



No. L0442



No. DAT-P-114/01-10

# TEST REPORT

No. FCC-PART24-2004003

|              |                                     |
|--------------|-------------------------------------|
| Test name    | FCC Test                            |
| Product      | GSM Triple Frequency Mobile Station |
| Model        | T528                                |
| Client       | TCL MOBILE COMMUNICATION CO., LTD.  |
| Type of test | Entrusted                           |

Telecommunication Metrology Center  
of Ministry of Information Industry



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2. Any copy of the test report is invalid if not re-marked with the “exclusive stamp for the test report” or the stamp of the test center.
3. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
4. The test report is invalid if there is any evidence of erasure and/or falsification.
5. If there is any dissidence for the test report, please file objection to the test center within 15 days from the date of receiving the test report.
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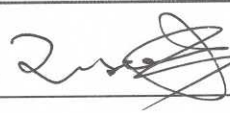
|                                    |                                                                                                                                                                                                                            |                                   |                                          |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------|
| <b>Product</b>                     | GSM Triple Frequency<br>Mobile Station                                                                                                                                                                                     | <b>Model</b>                      | T528                                     |
|                                    |                                                                                                                                                                                                                            | <b>Trade mark</b>                 |                                          |
| <b>Client</b>                      | TCL MOBILE<br>COMMUNICATION CO.,<br>LTD.                                                                                                                                                                                   | <b>Type of test</b>               | Entrusted                                |
| <b>Manufacturer</b>                | TCL MOBILE<br>COMMUNICATION CO.,<br>LTD.                                                                                                                                                                                   | <b>Arrival Date of<br/>sample</b> | Jun 01, 2004                             |
| <b>Place of<br/>sampling</b>       | (Blank)                                                                                                                                                                                                                    | <b>Carrier of the<br/>samples</b> | TCL MOBILE<br>COMMUNICATION CO.,<br>LTD. |
| <b>Quantity of the<br/>samples</b> | 1                                                                                                                                                                                                                          | <b>Date of<br/>product</b>        | (Blank)                                  |
| <b>Base of the<br/>samples</b>     | (Blank)                                                                                                                                                                                                                    | <b>Items of test</b>              | 8                                        |
| <b>Series number</b>               | No1: SAMPLE                                                                                                                                                                                                                |                                   |                                          |
| <b>Standard(s)</b>                 | FCC Part 24                                                                                                                                                                                                                |                                   |                                          |
| <b>Conclusion</b>                  | <b>Final Judgment: Pass</b> <div align="right"> <br/>             (Stamp)<br/> <b>Date of issue: Jun. 09<sup>th</sup>, 2004</b> </div> |                                   |                                          |
| <b>Comment</b>                     | The test result only responds to the tested sample.                                                                                                                                                                        |                                   |                                          |

Approved by



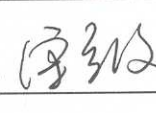
(Lu Minniu)

Revised by



(Wang Hongbo )

Performed by



(Song Chongwen)

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## 1 COMPETENCE AND WARRANTIES

**Telecommunication Metrology Center of the Ministry of Information Industry** is a test laboratory accredited by DAR (DATech) – Deutschen Akkreditierungs Rat (Deutsche Akkreditierungsstelle Technik), for the tests indicated in the Certificate No. **DAT-P-114/01-10**.

**Telecommunication Metrology Center of Ministry of Information Industry** is a test laboratory accredited by CNAL – Accreditation Certificate of China National Accreditation Board for Laboratories, for the tests indicated in the Certificate No. **L0442**.

**Telecommunication Metrology Center of Ministry of Information Industry** guarantees the reliability of the data presented in this report, which is the result of measurements and tests performed to the item under test on the date and under the conditions stated on the report and is based on the knowledge and technical facilities available at **Telecommunication Metrology Center of Ministry of Information Industry** at the time of execution of the test.

**Telecommunication Metrology Center of Ministry of Information Industry** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the item under test and the results of the test.

## 2 GENERAL CONDITIONS

- 2.1 This report only refers to the item that has undergone the test.
- 2.2 This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.
- 2.3 This document is only valid if complete; no partial reproduction can be made without written approval of Telecommunication Metrology Center of Ministry of Information Industry.
- 2.4 This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of Telecommunication Metrology Center of Ministry of Information Industry and the Accreditation Bodies, if it applies.

## 3 ABOUT EUT

### 3.1 Addressing Information Related to EUT

**Table 1: Applicant's details (The Client)**

|                 |                                                                                     |
|-----------------|-------------------------------------------------------------------------------------|
| Name or Company | TCL MOBILE COMMUNICATION CO., LTD.                                                  |
| Address/Post    | No.23 Zone, ZhongKai High & Technology Development Zone, HuiZhou, GuangDong, China. |
| City            | HuiZhou                                                                             |
| Postal Code     | 516006                                                                              |
| Country         | China                                                                               |
| Telephone       | 86-752-2611888                                                                      |
| Fax             | 86-752-2611800                                                                      |

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**Table 2: Manufacturer's details**

|                 |                                                                                     |
|-----------------|-------------------------------------------------------------------------------------|
| Name or Company | TCL MOBILE COMMUNICATION CO., LTD.                                                  |
| Address/Post    | No.23 Zone, ZhongKai High & Technology Development Zone, HuiZhou, GuangDong, China. |
| City            | HuiZhou                                                                             |
| Postal Code     | 516006                                                                              |
| Country         | China                                                                               |
| Telephone       | 86-752-2611888                                                                      |
| Fax             | 86-752-2611800                                                                      |

### **3.2 Equipment under test (EUT)**

|                         |                                              |
|-------------------------|----------------------------------------------|
| Model                   | T528                                         |
| Description             | GSM 1900 Mobile Phone                        |
| IMEI                    | 352560000010000                              |
| Hardware status         | 1.4                                          |
| Software status         | 01.02.08N                                    |
| Frequency               | 1850.2MHz – 1909.8MHz for PCS 1900           |
| Type of modulation      | GMSK                                         |
| Number of channels      | 299 for PCS 1900                             |
| Antenna                 | Tri-band                                     |
| Power supply            | Battery or Charger (AC Adaptor)              |
| Output power            | 29.94 dBm maximum EIRP measured for PCS 1900 |
| Extreme vol. Limits     | 3.3VDC to 4.2VDC (nominal: 3.7VDC)           |
| Extreme temp. Tolerance | -30°C to +50°C                               |

### **3.3 Photographs of Equipment under test**

Photographs of MS Hand Telephone Set and Charger are respectively shown in in ANNEX B of this test report.

## **4 LABORATORY ENVIRONMENT**

**Semi-anechoic chamber** (23 meters × 17meters × 10meters) did not exceed following limits along the EMC testing:

|                                   |                                                    |
|-----------------------------------|----------------------------------------------------|
| Temperature                       | Min. = 15 , Max. = 30                              |
| Relative humidity                 | Min. = 30 %, Max. = 60 %                           |
| Shielding effectiveness           | > 110 dB                                           |
| Electrical insulation             | > 10 k $\Omega$                                    |
| Ground system resistance          | < 0.5 $\Omega$                                     |
| Normalised site attenuation (NSA) | < $\pm$ 3.2 dB, 10 m distance, from 30 to 1000 MHz |
| Uniformity of field strength      | Between 0 and 6 dB, from 26 to 1000 MHz            |

**Control room** did not exceed following limits along the EMC testing:

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|                          |                         |
|--------------------------|-------------------------|
| Temperature              | Min. = 15 , Max. = 35   |
| Relative humidity        | Min. =30 %, Max. = 60 % |
| Shielding effectiveness  | > 110 dB                |
| Electrical insulation    | > 10 kΩ                 |
| Ground system resistance | < 0.5 Ω                 |

**Conducted chamber** did not exceed following limits along the EMC testing:

|                          |                          |
|--------------------------|--------------------------|
| Temperature              | Min. = 15 , Max. = 30    |
| Relative humidity        | Min. = 30 %, Max. = 60 % |
| Shielding effectiveness  | > 110 dB                 |
| Electrical insulation    | > 10 kΩ                  |
| Ground system resistance | < 0.5 Ω                  |

**Fully-anechoic chamber** (6.8 meters × 3.08 meters × 3.53 meters) did not exceed following limits along the EMC testing:

|                              |                                         |
|------------------------------|-----------------------------------------|
| Temperature                  | Min. = 15 , Max. = 30                   |
| Relative humidity            | Min. = 30 %, Max. = 60 %                |
| Shielding effectiveness      | > 110 dB                                |
| Electrical insulation        | > 10 kΩ                                 |
| Ground system resistance     | < 0.5 Ω                                 |
| Uniformity of field strength | Between 0 and 6 dB, from 26 to 1000 MHz |

## 5 SUMMARY OF TEST RESULTS

| Abbreviations used in this clause: |    |
|------------------------------------|----|
| ——Pass                             | P  |
| ——Not applicable                   | NA |
| ——Fail                             | F  |
| ——Not measured                     | NM |

| Clause | List                         | Verdict |
|--------|------------------------------|---------|
| 1      | POWER OUTPUT                 | P       |
| 2      | FREQUENCY STABILITY          | P       |
| 3      | OCCUPIED BANDWIDTH           | P       |
| 4      | EMISSION BANDWIDTH           | P       |
| 5      | EMISSION LIMIT               | P       |
| 6      | BAND EDGE COMPLIANCE         | P       |
| 7      | CONDUCTED SPURIOUS EMISSIONS | P       |
| 8      | CONDUCTED EMISSIONS          | P       |

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## **6 MAIN TEST INSTRUMENTS**

| <b>NO.</b> | <b>NAME</b>                         | <b>TYPE</b> | <b>SERIES NUMBER</b> | <b>PRODUCER</b> |
|------------|-------------------------------------|-------------|----------------------|-----------------|
| 1          | Test Receiver                       | ESS         | 847151/015           | R&S             |
| 2          | Test Receiver                       | ESI40       | 831564/002           | R&S             |
| 3          | BiLog Antenna                       | 3142B       | 9908-1403            | EMCO            |
| 4          | BiLog Antenna                       | 3142B       | 9908-1405            | EMCO            |
| 5          | Signal Generator                    | SMT06       | 831285/005           | R&S             |
| 6          | Signal Generator                    | SMP04       | 100070               | R&S             |
| 7          | LISN                                | ESH2-Z5     | 829991/012           | R&S             |
| 8          | Spectrum Analyzer                   | E4440A      | MY41000262           | Agilent         |
| 9          | Universal RadioCommunication Tester | CMD200      | 100680               | R&S             |
| 10         | Dual-Ridge Waveguide Horn Antenna   | 3115        | 9906-5827            | EMCO            |
| 11         | Dual-Ridge Waveguide Horn Antenna   | 3116        | 2663                 | EMCO            |
| 12         | Dual-Ridge Waveguide Horn Antenna   | 3116        | 2661                 | EMCO            |
| 13         | Climatic chamber                    | PL-2G       | 343074               | ESPEC           |

## **7 TEST PERIOD**

The performed test started on June. 1<sup>th</sup>, 2004 and finished on June. 9<sup>th</sup>, 2004.

## **8 TEST LOCATION**

Safety & EMC laboratory of Telecommunication Metrology Center of Ministry of Information Industry.

## **ANNEX A MEASUREMENT RESULTS**

### **A.1 OUTPUT POWER**

#### **A.1.1 Summary**

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation. This paragraph contains Burst Average conducted output power and EIRP measurements for the EUT.

In all cases, output power is within the specified limits.

#### **A.1.2 Conducted**

##### **A.1.2.1 Method of Measurements**

The EUT was set up for the max output power with pseudo random data modulation.

The power was measured with Agilent Spectrum Analyzer E4440A (peak)

These measurements were done at 3 frequencies, 1850.2 MHz, 1880.0 MHz and 1909.8 MHz (bottom, middle and top of operational frequency range).

##### **A.1.2.2 Limit**

| Power step | Nominal Peak output power (dBm) | Tolerance (dB) |
|------------|---------------------------------|----------------|
| 0          | ≤30dBm(1W)                      | ± 2            |

##### **A1.2.3 Measurement result**

| Frequency(MHz) | Power Step | Peak output power |
|----------------|------------|-------------------|
| 1850.2         | 0          | 29.86             |
| 1880           | 0          | 29.94             |
| 1909.8         | 0          | 29.70             |

#### **A.1.3 Radiated**

##### **A.1.3.1 Description**

This is the test for the maximum radiated power from the EUT. Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

##### **A.1.3.2 Method of Measurement**

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power ( $P_{in}$ ) is applied to the input of the dipole, and the power received ( $P_r$ ) at the chamber's probe antenna is recorded.
2. A "reference path loss" is established as  $P_{in} + 2.15 - P_r$ .
3. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.
5. The EUT is then put into pulse mode at its maximum power level (Power Step 0).
6. "Gated mode" power measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in FCC Rule 24.232 (b) and (c). The "reference path loss" from Step 1 is added to this result.

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7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power ( $P_{in}$ ).
8. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $ERP = EIRP - 2.15\text{dBi}$ .

