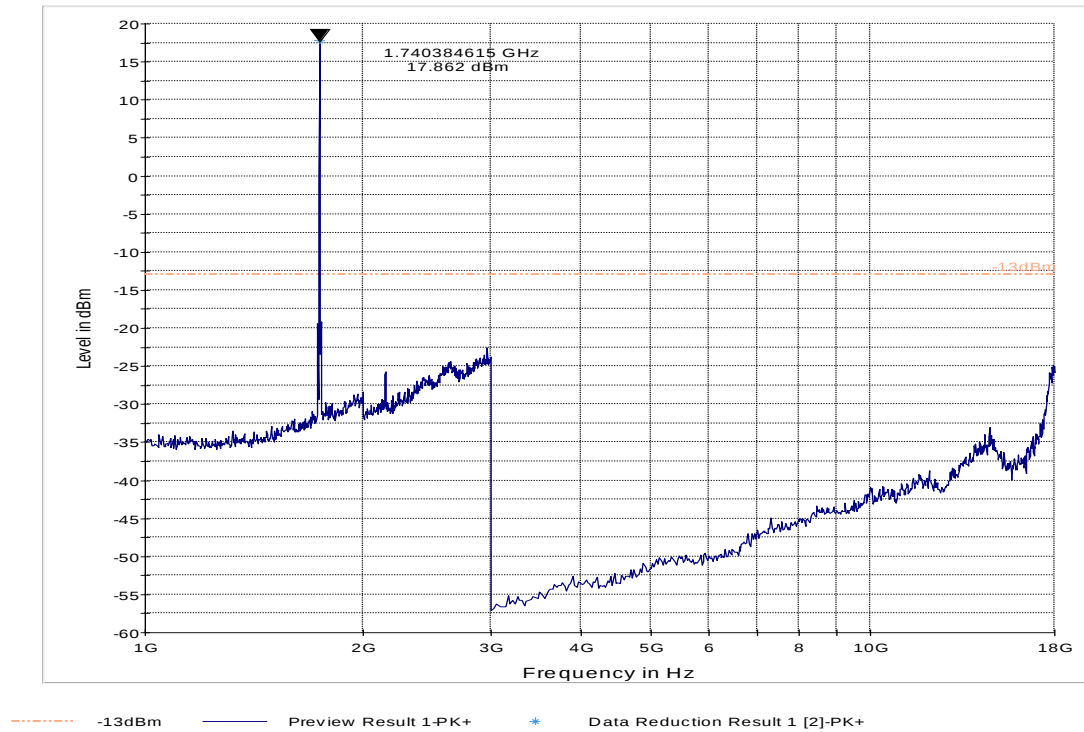
**Radiated Spurious Emissions (LTE Band 4) Tx: QPSK; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



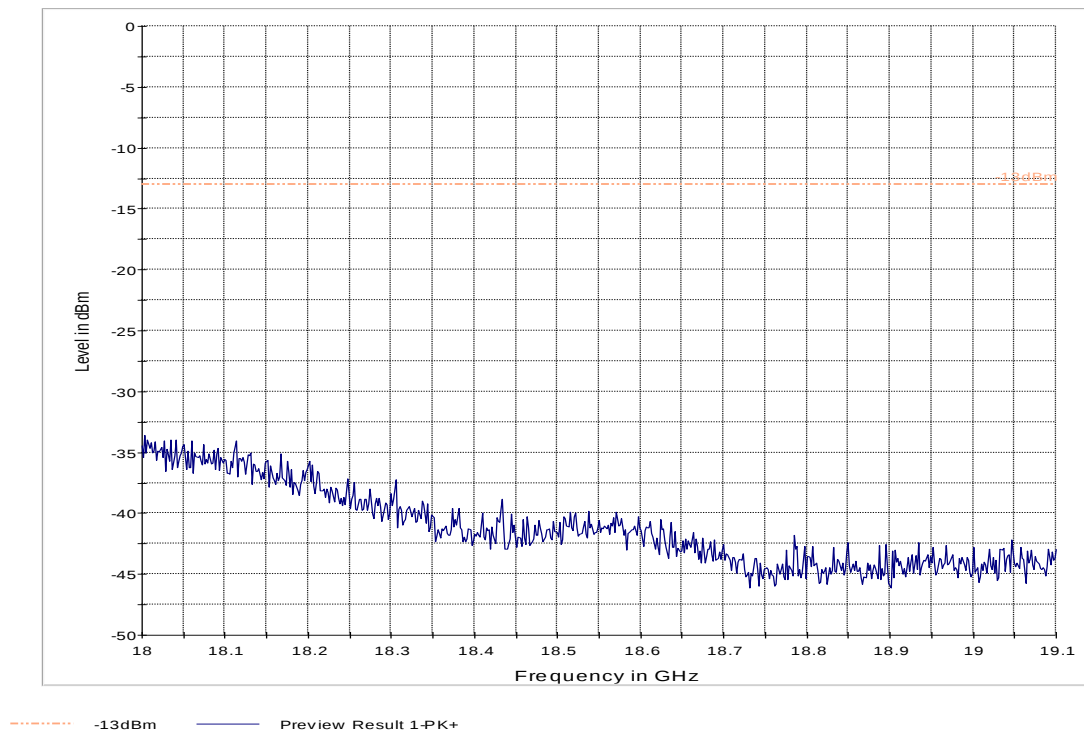
**Test results 30MHz-1GHz**



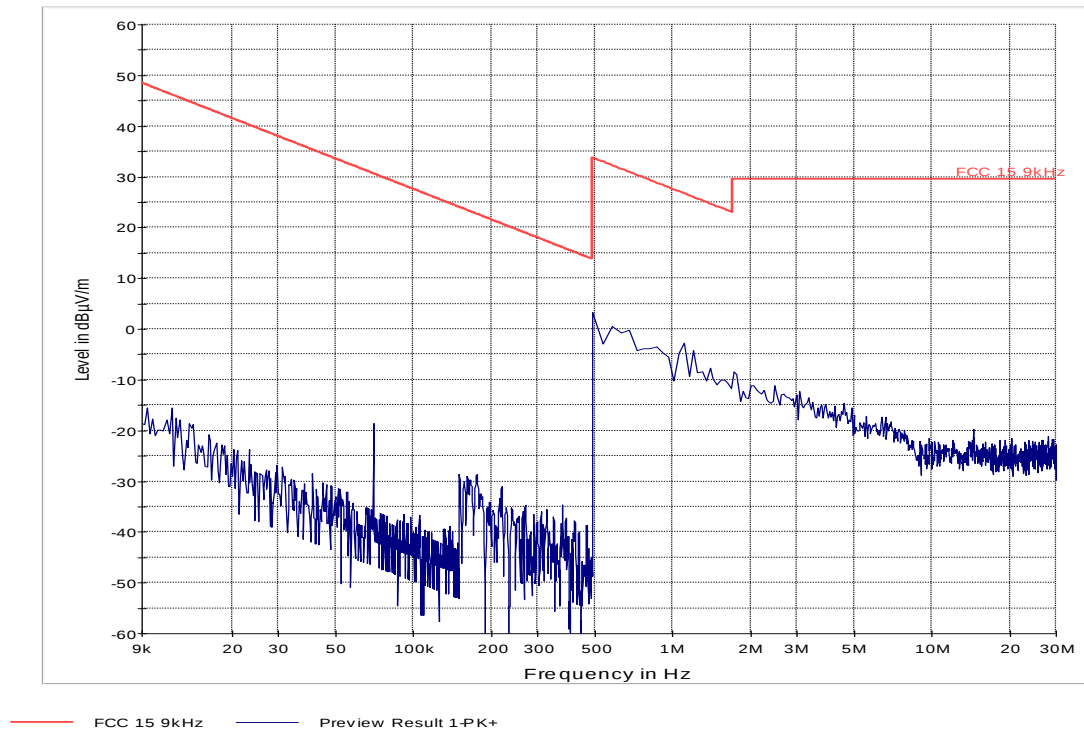
## Test results 1GHz-18GHz



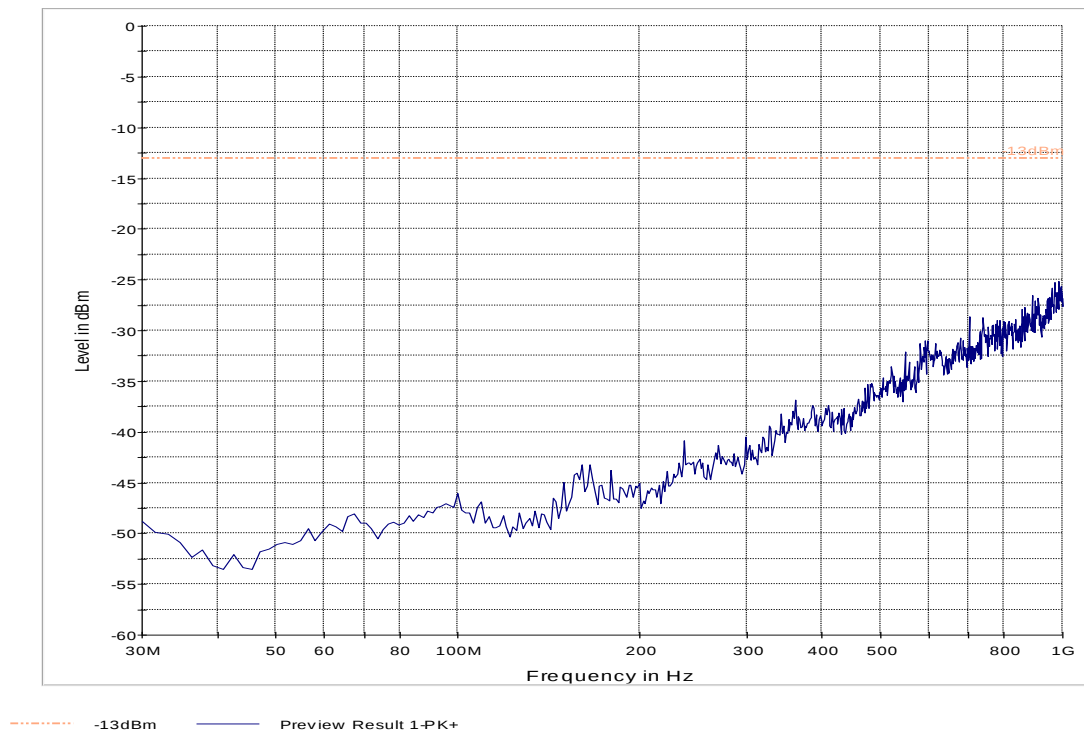
## Test results 18GHz-19.1GHz



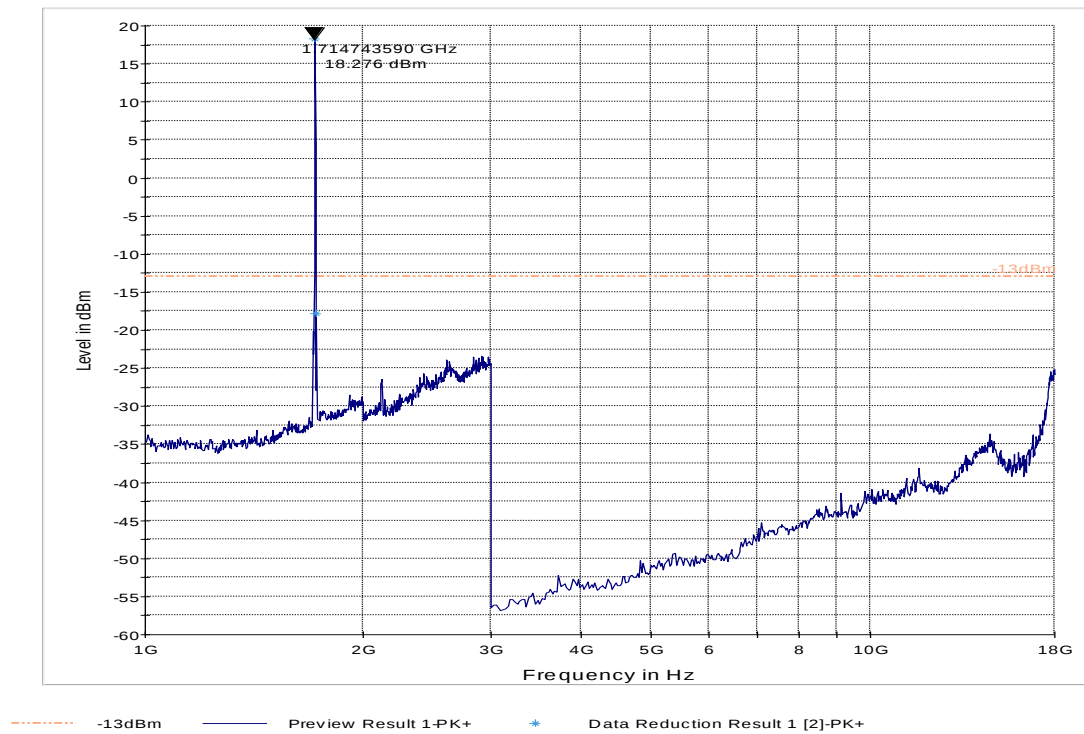
**Radiated Spurious Emissions (LTE Band 4) Tx: 16-QAM; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



