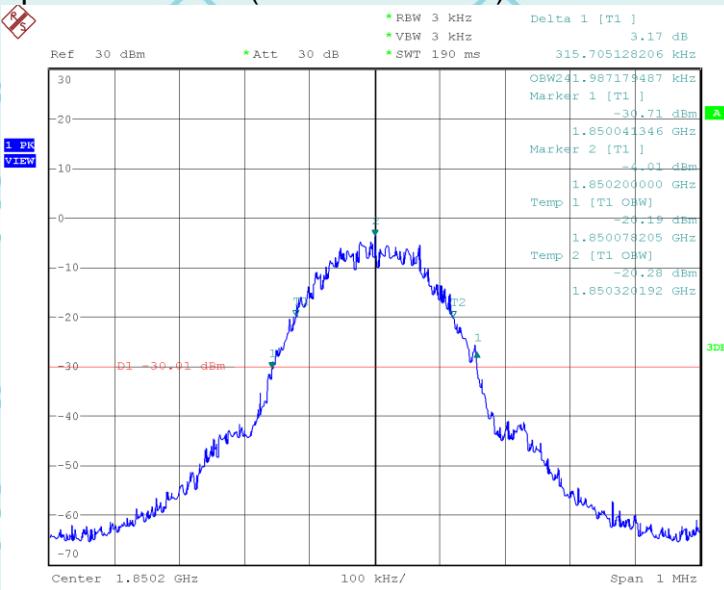
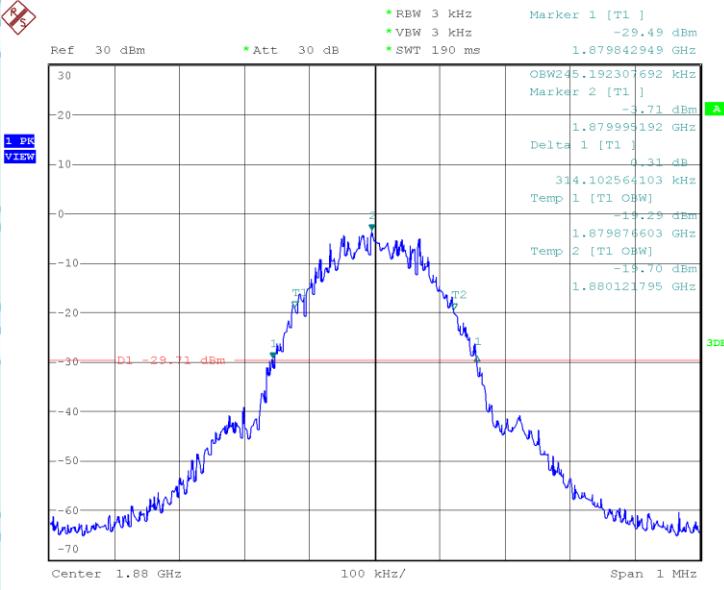


Occupied Bandwidth (99% and -26dBc) GPRS 1900 Band CH 512



Date: 26.NOV.2024 15:08:48

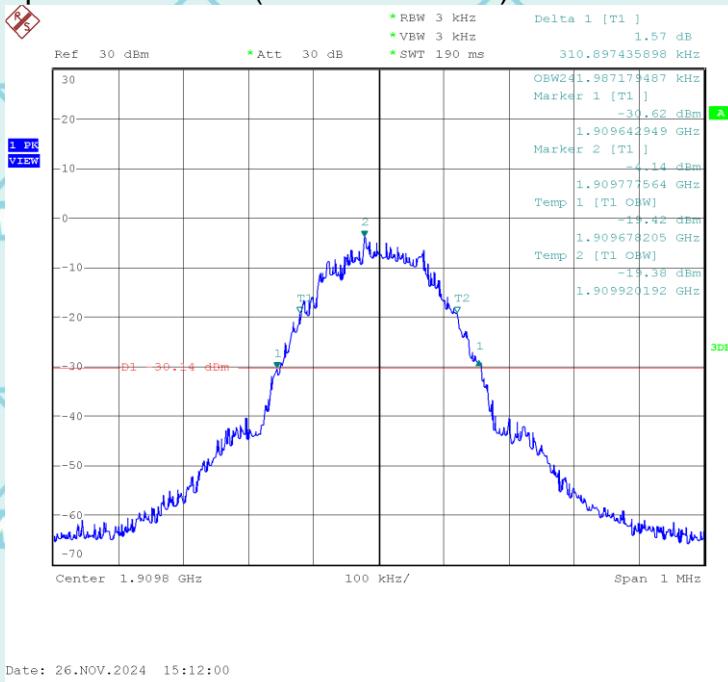
Occupied Bandwidth (99% and -26dBc) GPRS 1900 Band CH 661



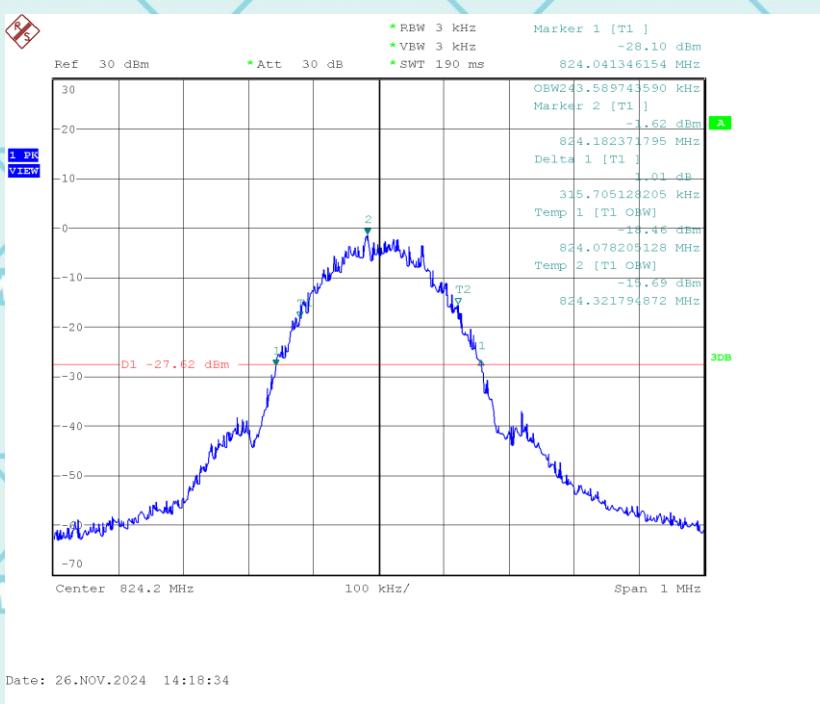
Date: 26.NOV.2024 15:10:36



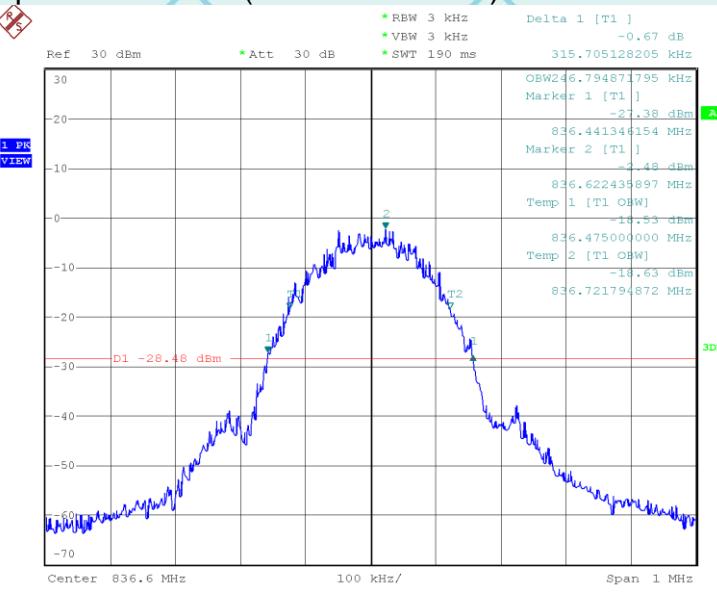
Occupied Bandwidth (99% and -26dBc) GPRS 1900 Band CH 810



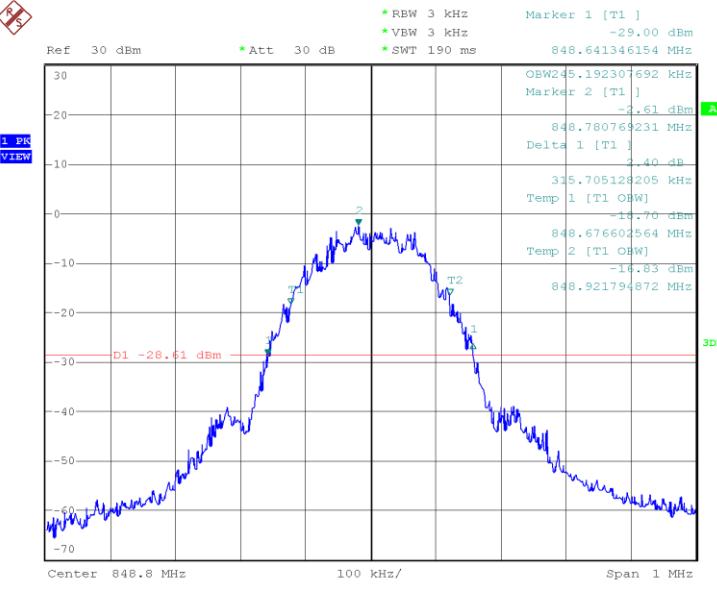
Occupied Bandwidth (99% and -26dBc) EGPRS 850 Band CH 128



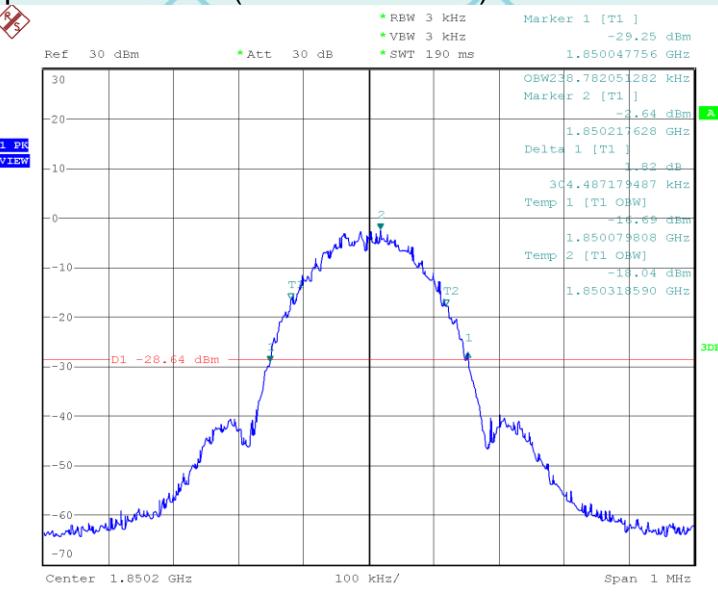
Occupied Bandwidth (99% and -26dBc) EGPRS 850 Band CH 190



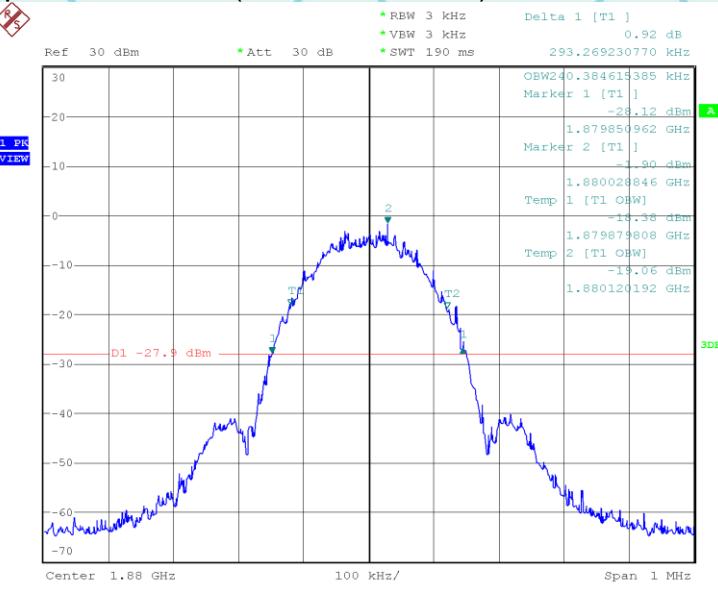
Occupied Bandwidth (99% and -26dBc) EGPRS 850 Band CH 251



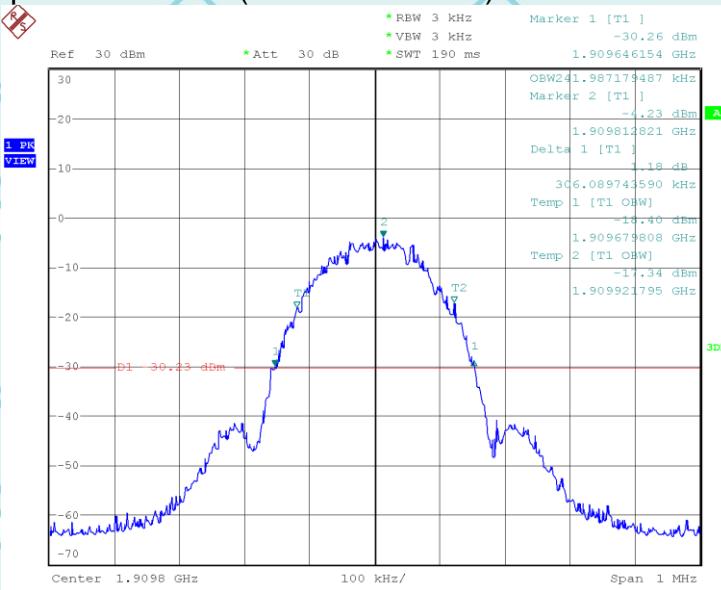
Occupied Bandwidth (99% and -26dBc) EGPRS 1900 Band CH 512