**A.1.3.3 Limits**

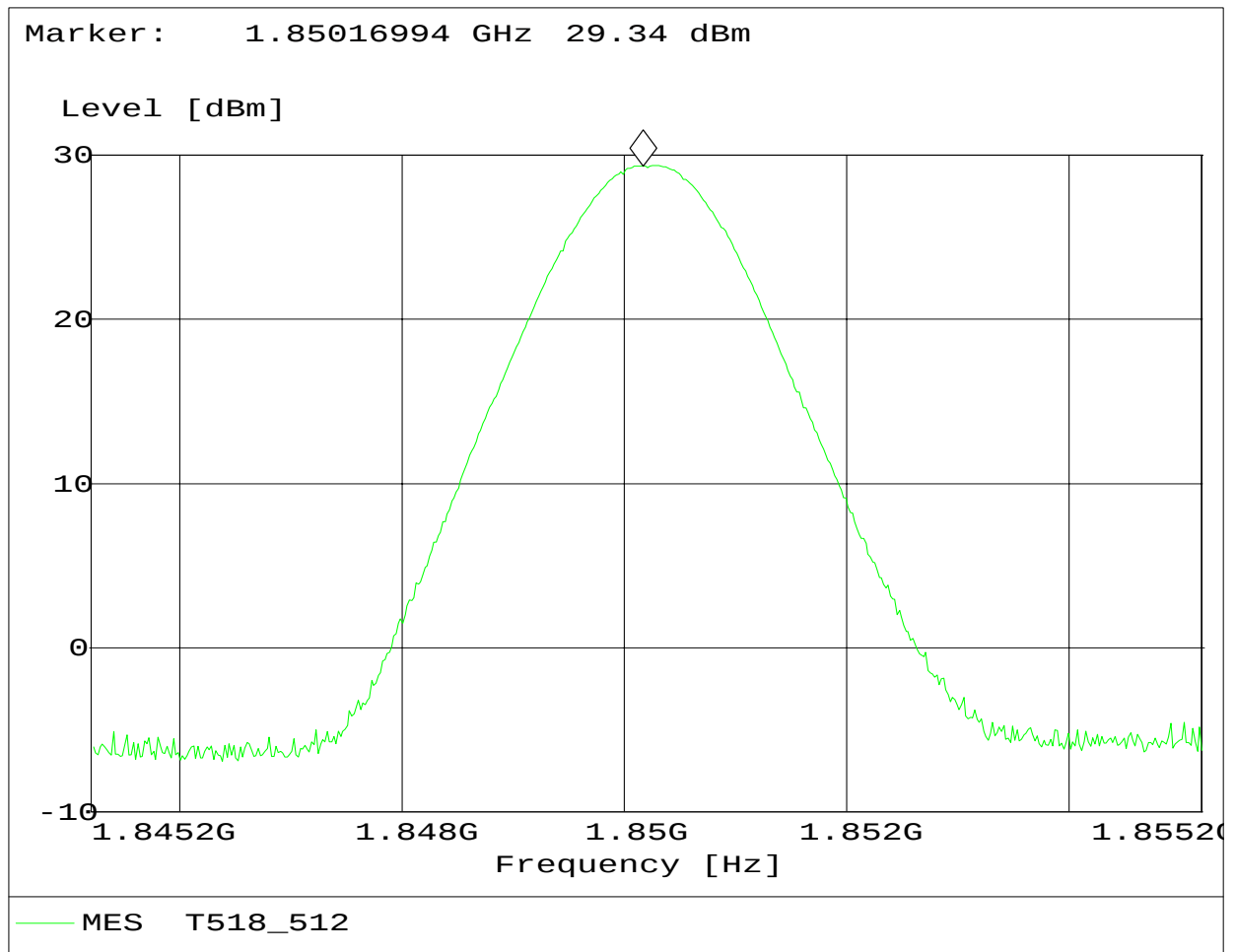
| Power Step | Burst Peak EIRP (dBm)    |
|------------|--------------------------|
| 0          | $\leq 30\text{dBm}$ (1W) |

**A.1.3.4 Power Measurements**

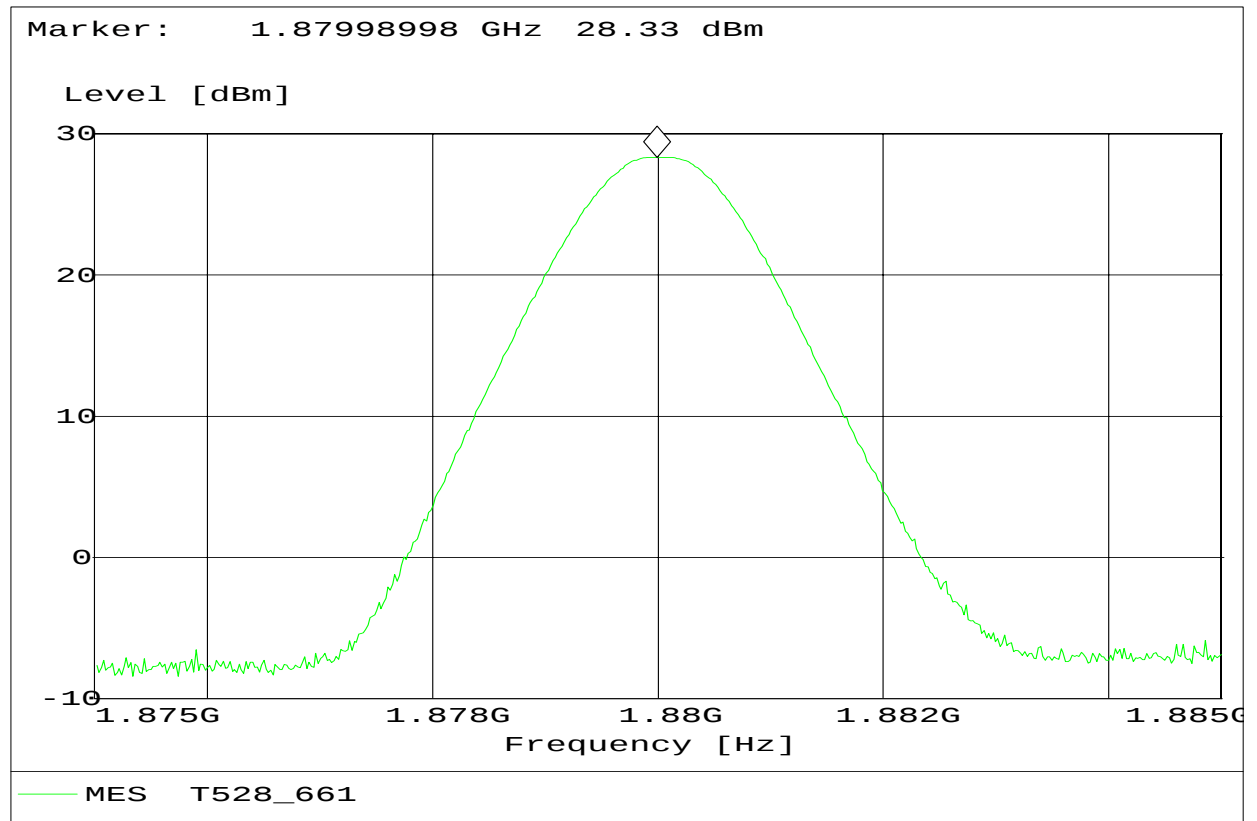
| channel | Frequency(MHz) | Power step | Burst Peak EIRP(dBm) |
|---------|----------------|------------|----------------------|
| 512     | 1850.2         | 0          | 29.34                |
| 661     | 1880           | 0          | 28.33                |
| 810     | 1909.8         | 0          | 29.22                |

**ANALYZER SETTINGS: RBW = VBW = 3MHz**

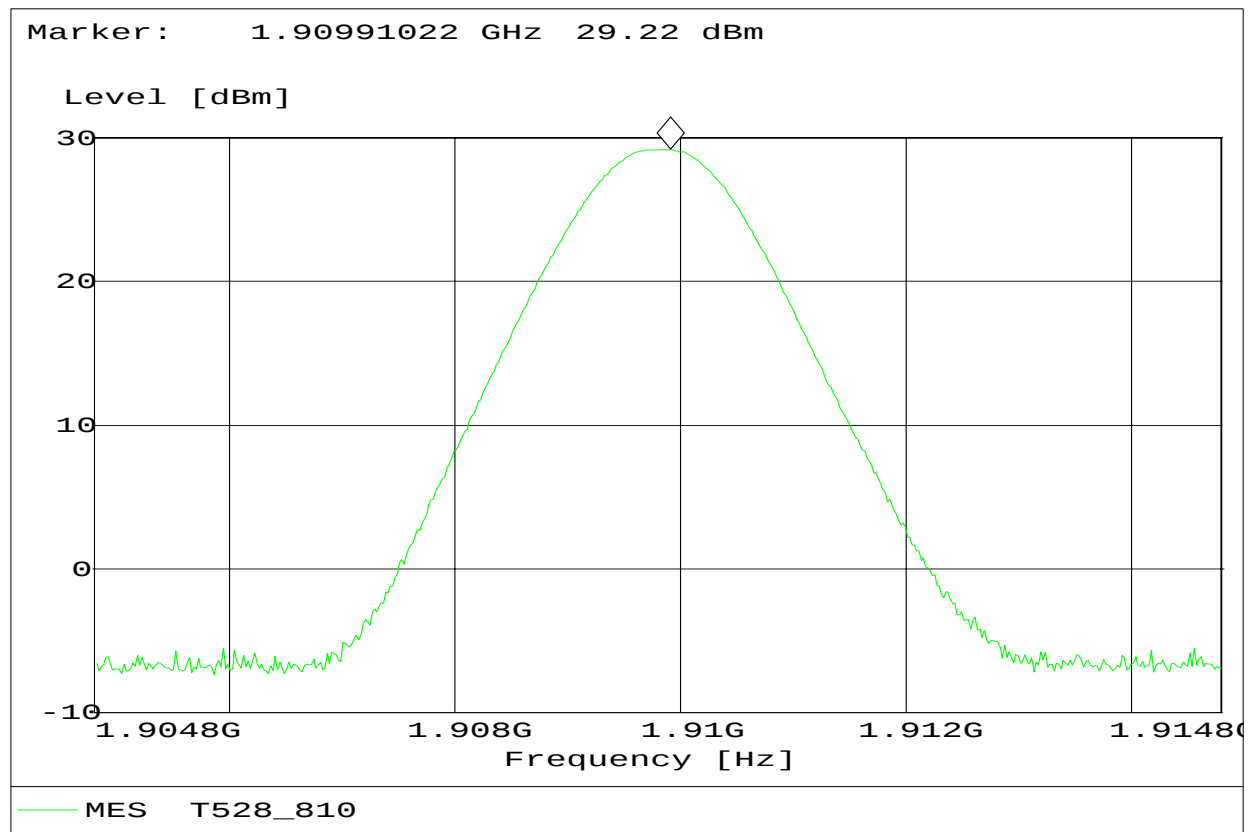
**A.1.3.3.1 EIRP CHANNEL 512**



A.1.3.3.2 EIRP CHANNEL 661



A.1.3.3.3 EIRP CHANNEL 810



## **A.2 FREQUENCY STABILITY**

### **A.2.1 Method of Measurement**

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30 °C.
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10 °C increments from -30 °C to +50 °C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1V increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50 °C.
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from +50 °C to -30 °C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 °C during the measurement procedure.

### **A.2.2 Measurement Limit**

#### **A.2.2.1 For Hand carried battery powered equipment**

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.3VDC and 4.2VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

#### **A.2.2.1 For equipment powered by primary supply voltage**

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

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**A.2.3 Measurement results**

**A.2.3.1 Frequency Error vs Voltage**

| Voltage(V) | Frequency error(Hz) | Frequency error(ppm) |
|------------|---------------------|----------------------|
| 3.3        | 24                  | 0.013                |
| 3.4        | 33                  | 0.018                |
| 3.5        | 26                  | 0.014                |
| 3.6        | 27                  | 0.014                |
| 3.7        | 24                  | 0.013                |
| 3.8        | 24                  | 0.013                |
| 3.9        | 27                  | 0.014                |
| 4.0        | 28                  | 0.015                |
| 4.1        | 33                  | 0.018                |
| 4.2        | 31                  | 0.016                |

**A.2.3.2 Frequency Error vs Temperature**

| temperature( ) | Frequency error(Hz) | Frequency error(ppm) |
|----------------|---------------------|----------------------|
| -30            | 27                  | 0.014                |
| -20            | 33                  | 0.018                |
| -10            | 25                  | 0.013                |
| 0              | 32                  | 0.017                |
| 10             | 25                  | 0.013                |
| 20             | 28                  | 0.015                |
| 30             | 29                  | 0.015                |
| 40             | 27                  | 0.014                |
| 50             | 34                  | 0.018                |