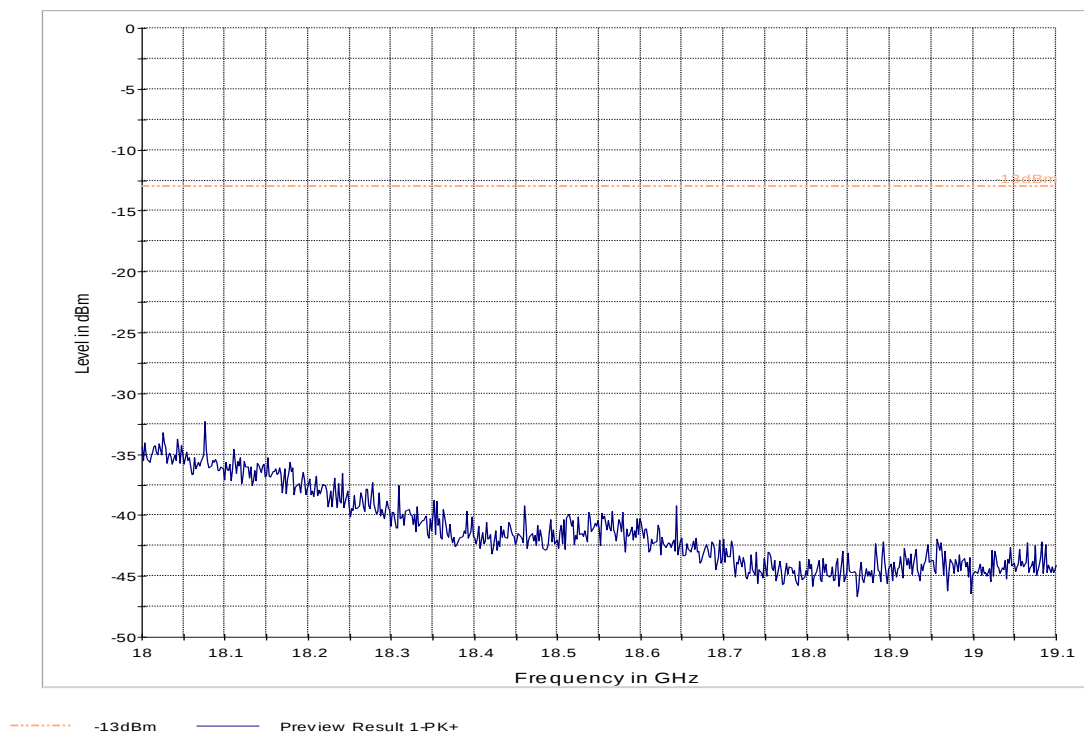
**Test results 30MHz-1GHz**



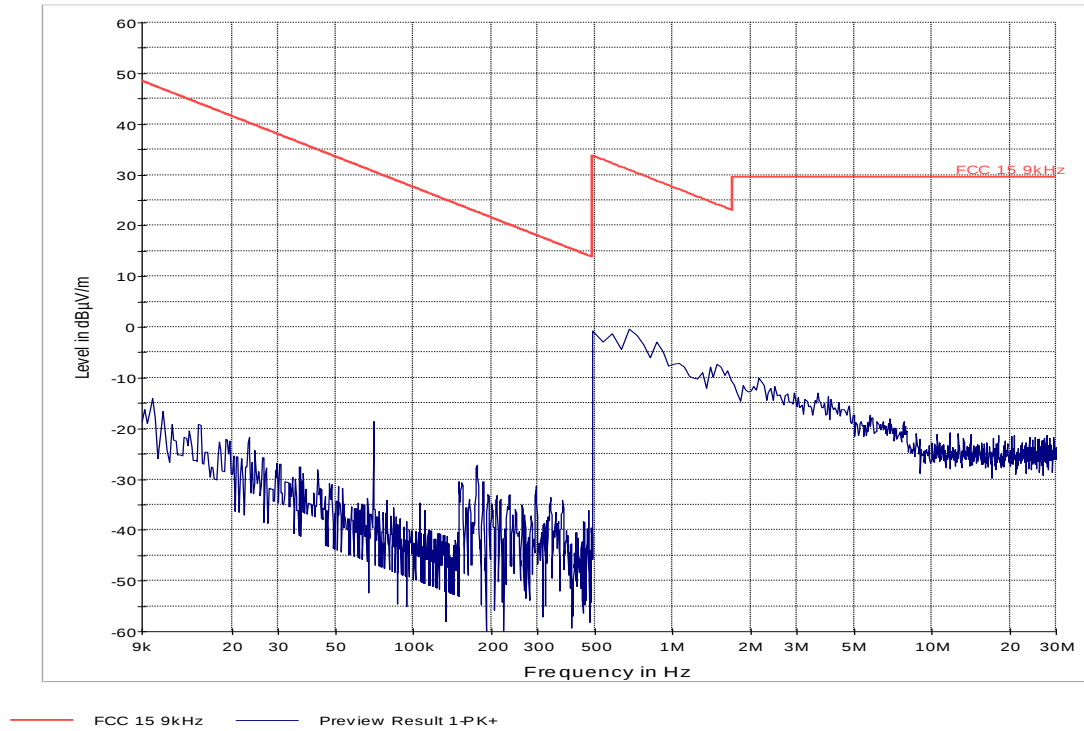
## Test results 1GHz-18GHz



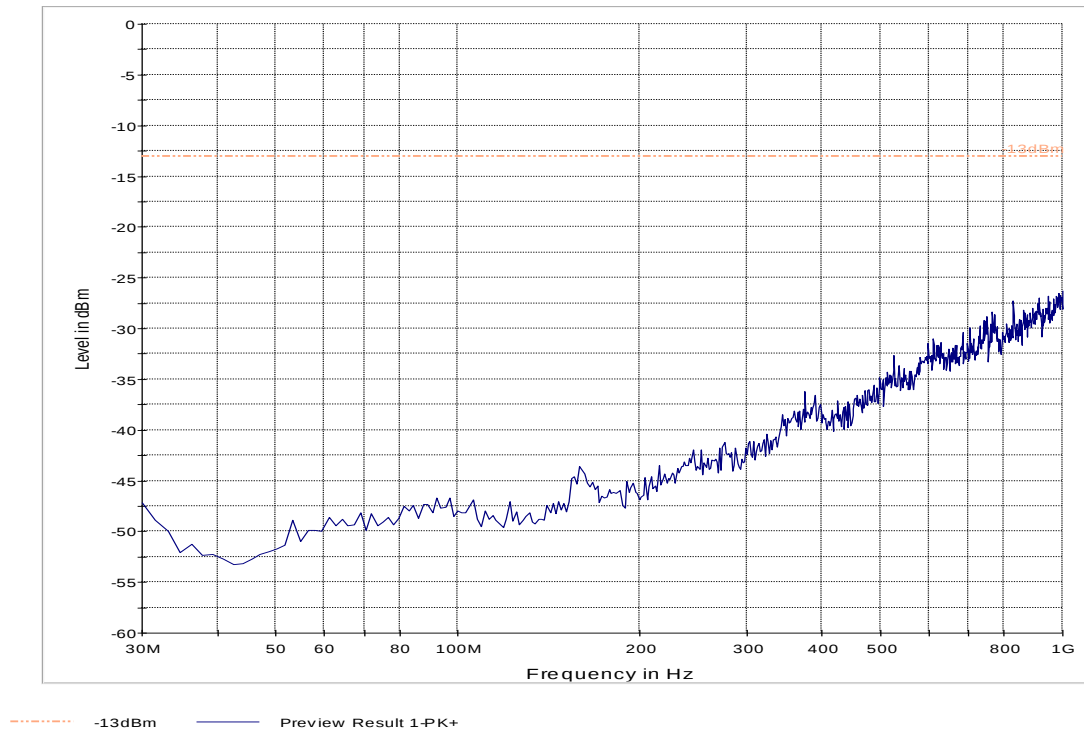
## Test results 18GHz-19.1GHz



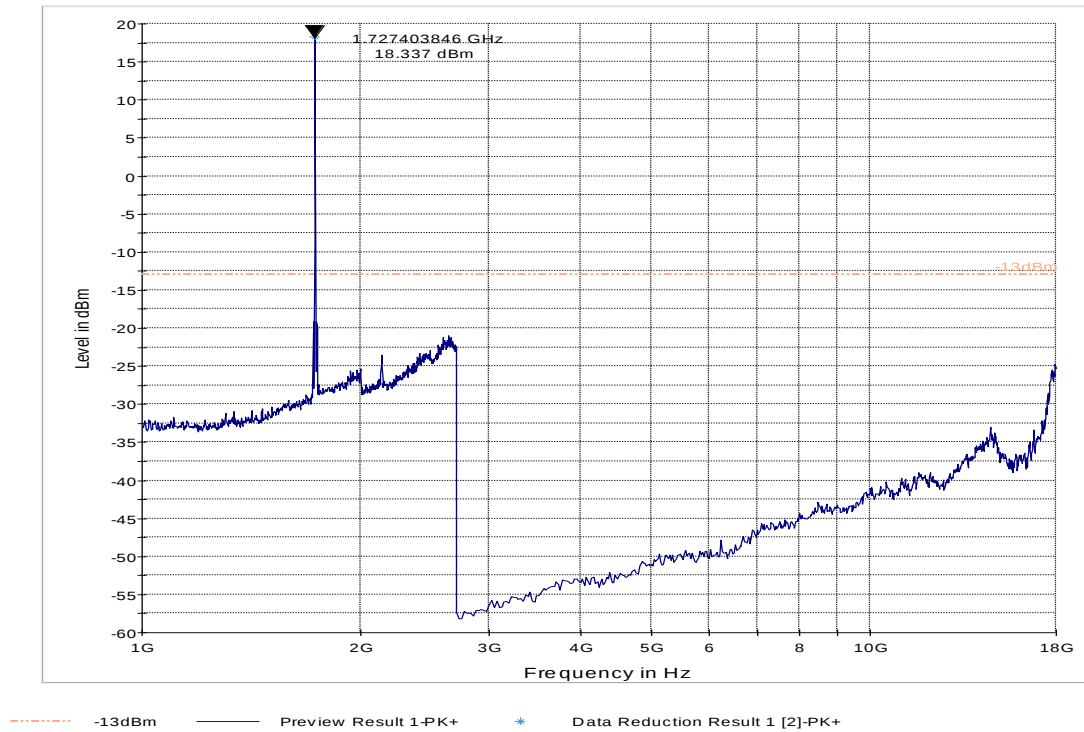
**Radiated Spurious Emissions (LTE Band 4) Tx: 16-QAM; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