Occupied Bandwidth (99% and -26dBc) EGPRS 1900 Band CH 661

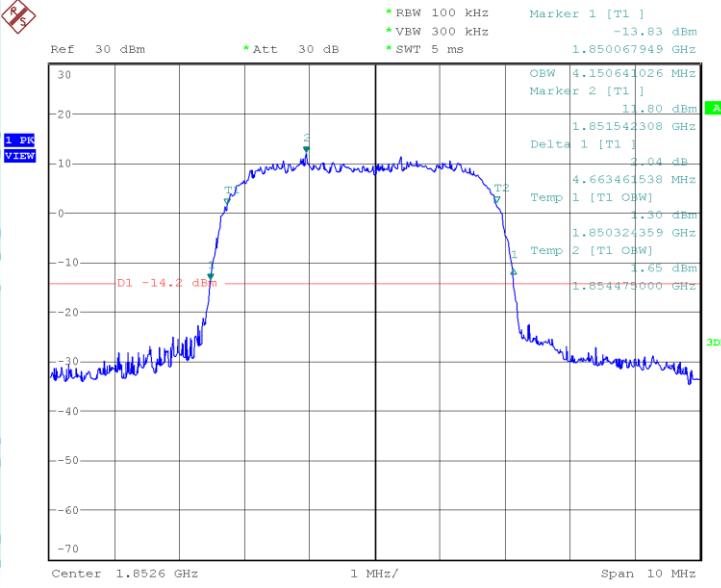


Occupied Bandwidth (99% and -26dBc) EGPRS 1900 Band CH 810



Date: 26.NOV.2024 15:16:36

UTRA BANDS
Occupied Bandwidth (99% and -26dBc) WCDMA Band 2 CH 9262



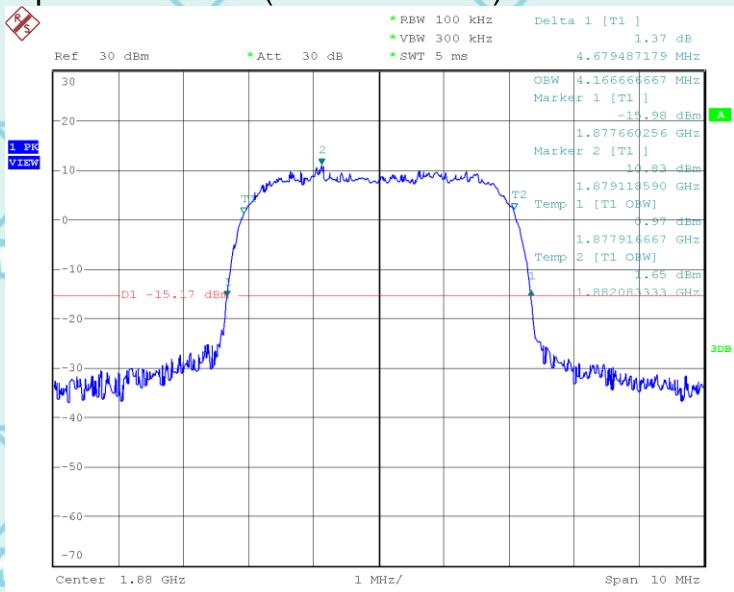
Date: 26.NOV.2024 11:01:42



W5C Re

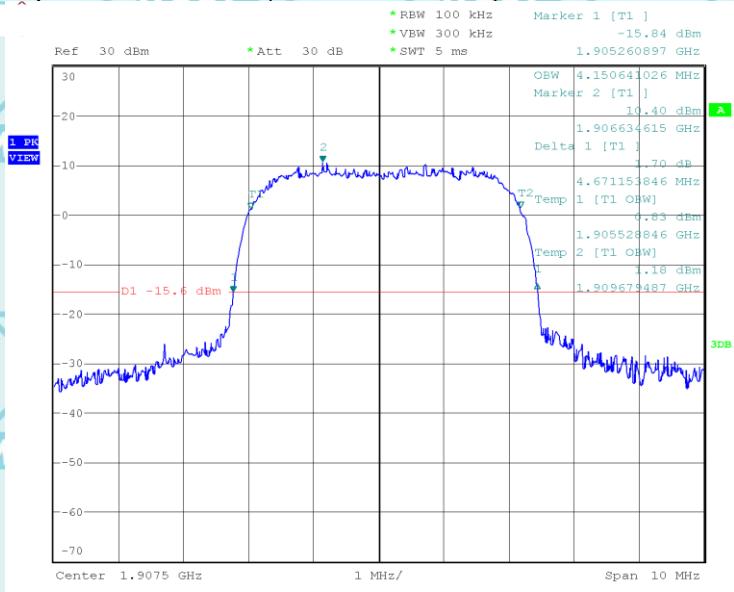
Report No.: WSCT-ANAB-R&E241100063A-RF

Occupied Bandwidth (99%and-26dBc) WCDMA Band 2 CH 9400



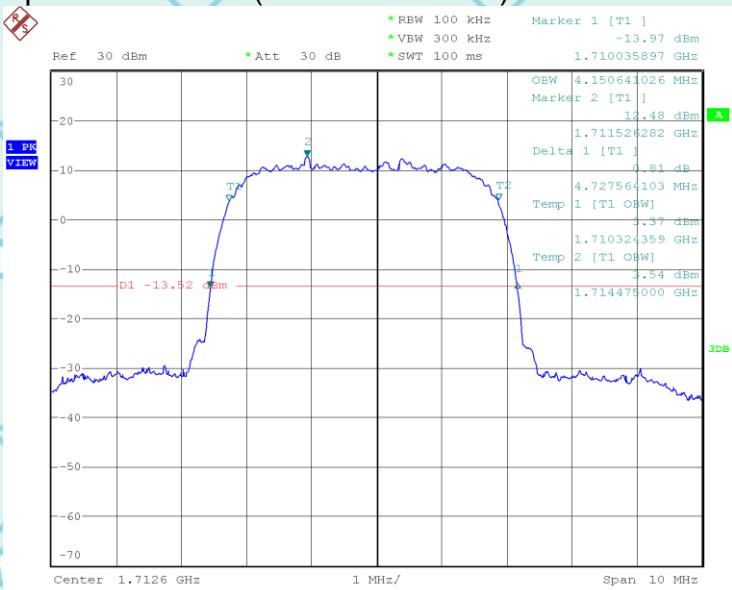
Date: 26.NOV.2024 11:00:23

Occupied Bandwidth (99%and-26dBc) WCDMA Band 2 CH 9538



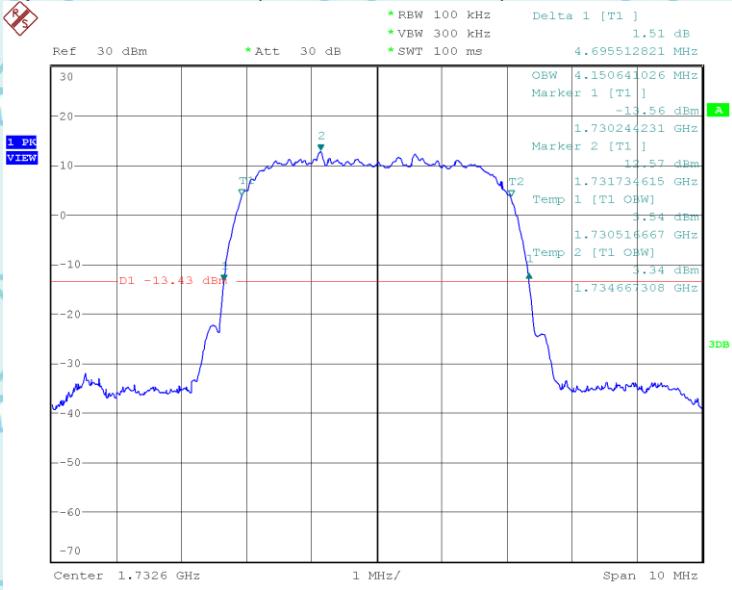
Date: 26.NOV.2024 10:58:46





Date: 2.DEC.2024 14:05:21

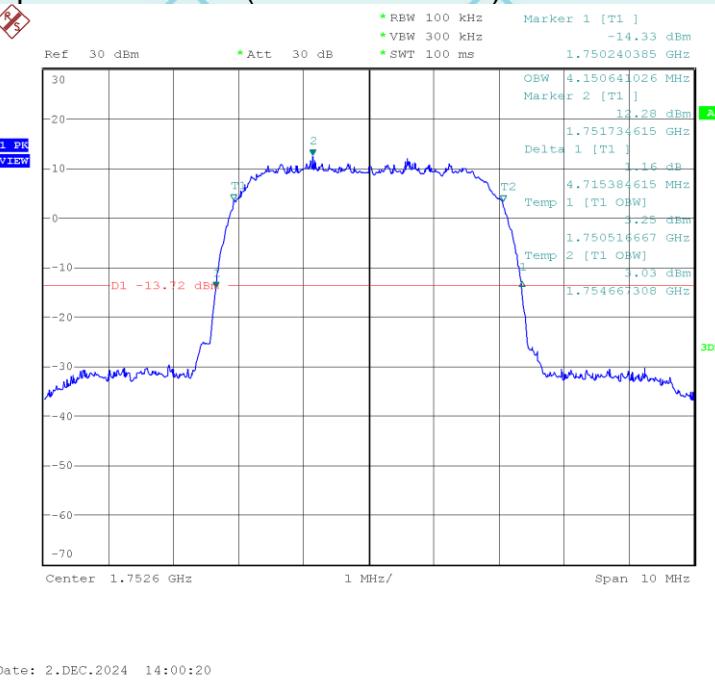
Occupied Bandwidth (99% and -26dBc) WCDMA Band 4 CH 1413



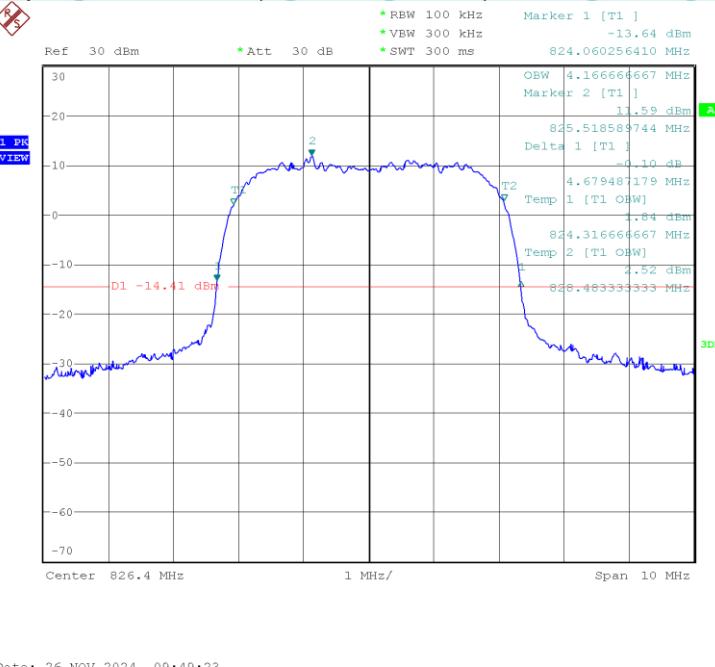
Date: 2.DEC.2024 14:02:08

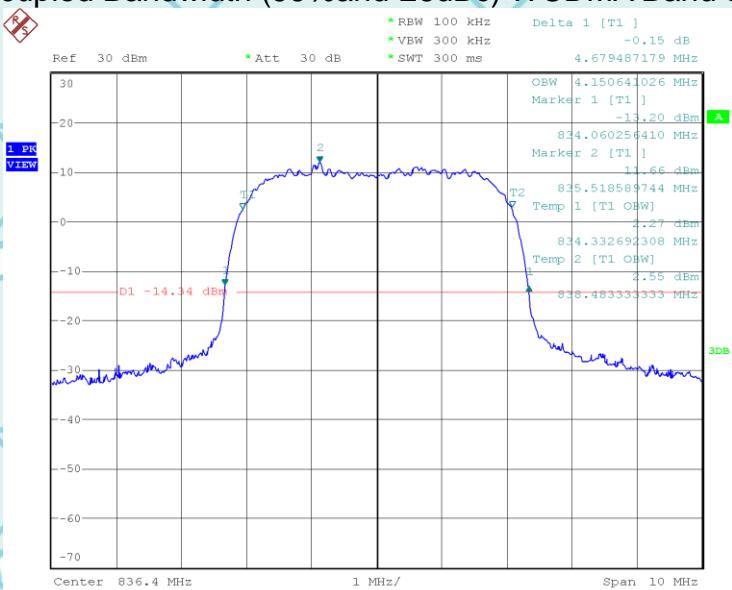


Occupied Bandwidth (99% and -26dBc) WCDMA Band 4 CH 1513



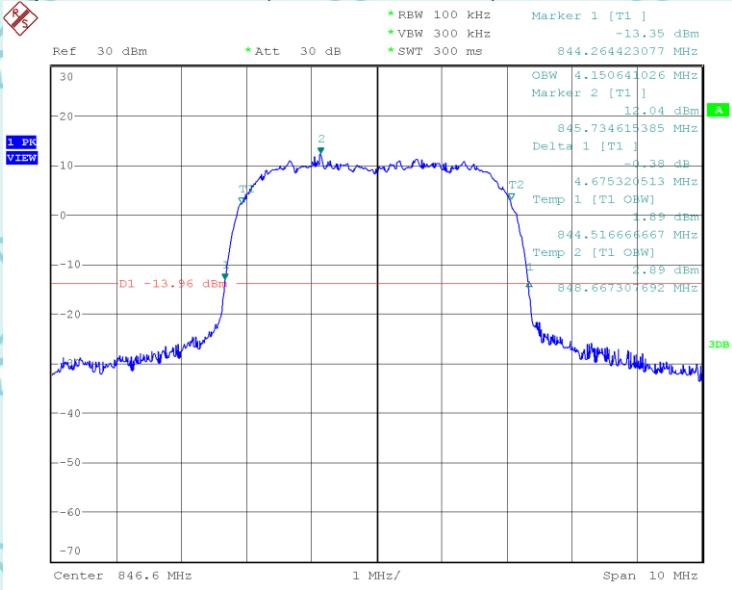
Occupied Bandwidth (99% and -26dBc) WCDMA Band 5 CH 4132