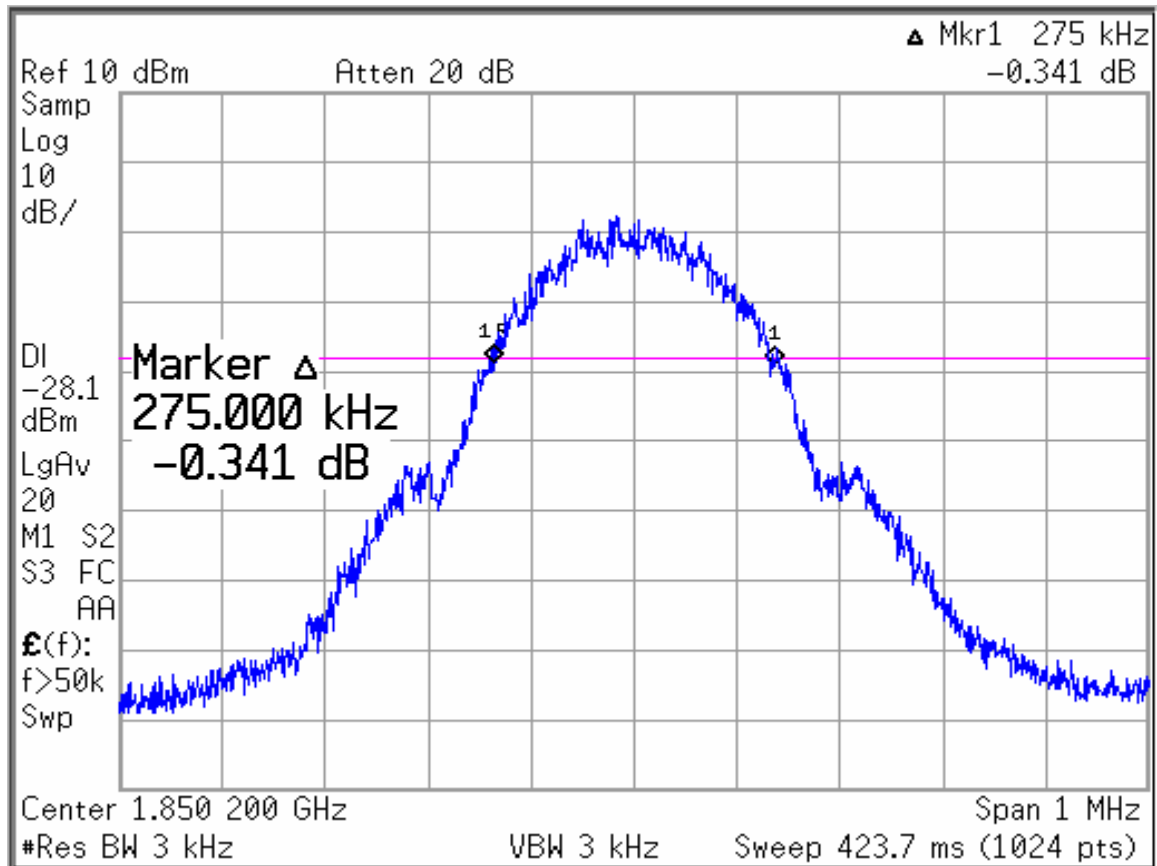
**A.3 OCCUPIED BANDWIDTH**

**A.3.1 Occupied Bandwidth Results**

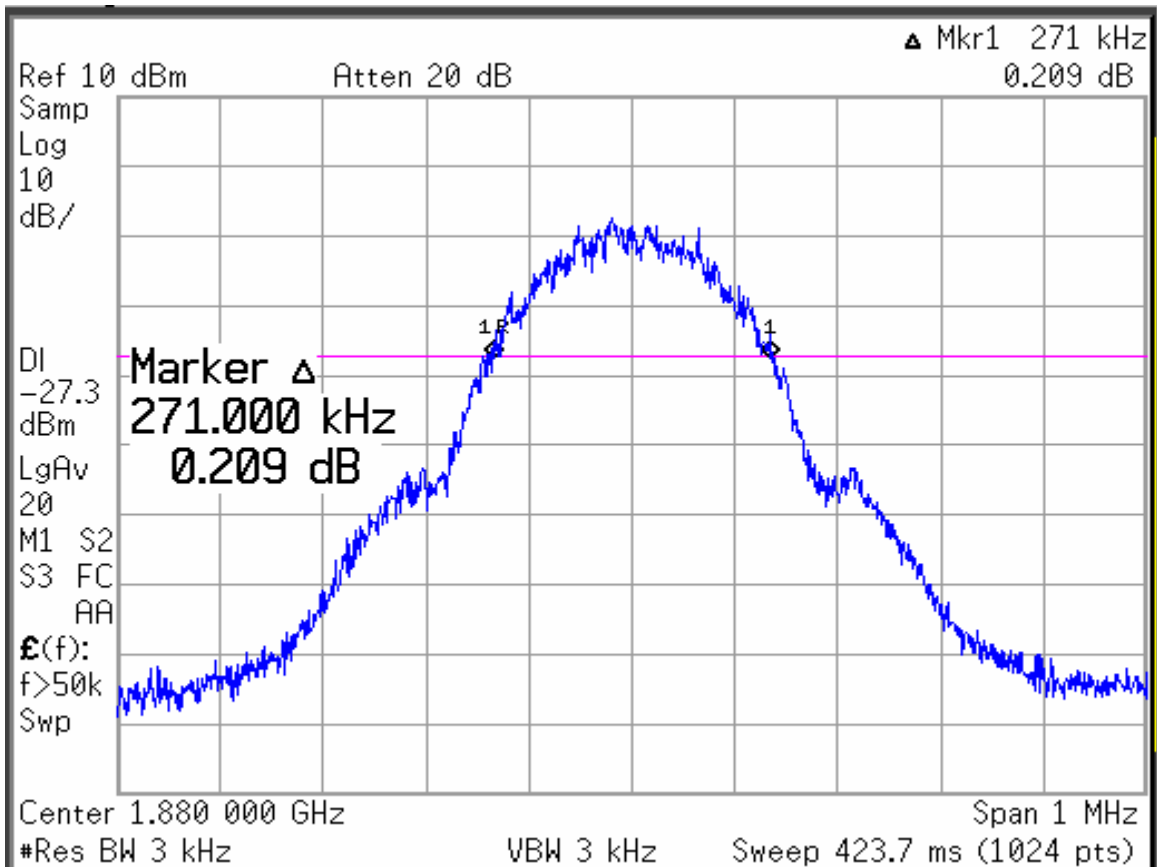
Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table below lists the measured -20dBc BW (99%). Spectrum analyzer plots are included on the following pages.

| Frequency(MHz) | Occupied Bandwidth (-20dBc BW)( kHz) |
|----------------|--------------------------------------|
| 1850.2         | 275                                  |
| 1880           | 271                                  |
| 1909.8         | 287                                  |

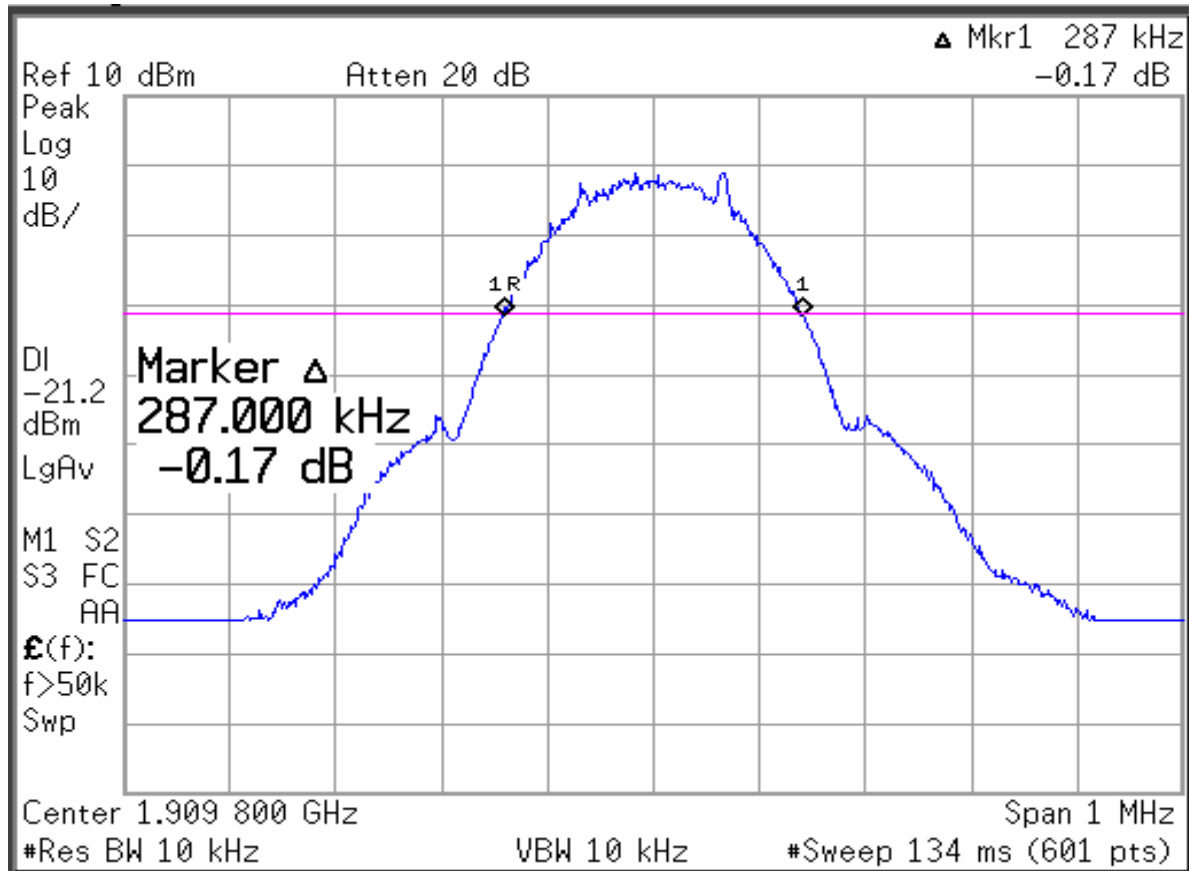
A.3.1.1 Channel 512-Occupied Bandwidth (-20dBc BW)



A.3.1.2 Channel 661-Occupied Bandwidth (-20dBc BW)