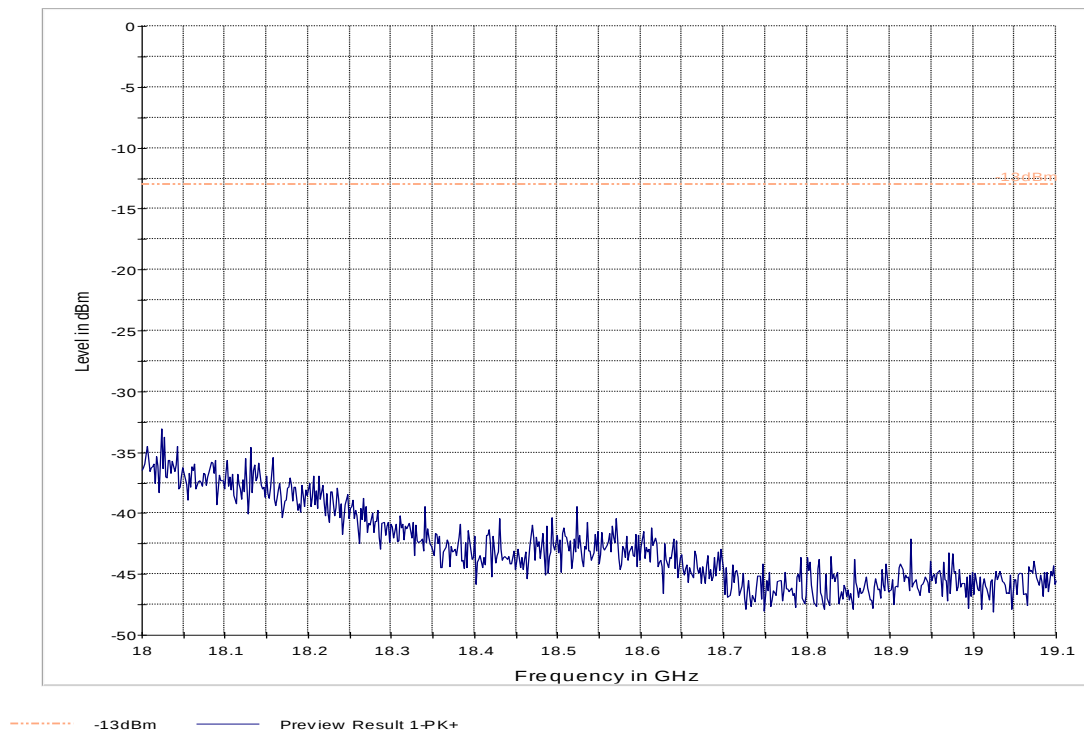
**Test results 30MHz-1GHz**



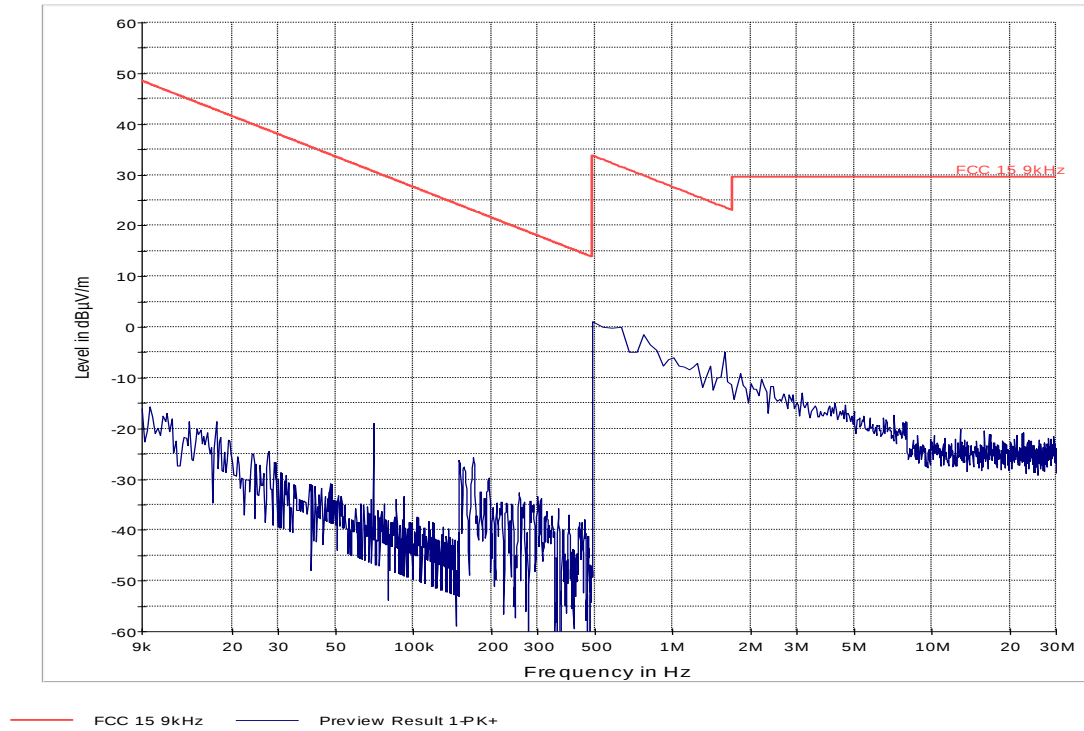
## Test results 1GHz-18GHz



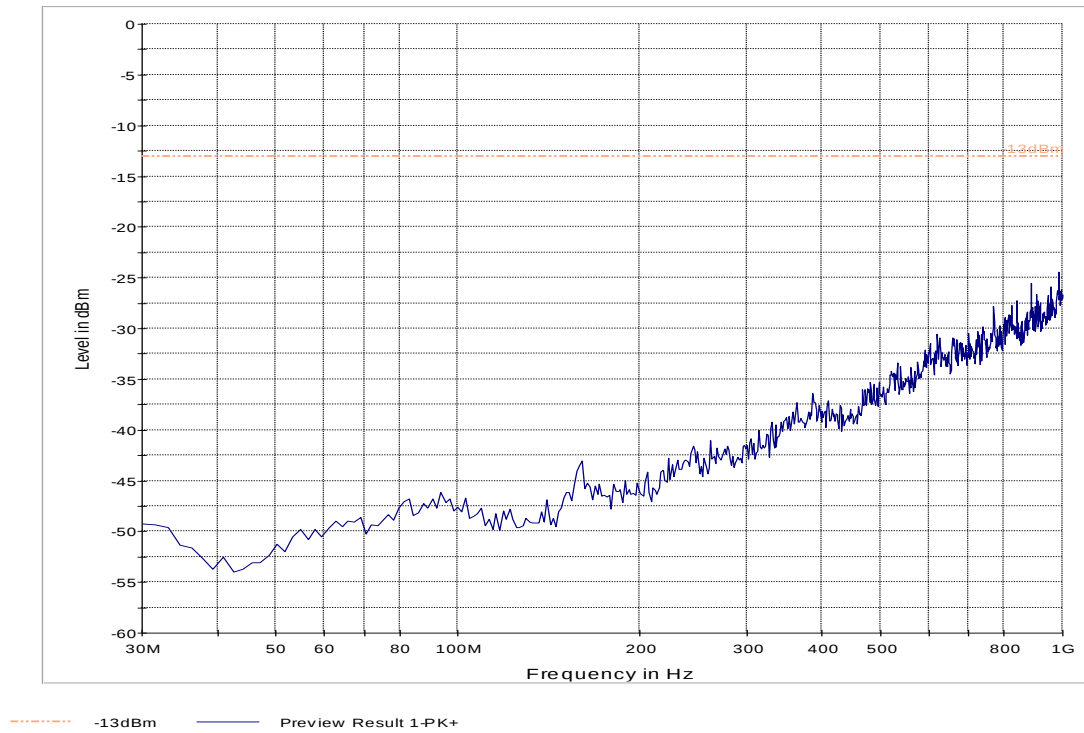
## Test results 18GHz-19.1GHz



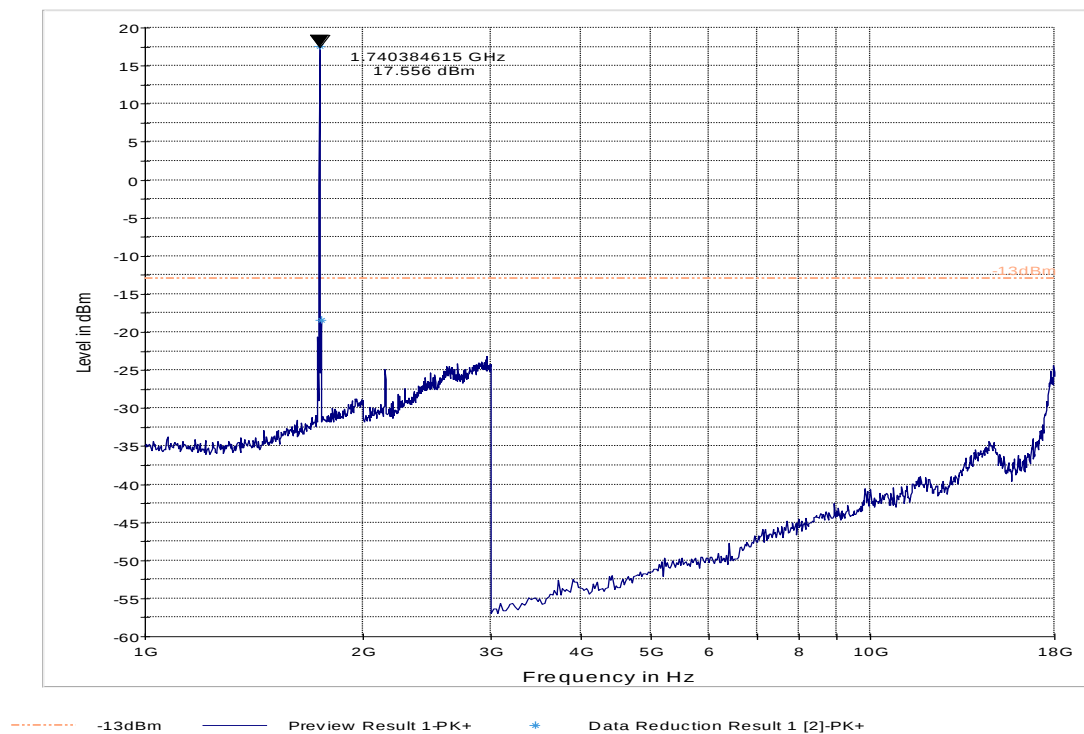
**Radiated Spurious Emissions (LTE Band 4) Tx: 16-QAM; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



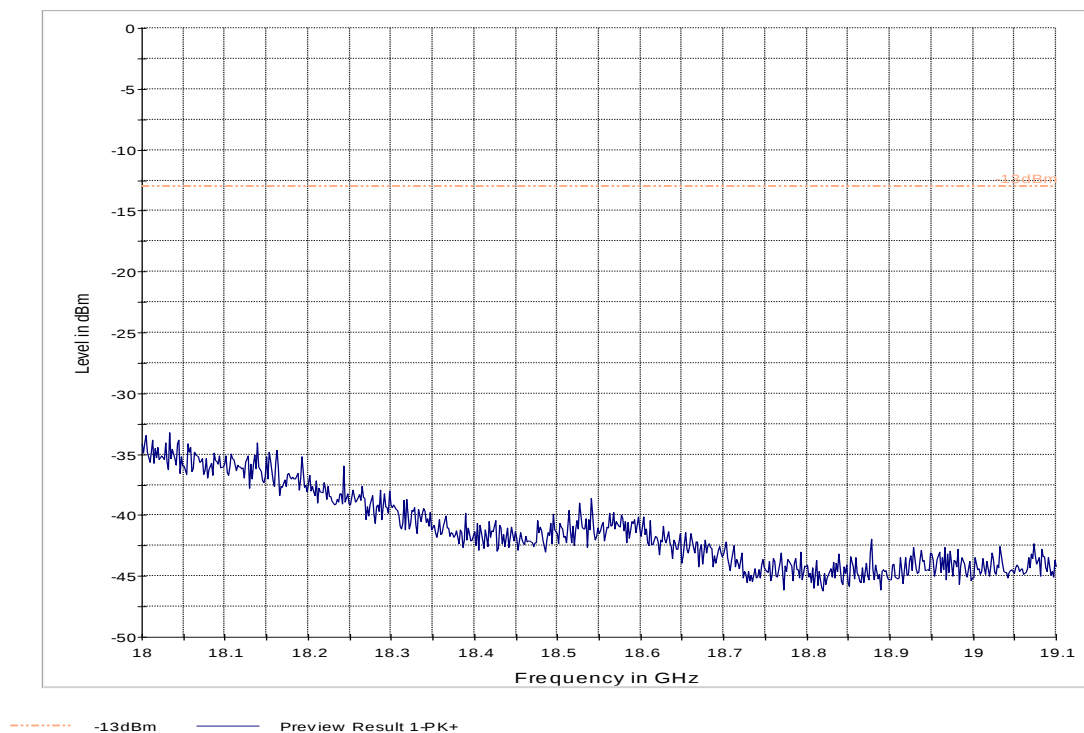
**Test results 30MHz-1GHz**



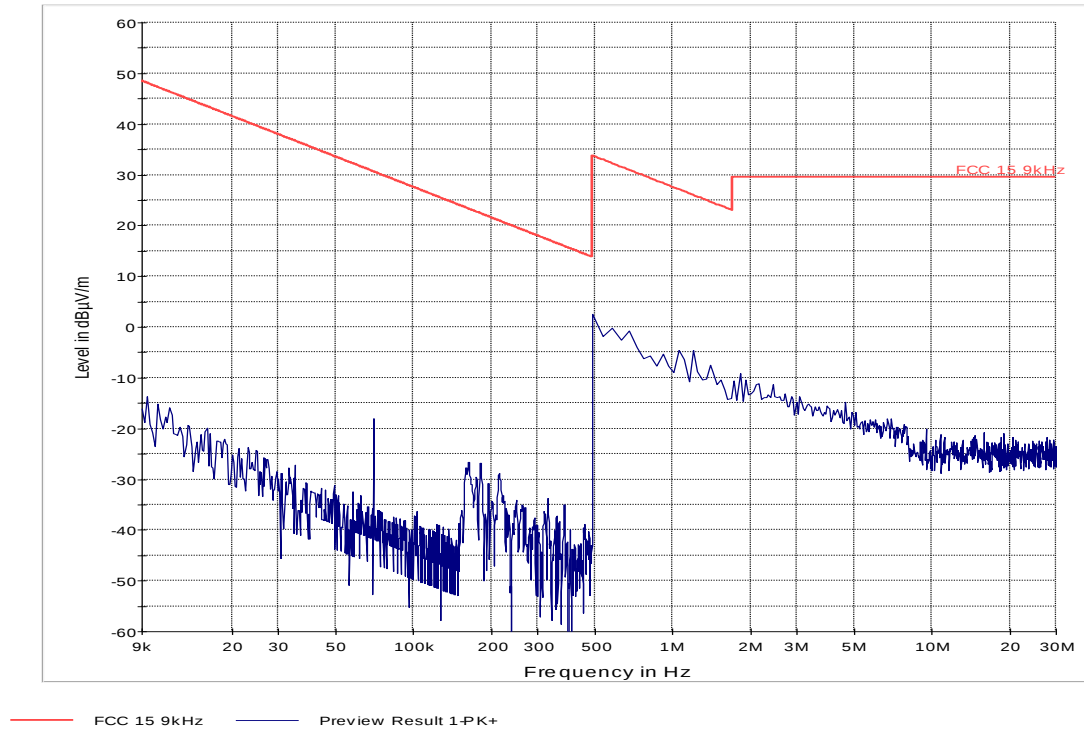
## Test results 1GHz-18GHz



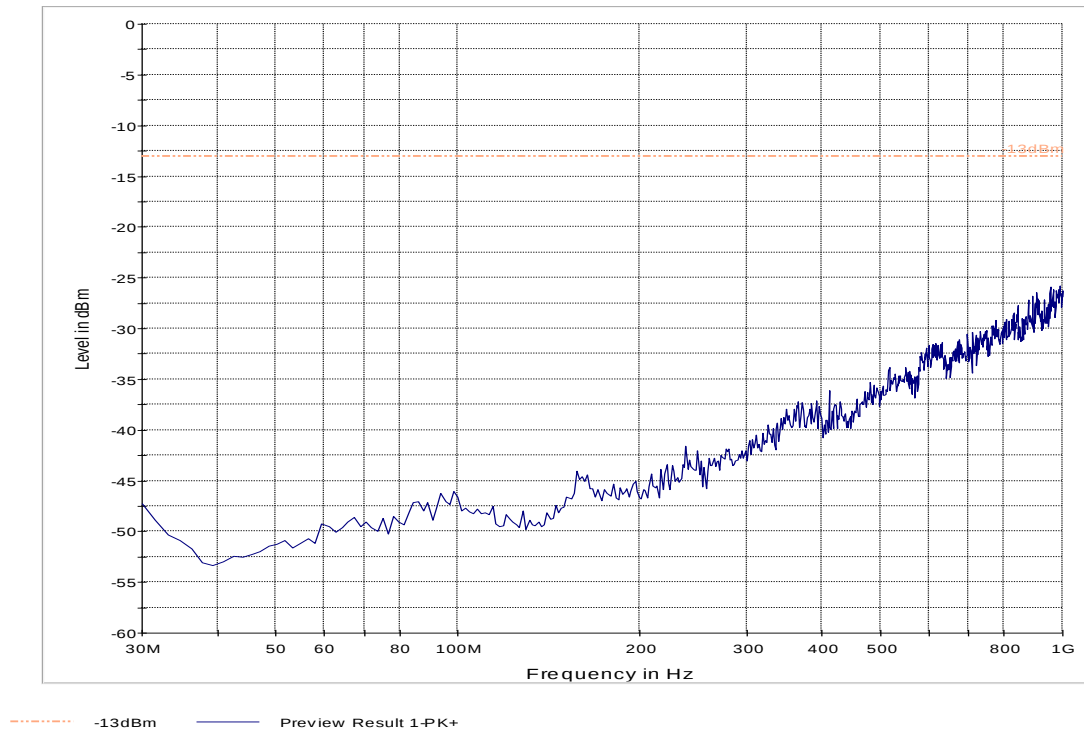
## Test results 18GHz-19.1GHz



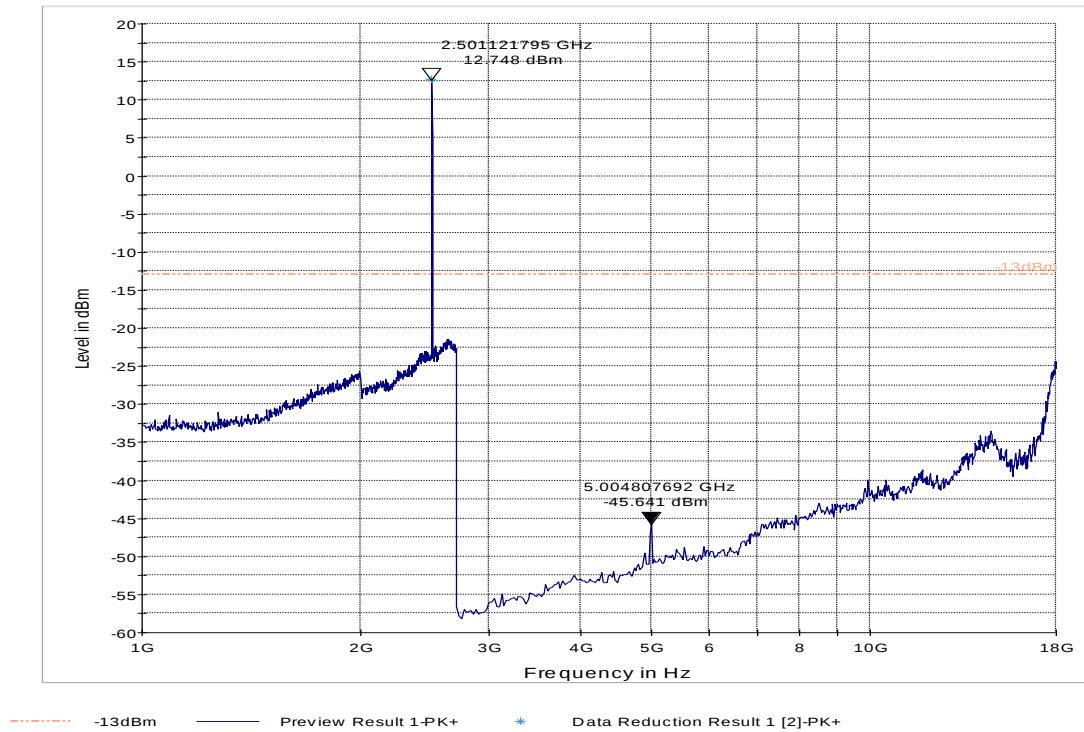
**Radiated Spurious Emissions (LTE Band 7) Tx: QPSK; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



