FCC RADIO TEST REPORT

FCC ID	:	**XIA-227**
Equipment	:	**4G LTE Cat 1 Industrial IoT Router** **Vodafone MachineLink 4G Lite**
Brand Name	:	**NetComm;** **Casa; Casa Systems**
Model Name	:	**NWL-22X & NTC-22X (X=7)**
Applicant	:	**NetComm Wireless Pty Ltd** **Level 5, 18-20 Orion Road Lane Cove, NSW 2066 Australia**
Manufacturer	:	**NetComm Wireless Pty Ltd** **Level 5, 18-20 Orion Road Lane Cove, NSW 2066 Australia**
Standard	:	**FCC 47 CFR Part 2, 22(H), 24(E), 27(L)**

The product was received on Sep. 09, 2021 and testing was performed from Nov. 04, 2021 to Dec. 04, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

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

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

Table of Contents

History of this test report **3**
Summary of Test Result **4**
1 General Description **5**
1.1 Product Feature of Equipment Under Test 5
1.2 Modification of EUT 5
1.3 Testing Location 6
1.4 Applicable Standards 6
2 Test Configuration of Equipment Under Test **7**
2.1 Test Mode 7
2.2 Connection Diagram of Test System 8
2.3 Support Unit used in test configuration 8
2.4 Measurement Results Explanation Example 8
2.5 Frequency List of Low/Middle/High Channels 9
3 Conducted Test Result **10**
3.1 Measuring Instruments 10
3.2 Conducted Output Power and ERP/EIRP 11
3.3 Peak-to-Average Ratio 12
3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement 13
3.5 Conducted Band Edge 14
3.6 Conducted Spurious Emission 15
3.7 Frequency Stability 16
4 Radiated Test Items **17**
4.1 Measuring Instruments 17
4.2 Test Setup 17
4.3 Test Result of Radiated Test 18
4.4 Field Strength of Spurious Radiation Measurement 19
5 List of Measuring Equipment **20**
6 Uncertainty of Evaluation **22**
Appendix A. Test Results of Conducted Test
Appendix B. Test Results of Radiated Test
Appendix C. Test Setup Photographs

History of this test report

Report No.	Version	Description	Issued Date
FG171916A	01	Initial issue of report	Dec. 15, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
	§22.913 (a)(5)	Effective Radiated Power (GSM850) (WCDMA Band V)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (GSM1900) (WCDMA Band II)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (WCDMA Band IV)		
3.3	§24.232 (d)	Peak-to-Average Ratio	Pass	
3.4	§2.1049 §22.917 (b) §24.238 (b) §27.53 (g)	Occupied Bandwidth (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Pass	-
3.5	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Band Edge Measurement (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Pass	-
3.6	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Conducted Emission (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Pass	-
3.7	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.4	§2.1053 §22.917 (a) §24.238 (a) §27.53 (h)	Field Strength of Spurious Radiation (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Pass	Under limit 23.95 dB at 2544.000 MHz

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Yun Huang

Report Producer: Celery Wei

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE and GNSS

Product Specification is subject to this standard	
Antenna Type	WWAN: Dipole Antenna GPS / Glonass / Galileo / BDS : GPS Active Patch Antenna
Antenna Gain	**<NANT-00001>:** Cellular Band: 3.13 dBi PCS Band: 3.42 dBi AWS Band: 3.28 dBi **<NANT-00006>:** Cellular Band: 0.4 dBi PCS Band: 2.72 dBi AWS Band:2.09 dBi

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

<Sample List>

Sample	Model Name	LED Quantity	PCBA
1	NTC-227	8	A (No Embedded SIM)
2	NWL-227	7	A (No Embedded SIM)
3			B (Embedded SIM)

Note:
1. Same PCB, antenna and antenna locations and the only differences are in housing, number of LEDs, and with or without embedded SIM.
2. From the above models, Sample 3 was selected as representative models for the test and their data were recorded in this report.

Accessories Information				
AC Adapter	**Brand Name**	NA	**Model Name**	S018BAM1200150
	Power Rating	I/P: 100-240Vac, 0.5 A, O/P: 12Vdc, 1.5A		
	Power Cord	1.5 meter, non-shielded cable, w/o ferrite core		
RJ45 Cable	**Signal Line**	1.5 meter, non-shielded cable		
Antenna 1	**Brand Name**	NA	**Model Name**	NANT-00001
Antenna 2	**Brand Name**	NA	**Model Name**	NANT-00006
DIN rail mounting bracket	**Brand Name**	NA	**Model Name**	NA

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH03-HY	03CH07-HY
Test Engineer	Oscar Chi	Jesse Wang, Stan Hsieh and Ken Wu
Temperature (℃)	21~24	19.5~24.1
Relative Humidity (%)	51~55	48.3~65.4

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

FCC Designation No.: TW1190

1.4 Applicable Standards

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

- ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 22(H), 24(E), 27(L)
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in two antenna polarization (Horizontal and Vertical), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find Ant. Horizontal as worst plane.

Radiated emissions were investigated as following frequency range:

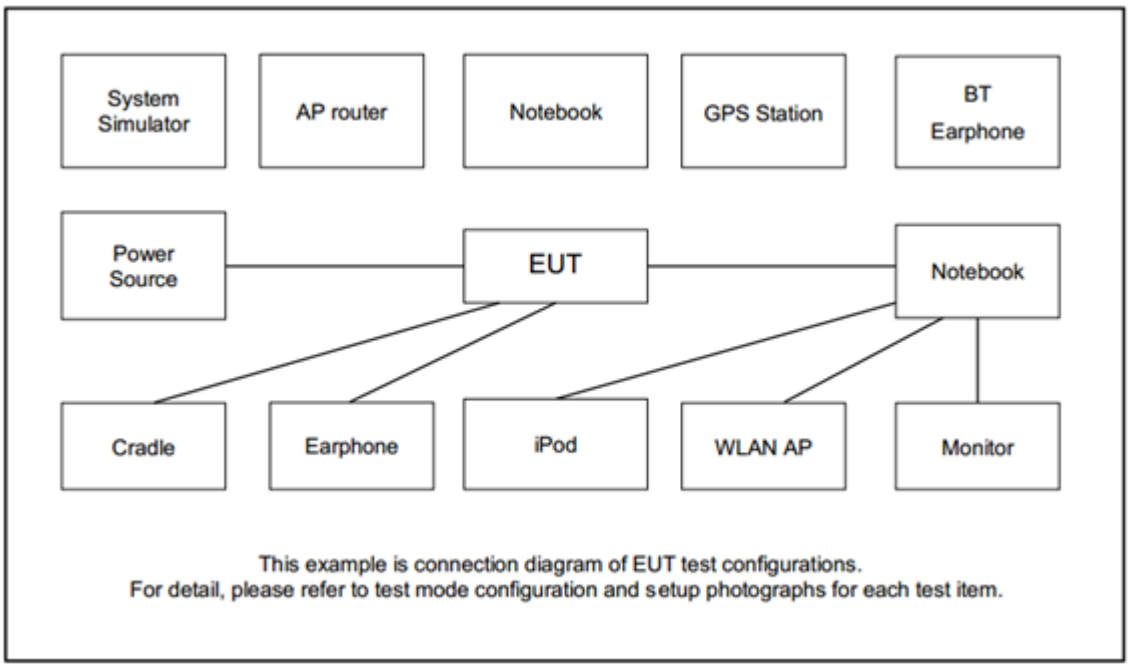
1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V
2. 30 MHz to 18000 MHz for WCDMA Band IV
3. 30 MHz to 19100 MHz for GSM1900 and WCDMA Band II

All modes, data rates and positions were investigated.

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

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM850	■ GPRS Class 8 Link ■ EDGE Class 8 Link	■ GPRS Class 8 Link ■ EDGE Class 8 Link
GSM1900	■ GPRS Class 8 Link ■ EDGE Class 8 Link	■ GPRS Class 8 Link ■ EDGE Class 8 Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 4.2 dB and a 10 dB attenuator.