#### A.3.1.3 Channel 810-Occupied Bandwidth (-20dBc BW)



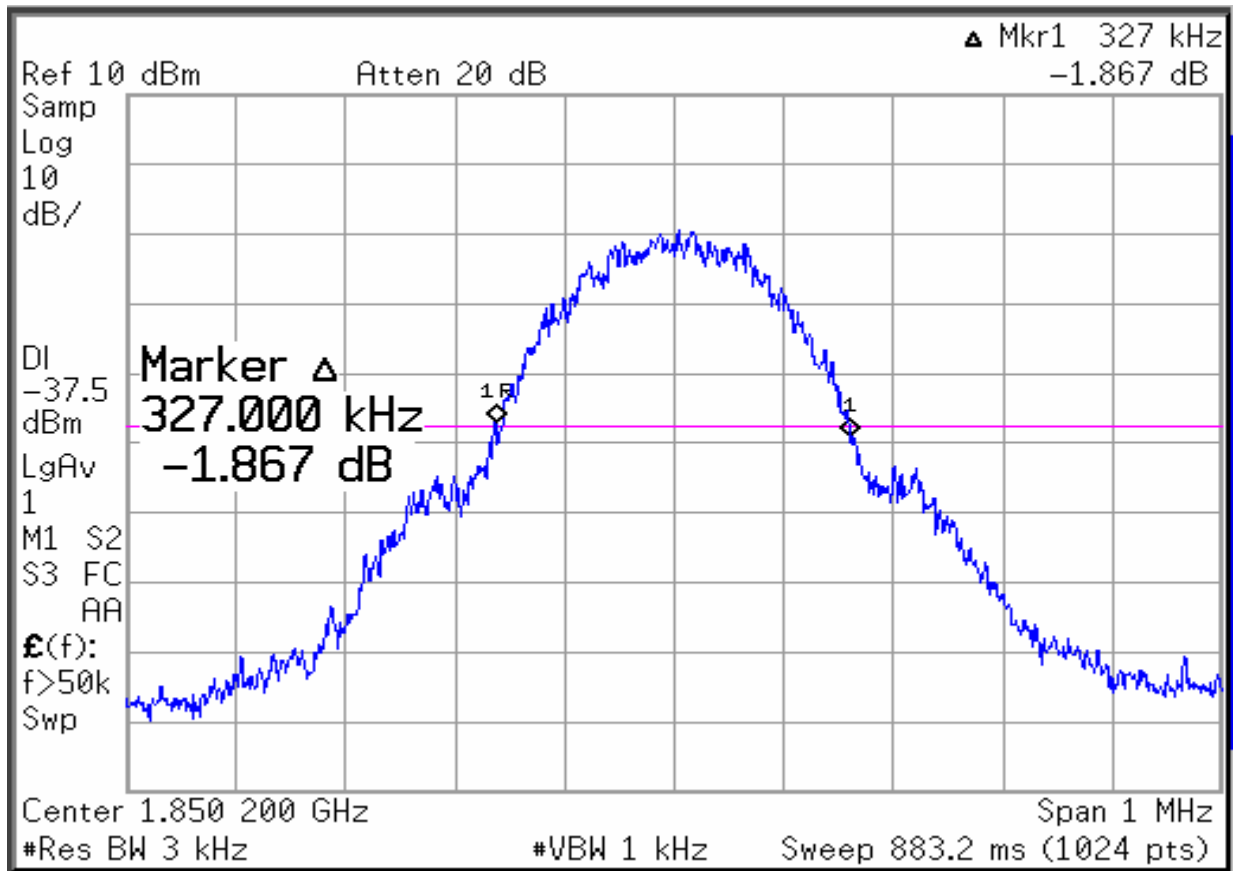
### A.4 EMISSION BANDWIDTH

#### A.4.1 Emission Bandwidth Results

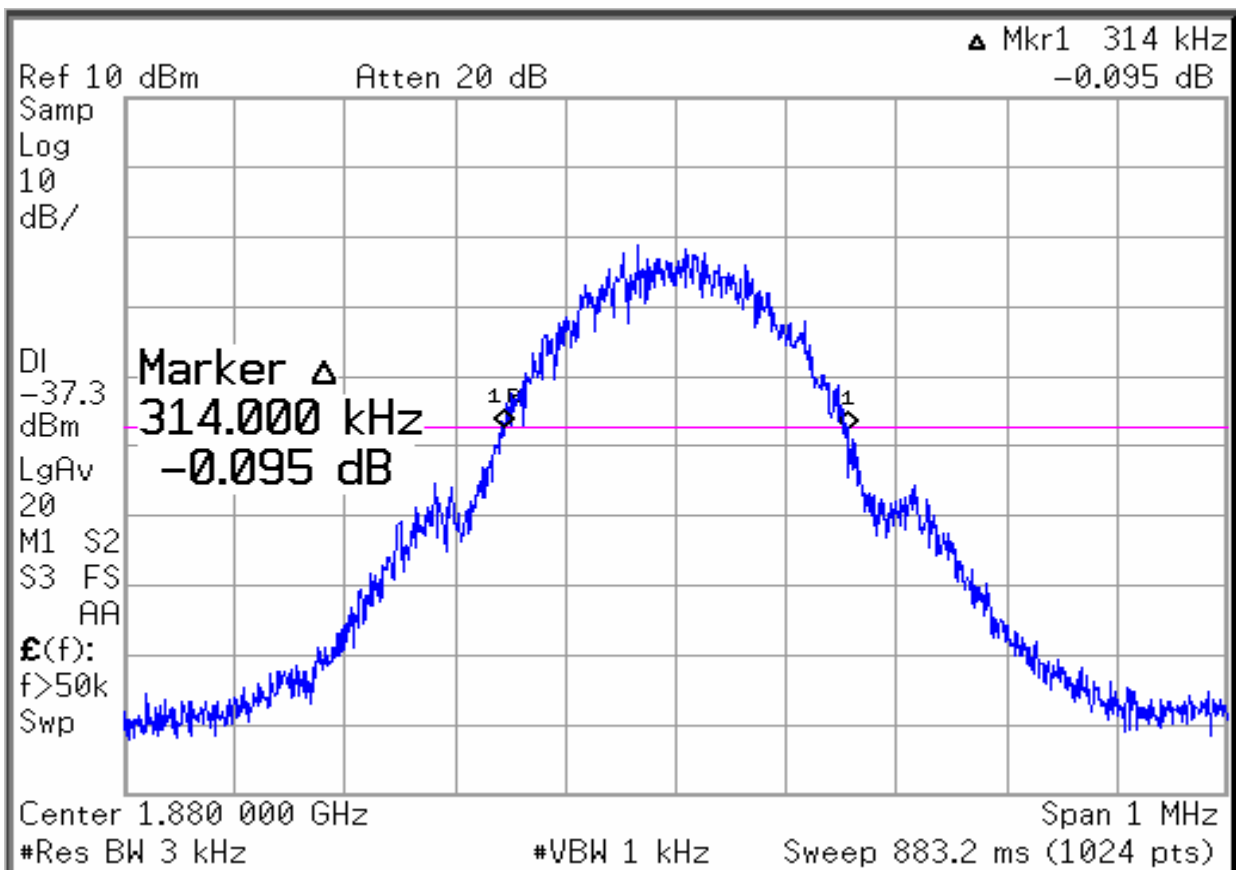
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

| Frequency(MHz) | Occupied Bandwidth (-26dBc BW)( kHz) |
|----------------|--------------------------------------|
| 1850.2         | 327                                  |
| 1880           | 314                                  |
| 1909.8         | 325                                  |

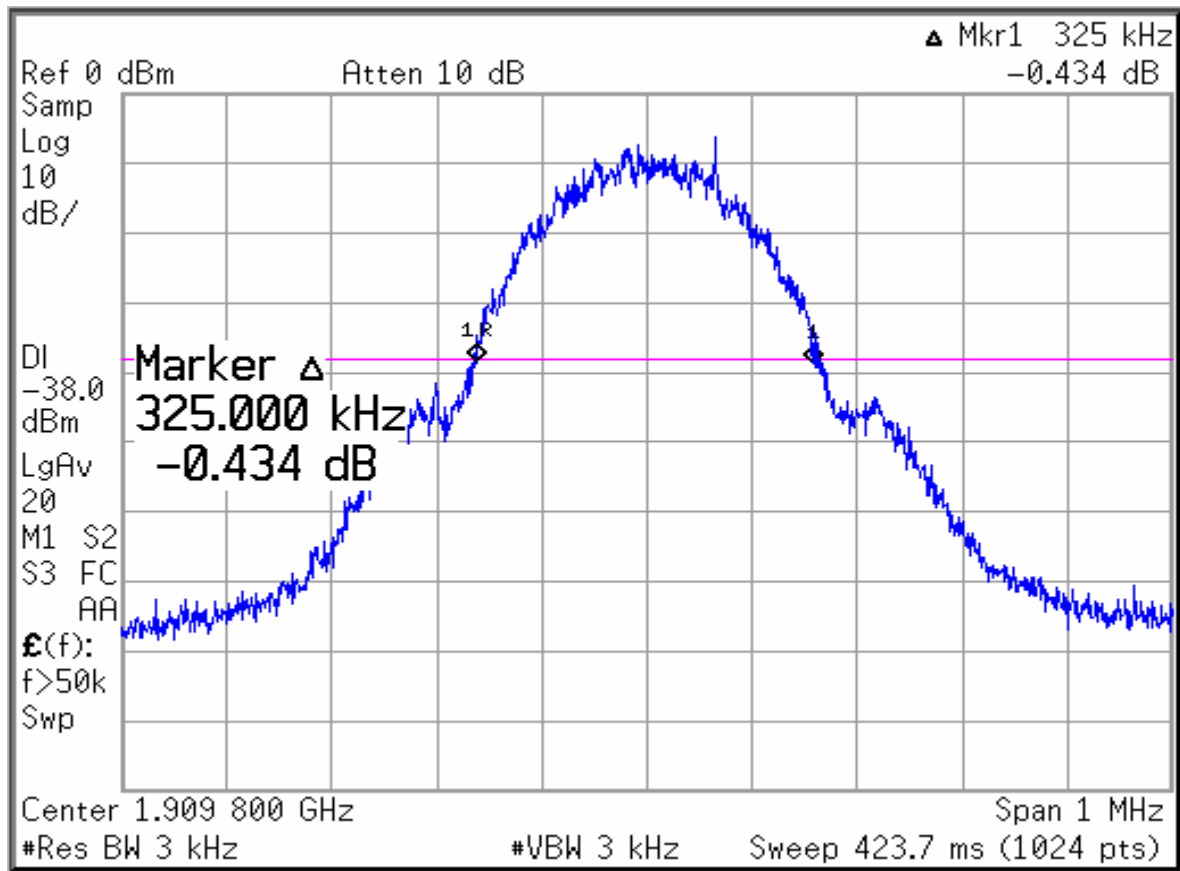
A.4.1.1 Channel 512-Occupied Bandwidth (-26dBc BW)



A.4.1.2 Channel 661-Occupied Bandwidth (-26dBc BW)



**A.4.1.3 Channel 810-Occupied Bandwidth (-26dBc BW)**



**A.5 EMISSION LIMIT**

**A.5.1 Measurement Method**

The site is constructed in accordance with ANSI C63.4 – 1992 requirements and is recognized by the FCC. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the USPCS band.

**A.5.2 Measurement Limit**

Sec. 24.238 Emission Limits.

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least  $43 + 10\log(P)$  dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

**A.5.3 Measurement Results**

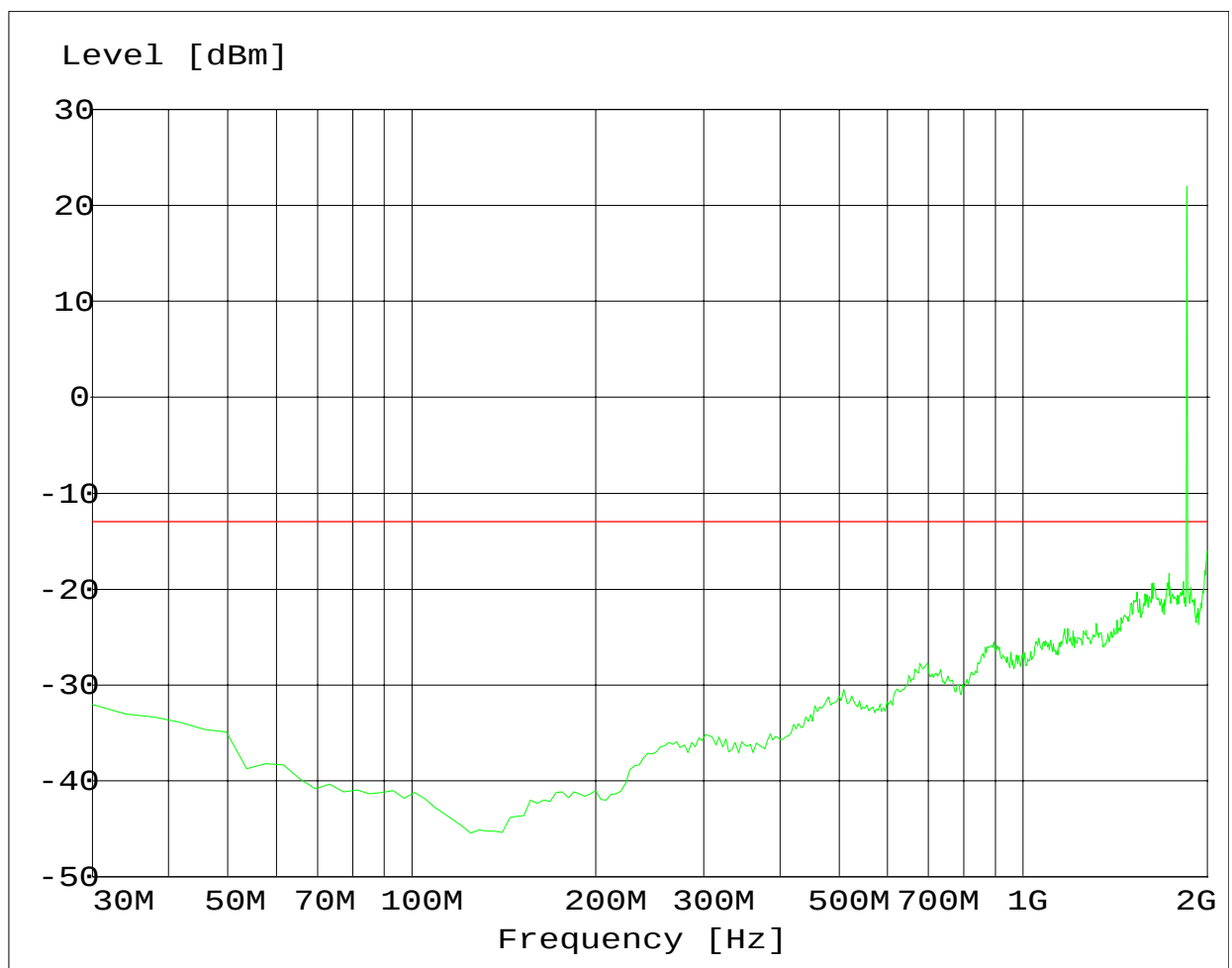
Radiated emissions measurements were made only at the upper, middle, and lower carrier

frequencies of the USPCS band (1850.2 MHz, 1880 MHz and 1909.8 MHz). 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 USPCS band into any of the other blocks. 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.

**NOTE: The spurious emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 18GHz and 20GHz very short cable connections to the antenna was used to minimize the noise level.**

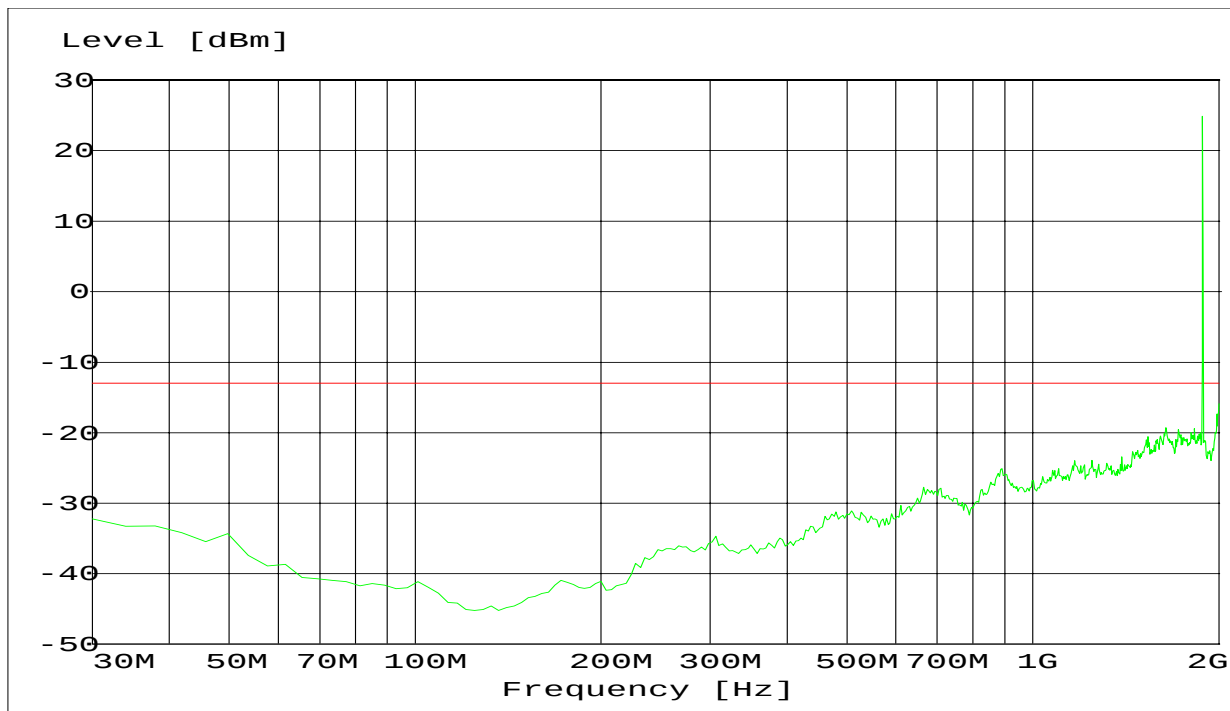
**A.5.3.1 RADIATED SPURIOUS EMISSIONS-Channel 512: 30MHz – 2GHz**