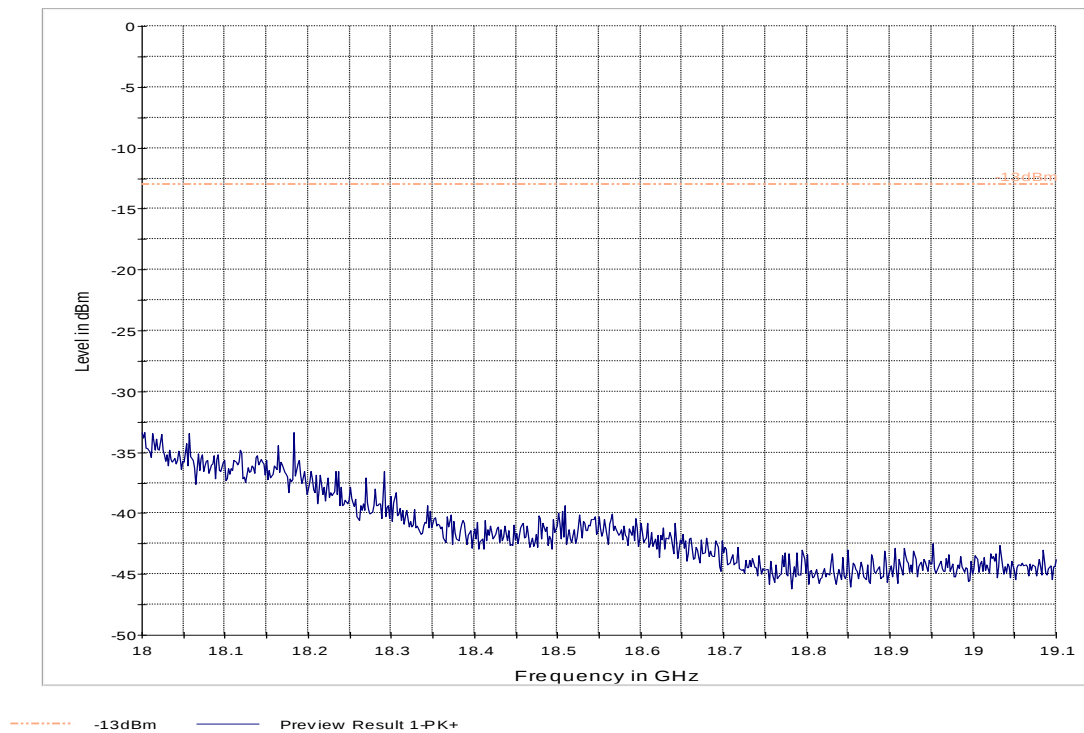
**Test results 30MHz-1GHz**



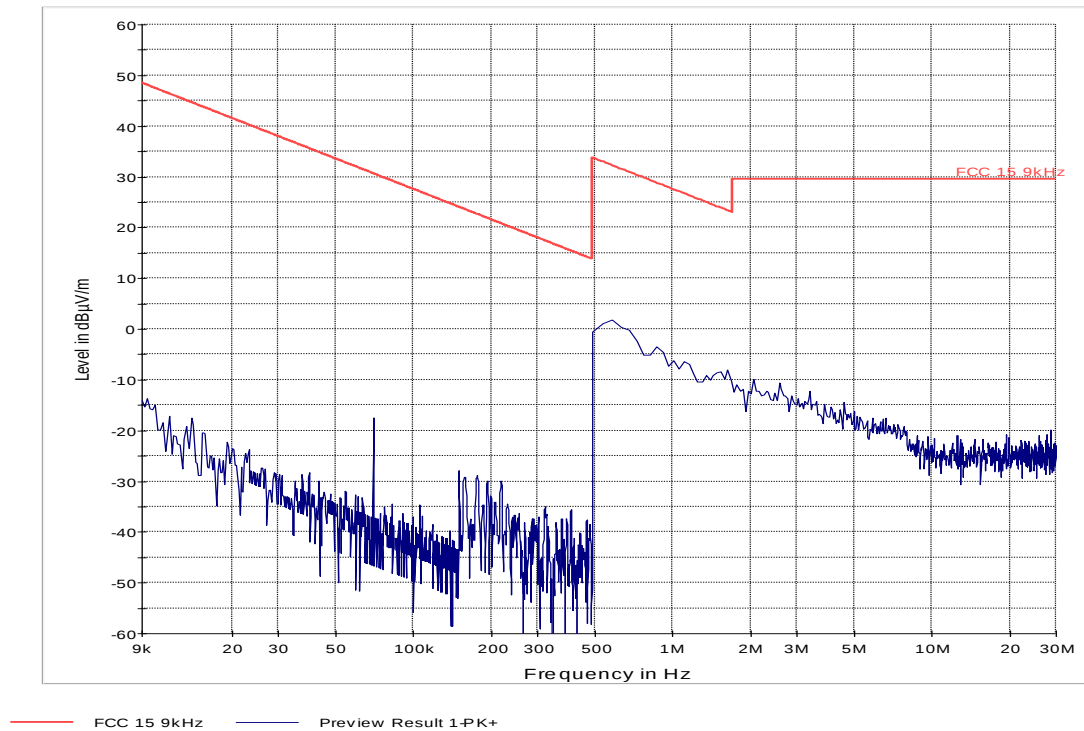
## Test results 1GHz-18GHz



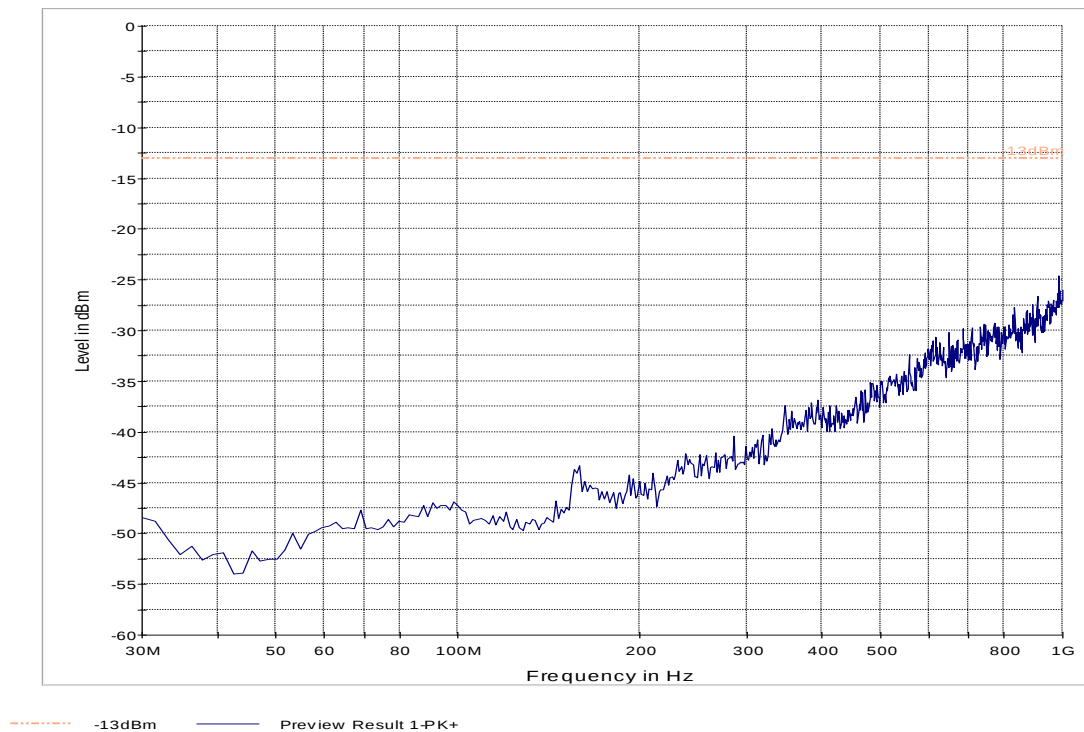
## Test results 18GHz-19.1GHz



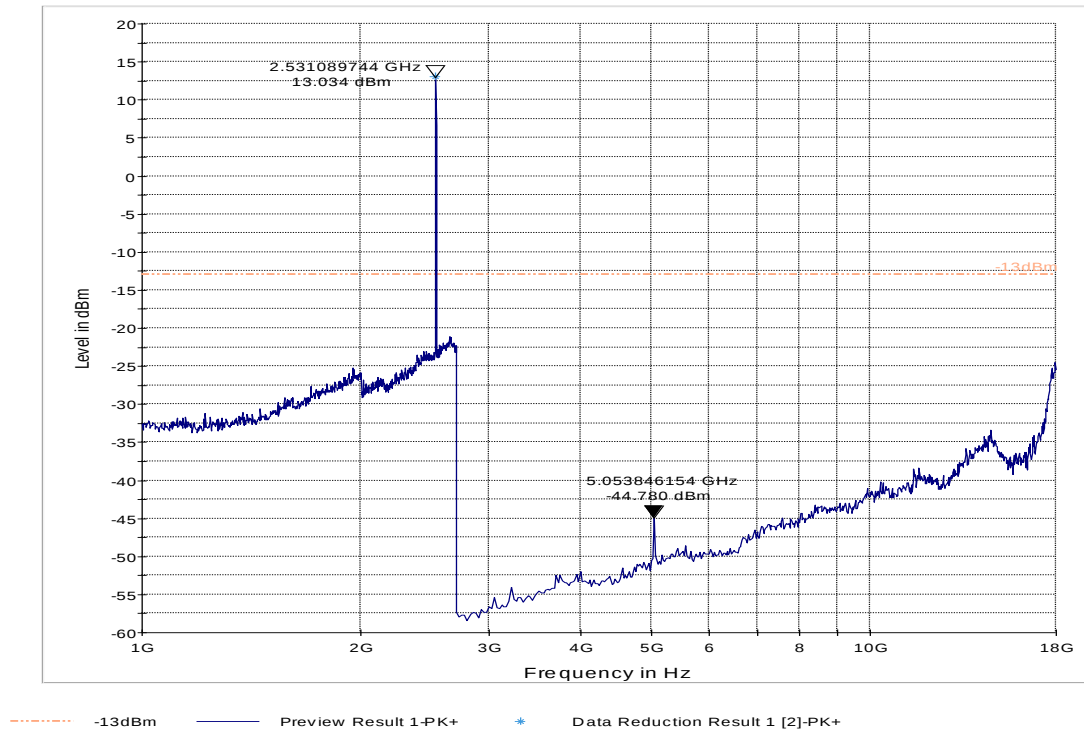
**Radiated Spurious Emissions (LTE Band 7) Tx: QPSK; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