Date: 26.NOV.2024 09:45:40

Occupied Bandwidth (99%and-26dBc) WCDMA Band 5 CH 4233



Date: 26.NOV.2024 09:39:53

Note: Please refer to Annex (LTE Occupied Bandwidth) for more test data



10. BAND EDGE

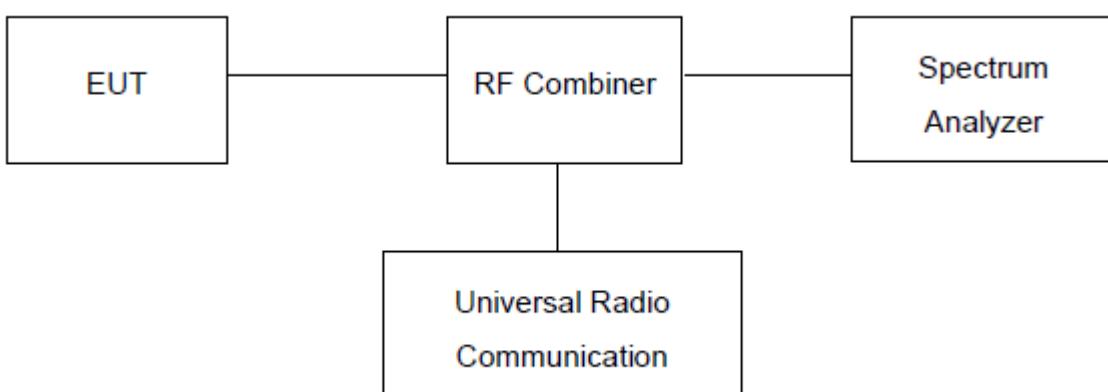
Test Limit:

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified. See section 4.

Test procedure:

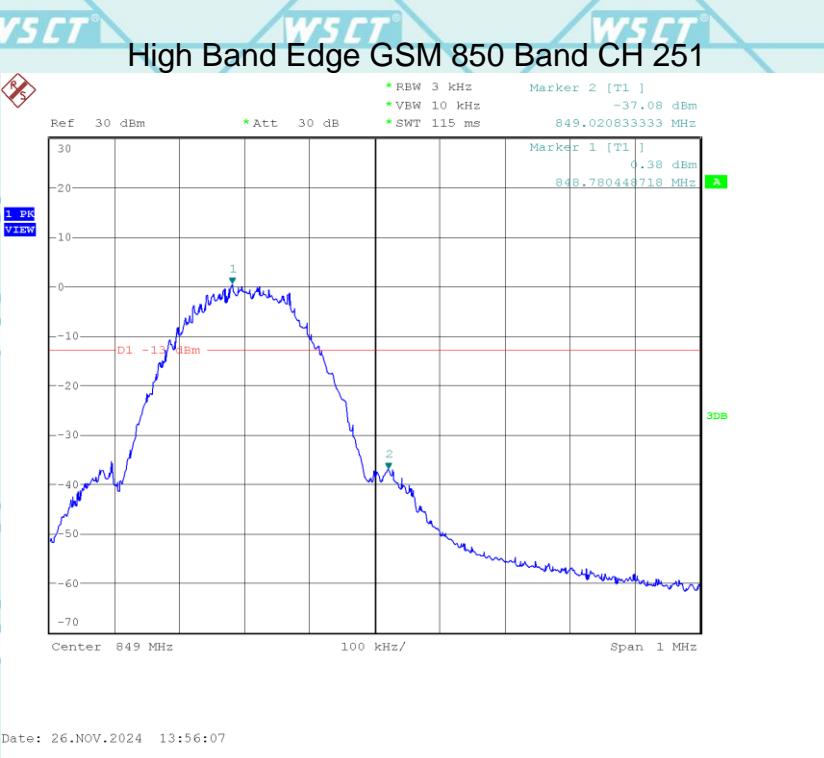
The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test setup:



10.1. Measurement Result

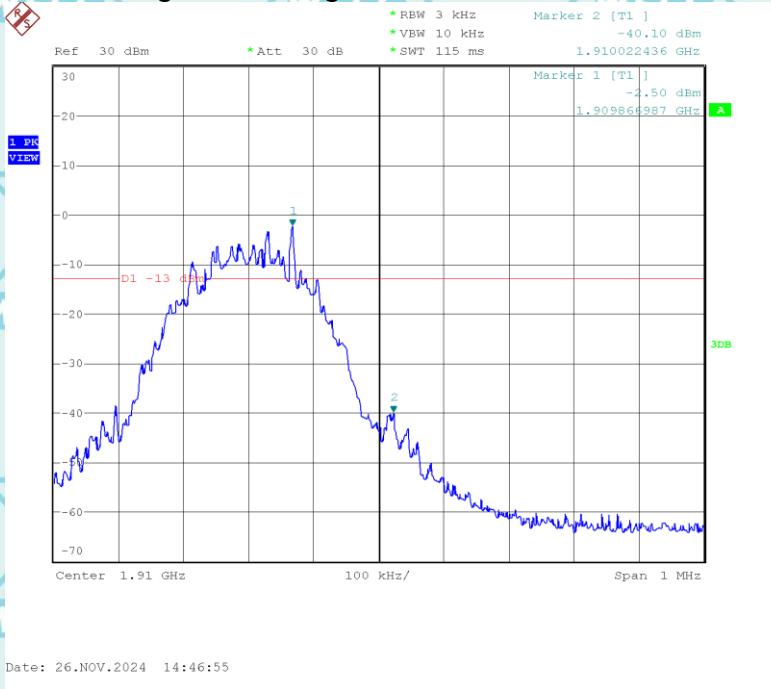
Test Plot(s)