**NOTE: peak above the limit line is the Carrier frequency @ ch-512**



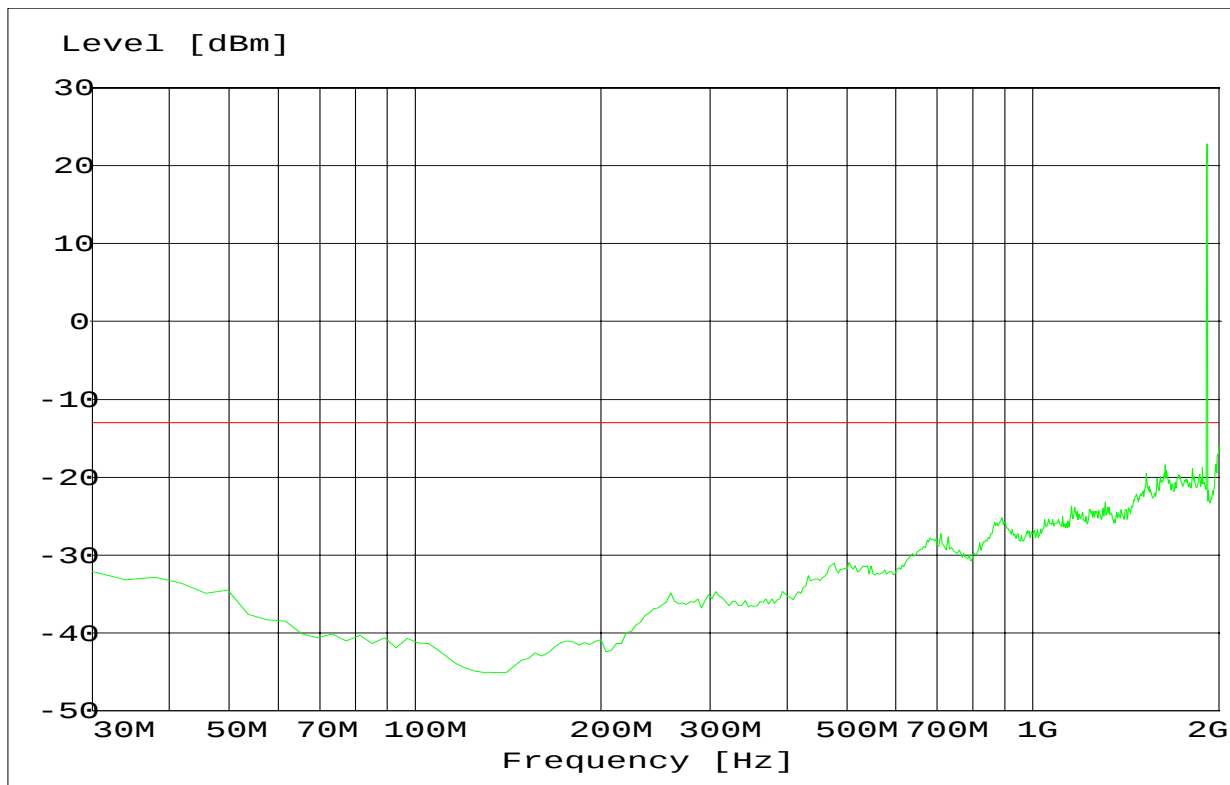
A.5.3.2 RADIATED SPURIOUS EMISSIONS-Channel 661: 30MHz – 2GHz

NOTE: peak above the limit line is the Carrier frequency @ ch-661

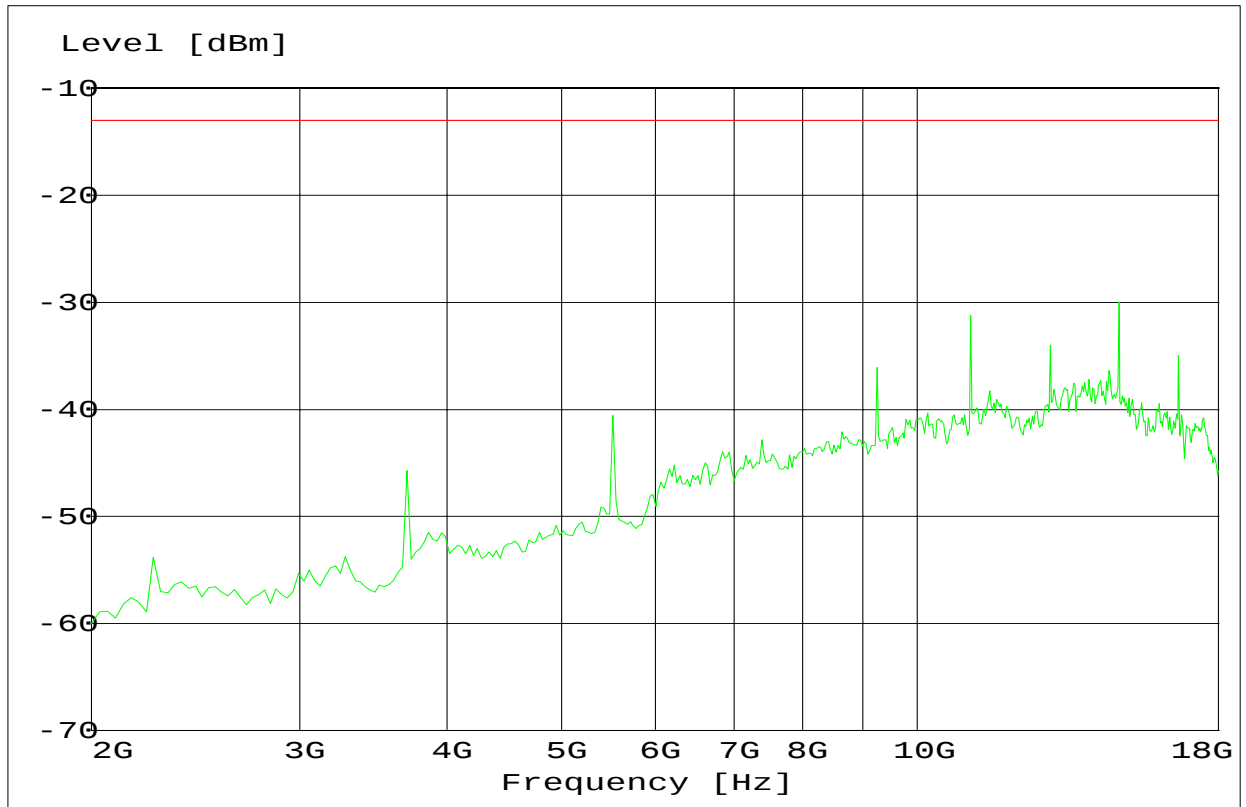


A.5.3.3 RADIATED SPURIOUS EMISSIONS-Channel 810: 30MHz – 2GHz

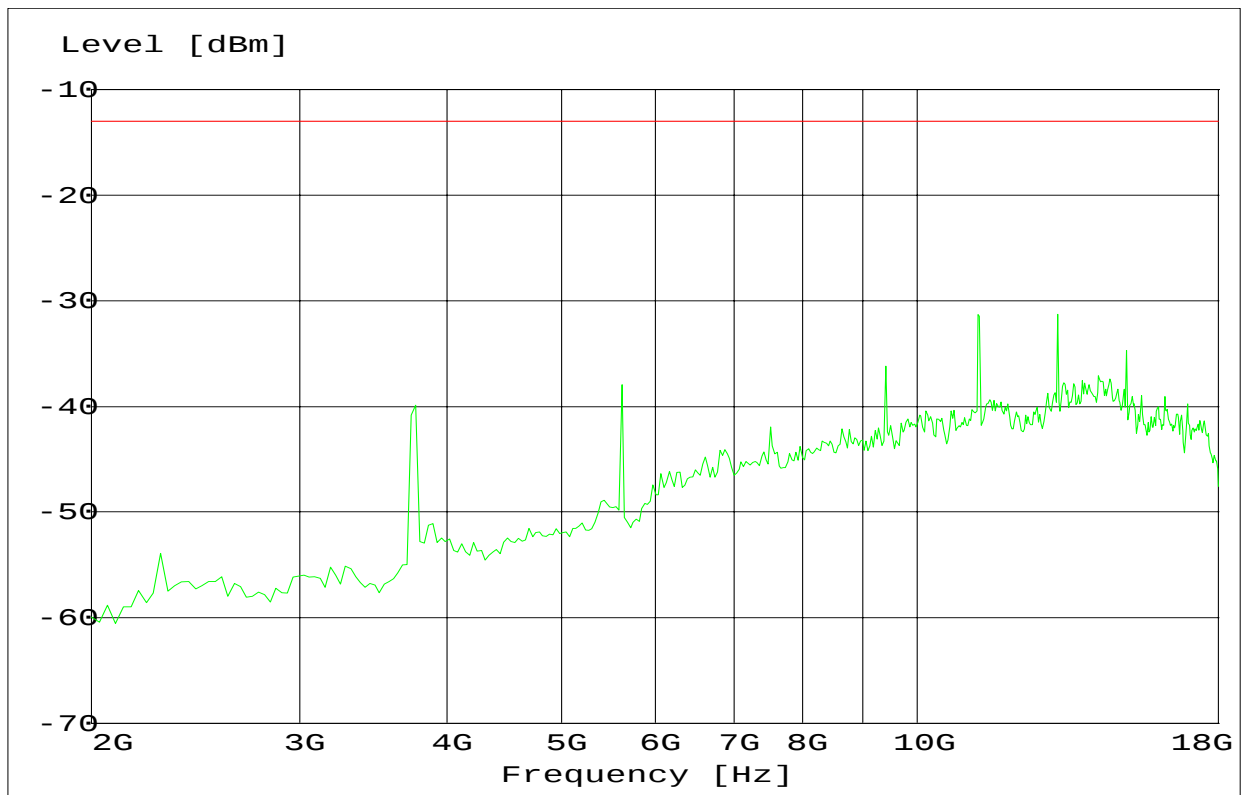
NOTE: peak above the limit line is the Carrier frequency @ ch-810



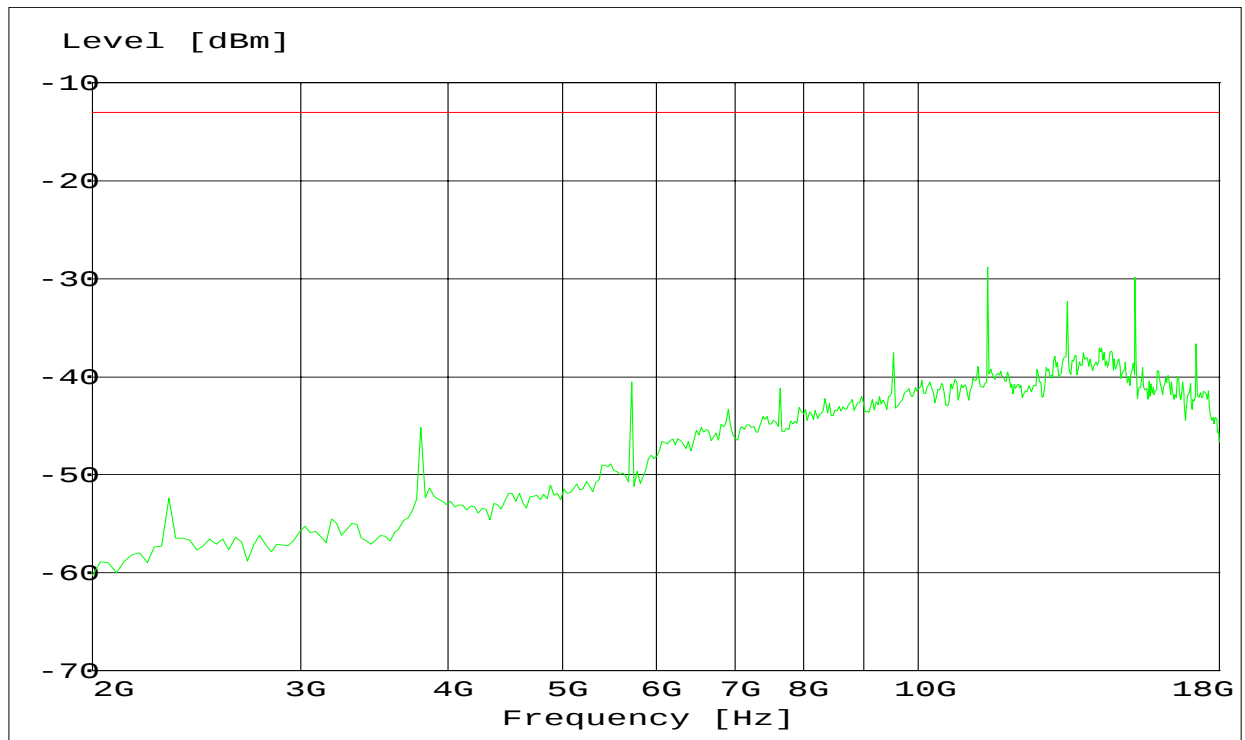
A.5.3.4 RADIATED SPURIOUS EMISSIONS-Channel 512: 2GHz – 18GHz