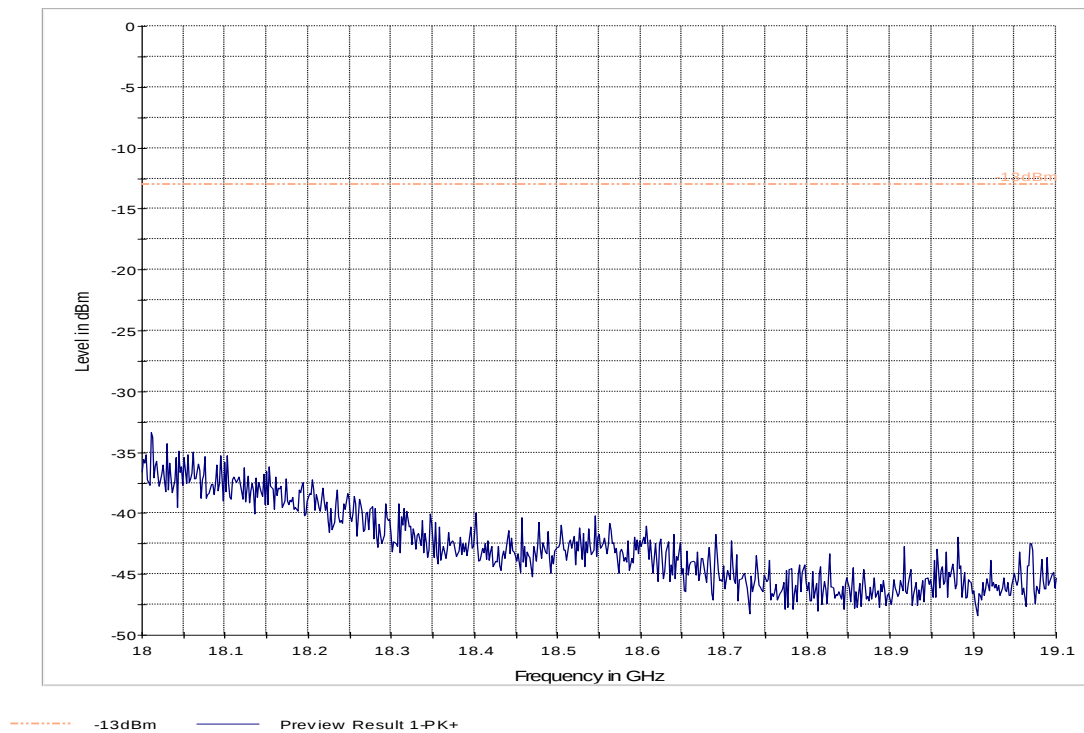
**Test results 30MHz-1GHz**



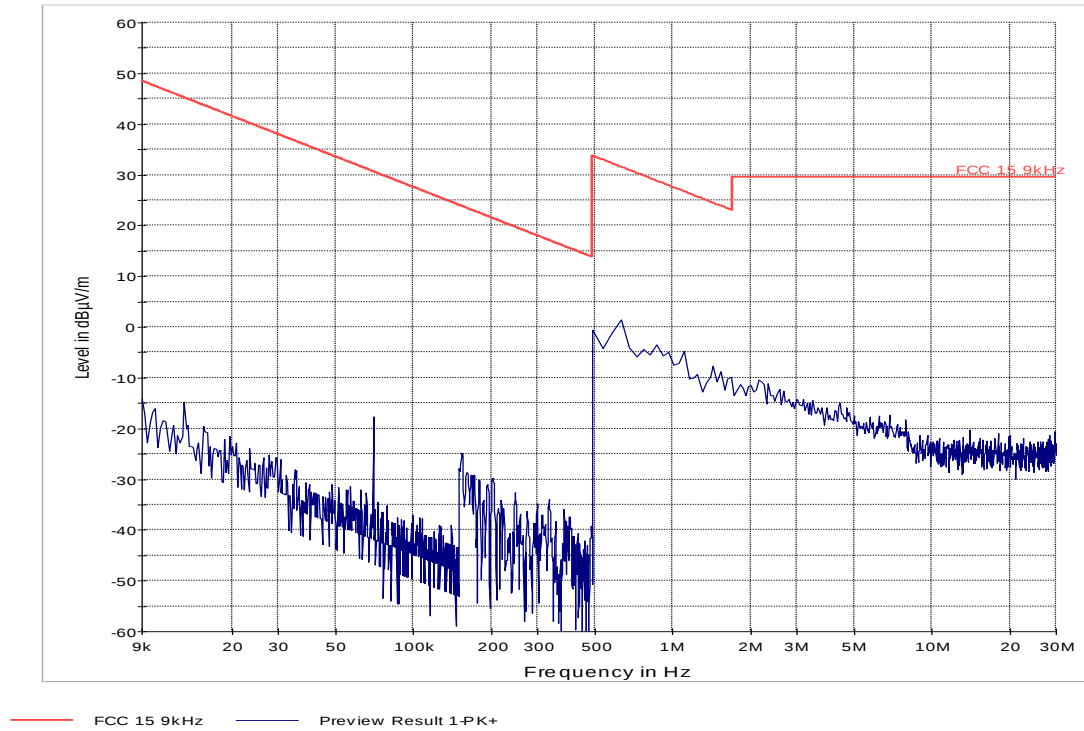
## Test results 1GHz-18GHz



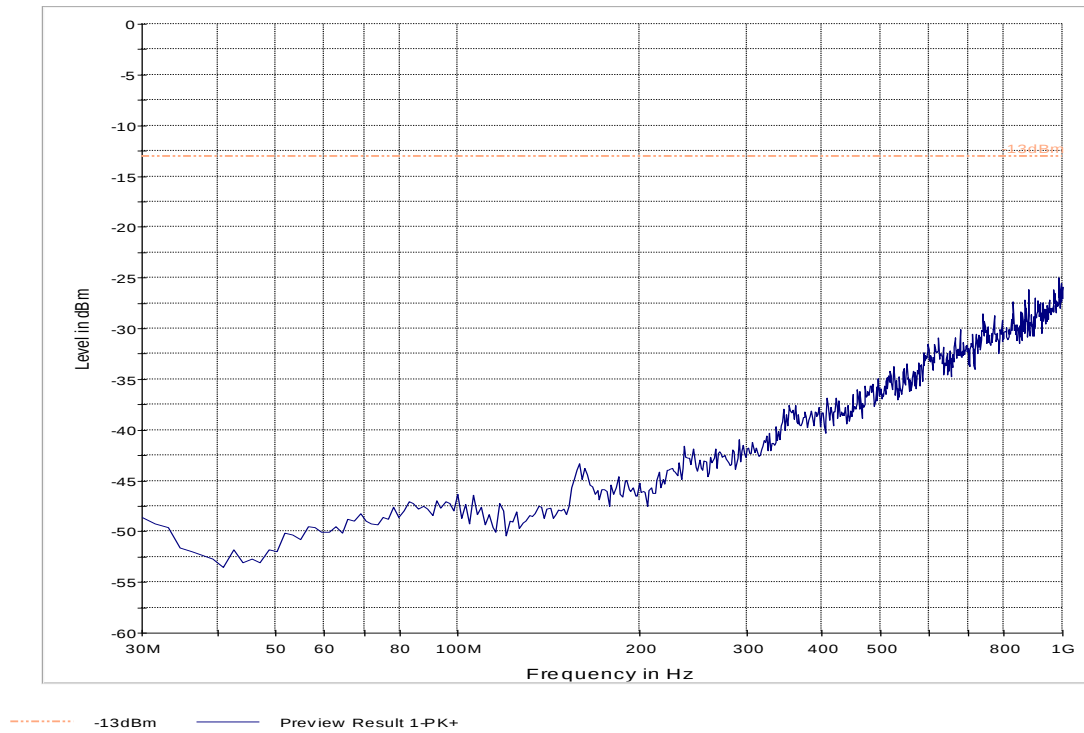
## Test results 18GHz-19.1GHz



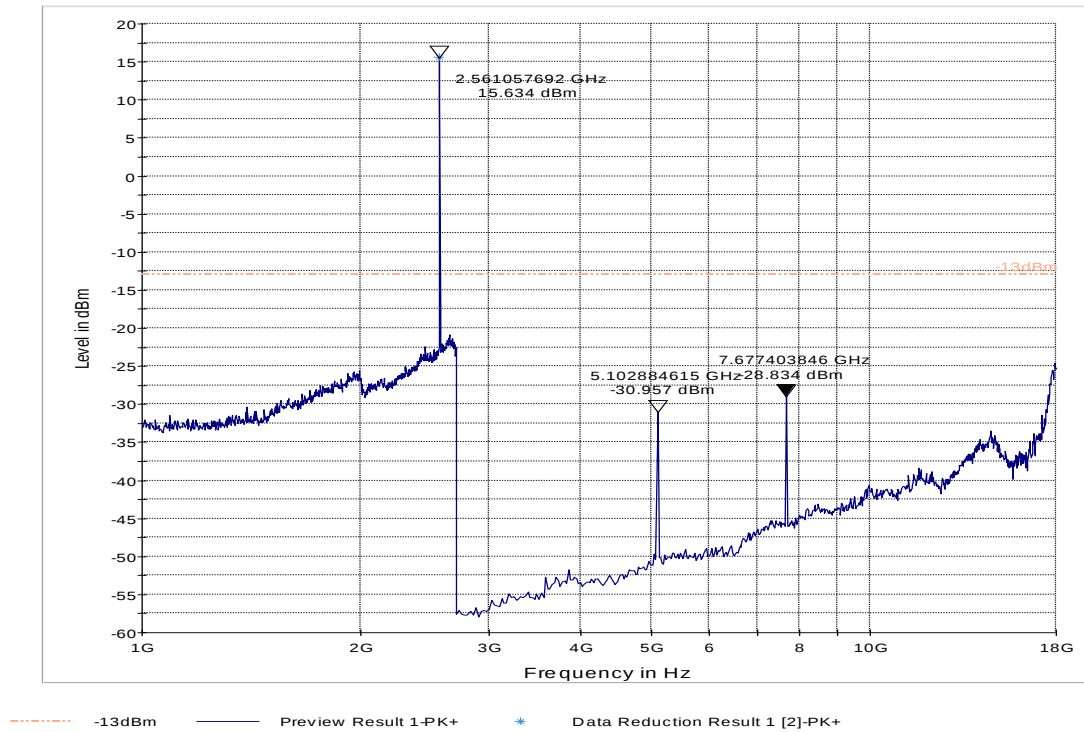
**Radiated Spurious Emissions (LTE Band 7) Tx: QPSK; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