Example:

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

Frequency List				
Band	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
GSM850	Channel	128	189	251
	Frequency	824.2	836.4	848.8
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
GSM1900	Channel	512	661	810
	Frequency	1850.2	1880.0	1909.8
WCDMA Band II	Channel	9262	9400	9538
	Frequency	1852.4	1880.0	1907.6
WCDMA Band IV	Channel	1312	1413	1513
	Frequency	1712.4	1732.6	1752.6

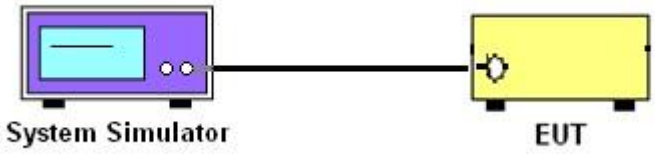
3 Conducted Test Result

3.1 Measuring Instruments

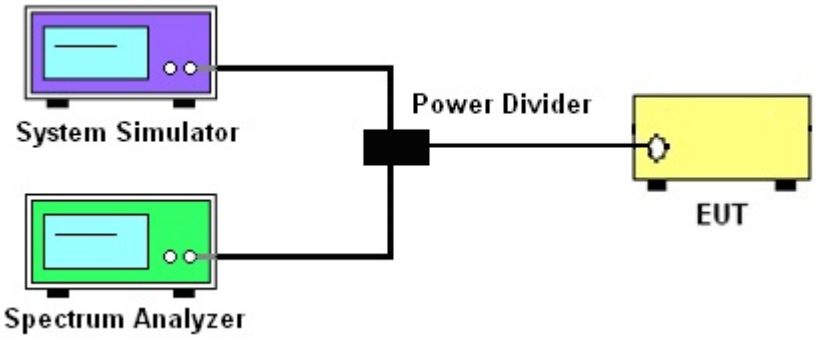
See list of measuring instruments of this test report.

3.1.1 Test Setup

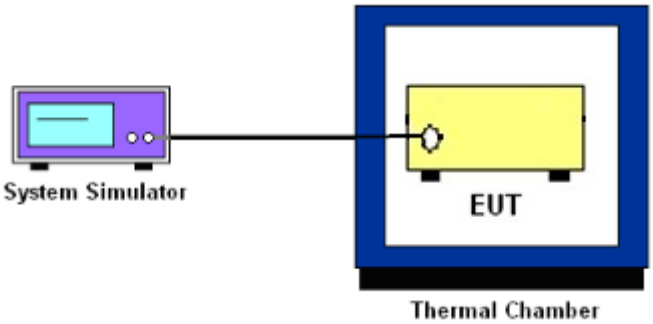
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and WCDMA Band V

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select the lowest, middle, and the highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer.
5. Record the maximum PAPR level associated with a probability of 0.1%.

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
   (This is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The band edges of low and high channels for the highest RF powers were measured.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
5. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

22.355

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

24.235 & 27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

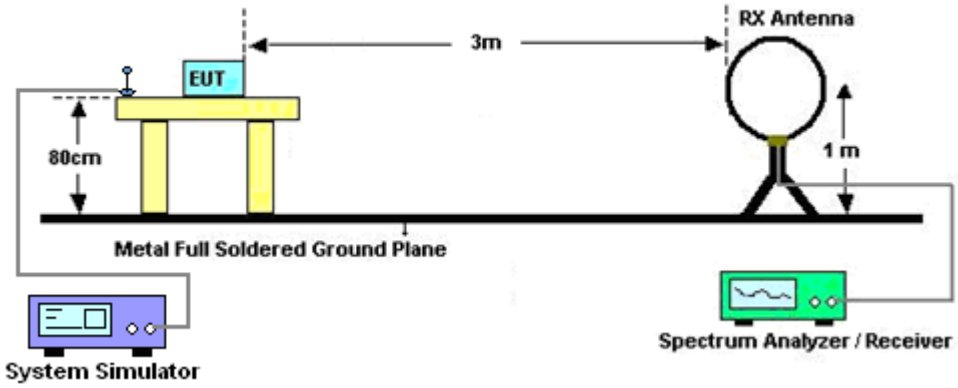
4 Radiated Test Items

4.1 Measuring Instruments

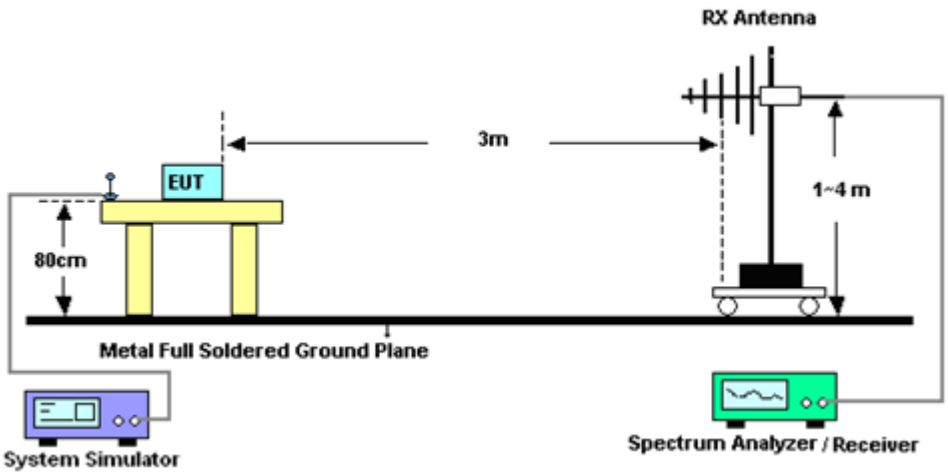
See list of measuring instruments of this test report.

4.2 Test Setup

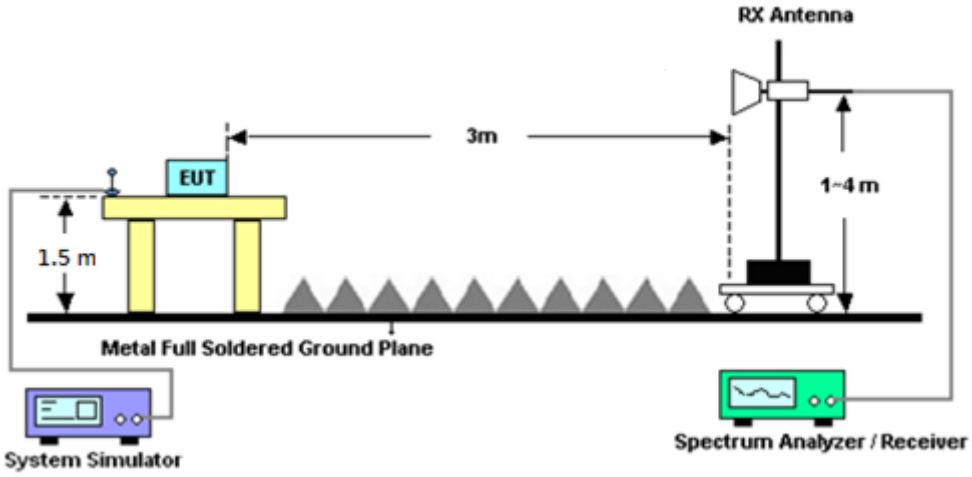
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