A5.3.5 RADIATED SPURIOUS EMISSIONS-Channel 661: 2GHz – 18GHz

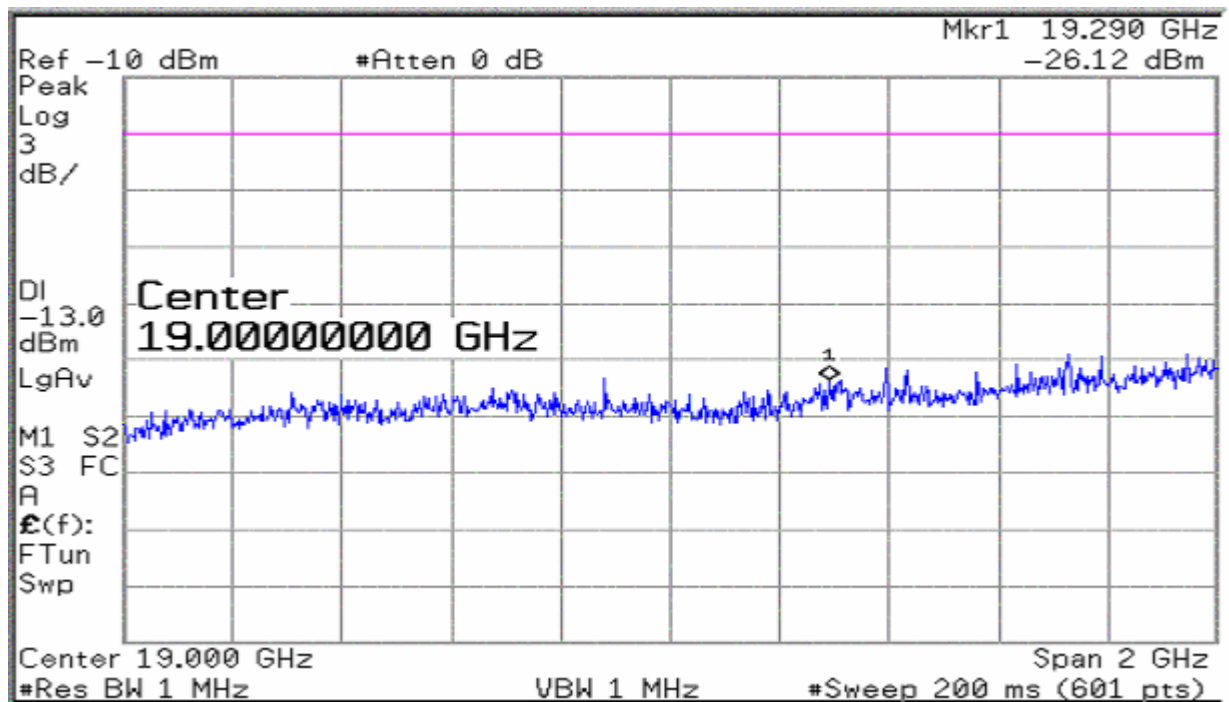


**A.5.3.6 RADIATED SPURIOUS EMISSIONS-Channel 810: 2GHz – 18GHz**

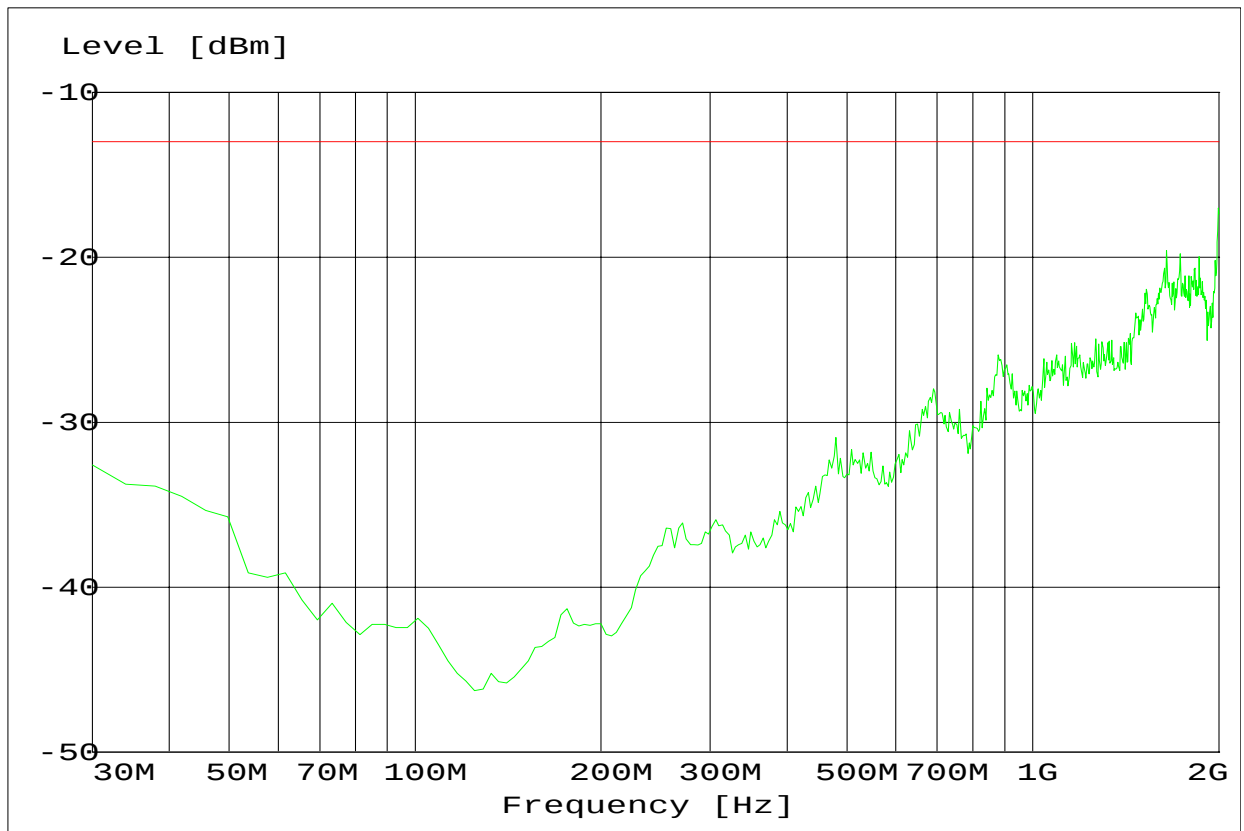


**A.5.3.7 Radiated spurious emission (18GHz-20GHz)**

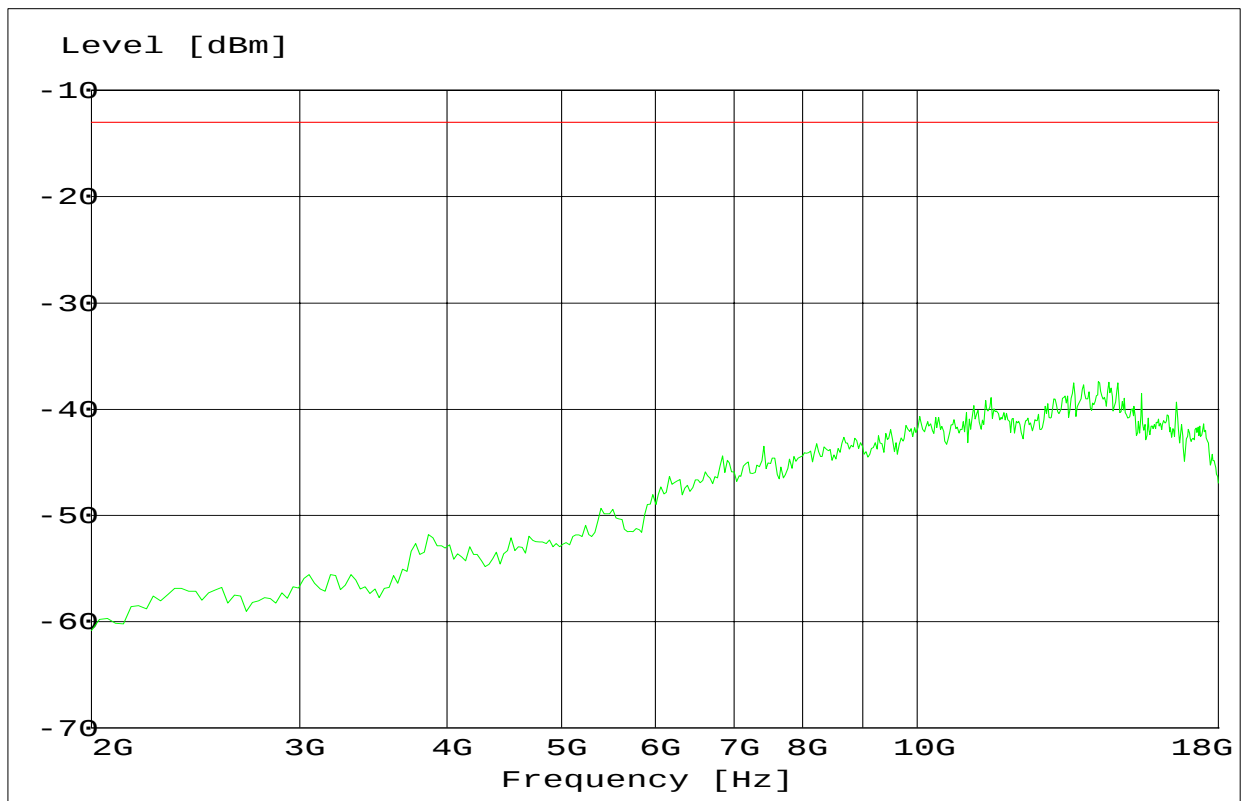
Note: This plot is valid for low, mid & high channels (worst-case plot). It is same as the floor noise.



A.5.3.8 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 30MHz – 2GHz

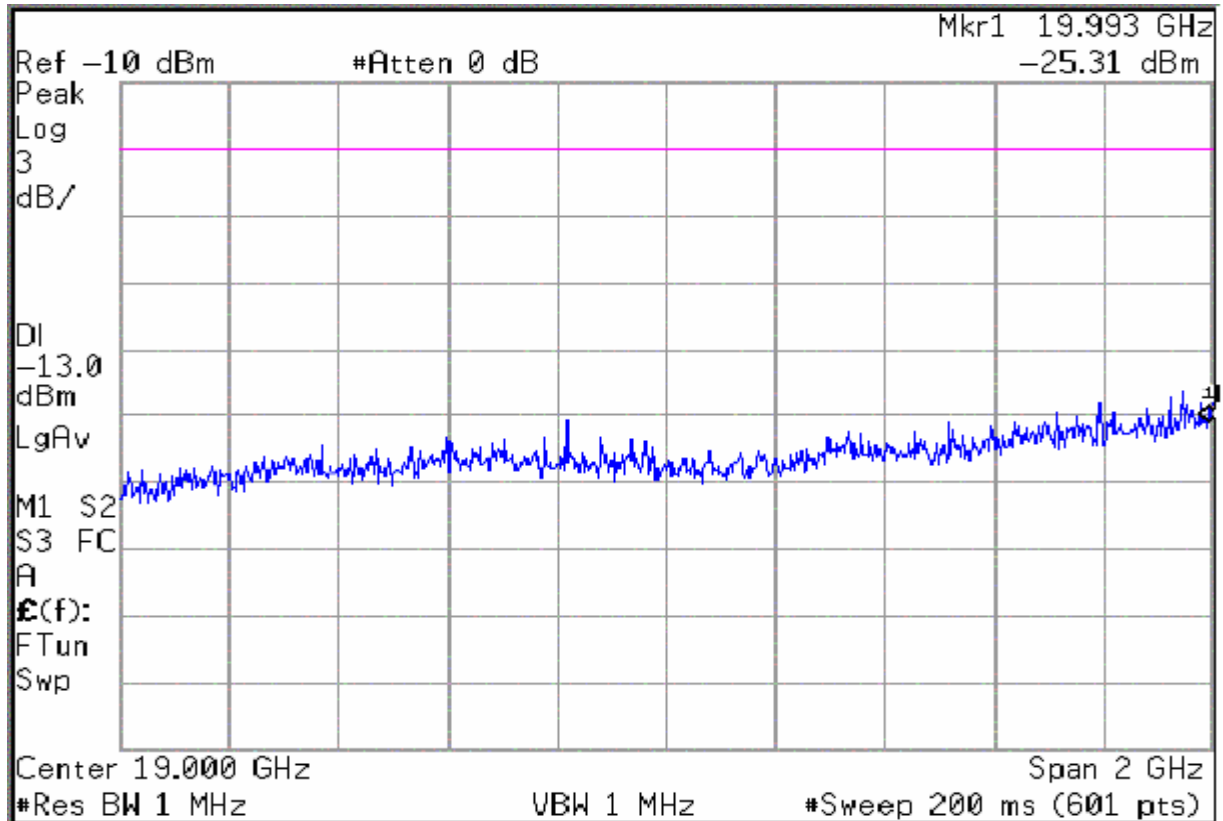


A.5.3.9 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 2GHz – 18GHz



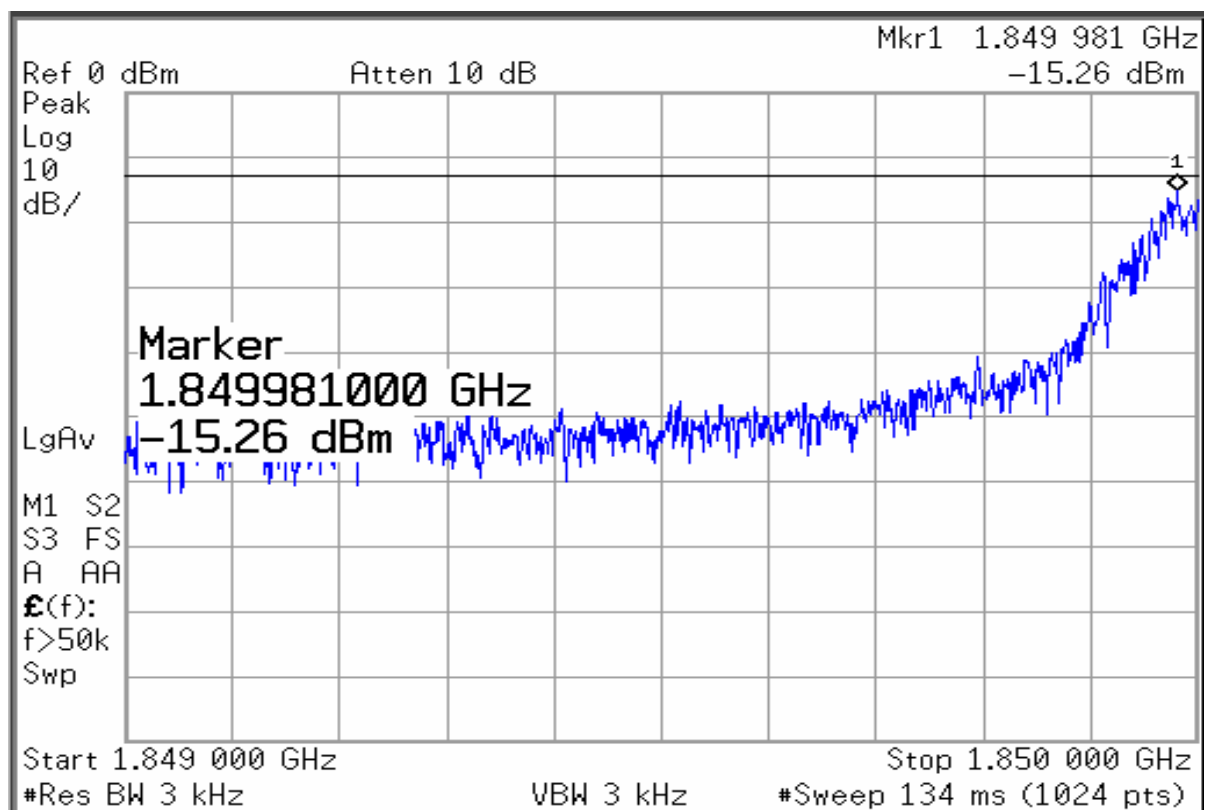
**A.5.3.10 RADIATED SPURIOUS EMISSIONS-EUT in Idle Mode: 18GHz – 20GHz**

Note: It is same as the floor noise.