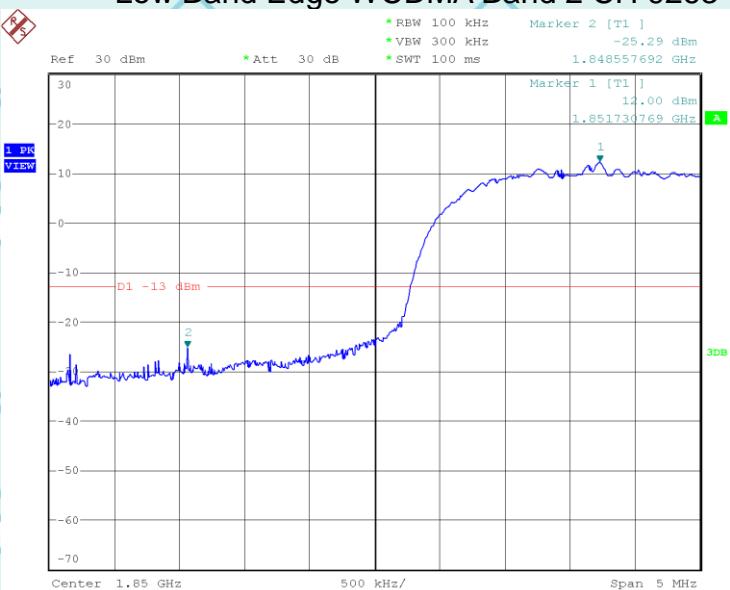
Low Band Edge PCS 1900 Band CH 512



High Band Edge PCS 1900 Band CH 810

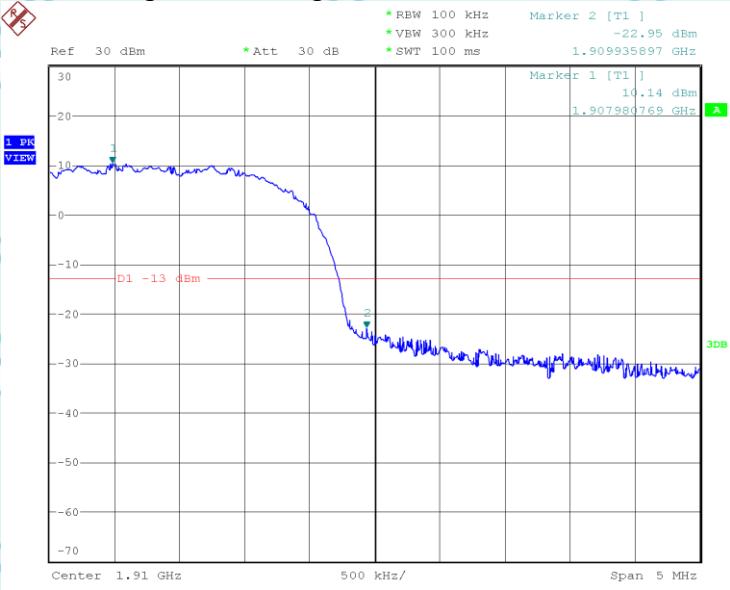


Low Band Edge WCDMA Band 2 CH 9263



Date: 26.NOV.2024 10:51:52

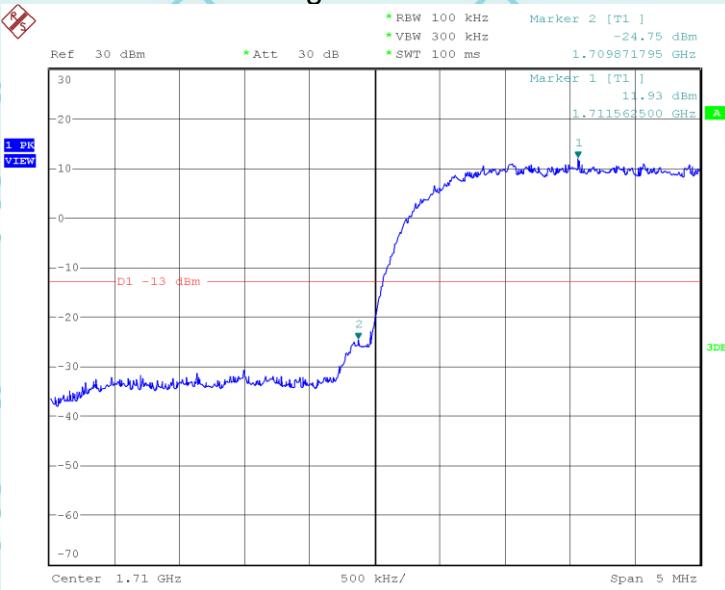
High Band Edge WCDMA Band 2 CH 9537



Date: 26.NOV.2024 10:54:28

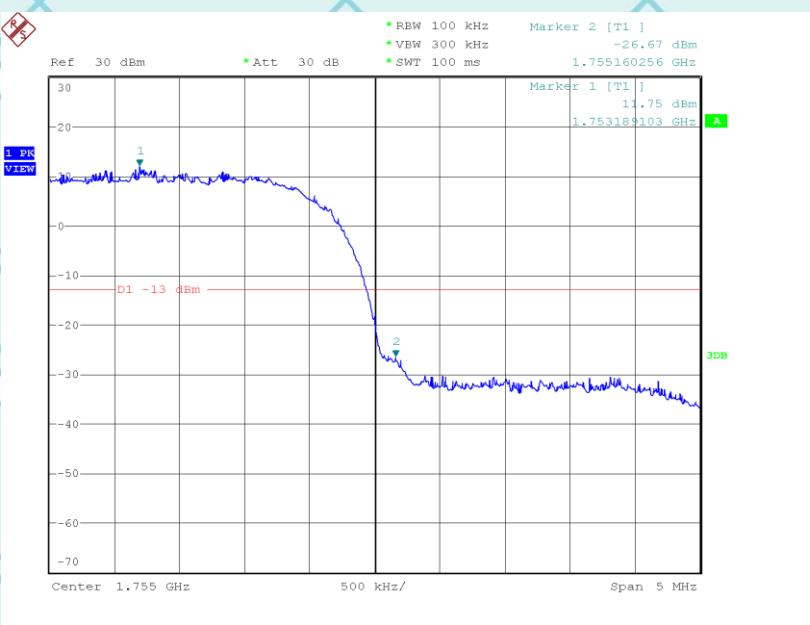


Low Band Edge WCDMA Band 4 CH 1312



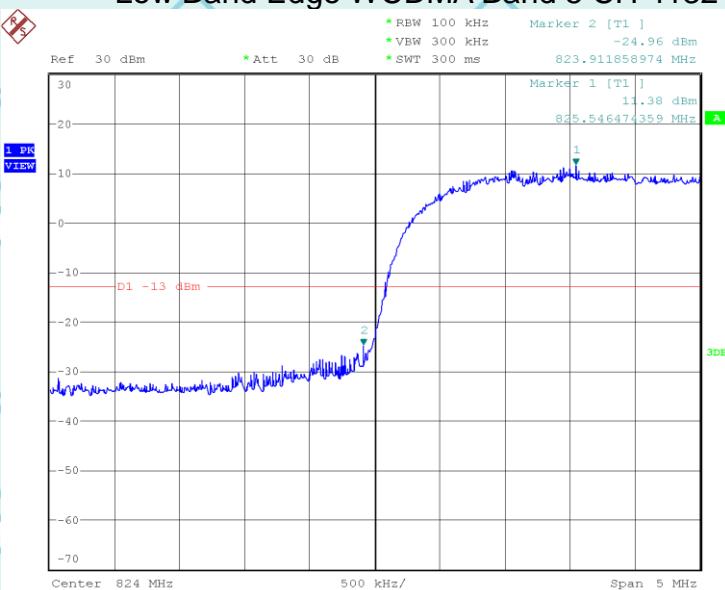
Date: 2.DEC.2024 13:58:12

Low Band Edge WCDMA Band 4 CH 1513



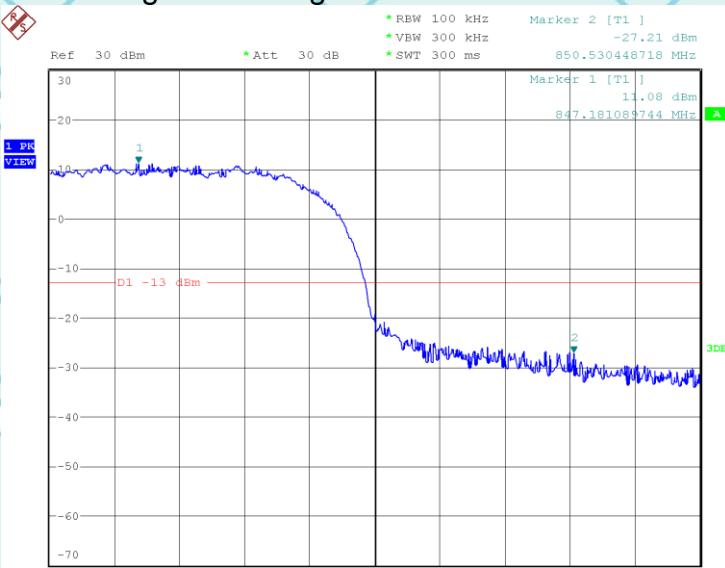
Date: 2.DEC.2024 13:58:59

Low Band Edge WCDMA Band 5 CH 4132



Date: 26.NOV.2024 09:33:10

High Band Edge WCDMA Band 5 CH 4233



Date: 26.NOV.2024 09:36:32

Note: Please refer to Annex (LTE Band Edge) for more test data

11. SPURIOUS EMISSION (Conducted and Radiated)

11.1. Measurement Result (Pre-measurement)

GSM850:

| Test Channel | BW(MHz) | UL Channel | Frequency(MHz) | Judgment |
|--------------|---------|------------|----------------|----------|
| Low Range | 0.2 | 128 | 824.3 | Pass |
| Middle Range | 0.2 | 190 | 836.7 | Pass |
| High Range | 0.2 | 251 | 848.9 | Pass |

PCS 1900 :

| Test Channel | BW(MHz) | UL Channel | Frequency(MHz) | Judgment |
|--------------|---------|------------|----------------|----------|
| Low Range | 0.2 | 512 | 1850.3 | Pass |
| Middle Range | 0.2 | 661 | 1880.1 | Pass |
| High Range | 0.2 | 810 | 1909.9 | Pass |

UTRA BANDS

Band 2:

| Test Channel | BW(MHz) | UL Channel | Frequency(MHz) | Judgment |
|--------------|---------|------------|----------------|----------|
| Low Range | 5 | 9262 | 1851.5 | Pass |
| Middle Range | 5 | 9400 | 1879.1 | Pass |
| High Range | 5 | 9538 | 1906.6 | Pass |

Band 4:

| Test Channel | BW(MHz) | UL Channel | Frequency(MHz) | Judgment |
|--------------|---------|------------|----------------|----------|
| Low Range | 5 | 1312 | 1711.5 | Pass |
| Middle Range | 5 | 1413 | 1731.7 | Pass |
| High Range | 5 | 1513 | 1751.7 | Pass |

Band 5:

| Test Channel | BW(MHz) | UL Channel | Frequency(MHz) | Judgment |
|--------------|---------|------------|----------------|----------|
| Low Range | 5 | 4132 | 825.5 | Pass |
| Middle Range | 5 | 4182 | 835.5 | Pass |
| High Range | 5 | 4233 | 845.7 | Pass |



Test Plot(s)

Conducted method

Test limit:

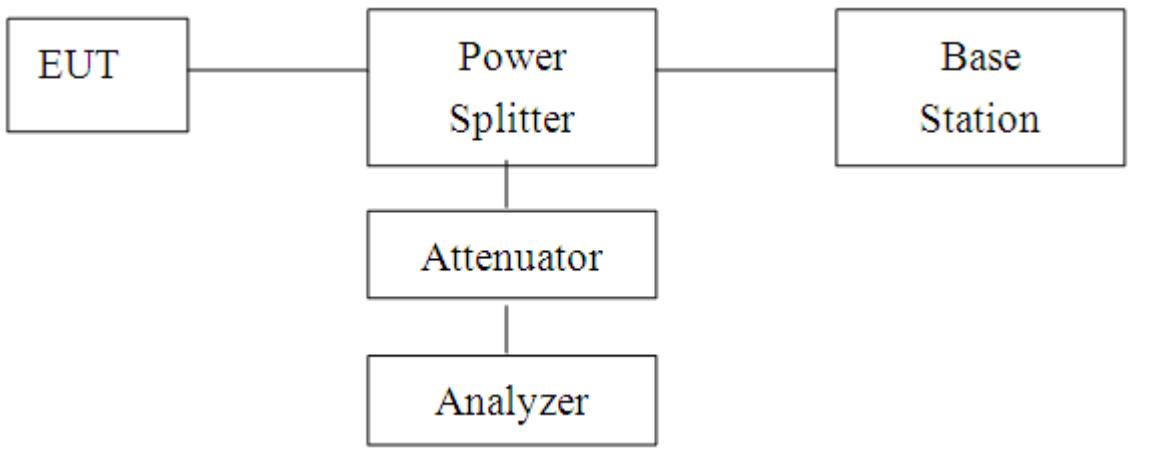
The spurious (unwanted) emission limits specified in the individual FCC rule parts applicable to licensed digital transmitters (typically referred to under the heading 'emission limits') normally apply to any and all emissions that are present outside of the authorized frequency band/block and apply to emissions in both the out-of-band and spurious domains. In some rule parts, the unwanted emission limits are specified by an emission mask that defines the applicable limit as a function of the frequency range relative to the authorized frequency block.

Typically, unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least $X + 10\log(P)$ dB, where P represents the transmitter power expressed in watts and X is a specified scalar value (e.g., 43). This specification can be interpreted in one of two equivalent ways. First, the required attenuation can be construed to be relative to the mean carrier power, with the resultant of the equation $X + 10\log(P)$ being expressed in dBc (dB relative to the maximum carrier power). Alternatively, the specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., $10\log(P) - (X + 10\log(P))$], resulting in an absolute level of $-X$ dBW [or $(-X + 30)$ dBm]. See section 4.

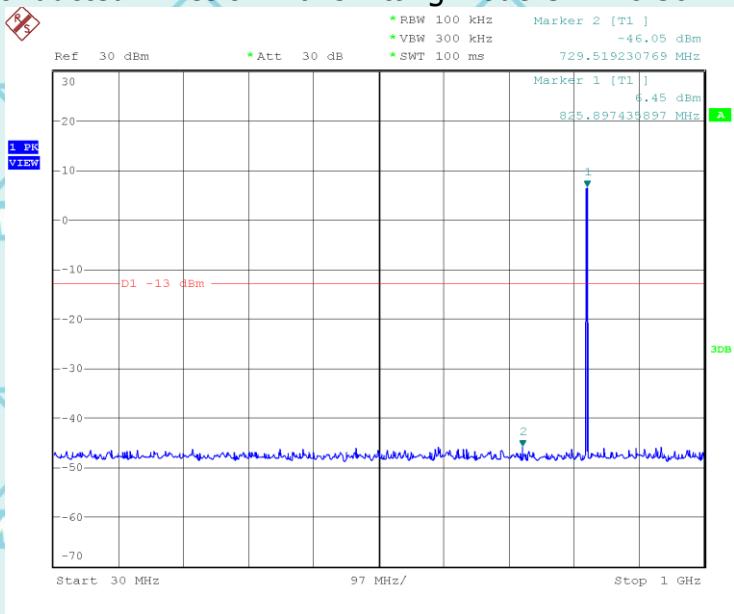
Test procedure:

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

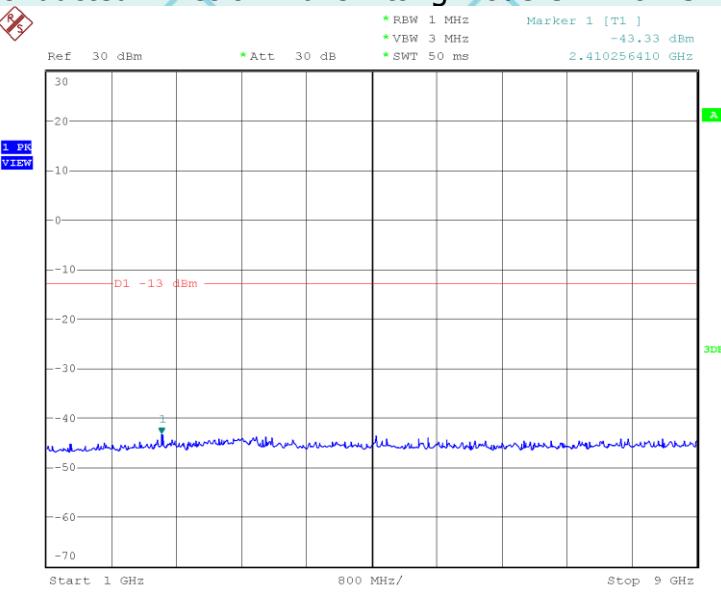
Conducted Emission Test-Up:



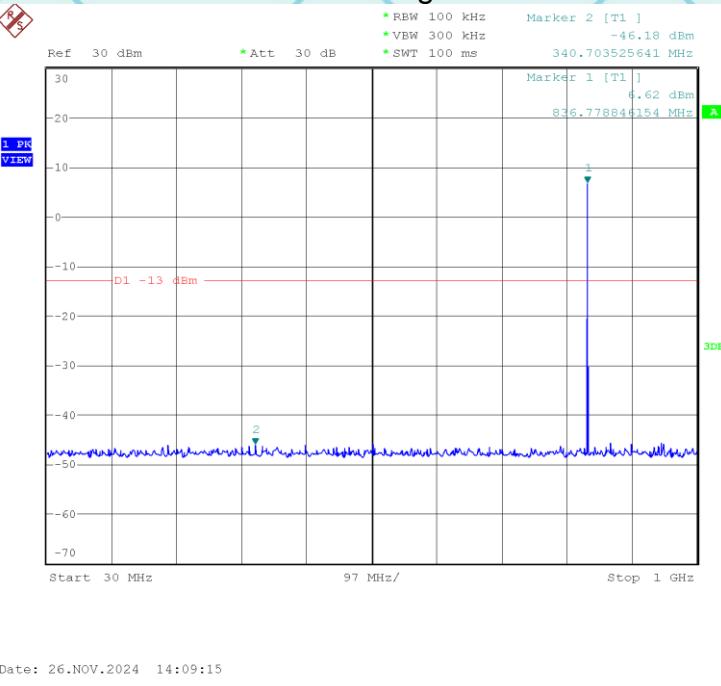
CONDUCTED EMISSION IN GSM850 Band
Conducted Emission Transmitting Mode CH 128 30MHz – 1GHz