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

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

4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

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

4.4.2 Test Procedures

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

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

5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	35419 & 03	30MHz~1GHz	Apr. 28, 2021	Nov. 04, 2021~ Dec. 04, 2021	Apr. 27, 2022	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 01, 2020	Nov. 04, 2021~ Nov. 29, 2021	Nov. 30, 2021	Radiation (03CH07-HY)
Horn Antenna	ESCO	3117	00066584	1GHz~18GHz	Oct. 25, 2021	Nov. 30, 2021~ Dec. 04, 2021	Oct. 24, 2022	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Nov. 04, 2021~ Dec. 04, 2021	Jan. 03, 2022	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 22, 2021	Nov. 04, 2021~ Dec. 04, 2021	Apr. 21, 2022	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 04, 2021	Nov. 04, 2021~ Dec. 04, 2021	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 04, 2021	Nov. 04, 2021~ Dec. 04, 2021	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 23, 2021	Nov. 04, 2021~ Dec. 04, 2021	Jul. 22, 2022	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2021	Nov. 04, 2021~ Dec. 04, 2021	Jul. 21, 2022	Radiation (03CH07-HY)
3m Semi Anechoic Chamber (NSA)	TDK	SAC-3M	03CH07-HY	30MHz~1GHz	Jan. 01, 2021	Nov. 04, 2021~ Dec. 04, 2021	Dec. 31, 2021	Radiation (03CH07-HY)
3m Semi Anechoic Chamber (Site VSWR)	TDK	SAC-3M	03CH07-HY	1GHz~18GHz	Dec. 23, 2020	Nov. 04, 2021~ Dec. 04, 2021	Dec. 22, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682-4	30MHz to 18GHz	Feb. 24, 2021	Nov. 04, 2021~ Dec. 04, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971-4	9kHz to 18GHz	Feb. 24, 2021	Nov. 04, 2021~ Dec. 04, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655-4	9kHz to 18GHz	Feb. 24, 2021	Nov. 04, 2021~ Dec. 04, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2,80 1606/2	18GHz~40GHz	Feb. 24, 2021	Nov. 04, 2021~ Dec. 04, 2021	Feb. 23, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 17, 2021	Nov. 04, 2021~ Dec. 04, 2021	Sep. 16, 2022	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Nov. 04, 2021~ Dec. 04, 2021	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Nov. 04, 2021~ Dec. 04, 2021	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Nov. 04, 2021~ Dec. 04, 2021	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Nov. 04, 2021~ Dec. 04, 2021	N/A	Radiation (03CH07-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	Nov. 04, 2021~ Dec. 04, 2021	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 09, 2021	Nov. 04, 2021~ Dec. 04, 2021	Mar. 08, 2022	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz-40GHz	May 12, 2021	Nov. 04, 2021~ Dec. 04, 2021	May 11, 2022	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 01, 2021	Nov. 05, 2021	Feb. 28, 2022	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Sep. 30, 2021	Nov. 05, 2021	Sep. 29, 2022	Conducted (TH03-HY)
Temperature & Humidity Cabinet Chamber	ESPEC	LHU-113	1012005860	-20℃~85℃	Jan. 18, 2021	Nov. 05, 2021	Jan. 17, 2022	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~4A	Oct. 06, 2021	Nov. 05, 2021	Oct. 05, 2022	Conducted (TH03-HY)
Base Station(Measure)	Rohde & Schwarz	CMU200	117995	GSM / GPRS / WCDMA / CDMA	Jul. 13, 2021	Nov. 05, 2021	Jul. 12, 2022	Conducted (TH03-HY)

6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.16 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.71 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.16 dB

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) & ERP / EIRP

GSM850 Maximum Average Power [dBm] (GT - LC = 3.13 dB)					
Channel	128	189	251	ERP (dBm)	ERP (W)
Frequency	824.2	836.4	848.8		
GPRS class 8	33.26	33.31	33.30	34.29	2.6853
GPRS class 10	31.29	31.24	31.30		
GPRS class 11	30.01	29.92	29.90		
GPRS class 12	28.97	28.49	28.50		
EGPRS class 8	26.73	26.47	26.37	27.71	0.5902
EGPRS class 10	25.57	25.32	25.23		
EGPRS class 11	23.92	23.67	23.60		
EGPRS class 12	22.78	22.50	22.41		
Limit	ERP < 7W			Result	Pass

GSM1900 Maximum Average Power [dBm] (GT - LC = 3.42 dB)					
Channel	512	661	810	EIRP (dBm)	EIRP (W)
Frequency	1850.2	1880	1909.8		
GPRS class 8	29.42	29.26	29.16	32.84	1.9231
GPRS class 10	28.21	28.04	28.00		
GPRS class 11	26.55	26.42	26.30		
GPRS class 12	25.15	25.00	25.37		
EGPRS class 8	25.63	25.33	25.36	29.05	0.8035
EGPRS class 10	24.83	24.64	24.72		
EGPRS class 11	23.59	23.37	23.39		
EGPRS class 12	22.34	22.16	22.21		
Limit	EIRP < 2W			Result	Pass

WCDMA Band V Maximum Average Power [dBm] (GT - LC = 3.13 dB)					
Channel	4132	4182	4233	ERP (dBm)	ERP (W)
Frequency	826.4	836.4	846.6		
RMC 12.2K	22.92	23.05	22.82	24.03	0.2529
HSDPA Subtest-1	21.95	22.02	21.86		
HSDPA Subtest-2	22.03	21.97	21.87		
HSDPA Subtest-3	21.39	21.53	21.49		
HSDPA Subtest-4	21.45	21.37	21.31		
HSUPA Subtest-1	21.66	21.62	21.82		
HSUPA Subtest-2	20.69	20.77	20.73		
HSUPA Subtest-3	20.79	20.31	20.59		
HSUPA Subtest-4	20.35	20.53	20.26		
HSUPA Subtest-5	21.93	22.03	21.90		
Limit	ERP < 7W			Result	Pass

WCDMA Band II Maximum Average Power [dBm] (GT - LC = 3.42 dB)					
Channel	9262	9400	9538	EIRP (dBm)	EIRP (W)
Frequency	1852.4	1880	1907.6		
RMC 12.2K	22.76	22.89	22.74	26.31	0.4276
HSDPA Subtest-1	21.71	21.90	21.85		
HSDPA Subtest-2	21.88	21.83	21.85		
HSDPA Subtest-3	21.25	21.32	21.37		
HSDPA Subtest-4	21.18	21.42	21.35		
HSUPA Subtest-1	21.24	21.40	21.41		
HSUPA Subtest-2	20.48	20.49	20.50		
HSUPA Subtest-3	20.77	20.73	20.71		
HSUPA Subtest-4	20.56	20.59	20.53		
HSUPA Subtest-5	21.72	21.92	21.87		
Limit	EIRP < 2W			Result	Pass

WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 3.28 dB)					
Channel	1312	1413	1513	EIRP (dBm)	EIRP (W)
Frequency	1712.4	1732.6	1752.6		
RMC 12.2K	22.91	22.98	22.95	26.26	0.4227
HSDPA Subtest-1	21.74	21.90	21.91		
HSDPA Subtest-2	21.87	21.86	21.94		
HSDPA Subtest-3	21.33	21.40	21.43		
HSDPA Subtest-4	21.33	21.32	21.33		
HSUPA Subtest-1	21.55	21.50	21.54		
HSUPA Subtest-2	20.53	20.69	20.80		
HSUPA Subtest-3	20.45	20.84	20.86		
HSUPA Subtest-4	20.51	20.48	20.75		
HSUPA Subtest-5	22.02	22.10	21.92		
Limit	EIRP < 1W			Result	Pass

A1. GSM

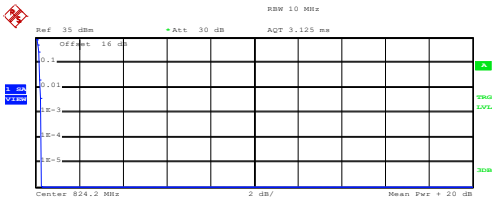
Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.28	3.12	PASS
Middle CH	0.24	3.36	
Highest CH	0.24	3.28	

Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.32	3.20	PASS
Middle CH	0.32	3.44	
Highest CH	0.32	3.28	

GSM850 (GPRS class 8)

Lowest Channel

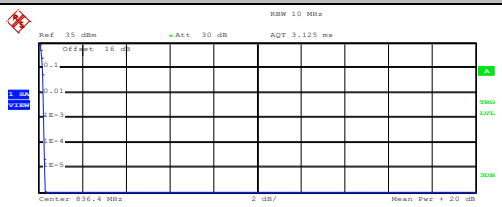


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.64 dBm
Peak	33.91 dBm
Crest	0.27 dB
10 %	0.20 dB
1 %	0.24 dB
.1 %	0.28 dB
.01 %	0.28 dB

Date: 5.NOV.2021 11:37:15

Middle Channel

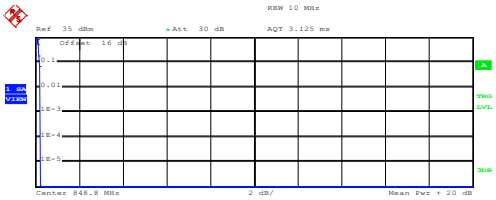


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.63 dBm
Peak	33.91 dBm
Crest	0.28 dB
10 %	0.20 dB
1 %	0.24 dB
.1 %	0.24 dB
.01 %	0.28 dB

Date: 5.NOV.2021 11:37:32

Highest Channel



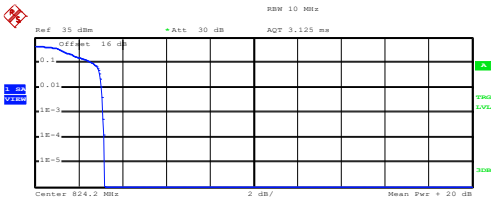
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.48 dBm
Peak	33.70 dBm
Crest	0.22 dB
10 %	0.20 dB
1 %	0.24 dB
.1 %	0.24 dB
.01 %	0.24 dB