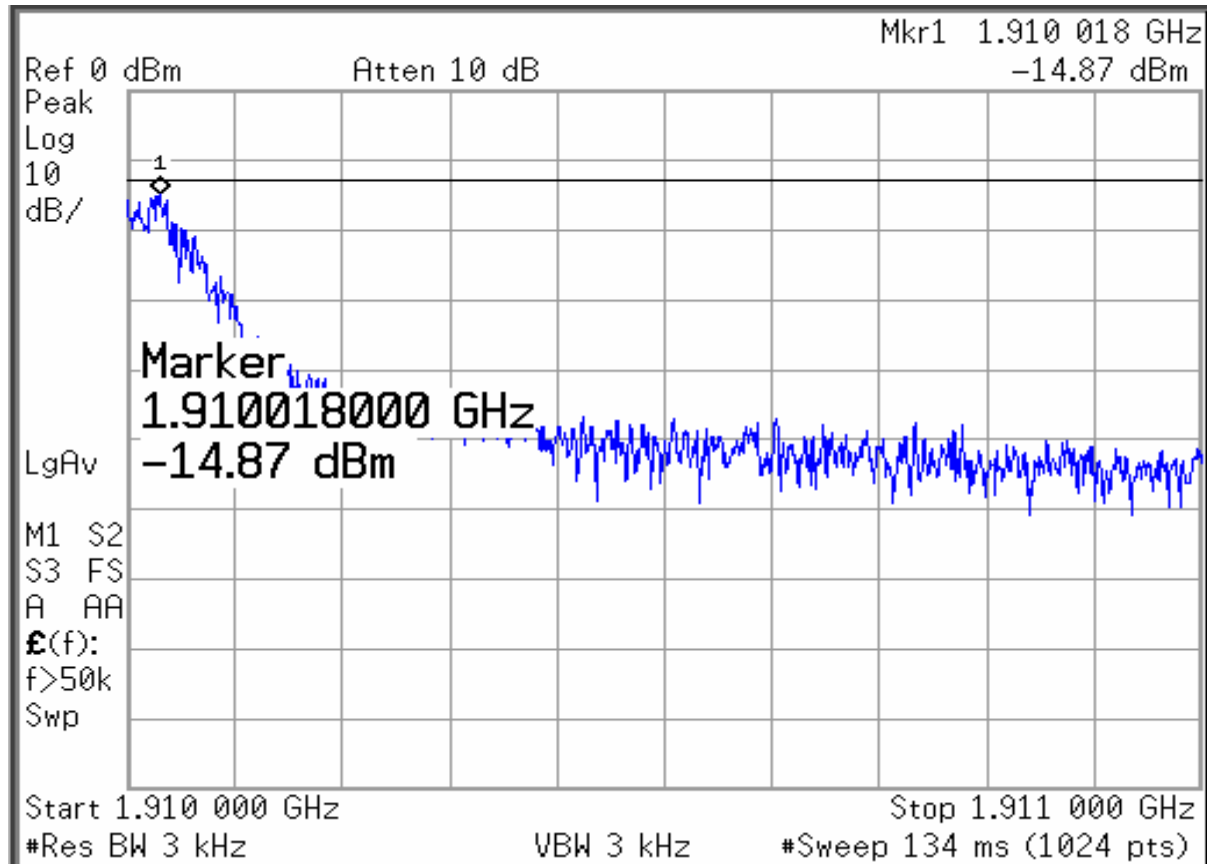


**A.6 BAND EDGE COMPLIANCE**

**A.6.1 LOW BAND EDGE BLOCK-A (PCS-1900)-Channel 512**



#### A.6.2 HIGH BAND EDGE BLOCK-C (PCS-1900) –Channel 810



### A.7 CONDUCTED SPURIOUS EMISSION

#### A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment under test, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

##### USPCS Transmitter

| Channel | Frequency (MHz) |
|---------|-----------------|
| 512     | 1850.2          |
| 661     | 1880.0          |
| 810     | 1909.8          |

#### A.7.2 Measurement Limit

Sec. 24.238 Emission Limits.

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least  $43+10\log(P)$  dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

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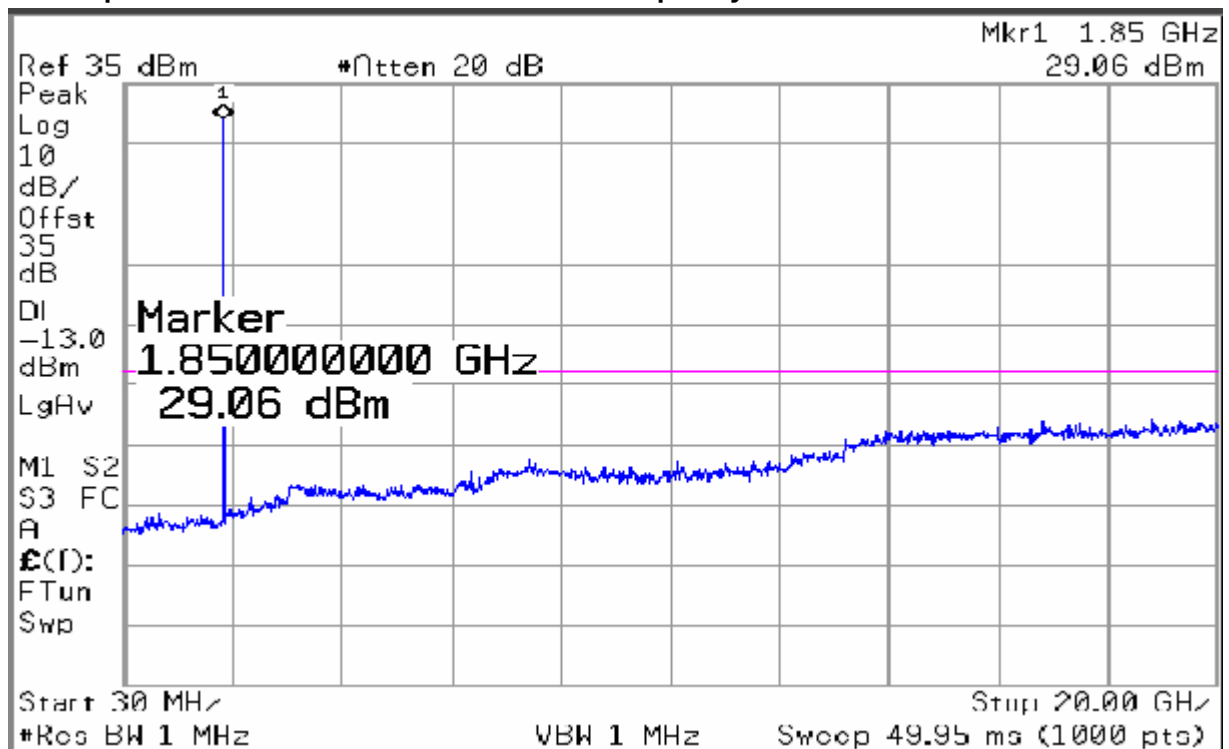
**A.7.3 Measurement result**

| Harmonic        | Tx ch. 512<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch. 661<br>Freq.<br>(MHz) | Level<br>(dBm) | Tx ch. 810<br>Freq.<br>(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 |                              |                |                              |                |                              |                |

**A.7.3.1 Channel 512: 30MHz – 20GHz**

Spurious emission limit –13dBm.

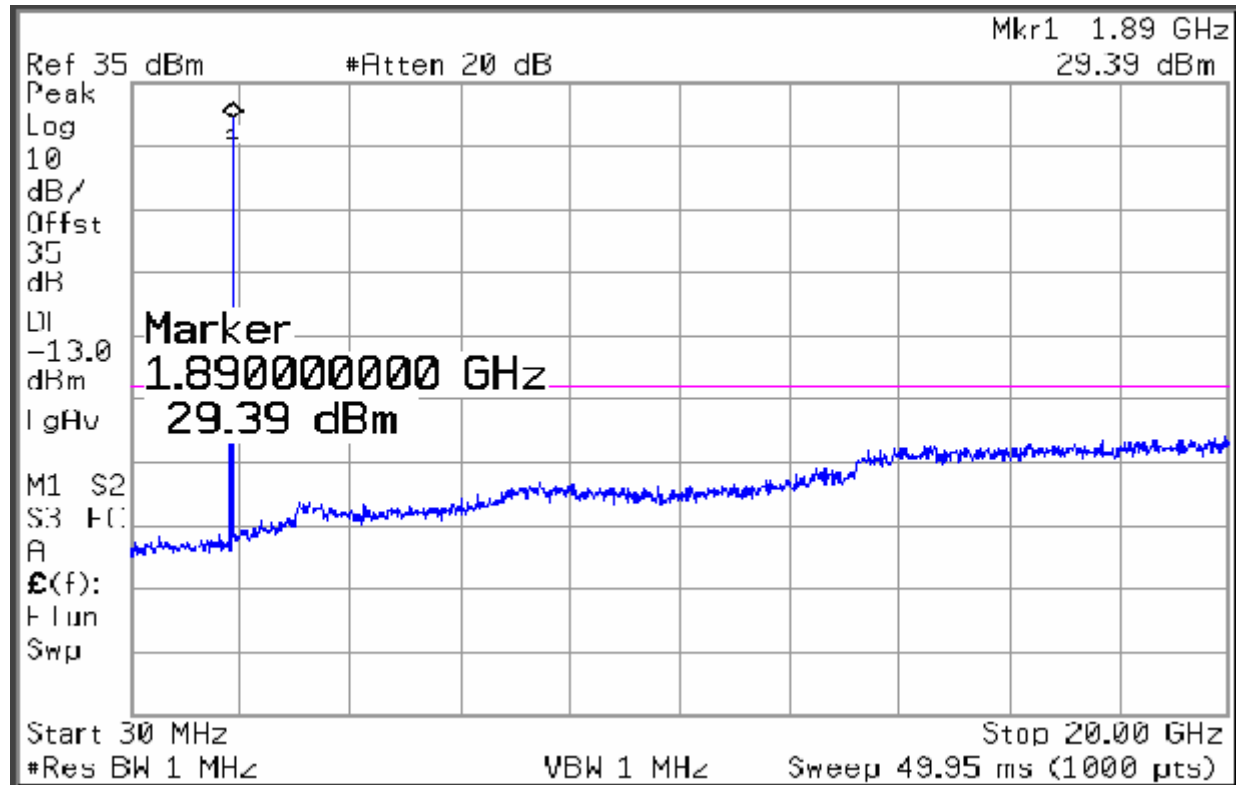
**NOTE:** peak above the limit line is the carrier frequency.



**A.7.3.2 Channel 661: 30MHz – 20GHz**

Spurious emission limit –13dBm

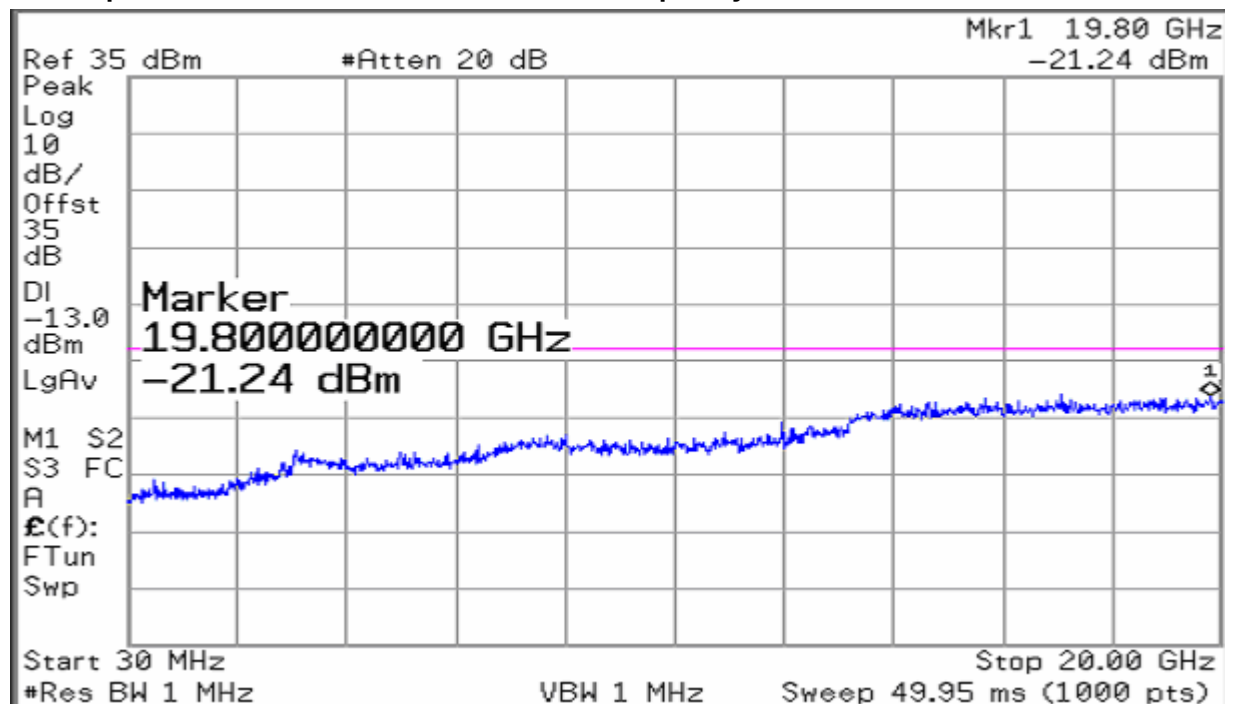
**NOTE:** peak above the limit line is the carrier frequency.