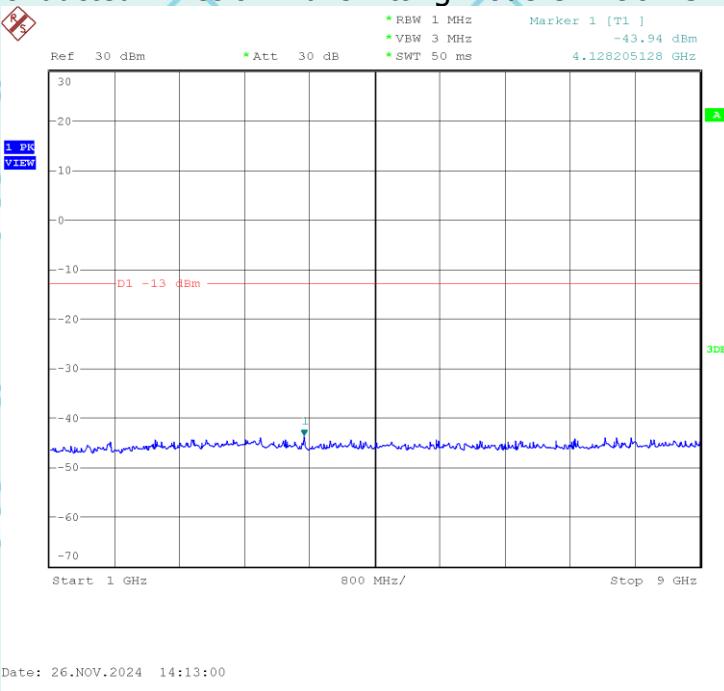
Conducted Emission Transmitting Mode CH 128 1GHz – 9GHz



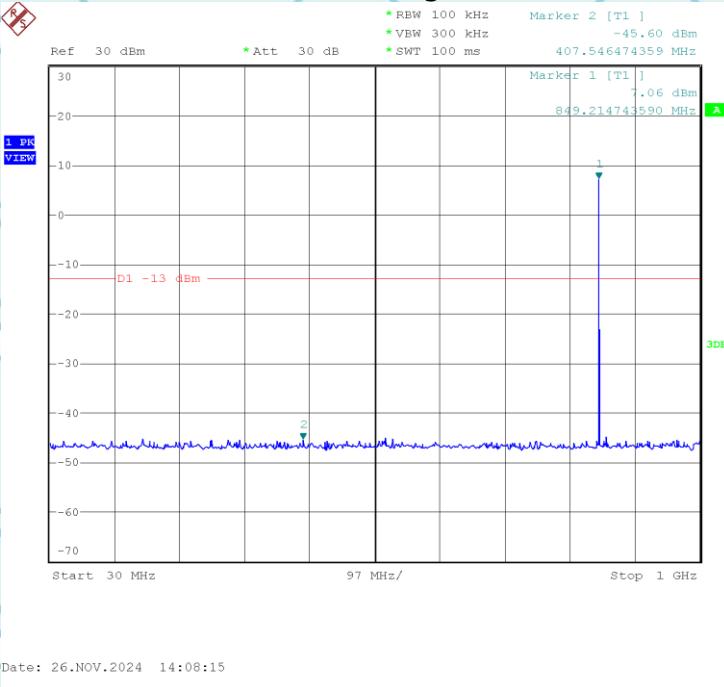
Conducted Emission Transmitting Mode CH 190 30MHz – 1GHz



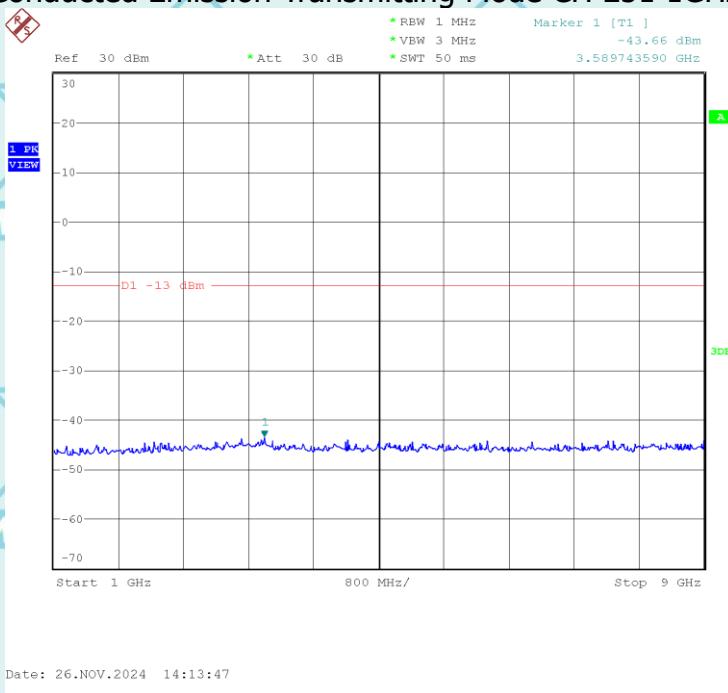
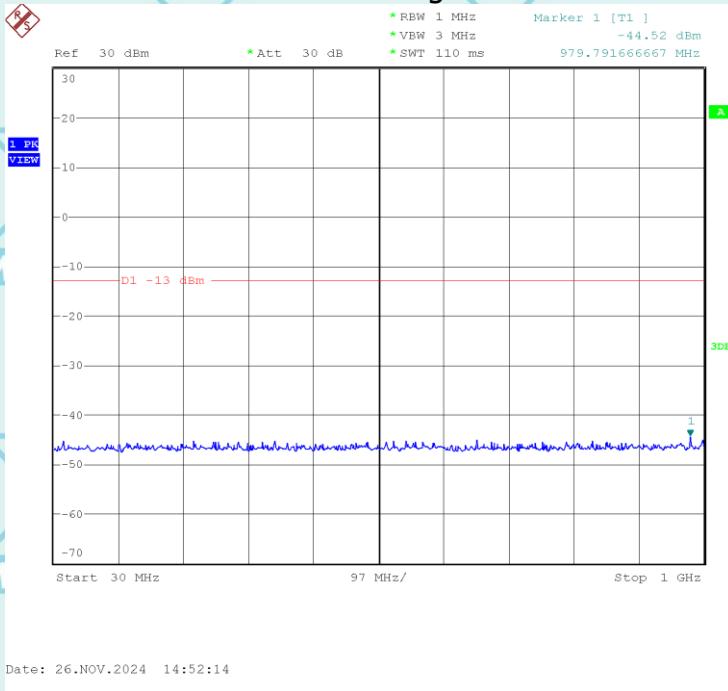
Conducted Emission Transmitting Mode CH 190 1GHz – 9GHz



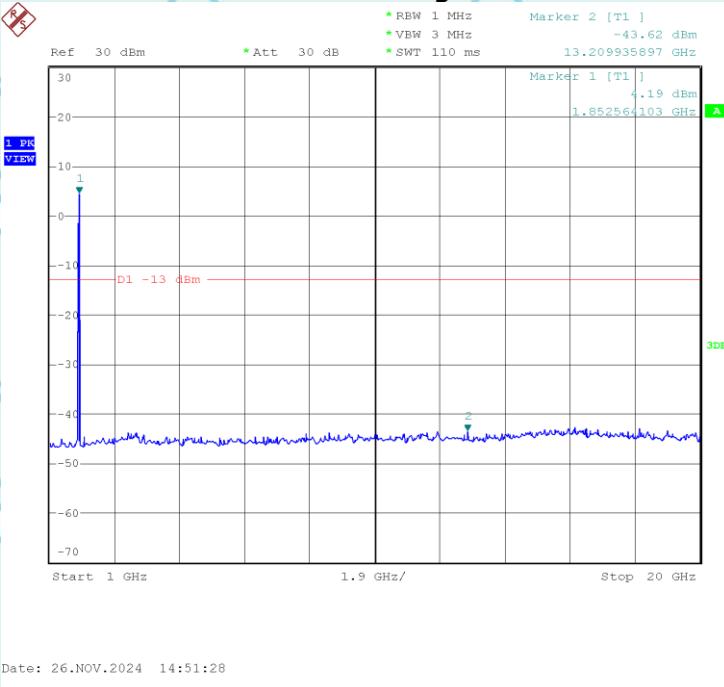
Conducted Emission Transmitting Mode CH 251 30MHz – 1GHz



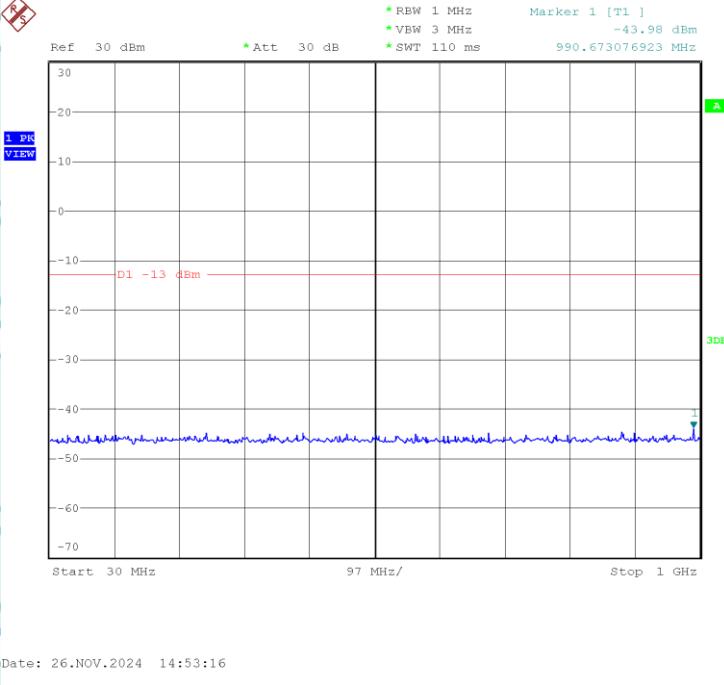
Conducted Emission Transmitting Mode CH 251 1GHz – 9GHz

CONDUCTED EMISSION IN PCS1900 BAND
Conducted Emission Transmitting Mode CH 512 30MHz – 1GHz

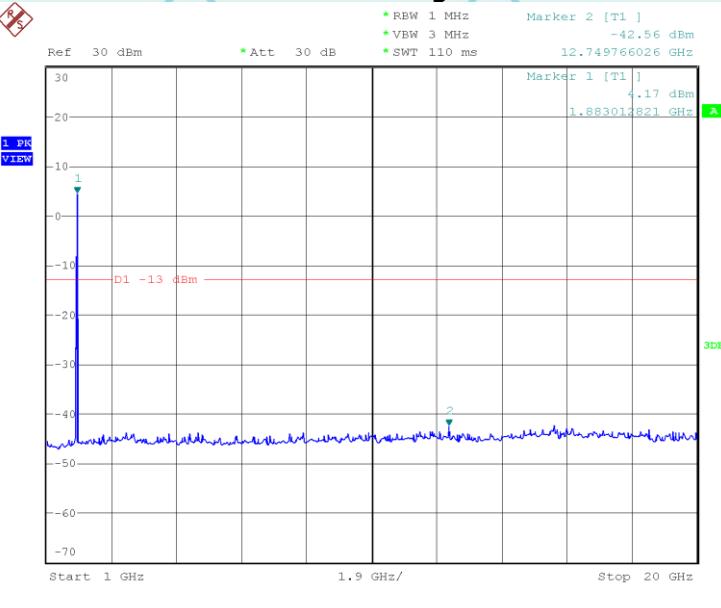
Conducted Emission Transmitting Mode CH 512 1GHz – 9GHz



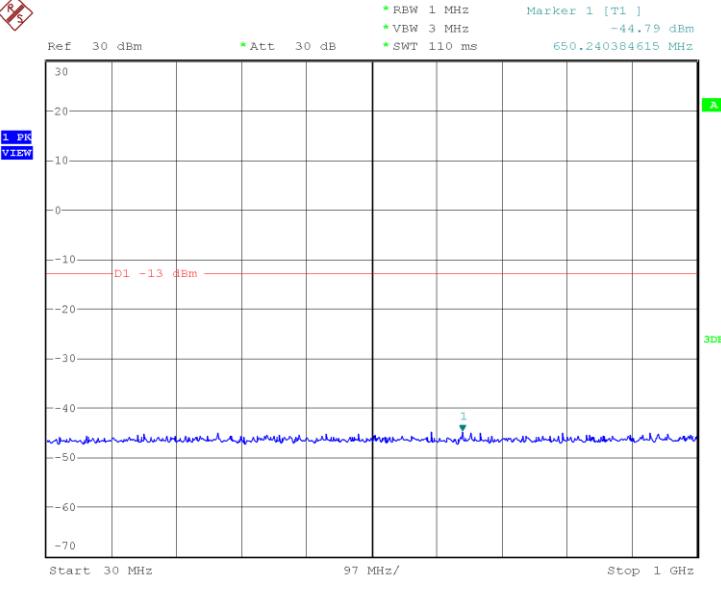
Conducted Emission Transmitting Mode CH 661 30MHz – 1GHz