Date: 5.NOV.2021 11:37:49

GSM850 (EDGE class 8)

Lowest Channel

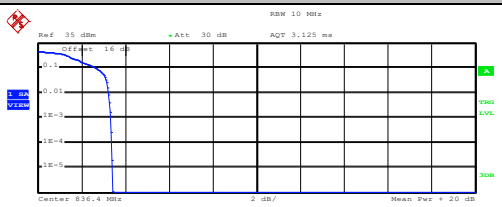


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	27.29 dBm
Peak	30.46 dBm
Crest	3.17 dB
10 %	2.64 dB
1 %	3.04 dB
.1 %	3.12 dB
.01 %	3.16 dB

Date: 5.NOV.2021 13:55:42

Middle Channel

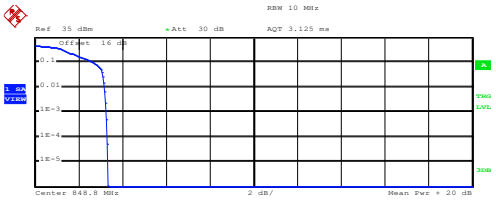


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	26.88 dBm
Peak	30.31 dBm
Crest	3.43 dB
10 %	2.68 dB
1 %	3.24 dB
.1 %	3.36 dB
.01 %	3.40 dB

Date: 5.NOV.2021 13:56:01

Highest Channel



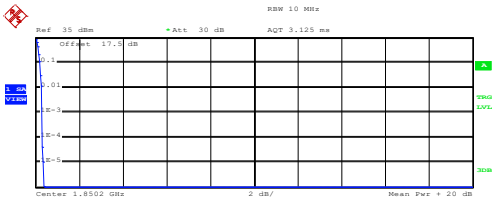
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	26.79 dBm
Peak	30.10 dBm
Crest	3.32 dB
10 %	2.68 dB
1 %	3.20 dB
.1 %	3.28 dB
.01 %	3.32 dB

Date: 5.NOV.2021 13:56:17

GSM1900 (GPRS class 8)

Lowest Channel

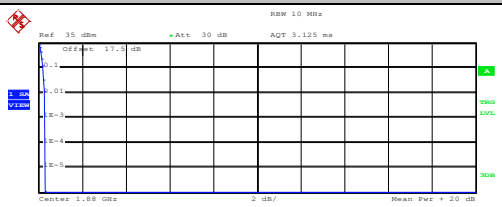


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.45 dBm
Peak	29.82 dBm
Crest	0.37 dB
10 %	0.20 dB
1 %	0.28 dB
.1 %	0.32 dB
.01 %	0.32 dB

Date: 5.NOV.2021 12:09:00

Middle Channel

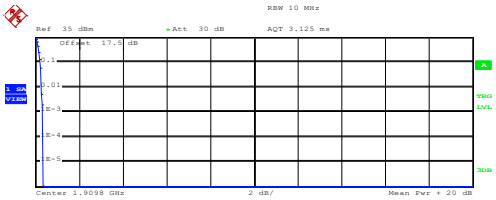


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.37 dBm
Peak	29.68 dBm
Crest	0.31 dB
10 %	0.20 dB
1 %	0.28 dB
.1 %	0.32 dB
.01 %	0.32 dB

Date: 5.NOV.2021 12:09:19

Highest Channel



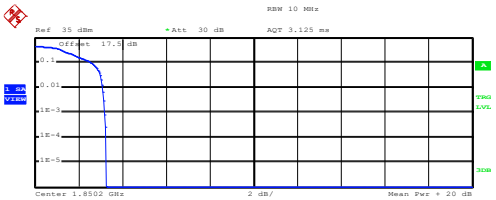
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.68 dBm
Peak	30.03 dBm
Crest	0.35 dB
10 %	0.24 dB
1 %	0.28 dB
.1 %	0.32 dB
.01 %	0.36 dB

Date: 5.NOV.2021 12:09:37

GSM1900 (EDGE class 8)

Lowest Channel

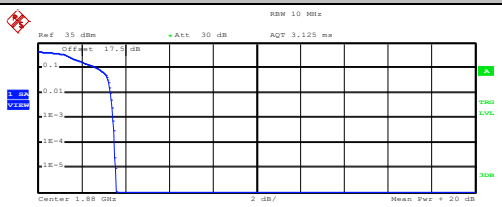


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.85 dBm
Peak	23.12 dBm
Crest	3.27 dB
10 %	2.60 dB
1 %	3.12 dB
.1 %	3.20 dB
.01 %	3.28 dB

Date: 5.NOV.2021 14:10:17

Middle Channel

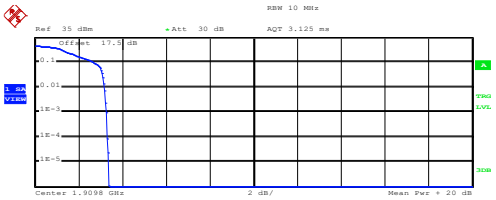


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.54 dBm
Peak	23.12 dBm
Crest	3.58 dB
10 %	2.72 dB
1 %	3.32 dB
.1 %	3.44 dB
.01 %	3.52 dB

Date: 5.NOV.2021 14:10:33

Highest Channel



Complementary Cumulative Distribution Function (100000 samples)

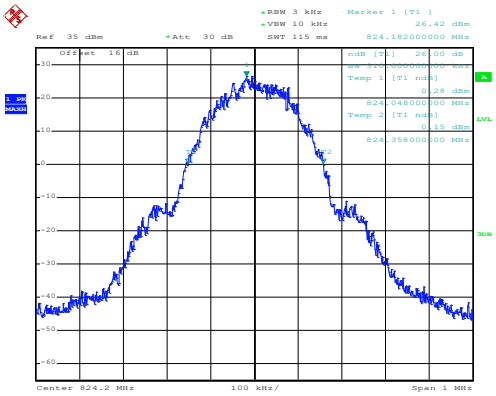
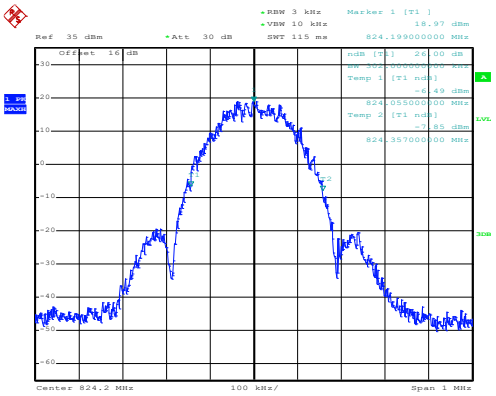
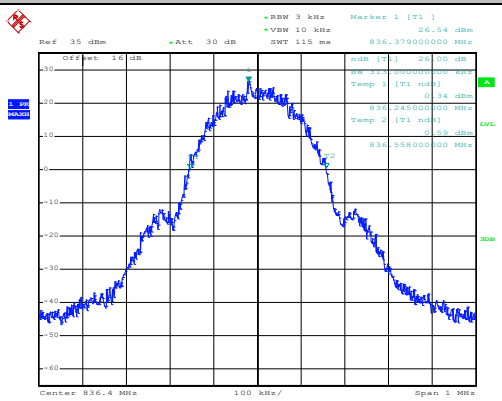
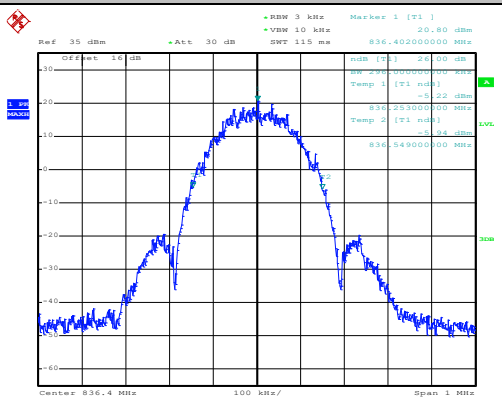
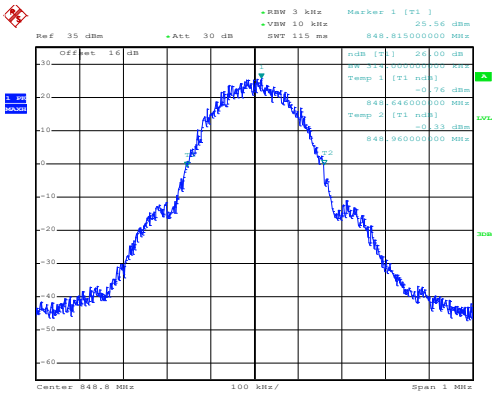
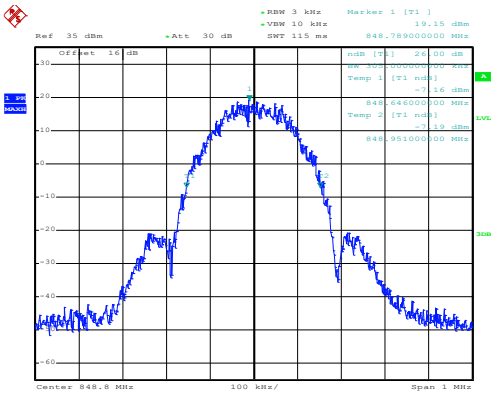
	Trace 1
Mean	19.68 dBm
Peak	23.05 dBm
Crest	3.37 dB
10 %	2.72 dB
1 %	3.20 dB
.1 %	3.28 dB
.01 %	3.32 dB