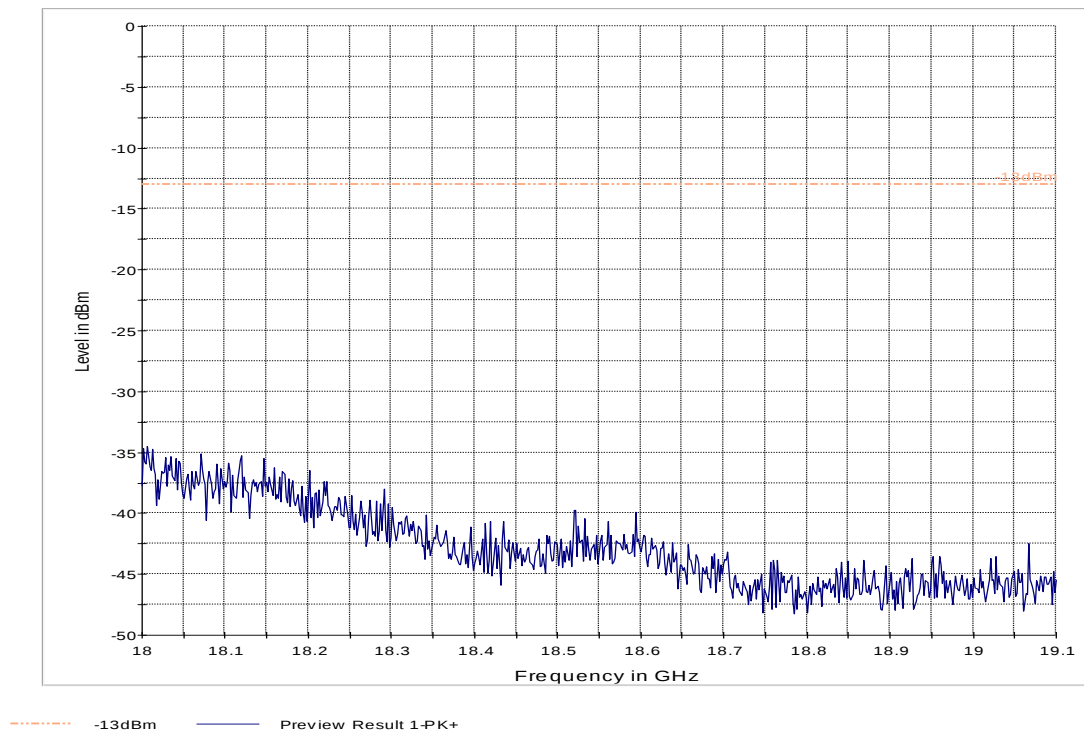
**Test results 30MHz-1GHz**



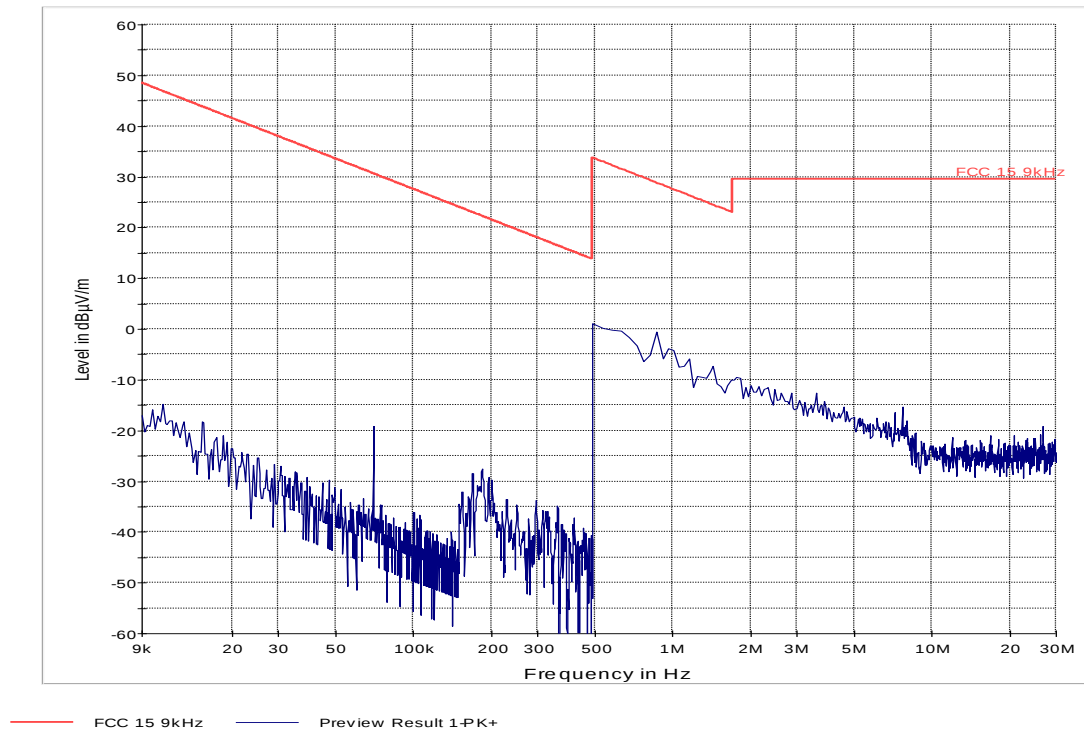
## Test results 1GHz-18GHz



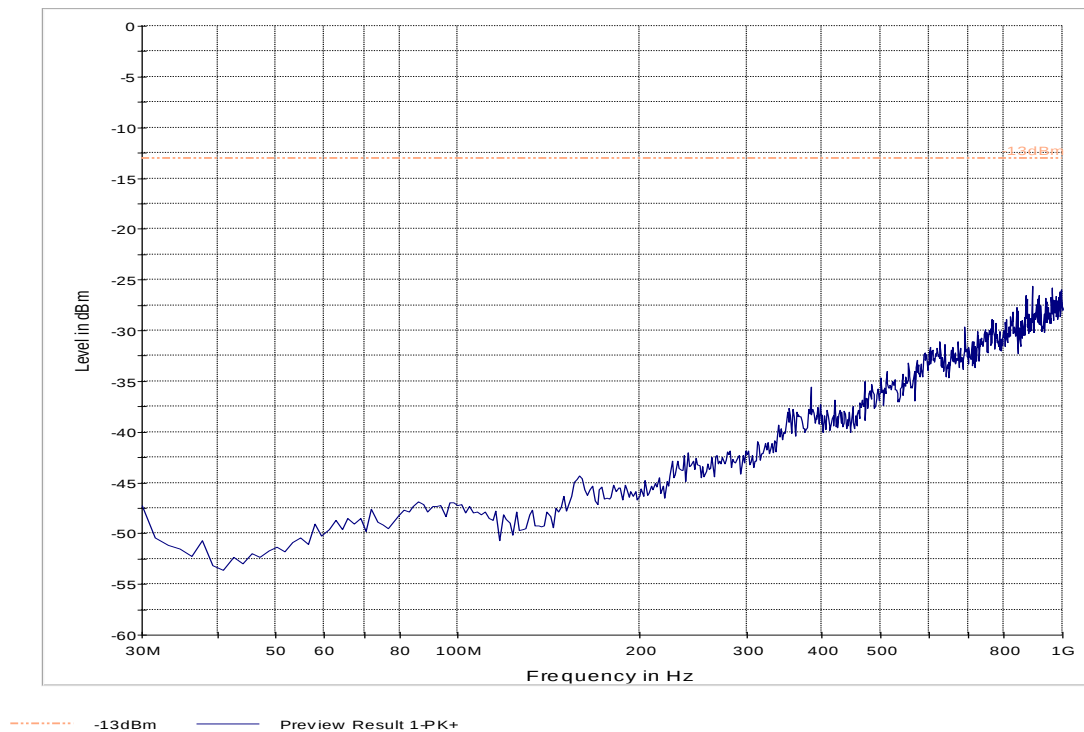
## Test results 18GHz-19.1GHz



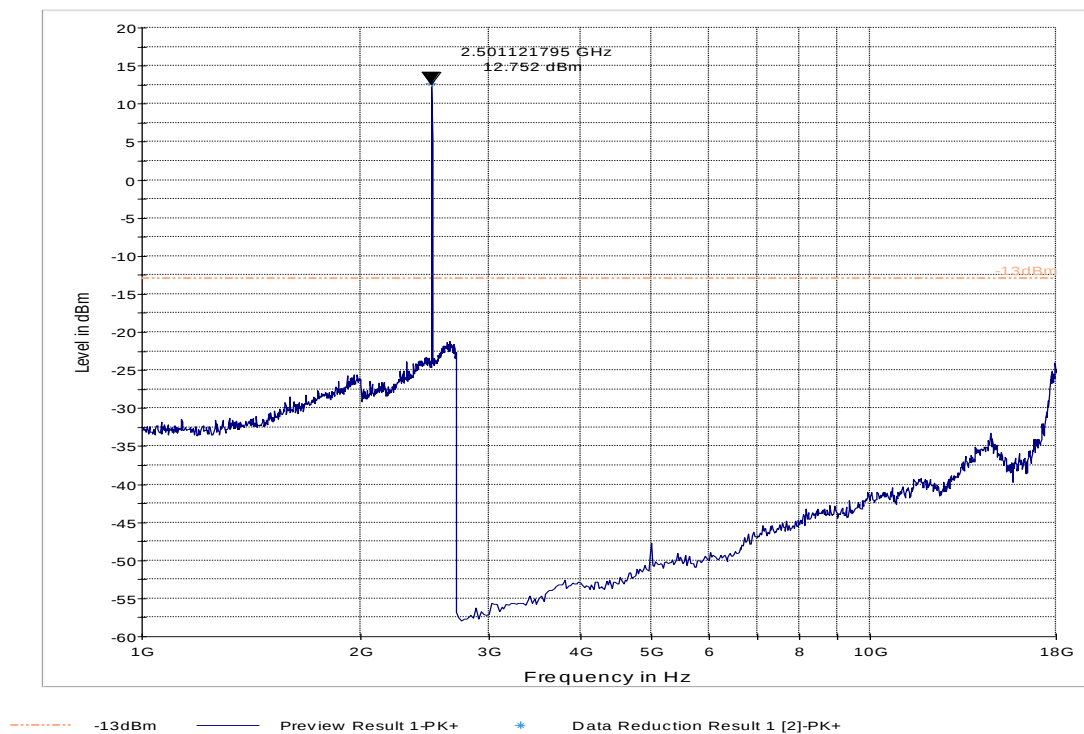
**Radiated Spurious Emissions (LTE Band 7) Tx: 16-QAM; 10MHz BW: Low Channel**  
**Test results 9kHz-30MHz**



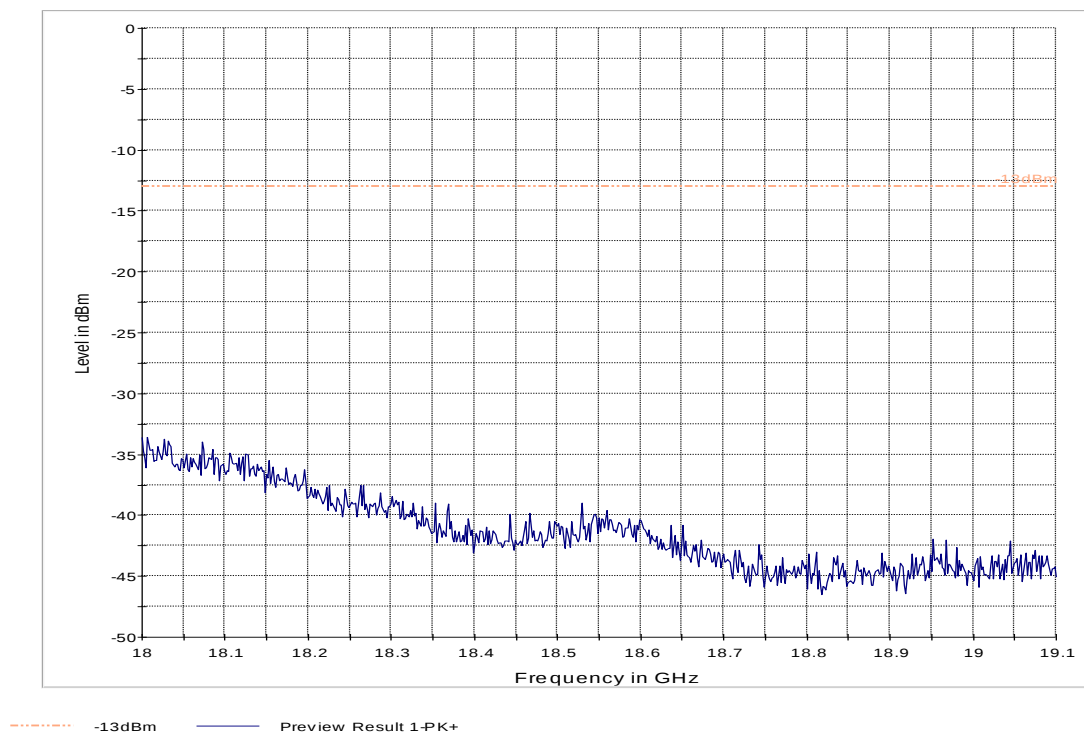
**Test results 30MHz-1GHz**



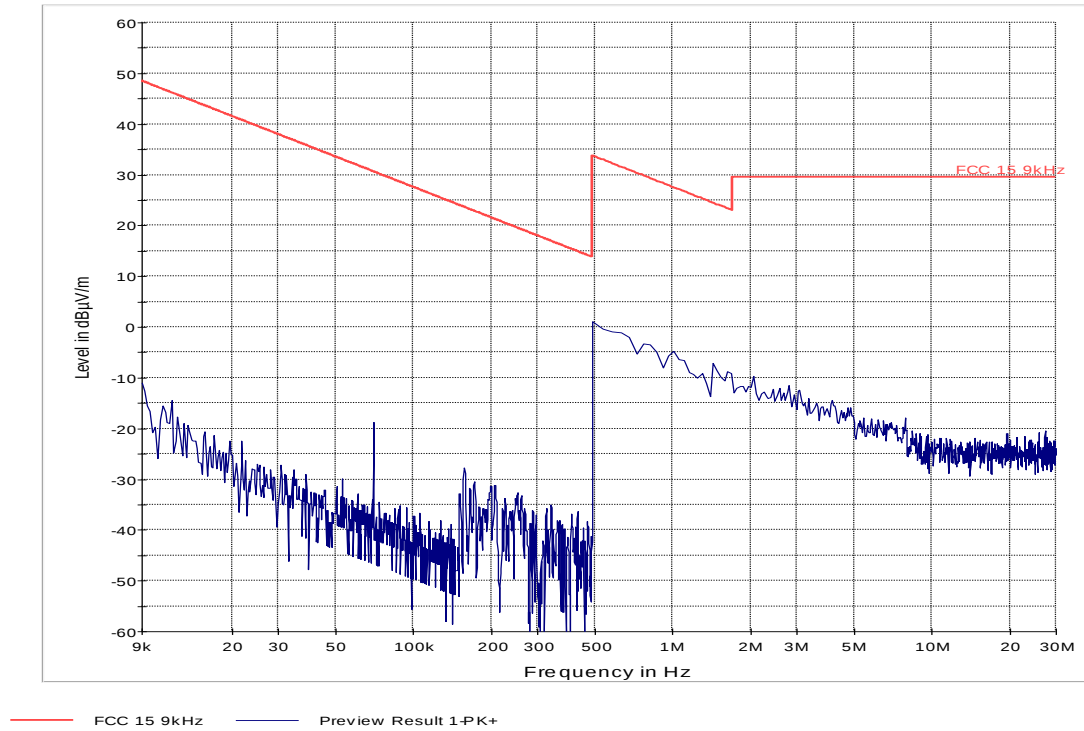
## Test results 1GHz-18GHz



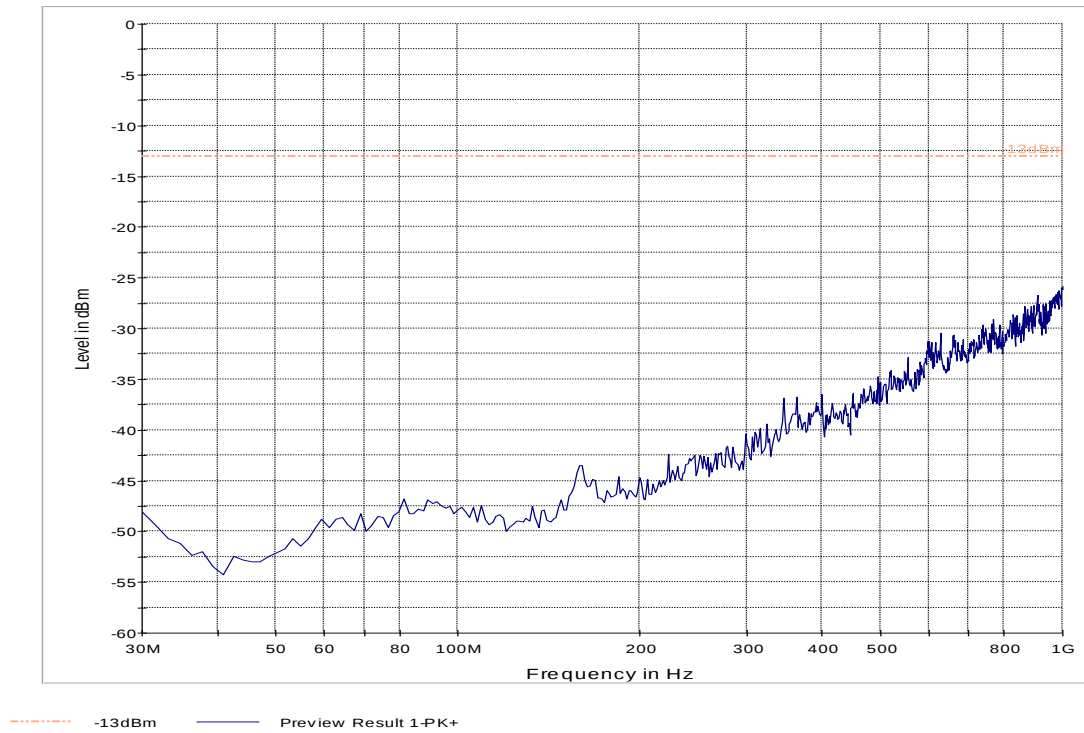
## Test results 18GHz-19.1GHz



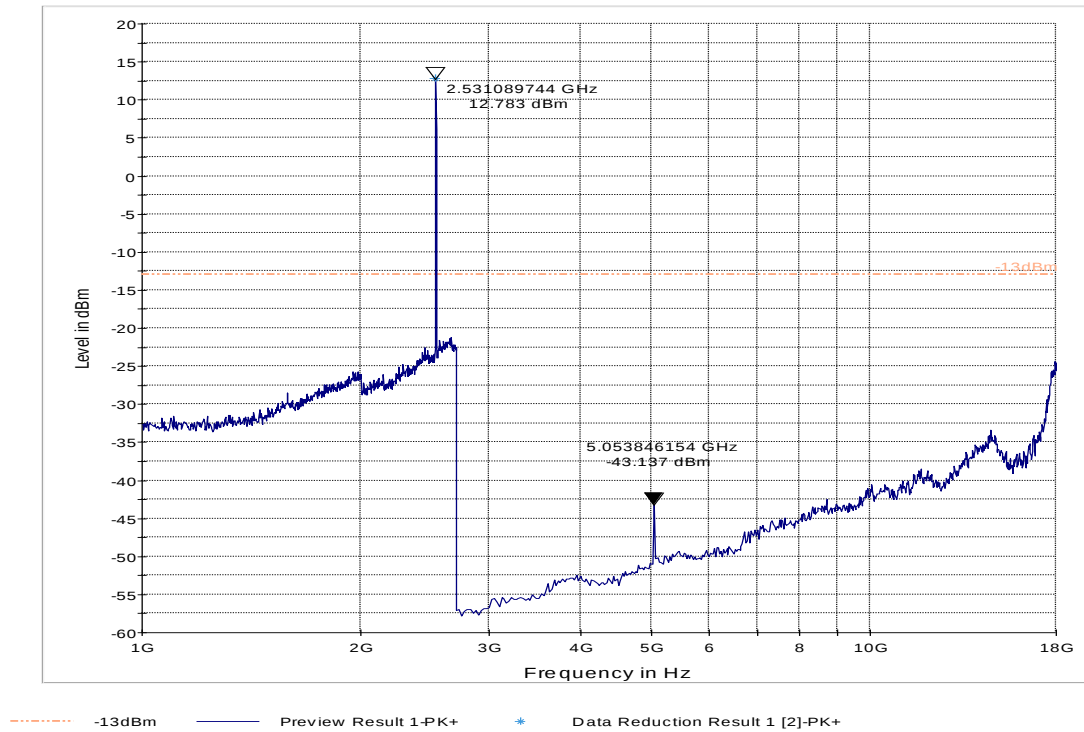
**Radiated Spurious Emissions (LTE Band 7) Tx: 16-QAM; 10MHz BW: Mid Channel**  
**Test results 9kHz-30MHz**