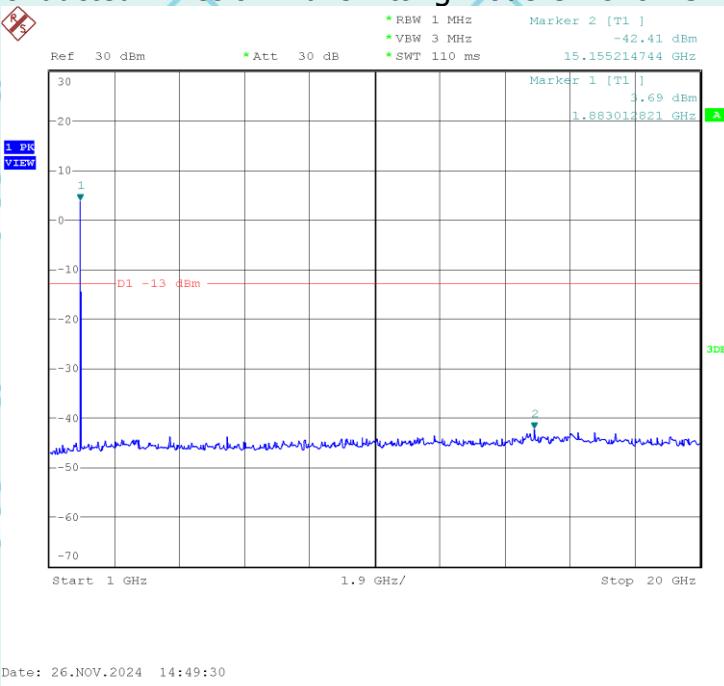
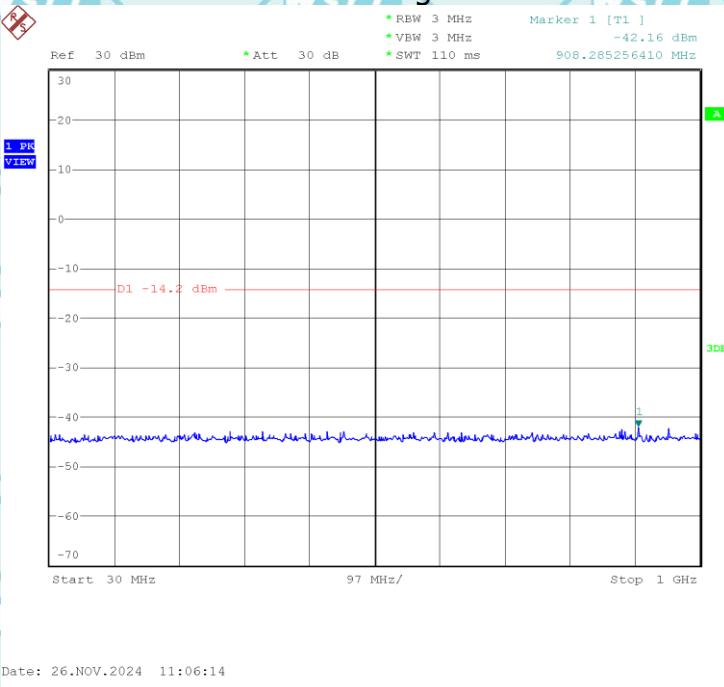
Conducted Emission Transmitting Mode CH 661 1GHz – 9GHz



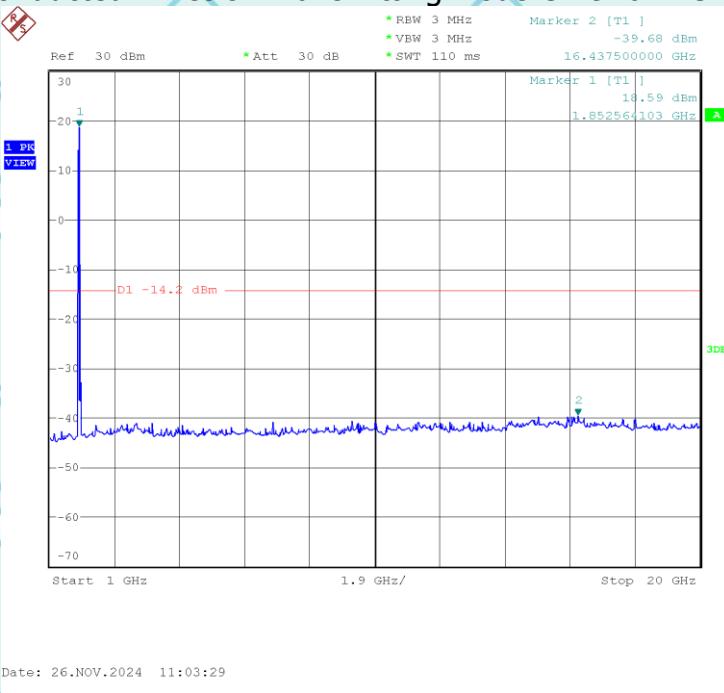
Conducted Emission Transmitting Mode CH 810 30MHz – 1GHz



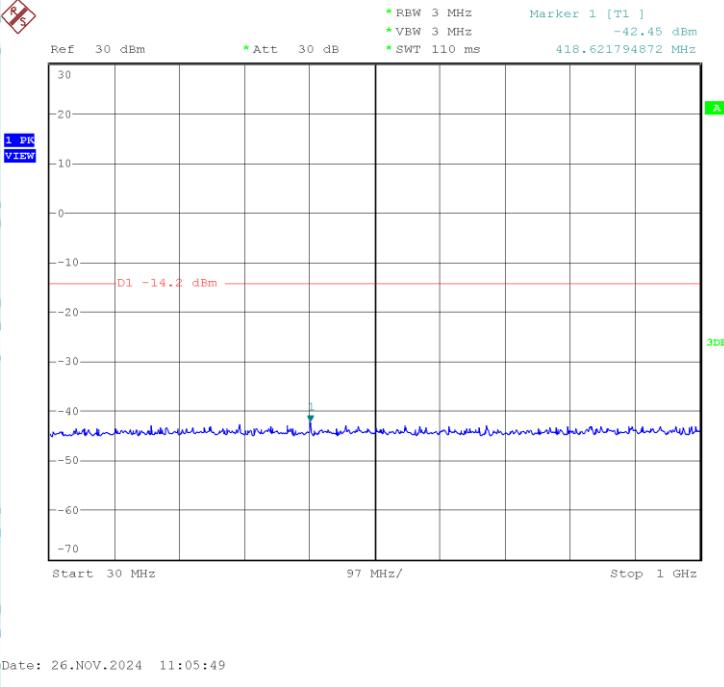
Conducted Emission Transmitting Mode CH 810 1GHz – 9GHz

CONDUCTED EMISSION IN WCDMA Band 2
Conducted Emission Transmitting Mode CH 9262 30MHz – 1GHz

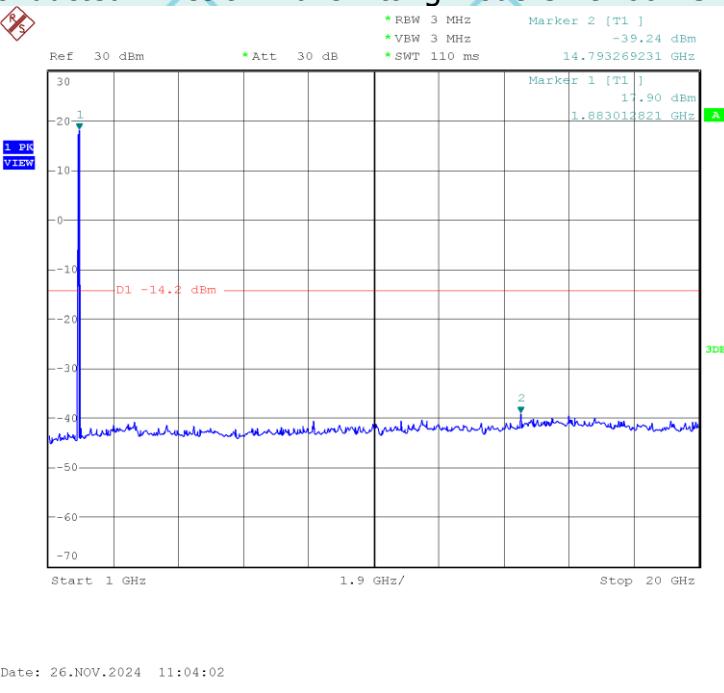
Conducted Emission Transmitting Mode CH 9262 1GHz – 9GHz



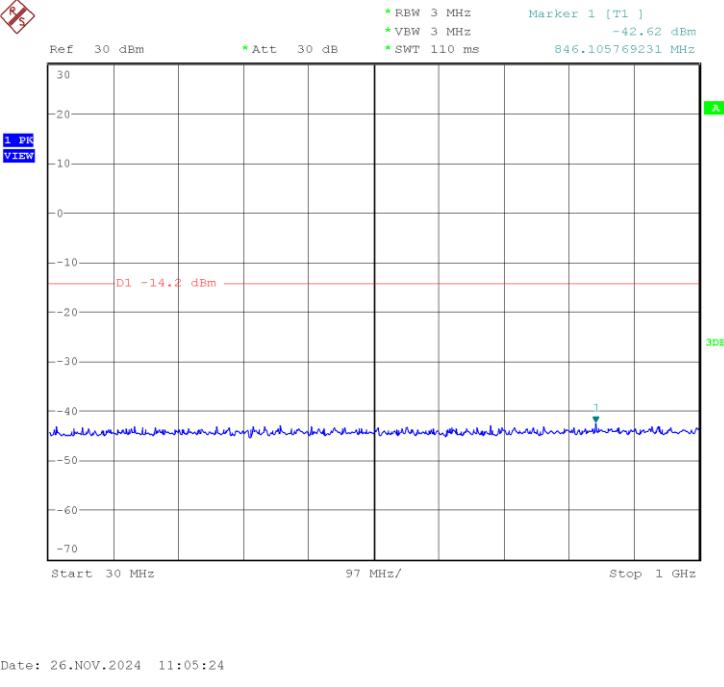
Conducted Emission Transmitting Mode CH 9400 30MHz – 1GHz



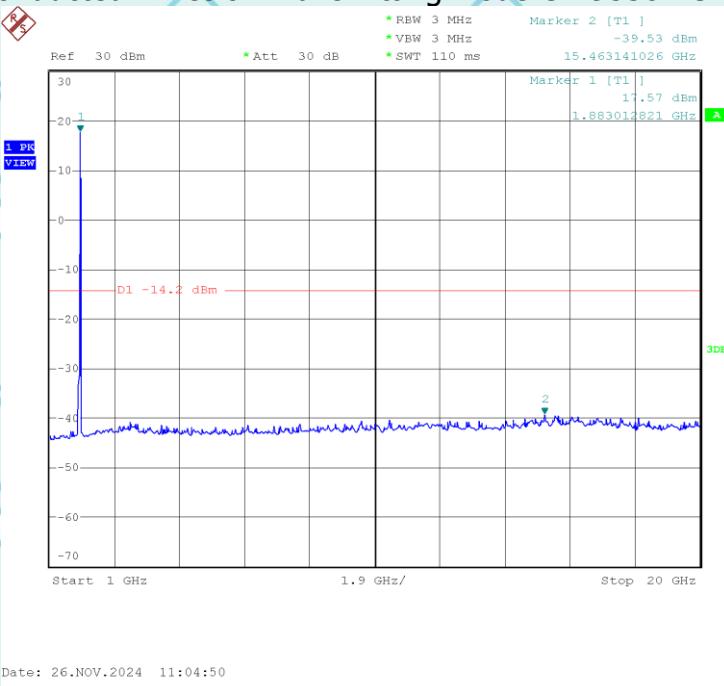
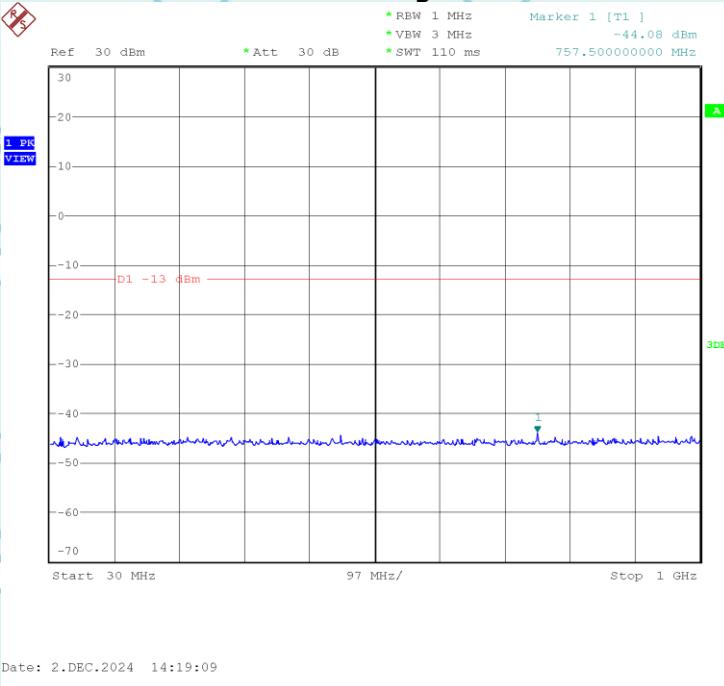
Conducted Emission Transmitting Mode CH 9400 1GHz – 9GHz