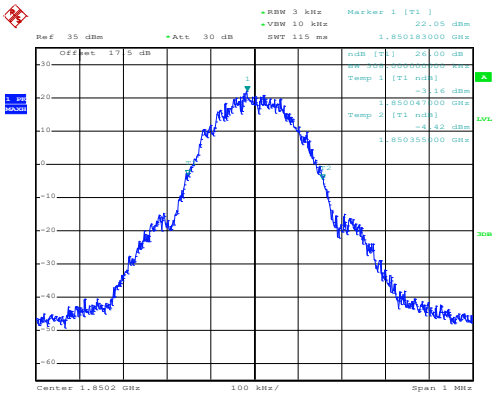
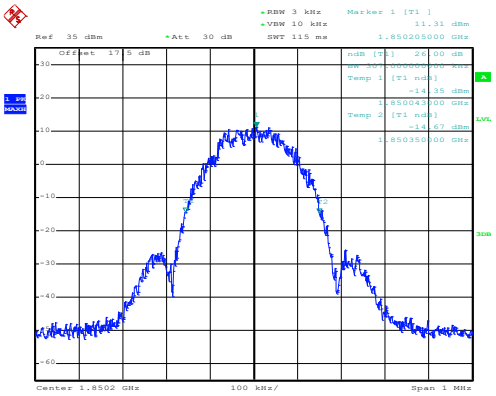
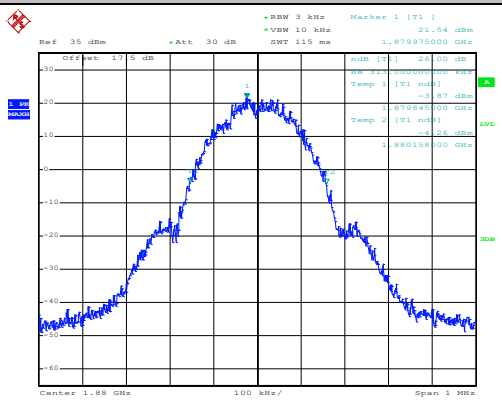
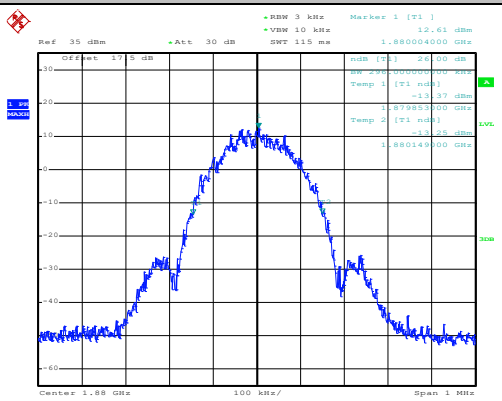
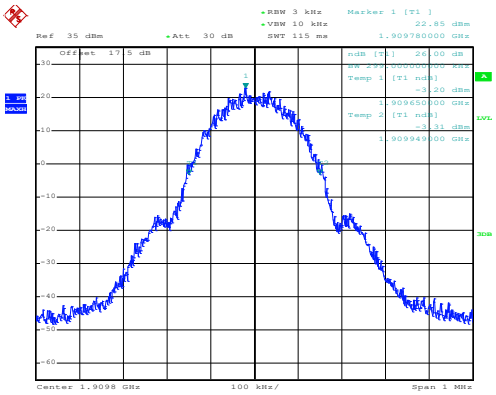
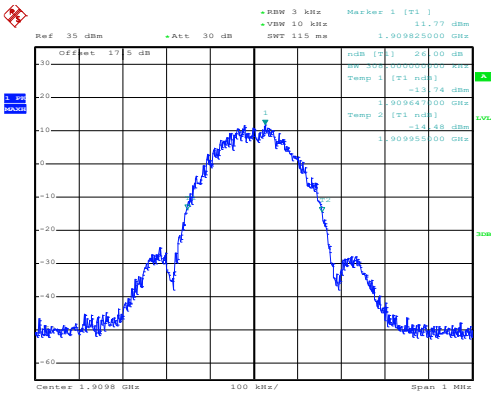
Date: 5.NOV.2021 14:10:51

26dB Bandwidth

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.310	0.302
Middle CH	0.313	0.296
Highest CH	0.314	0.305

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.308	0.307
Middle CH	0.313	0.296
Highest CH	0.299	0.308

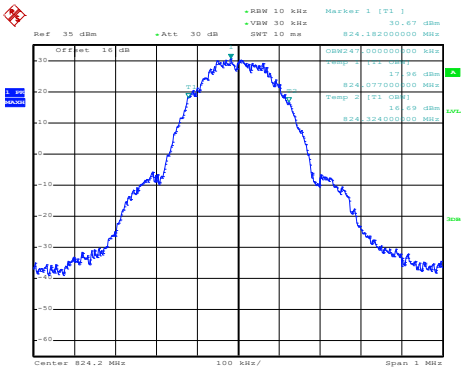
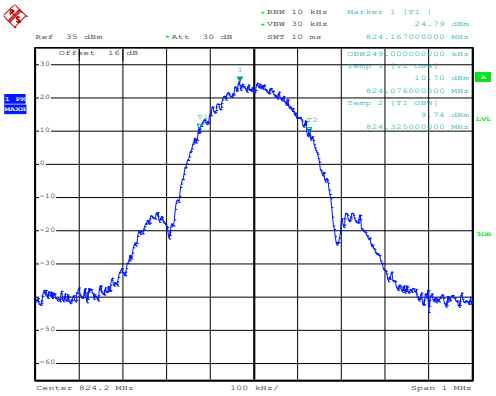
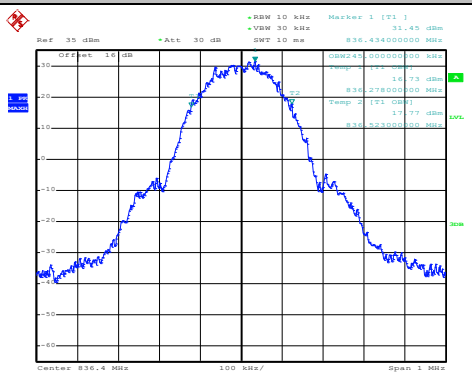
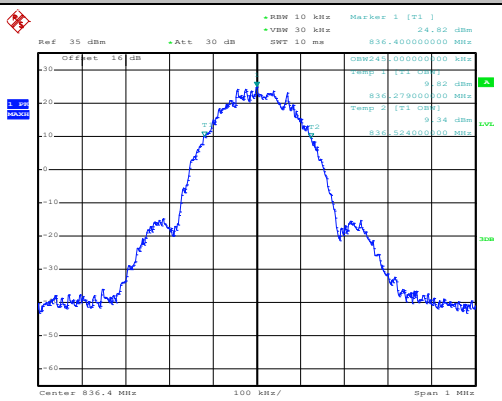
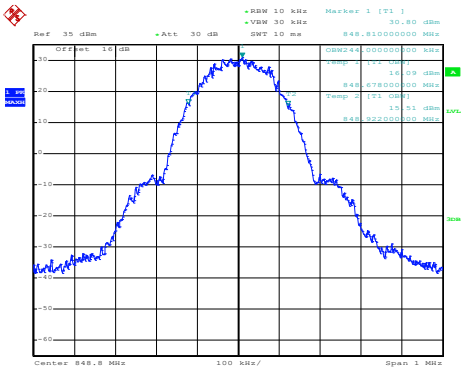
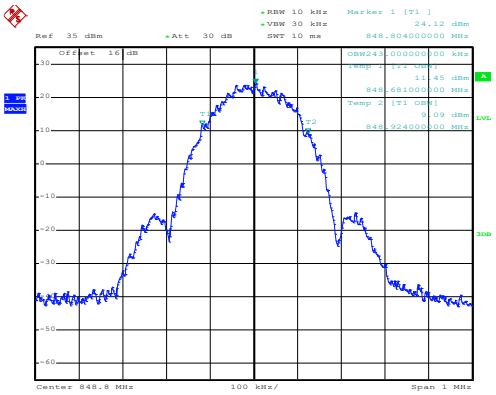
GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Date: 5.NOV.2021 11:15:13	Date: 5.NOV.2021 13:43:55
Middle Channel	**Middle Channel**
	