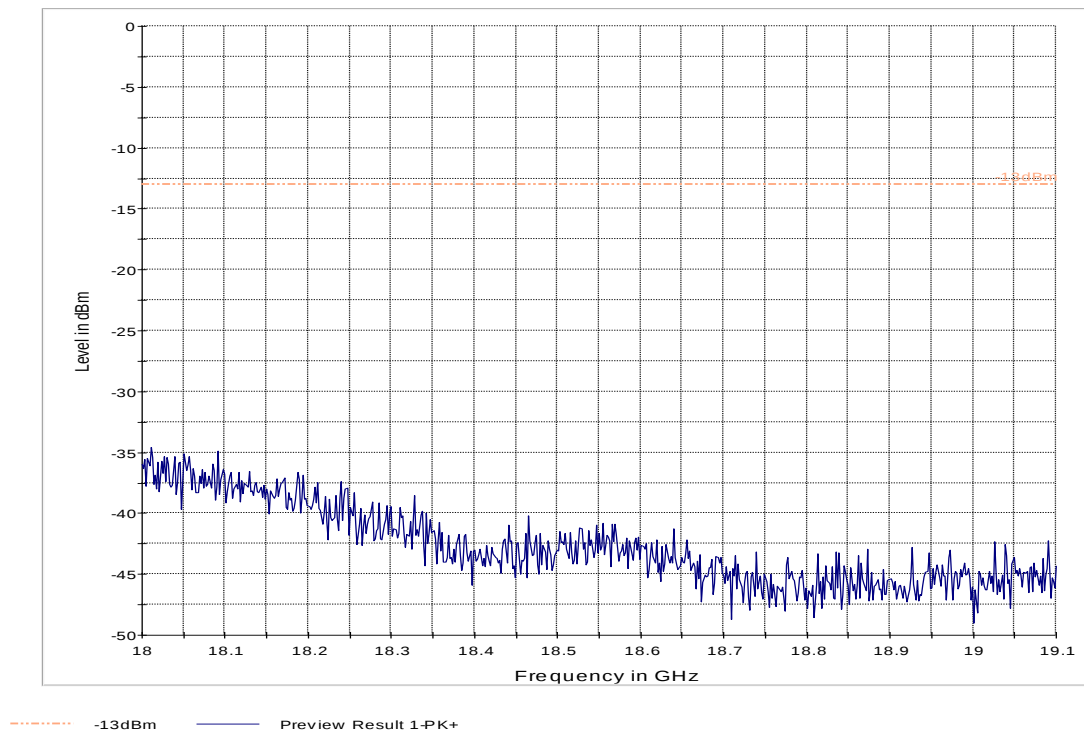
**Test results 30MHz-1GHz**



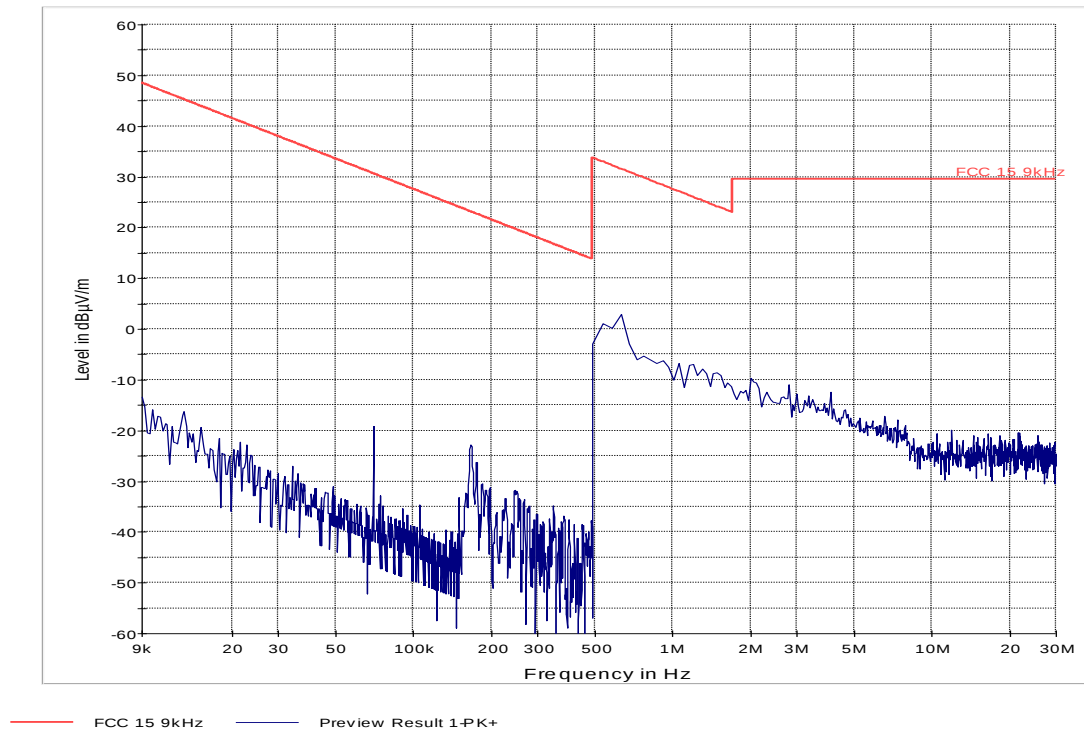
## Test results 1GHz-18GHz



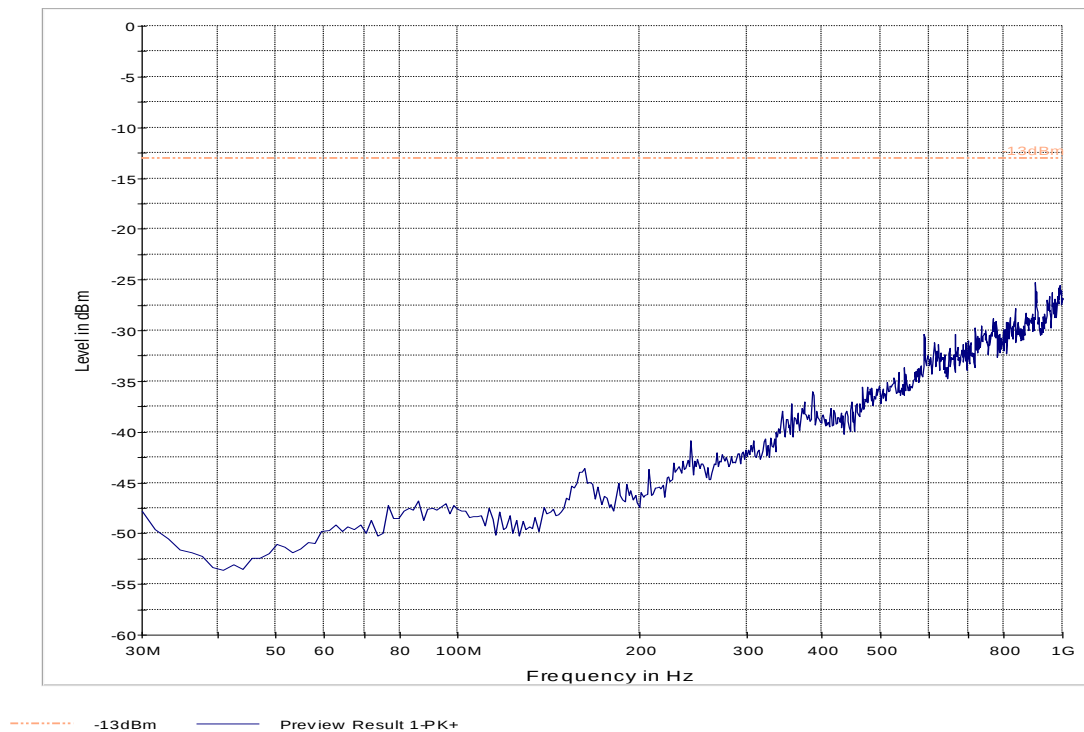
## Test results 18GHz-19.1GHz



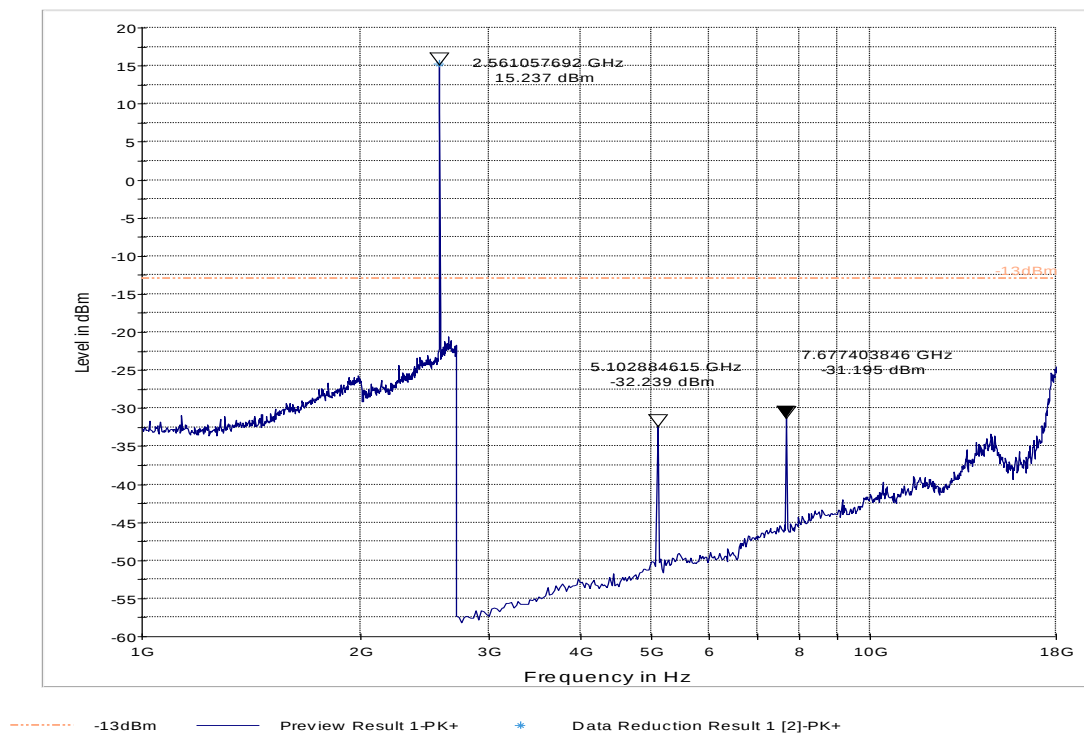
**Radiated Spurious Emissions (LTE Band 7) Tx: 16-QAM; 10MHz BW: High Channel**  
**Test results 9kHz-30MHz**