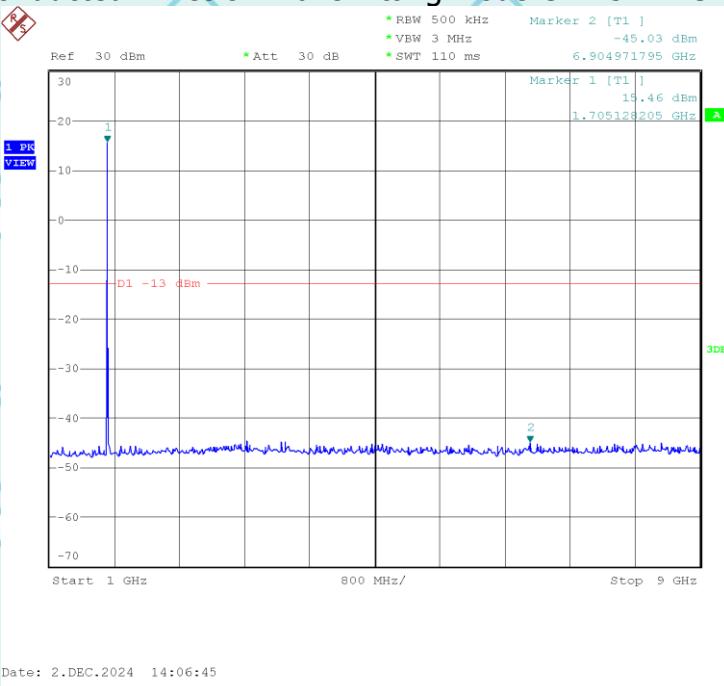
Conducted Emission Transmitting Mode CH 9538 30MHz – 1GHz



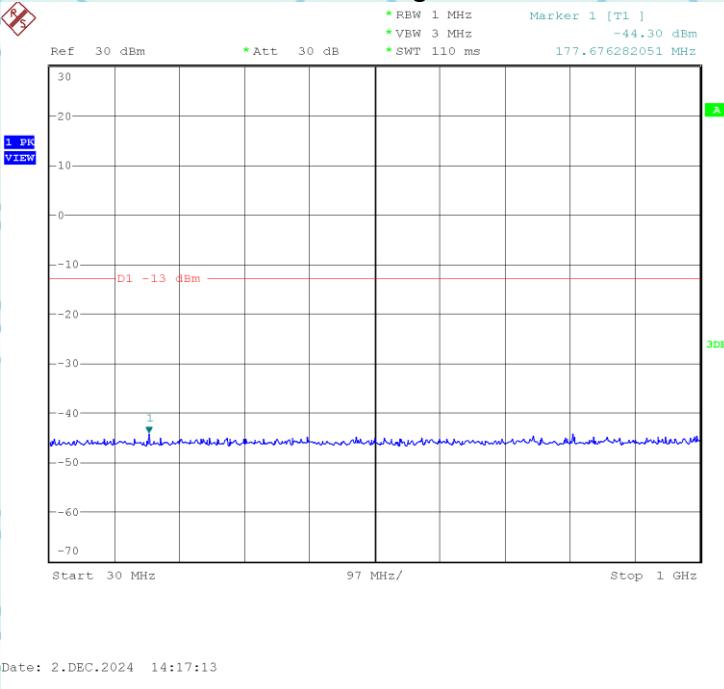
Conducted Emission Transmitting Mode CH 9538 1GHz – 9GHz

CONDUCTED EMISSION IN WCDMA Band 4
Conducted Emission Transmitting Mode CH 1312 30MHz – 1GHz

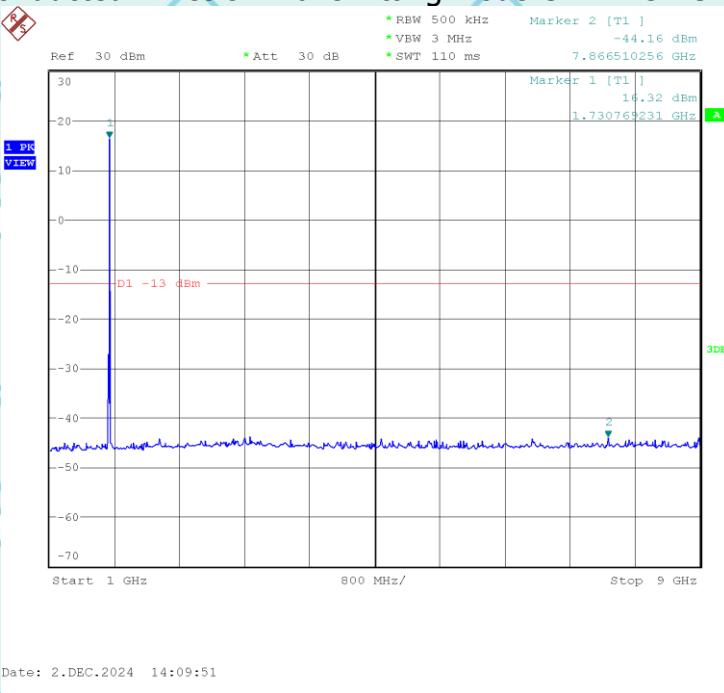
Conducted Emission Transmitting Mode CH 1312 1GHz – 9GHz



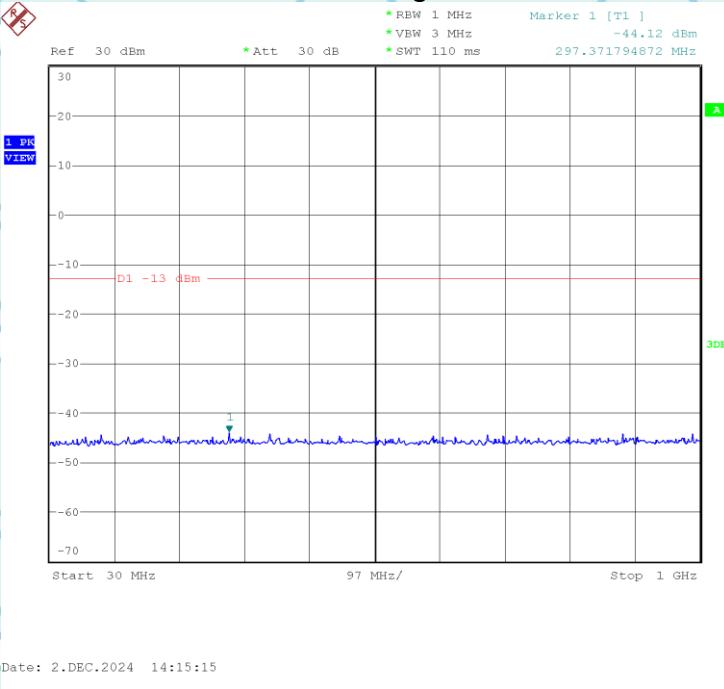
Conducted Emission Transmitting Mode CH 1413 30MHz – 1GHz



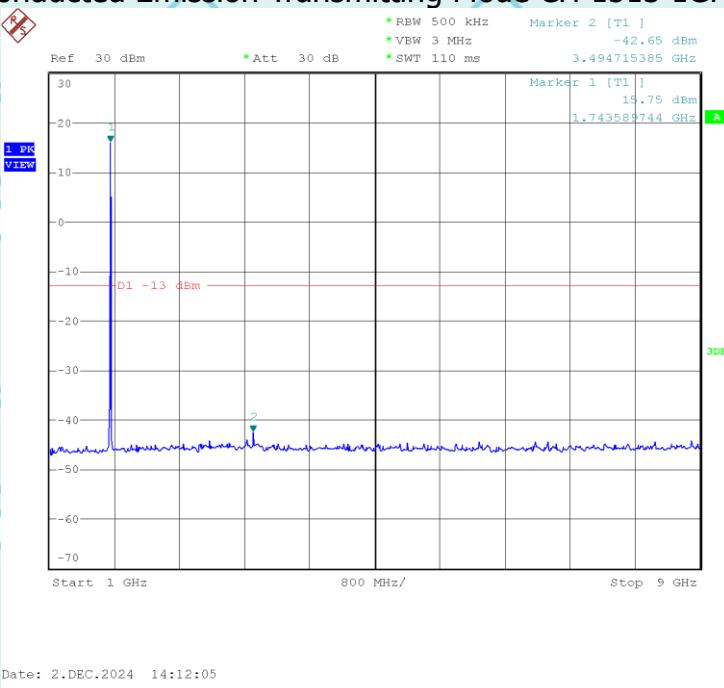
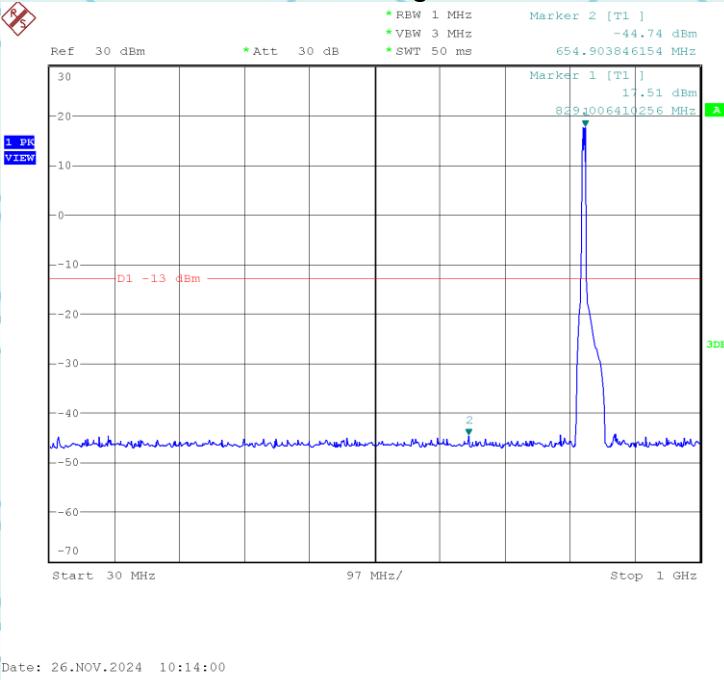
Conducted Emission Transmitting Mode CH 1413 1GHz – 9GHz



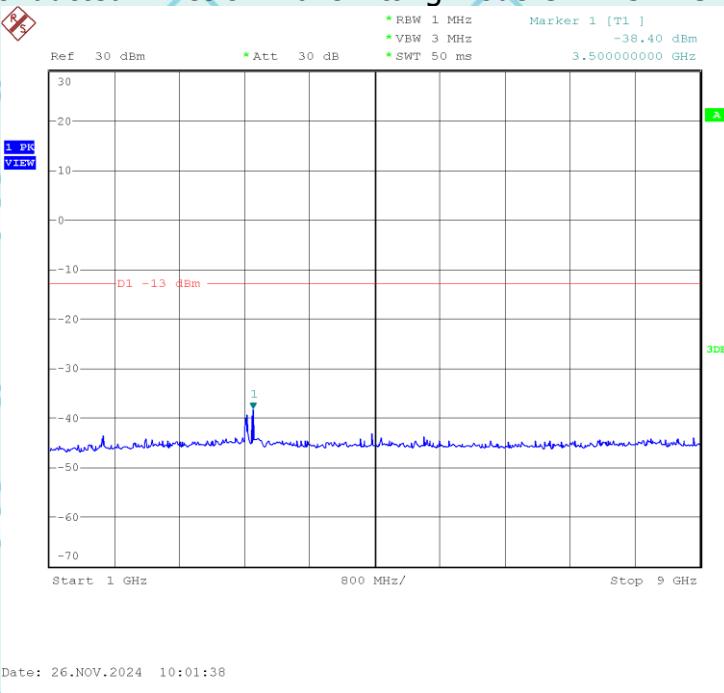
Conducted Emission Transmitting Mode CH 1513 30MHz – 1GHz



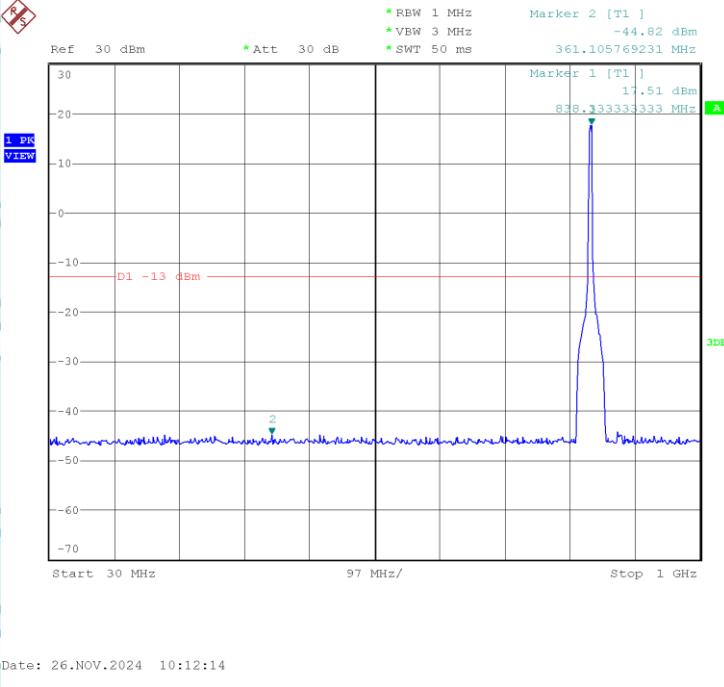
Conducted Emission Transmitting Mode CH 1513 1GHz – 9GHz

CONDUCTED EMISSION IN WCDMA Band 5
Conducted Emission Transmitting Mode CH 4132 30MHz – 1GHz