Date: 5.NOV.2021 11:16:42	Date: 5.NOV.2021 13:44:29
Highest Channel	**Highest Channel**
	
Date: 5.NOV.2021 11:17:18	Date: 5.NOV.2021 13:45:03

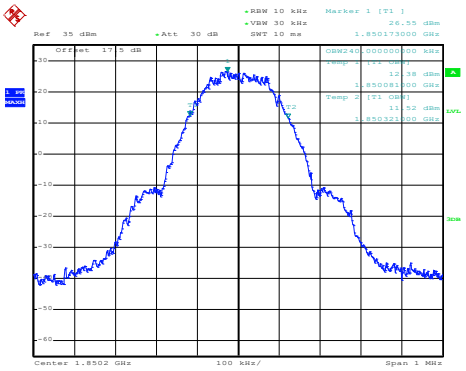
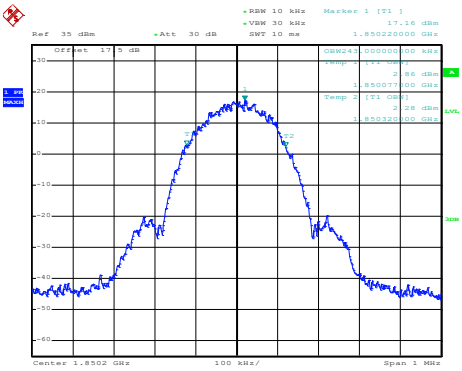
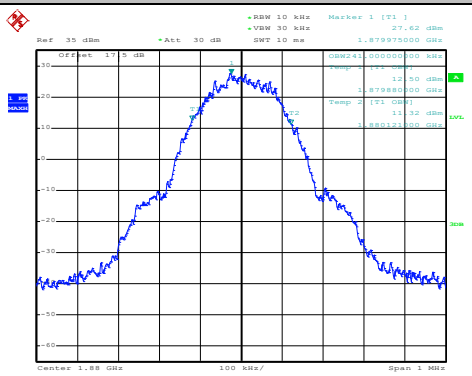
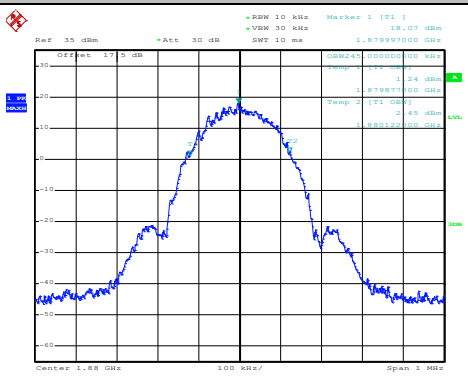
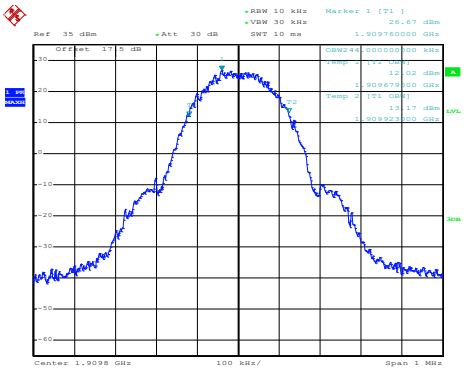
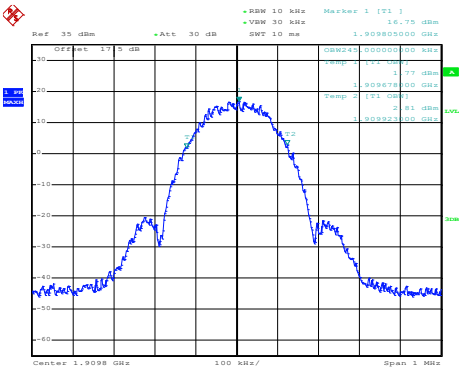
GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Date: 5.NOV.2021 11:49:49	Date: 5.NOV.2021 13:58:37
Middle Channel	**Middle Channel**
	
Date: 5.NOV.2021 11:50:25	Date: 5.NOV.2021 13:59:11
Highest Channel	**Highest Channel**
	
Date: 5.NOV.2021 11:51:00	Date: 5.NOV.2021 14:01:38

Occupied Bandwidth

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.247	0.249
Middle CH	0.245	0.245
Highest CH	0.244	0.243

Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.240	0.243
Middle CH	0.241	0.245
Highest CH	0.244	0.245

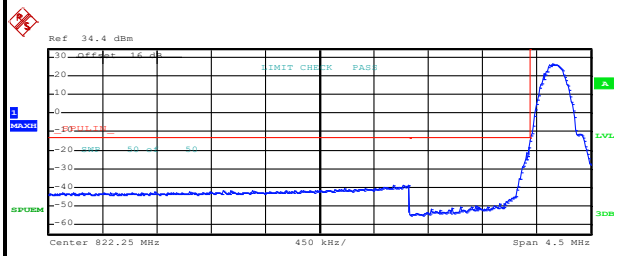
GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
 Date: 5.NOV.2021 11:30:52	 Date: 5.NOV.2021 13:53:59
Middle Channel	**Middle Channel**
 Date: 5.NOV.2021 11:31:28	 Date: 5.NOV.2021 13:54:33
Highest Channel	**Highest Channel**
 Date: 5.NOV.2021 11:32:03	 Date: 5.NOV.2021 13:55:05

GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
 Date: 5.NOV.2021 11:54:33	 Date: 5.NOV.2021 14:05:30
Middle Channel	**Middle Channel**
 Date: 5.NOV.2021 11:55:06	 Date: 5.NOV.2021 14:06:04
Highest Channel	**Highest Channel**
 Date: 5.NOV.2021 11:55:40	 Date: 5.NOV.2021 14:06:38

Conducted Band Edge

GSM850 (GPRS class 8)

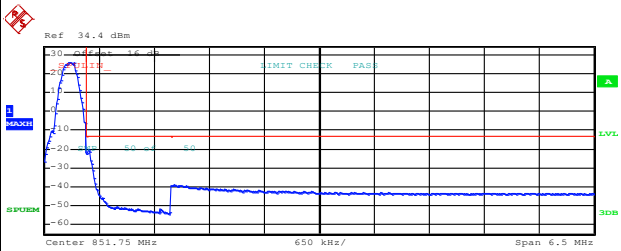
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.937000 M	-38.85	-25.85
823.000 M	824.000 M	3.00 k	823.988000 M	-20.87	-7.87
824.000 M	824.500 M	10.00 k	824.181500 M	26.35	-8.65

Date: 5.NOV.2021 11:34:53

Highest Band Edge

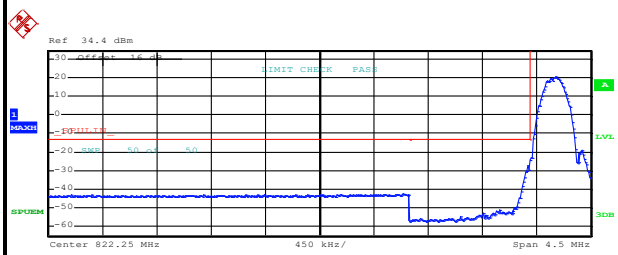


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.500 M	849.000 M	10.00 k	848.813000 M	25.94	-9.06
849.000 M	850.000 M	3.00 k	849.012000 M	-20.31	-7.31
850.000 M	855.000 M	100.00 k	850.030000 M	-39.07	-26.07