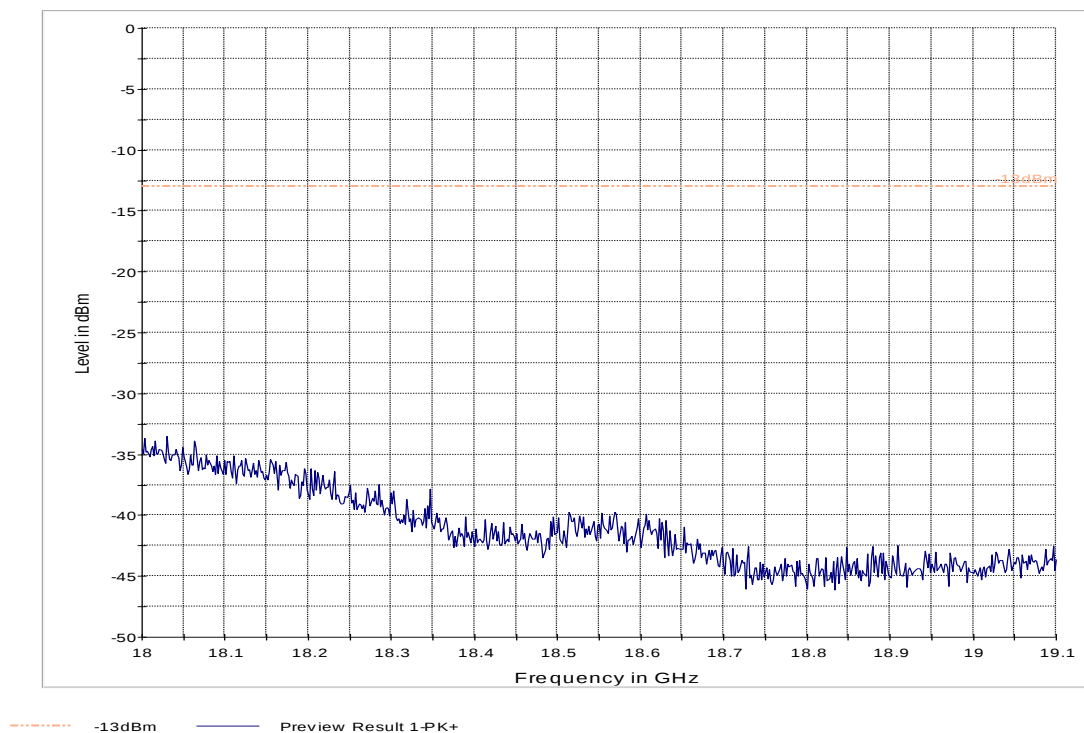
**Test results 30MHz-1GHz**



## Test results 1GHz-18GHz



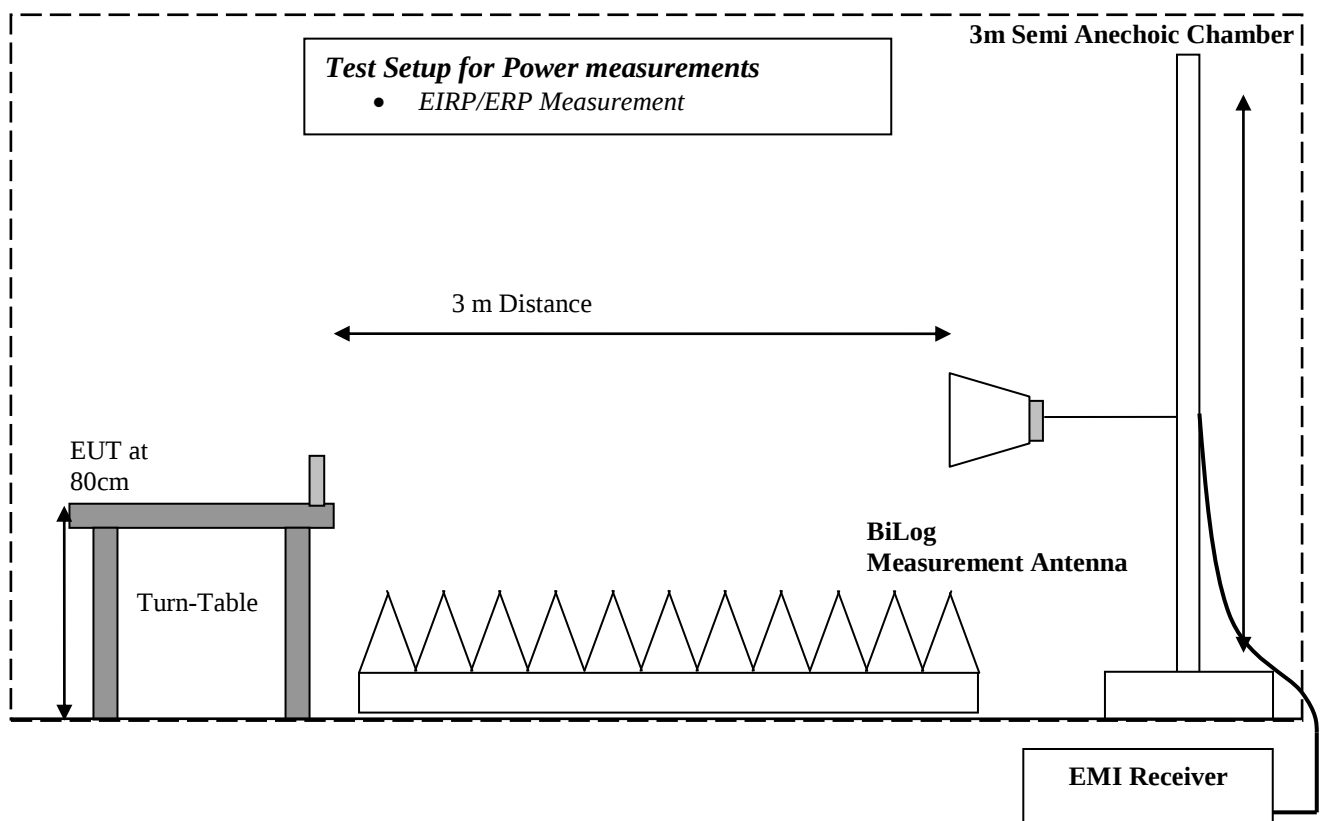
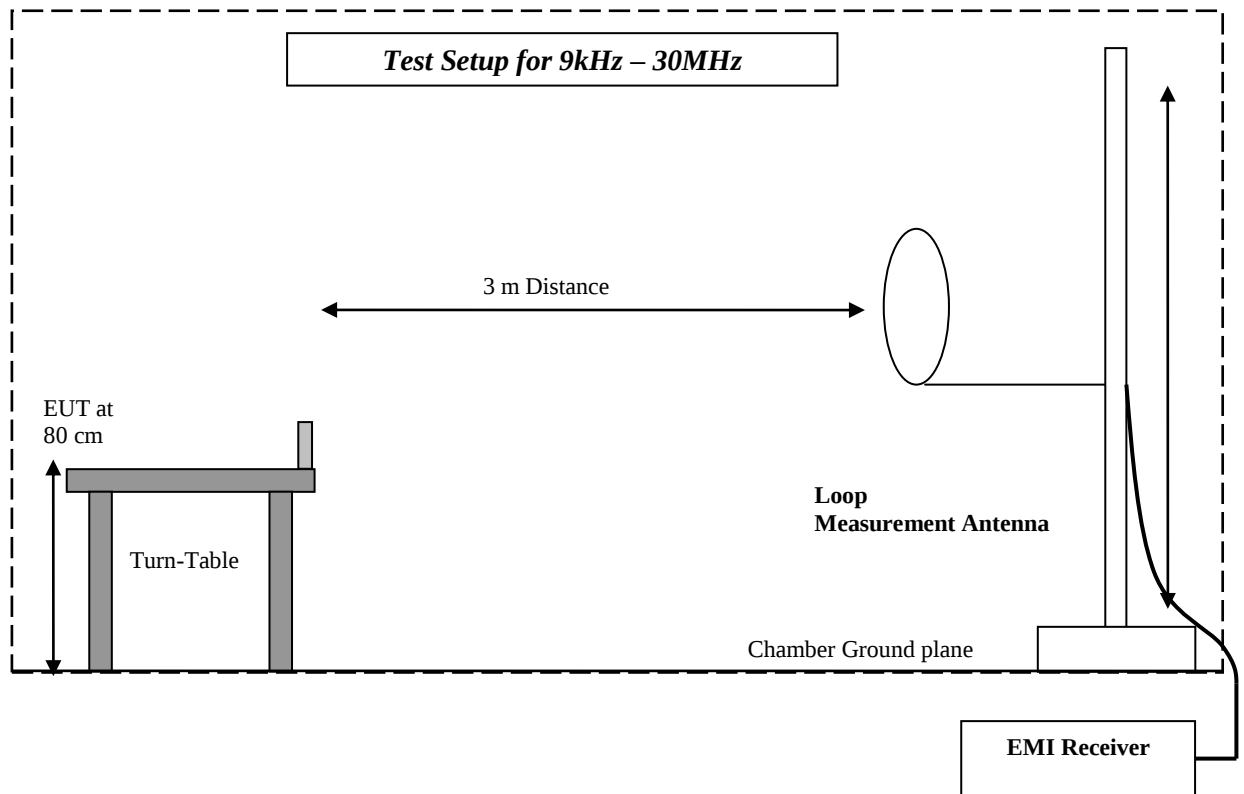
## Test results 18GHz-19.1GHz

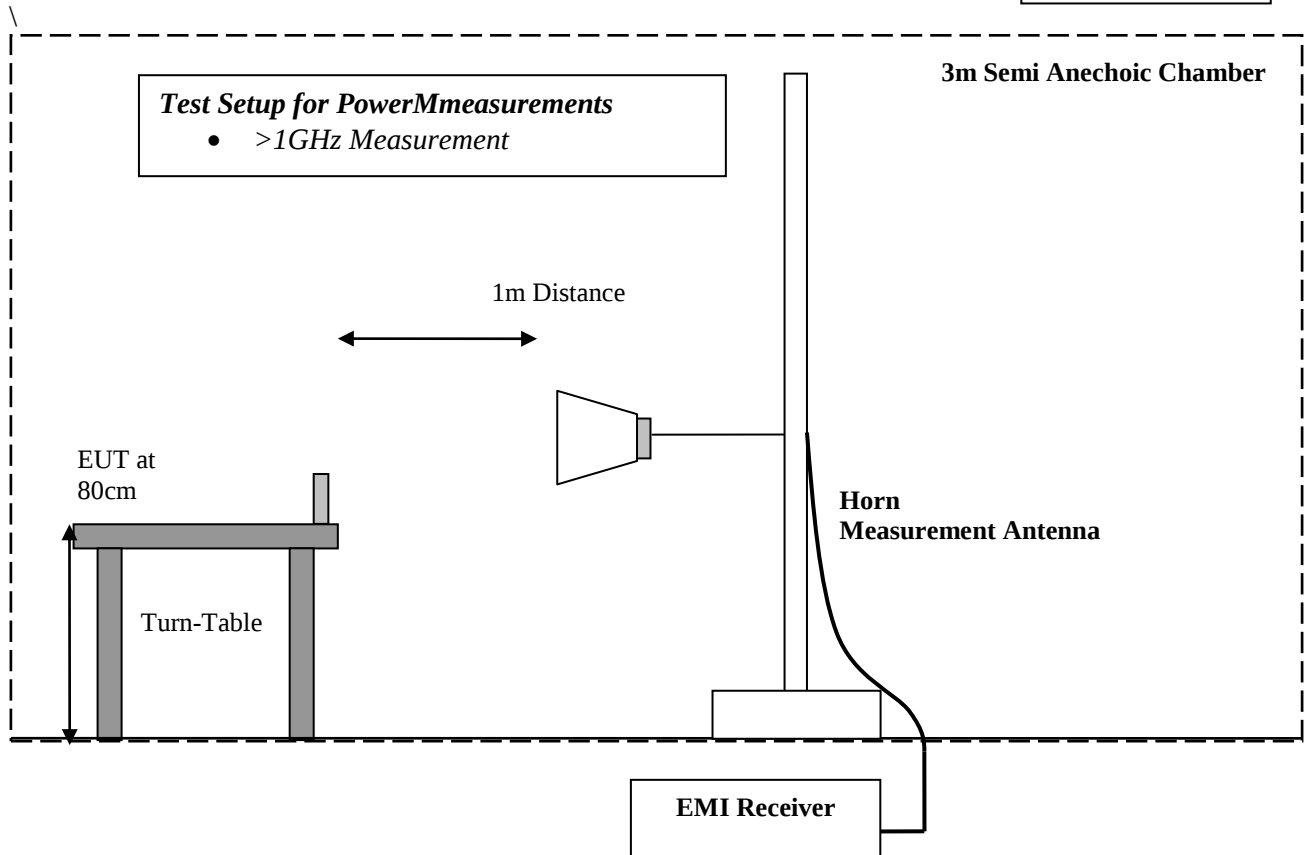
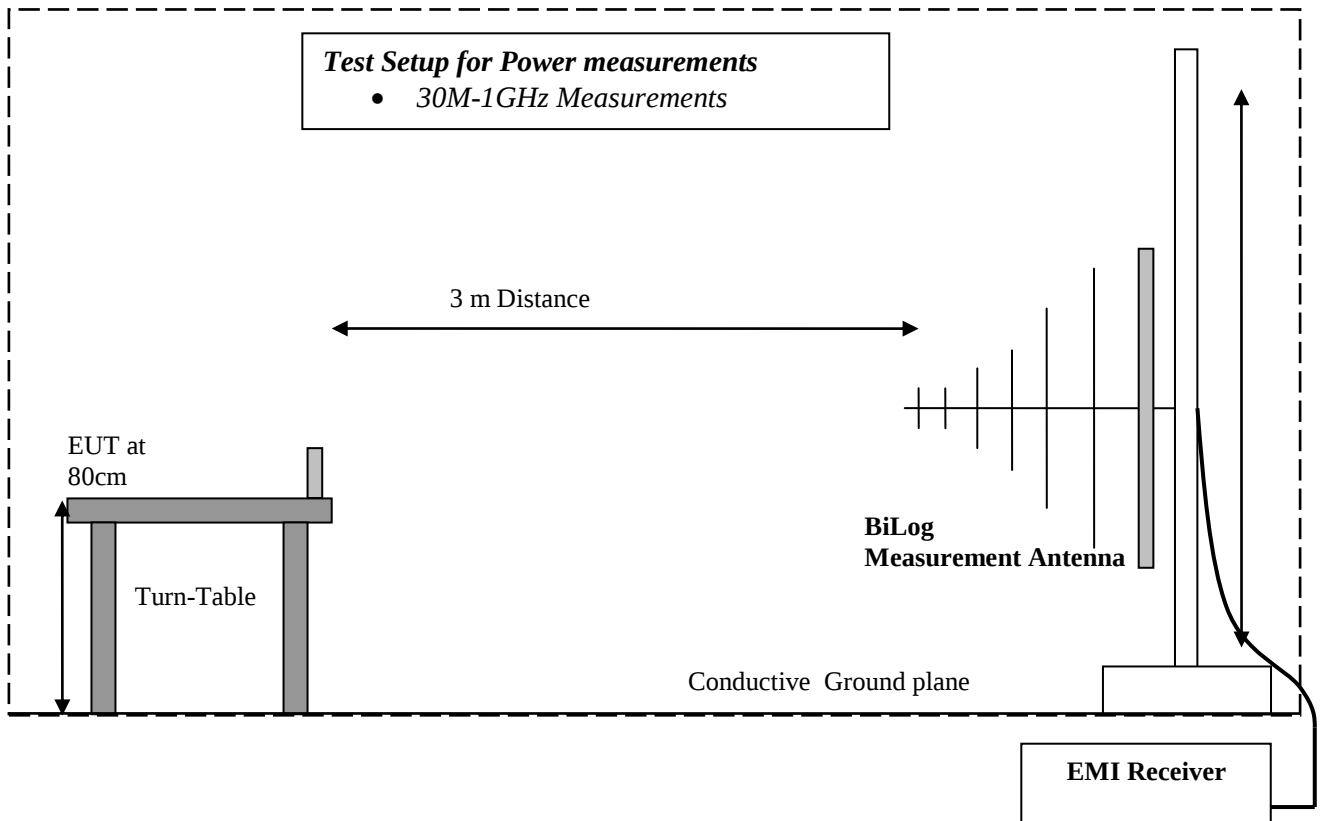


## 7 Test Equipment and Ancillaries used for tests

| Instrument/Ancillary       | Model         | Manufacturer    | Serial No.  | Cal Date                   | Cal Interval |
|----------------------------|---------------|-----------------|-------------|----------------------------|--------------|
| Radio Communication Tester | CMU 200       | Rohde & Schwarz | 110759      | June 2013                  | 2 Years      |
| EMI Receiver/Analyzer      | ESU 40        | Rohde & Schwarz | 100251      | Sept 2013                  | 2 Years      |
| Spectrum Analyzer          | FSU           | Rohde & Schwarz | 200302      | June 2013                  | 2 Years      |
| Loop Antenna               | 6512          | EMCO            | 00049838    | Apr 2012                   | 3 years      |
| Biconilog Antenna          | 3141          | EMCO            | 0005-1186   | Mar 2012                   | 3 years      |
| Horn Antenna (1-18GHz)     | 3115          | ETS             | 00035111    | Mar 2012                   | 3 years      |
| Horn Antenna (1-18GHz)     | 3115          | ETS             | 00035114    | Apr 2012                   | 3 years      |
| Horn Antenna (18-40GHz)    | 3116          | ETS             | 00070497    | Aug 2011                   | 3 years      |
| Communication Antenna      | IBP5-900/1940 | Kathrein        | n/a         | n/a                        | n/a          |
| High Pass Filter           | 5HC2700       | Trilithic Inc.  | 9926013     | Part of system calibration |              |
| High Pass Filter           | 4HC1600       | Trilithic Inc.  | 9922307     | Part of system calibration |              |
| 6GHz High Pass Filter      | HPM50106      | Microtronics    | 001         | Part of system calibration |              |
| Pre-Amplifier              | JS4-00102600  | Miteq           | 00616       | Part of system calibration |              |
| LISN                       | 50-25-2-08    | FCC             | 08014       | Jan 2013                   | 1 year       |
| DC Power Supply            | 6655A         | Hewlett Packard | 3403A-00487 | n/a                        | n/a          |
| Multimeter                 | MM200         | Klein           | N/A         | Apr 2011                   | 2 Years      |
| Temp Hum Logger            | TM320         | Dickson         | 03280063    | Apr 2013                   | 1 Year       |
| Temp Hum Logger            | TM325         | Dickson         | 5285354     | Apr 2013                   | 1 Year       |

## 8 Test Setup Diagrams





## 9 Revision History

| Date       | Report Name              | Changes to report | Report prepared by |
|------------|--------------------------|-------------------|--------------------|
| 2014-01-21 | EMC_CETEC_063_13001_WWAN | Initial Version   | Franz Engert       |