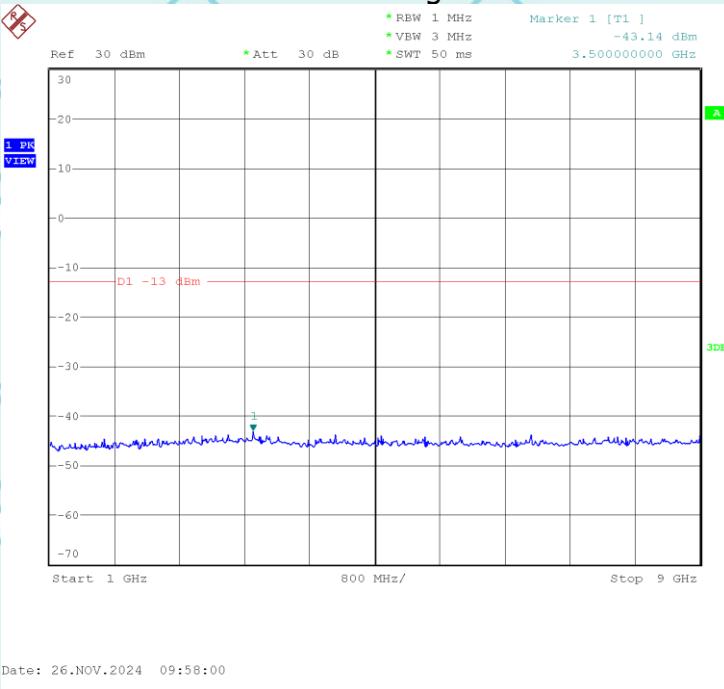
Conducted Emission Transmitting Mode CH 4132 1GHz – 9GHz



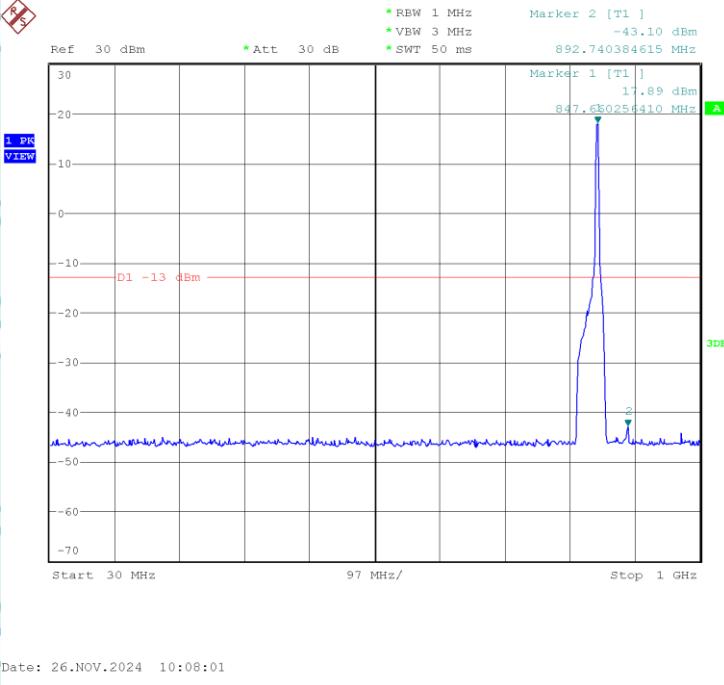
Conducted Emission Transmitting Mode CH 4182 30MHz – 1GHz



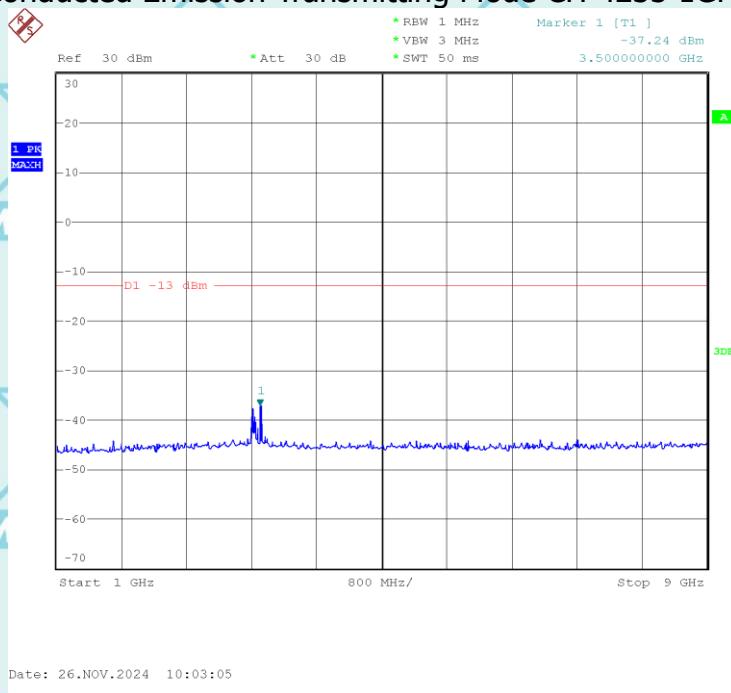
Conducted Emission Transmitting Mode CH 4182 1GHz – 9GHz



Conducted Emission Transmitting Mode CH 4233 30MHz – 1GHz



Conducted Emission Transmitting Mode CH 4233 1GHz – 9GHz



Note: Please refer to Annex (LTE Out-of-band emissions) for more test data



12. FREQUENCY STABILITY

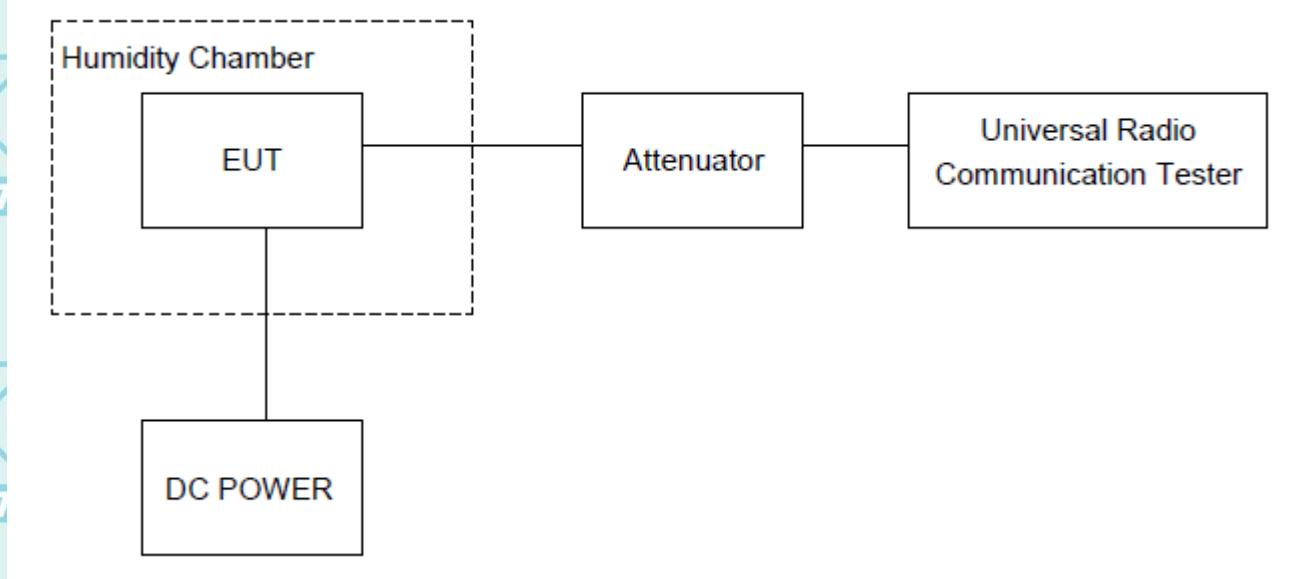
Test limit:

The frequency stability of the transmitter shall be measured while varying the ambient temperatures and supply voltages over the ranges specified in §2.1055. The specific frequency stability limits are provided in the relevant rules section(s). see section 4.

Test procedure:

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

Test setup:



12.1. Measurement Result (Worst)

Frequency Error against Voltage for GSM 850 band (836.6MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error (ppm) |
|------------|---------------------|-----------------------|
| 3.45 | 29 | 0.035 |
| 3.91 | 41 | 0.049 |
| 4.50 | 32 | 0.038 |

Frequency Error against Temperature for GSM 850 band (836.6MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -20 | 38 | 0.046 |
| 0 | 30 | 0.036 |
| 10 | 37 | 0.044 |
| 20 | 39 | 0.046 |
| 30 | 38 | 0.046 |
| 40 | 30 | 0.036 |
| 55 | 41 | 0.049 |

Frequency Error against Voltage for PCS 1900 band (1880MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error(ppm) |
|------------|---------------------|----------------------|
| 3.45 | 41 | 0.022 |
| 3.91 | 34 | 0.018 |
| 4.50 | 34 | 0.018 |

Frequency Error against Temperature for PCS 1900 band (1880MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 34 | 0.018 |
| 0 | 39 | 0.021 |
| 10 | 38 | 0.020 |
| 20 | 29 | 0.016 |
| 30 | 38 | 0.020 |
| 40 | 41 | 0.022 |
| 55 | 34 | 0.018 |

Frequency Error against Voltage for GPRS 850 band (836.6MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error (ppm) |
|------------|---------------------|-----------------------|
| 3.45 | 31 | 0.037 |
| 3.91 | 36 | 0.044 |
| 4.50 | 33 | 0.040 |

Frequency Error against Temperature for GPRS 850 band (836.6MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 30 | 0.036 |
| 0 | 40 | 0.047 |
| 10 | 33 | 0.039 |
| 20 | 39 | 0.047 |
| 30 | 38 | 0.045 |
| 40 | 38 | 0.045 |
| 55 | 31 | 0.037 |

Frequency Error against Voltage for GPRS 1900 band (1880MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error(ppm) |
|------------|---------------------|----------------------|
| 3.45 | 32 | 0.017 |
| 3.91 | 37 | 0.020 |
| 4.50 | 30 | 0.016 |

Frequency Error against Temperature for GPRS 1900 band (1880MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 38 | 0.020 |
| 0 | 37 | 0.020 |
| 10 | 32 | 0.017 |
| 20 | 38 | 0.020 |
| 30 | 34 | 0.018 |
| 40 | 33 | 0.018 |
| 55 | 32 | 0.017 |

Frequency Error against Voltage for EGPRS 850 band (836.6MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error (ppm) |
|------------|---------------------|-----------------------|
| 3.45 | 32 | 0.038 |
| 3.91 | 33 | 0.039 |
| 4.50 | 33 | 0.040 |

Frequency Error against Temperature for EGPRS 850 band (836.6MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 39 | 0.047 |
| 0 | 40 | 0.048 |
| 10 | 36 | 0.042 |
| 20 | 28 | 0.034 |
| 30 | 36 | 0.043 |
| 40 | 35 | 0.042 |
| 55 | 40 | 0.048 |

Frequency Error against Voltage for EGPRS 1900 band (1880MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error(ppm) |
|------------|---------------------|----------------------|
| 3.45 | 31 | 0.016 |
| 3.91 | 29 | 0.016 |
| 4.50 | 36 | 0.019 |

Frequency Error against Temperature for EGPRS 1900 band (1880MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 37 | 0.020 |
| 0 | 37 | 0.020 |
| 10 | 36 | 0.019 |
| 20 | 40 | 0.021 |
| 30 | 39 | 0.021 |
| 40 | 30 | 0.016 |
| 55 | 40 | 0.021 |



Frequency Error against Voltage for WCDMA Band 2 (1880MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error (ppm) |
|------------|---------------------|-----------------------|
| 3.45 | 29 | 0.015 |
| 3.91 | 30 | 0.016 |
| 4.50 | 35 | 0.019 |

Frequency Error against Temperature for WCDMA Band 2 (1880MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 40 | 0.021 |
| 0 | 41 | 0.022 |
| 10 | 35 | 0.019 |
| 20 | 35 | 0.018 |
| 30 | 33 | 0.018 |
| 40 | 31 | 0.016 |
| 55 | 40 | 0.021 |

Frequency Error against Voltage for WCDMA Band 4 (1732.6MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error (ppm) |
|------------|---------------------|-----------------------|
| 3.45 | 39 | 0.022 |
| 3.91 | 35 | 0.020 |
| 4.50 | 29 | 0.017 |

Frequency Error against Temperature for WCDMA Band 4 (1732.6MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 34 | 0.020 |
| 0 | 38 | 0.022 |
| 10 | 37 | 0.021 |
| 20 | 31 | 0.018 |
| 30 | 29 | 0.017 |
| 40 | 32 | 0.018 |
| 55 | 30 | 0.017 |



Frequency Error against Voltage for WCDMA Band 5 (836.4MHz)

| Voltage(V) | Frequency error(Hz) | Frequency error(ppm) |
|------------|---------------------|----------------------|
| 3.45 | 29 | 0.035 |
| 3.91 | 40 | 0.048 |
| 4.50 | 32 | 0.039 |

Frequency Error against Temperature for WCDMA Band 5 (836.4MHz)

| Temperature(°C) | Frequency error(Hz) | Frequency error(ppm) |
|-----------------|---------------------|----------------------|
| -10 | 38 | 0.045 |
| 0 | 31 | 0.037 |
| 10 | 32 | 0.038 |
| 20 | 31 | 0.037 |
| 30 | 40 | 0.047 |
| 40 | 29 | 0.034 |
| 55 | 40 | 0.047 |

Note: Please refer to Annex (LTE Frequency Error against) for more test data

13. Test Setup Photographs

Please refer to Annex "Set Up Photos-RF" for test setup photos

---END OF REPORT---