Date: 5.NOV.2021 11:36:28

GSM850 (EDGE class 8)

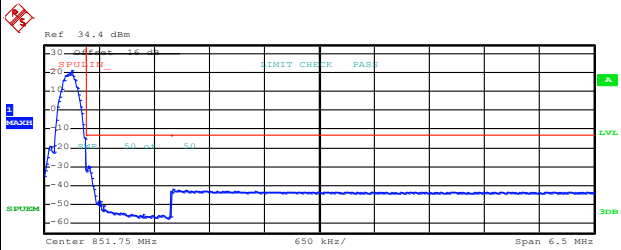
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.940000 M	-42.58	-29.58
823.000 M	824.000 M	3.00 k	823.972000 M	-27.52	-14.52
824.000 M	824.500 M	10.00 k	824.208500 M	20.42	-14.58

Date: 5.NOV.2021 13:51:43

Highest Band Edge

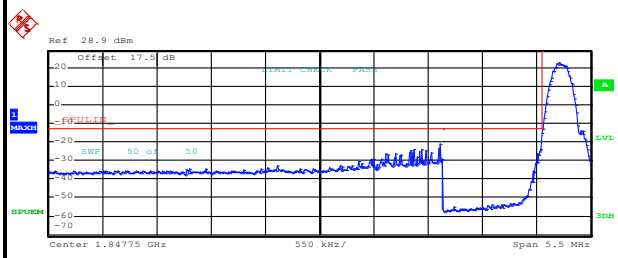


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.500 M	849.000 M	10.00 k	848.826000 M	21.44	-13.56
849.000 M	850.000 M	3.00 k	849.012000 M	-29.61	-16.61
850.000 M	855.000 M	100.00 k	850.020000 M	-42.11	-29.11

Date: 5.NOV.2021 13:53:19

GSM1900 (GPRS class 8)

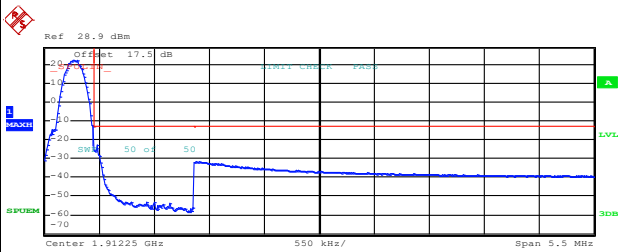
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848964 G	-21.16	-8.16
1.849 G	1.850 G	3.00 k	1.849992 G	-24.36	-11.36
1.850 G	1.851 G	10.00 k	1.850181 G	22.65	-12.35

Date: 5.NOV.2021 11:57:17

Highest Band Edge

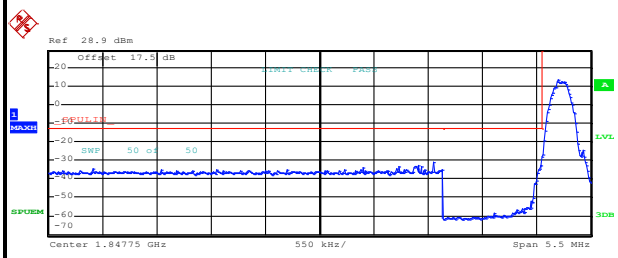


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909787 G	22.24	-12.76
1.910 G	1.911 G	3.00 k	1.910024 G	-23.13	-10.13
1.911 G	1.915 G	1.00 M	1.911044 G	-31.74	-18.74

Date: 5.NOV.2021 12:08:37

GSM1900 (EDGE class 8)

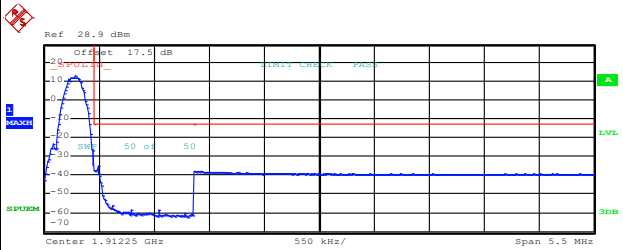
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848904 G	-31.16	-18.16
1.849 G	1.850 G	3.00 k	1.849988 G	-32.92	-19.92
1.850 G	1.851 G	10.00 k	1.850168 G	13.41	-21.59

Date: 5.NOV.2021 14:08:16

Highest Band Edge



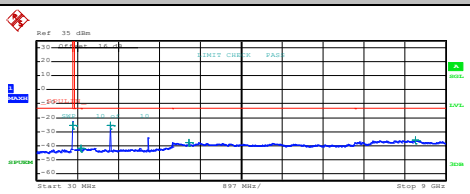
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909807 G	13.09	-21.91
1.910 G	1.911 G	3.00 k	1.910036 G	-34.96	-21.96
1.911 G	1.915 G	1.00 M	1.911040 G	-37.89	-24.89

Date: 5.NOV.2021 14:09:50

Conducted Spurious Emission

GSM850 (GPRS class 8)

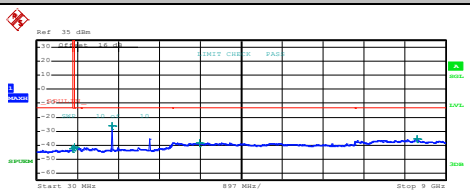
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	819.802500 M	-25.48	-12.48
855.000 M	1.000 G	1.00 M	992.460009 M	-41.84	-28.84
1.000 G	3.000 G	1.00 M	1.648500 G	-25.36	-12.36
3.000 G	7.000 G	1.00 M	3.365000 G	-37.93	-24.93
7.000 G	9.000 G	1.00 M	8.329000 G	-36.13	-23.13

Date: 5.NOV.2021 11:19:47

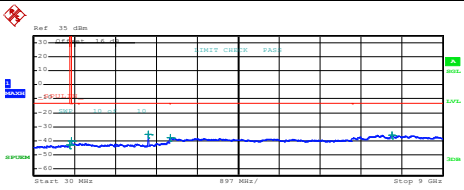
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	814.272500 M	-42.56	-29.56
855.000 M	1.000 G	1.00 M	856.413750 M	-41.44	-28.44
1.000 G	3.000 G	1.00 M	1.673000 G	-25.86	-12.86
3.000 G	7.000 G	1.00 M	3.599000 G	-38.18	-25.18
7.000 G	9.000 G	1.00 M	8.372500 G	-35.45	-22.45

Date: 5.NOV.2021 11:27:39

Highest Channel

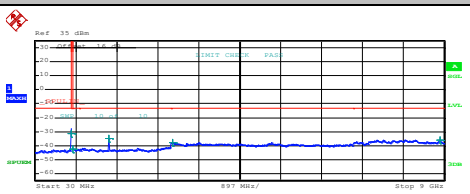


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	817.037500 M	-43.07	-30.07
855.000 M	1.000 G	1.00 M	856.812500 M	-39.87	-26.87
1.000 G	3.000 G	1.00 M	2.547000 G	-35.30	-22.30
3.000 G	7.000 G	1.00 M	3.024000 G	-37.89	-24.89
7.000 G	9.000 G	1.00 M	7.883500 G	-36.02	-23.02

Date: 5.NOV.2021 11:28:40

GSM850 (EDGE class 8)

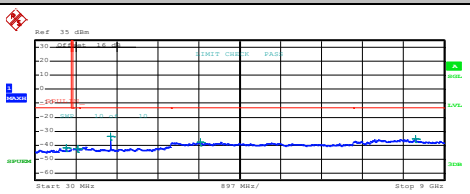
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	819.802500 M	-31.21	-18.21
855.000 M	1.000 G	1.00 M	859.603750 M	-42.57	-29.57
1.000 G	3.000 G	1.00 M	1.648500 G	-35.11	-22.11
3.000 G	7.000 G	1.00 M	3.046000 G	-37.61	-24.61
7.000 G	9.000 G	1.00 M	8.915000 G	-35.91	-22.91