**A.7.3.3 Channel 810: 30MHz – 20GHz**

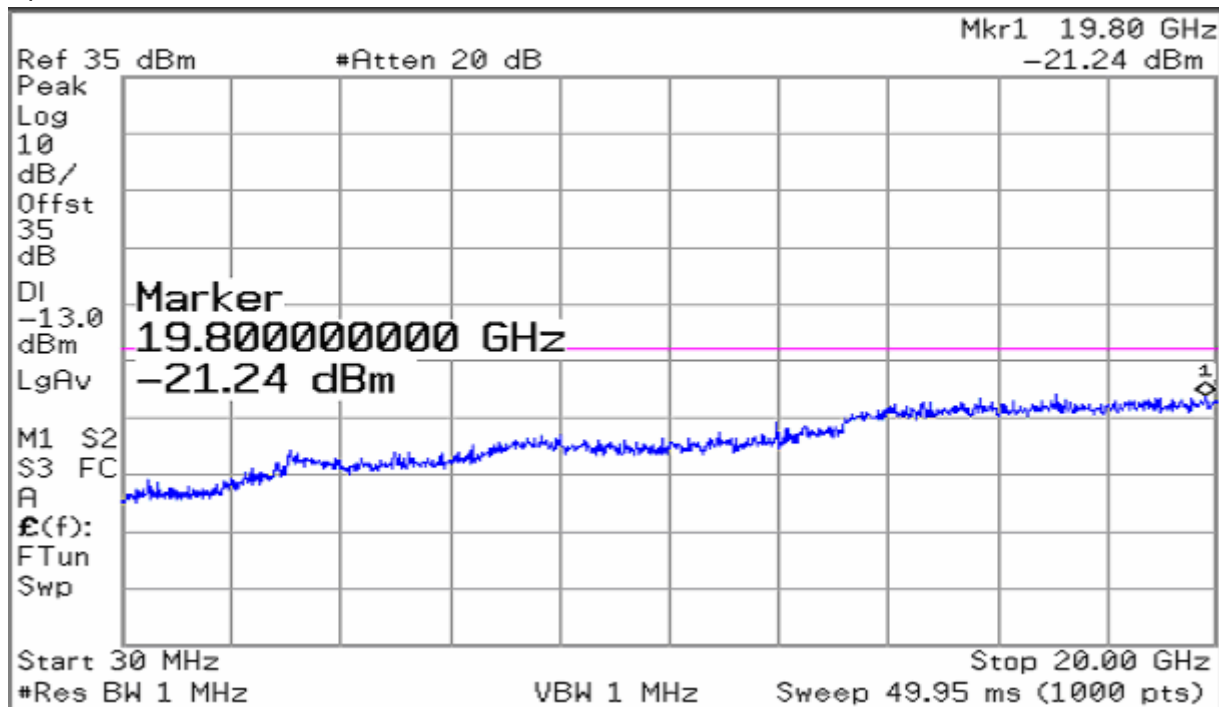
Spurious emission limit –13dBm.

**NOTE:** peak above the limit line is the carrier frequency.



**A.7.3.4 Idle mode: 30MHz – 20GHz**

Spurious emission limit –13dBm.



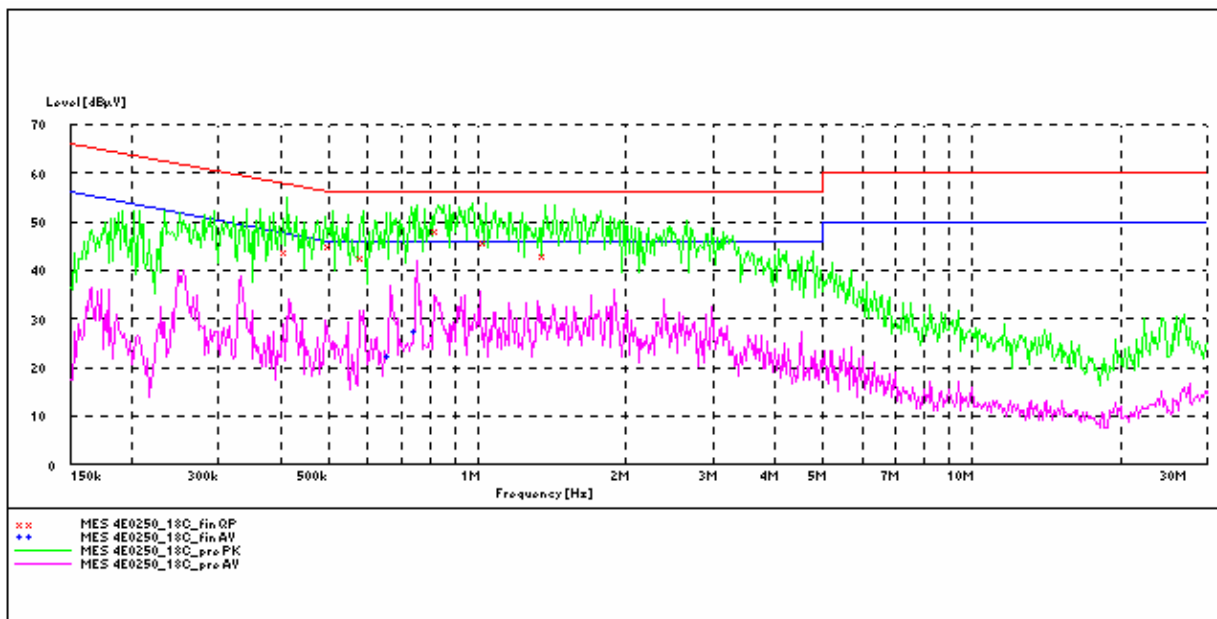
**A.8 CONDUCTED EMISSION**

**A.8.1 Limit**

| Frequency of Emission (MHz) | Conducted Limit (dBμV) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi -Peak            | Average   |
| 0.15 – 0.                   | 66 to 56*              | 56 to 46* |
| 0.5 – 5                     | 56                     | 46        |
| 5 – 30                      | 60                     | 50        |

\* Decreases with logarithm of the frequency

**A.8.2 Measurement result**



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**MEASUREMENT RESULT: "4E0250\_1C\_fin QP"**

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|------|-----|
| 0.412647         | 43.90         | 10.0         | 58            | 13.7         | L1   | FLO |
| 0.507636         | 45.20         | 10.0         | 56            | 10.8         | L1   | GND |
| 0.585925         | 42.90         | 10.0         | 56            | 13.1         | L1   | FLO |
| 0.831966         | 48.40         | 10.0         | 56            | 7.6          | L1   | FLO |
| 1.039922         | 45.90         | 10.0         | 56            | 10.1         | L1   | FLO |
| 1.374419         | 43.30         | 10.1         | 56            | 12.7         | N    | GND |

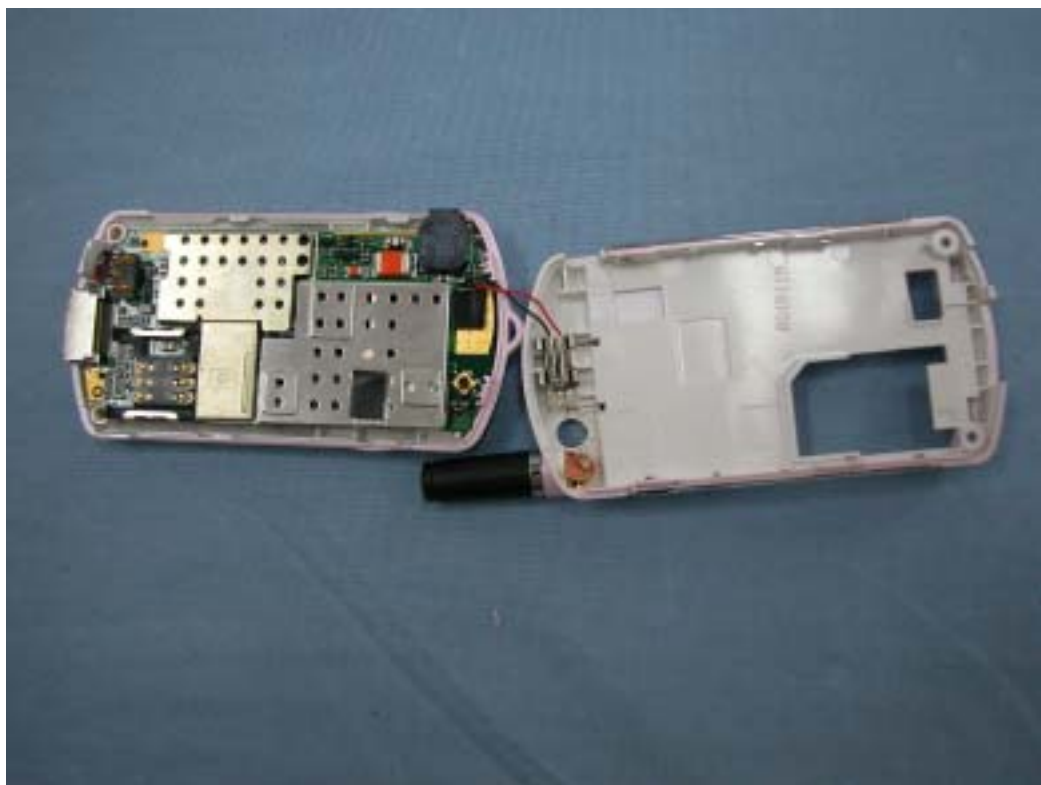
**MEASUREMENT RESULT: "4E0250\_1C\_fin AV"**

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|------|-----|
| 0.665596         | 22.50         | 10.0         | 46            | 23.5         | L1   | GND |
| 0.756100         | 27.50         | 10.0         | 46            | 18.5         | L1   | GND |

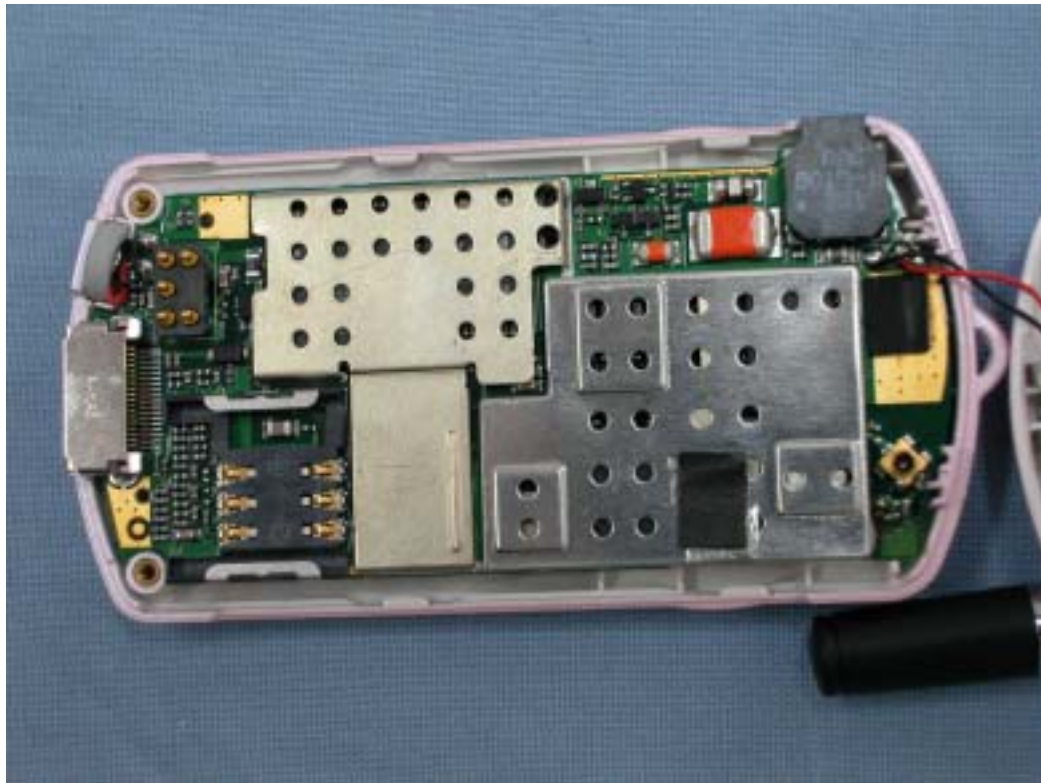
ANNEX B PHOTOGRAPH OF EUT



Mobile Phone



Mobile station



Mobile station



Mobile station

ANNEX C TEST LAYOUT



Pic1 Conducted Emission



Pic2 Radiated Spurious Emission

\*\*\*END OF REPORT BODY\*\*\*