Date: 5.NOV.2021 13:46:16

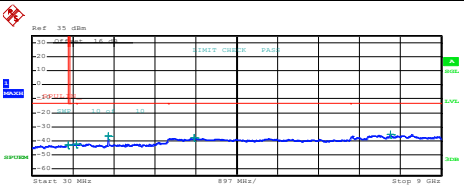
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	711.177500 M	-42.18	-29.18
855.000 M	1.000 G	1.00 M	968.208758 M	-42.20	-29.20
1.000 G	3.000 G	1.00 M	1.673000 G	-33.63	-20.63
3.000 G	7.000 G	1.00 M	3.653000 G	-38.02	-25.02
7.000 G	9.000 G	1.00 M	8.367000 G	-35.60	-22.60

Date: 5.NOV.2021 13:47:08

Highest Channel

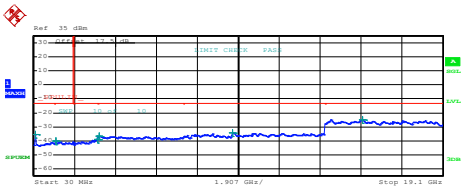


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	811.705000 M	-42.93	-29.93
855.000 M	1.000 G	1.00 M	992.713759 M	-42.47	-29.47
1.000 G	3.000 G	1.00 M	1.697500 G	-36.76	-23.76
3.000 G	7.000 G	1.00 M	3.590000 G	-38.04	-25.04
7.000 G	9.000 G	1.00 M	7.884500 G	-35.54	-22.54

Date: 5.NOV.2021 13:47:59

GSM1900 (GPRS class 8)

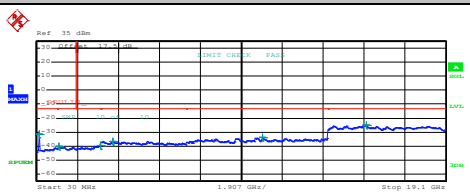
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	111.965000 M	-35.50	-22.50
1.000 G	1.845 G	1.00 M	1.067177 G	-40.11	-27.11
1.915 G	3.000 G	1.00 M	2.992948 G	-39.07	-26.07
3.000 G	7.000 G	1.00 M	3.097000 G	-36.35	-23.35
7.000 G	13.600 G	1.00 M	9.303400 G	-34.35	-21.35
13.600 G	19.100 G	1.00 M	15.358625 G	-24.91	-11.91

Date: 5.NOV.2021 11:52:07

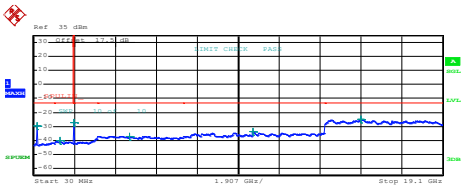
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	141.792500 M	-31.63	-18.63
1.000 G	1.845 G	1.00 M	1.072459 G	-40.42	-27.42
1.915 G	3.000 G	1.00 M	2.997288 G	-39.61	-26.61
3.000 G	7.000 G	1.00 M	3.591000 G	-36.74	-23.74
7.000 G	13.600 G	1.00 M	10.542550 G	-33.95	-20.95
13.600 G	19.100 G	1.00 M	15.395750 G	-25.01	-12.01

Date: 5.NOV.2021 11:53:01

Highest Channel

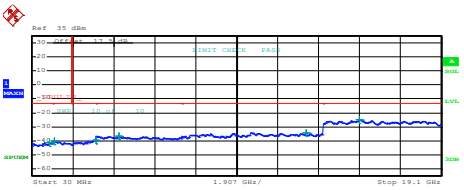


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	171.620000 M	-29.37	-16.37
1.000 G	1.845 G	1.00 M	1.266809 G	-40.24	-27.24
1.915 G	3.000 G	1.00 M	1.915271 G	-27.53	-14.53
3.000 G	7.000 G	1.00 M	4.494000 G	-36.94	-23.94
7.000 G	13.600 G	1.00 M	10.239775 G	-33.87	-20.87
13.600 G	19.100 G	1.00 M	15.283687 G	-25.12	-12.12

Date: 5.NOV.2021 11:53:54

GSM1900 (EDGE class 8)

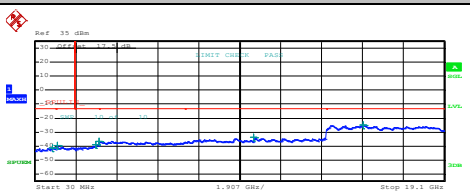
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	830.492500 M	-41.43	-28.43
1.000 G	1.845 G	1.00 M	1.073304 G	-40.07	-27.07
1.915 G	3.000 G	1.00 M	2.995389 G	-39.58	-26.58
3.000 G	7.000 G	1.00 M	4.066000 G	-36.64	-23.64
7.000 G	13.600 G	1.00 M	12.790675 G	-34.23	-21.23
13.600 G	19.100 G	1.00 M	15.303625 G	-24.74	-11.74

Date: 5.NOV.2021 14:02:37

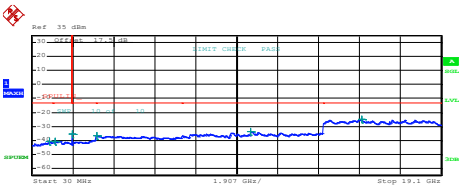
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	849.650000 M	-41.57	-28.57
1.000 G	1.845 G	1.00 M	1.060206 G	-39.54	-26.54
1.915 G	3.000 G	1.00 M	2.835080 G	-39.05	-26.05
3.000 G	7.000 G	1.00 M	3.002000 G	-36.59	-23.59
7.000 G	13.600 G	1.00 M	10.216675 G	-33.81	-20.81
13.600 G	19.100 G	1.00 M	15.331813 G	-25.17	-12.17

Date: 5.NOV.2021 14:03:52

Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	824.915000 M	-40.76	-27.76
1.000 G	1.845 G	1.00 M	1.098231 G	-40.44	-27.44
1.915 G	3.000 G	1.00 M	1.915271 G	-35.73	-22.73
3.000 G	7.000 G	1.00 M	3.032000 G	-36.80	-23.80
7.000 G	13.600 G	1.00 M	10.212550 G	-33.88	-20.88
13.600 G	19.100 G	1.00 M	15.389563 G	-25.06	-12.06

Date: 5.NOV.2021 14:04:43

Frequency Stability

Test Conditions	Middle Channel	GSM850 (GPRS class 8)	GSM850 (EDGE class 8)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0060	0.0012	PASS
40	Normal Voltage	0.0036	0.0012	
30	Normal Voltage	0.0024	0.0012	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0084	0.0024	
0	Normal Voltage	0.0072	0.0000	
-10	Normal Voltage	0.0048	0.0000	
-20	Normal Voltage	0.0000	0.0024	
-30	Normal Voltage	0.0024	0.0024	
20	Maximum Voltage	0.0048	0.0060	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0024	0.0036	

Test Conditions	Middle Channel	GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0090	0.0053	PASS
40	Normal Voltage	0.0069	0.0011	
30	Normal Voltage	0.0043	0.0005	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0016	0.0021	
0	Normal Voltage	0.0037	0.0000	
-10	Normal Voltage	0.0059	0.0011	
-20	Normal Voltage	0.0080	0.0005	
-30	Normal Voltage	0.0090	0.0011	
20	Maximum Voltage	0.0032	0.0133	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0005	0.0133	

Note:

1. Normal Voltage = 12V. ；Battery End Point (BEP) = 8 V.；Maximum Voltage =40 V
2. The frequency fundamental emissions stay within the authorized frequency block.

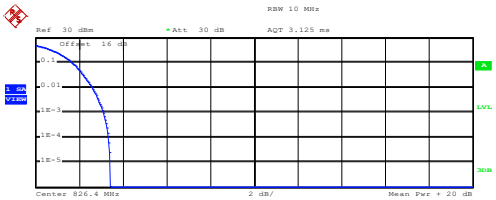
A2. WCDMA

Peak-to-Average Ratio

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.12	3.12	3.32	PASS
Middle CH	3.12	3.32	3.20	
Highest CH	3.04	3.32	3.28	

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

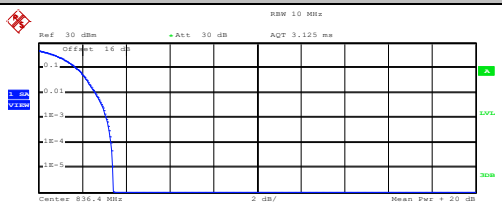


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.06 dBm
Peak	23.48 dBm
Crest	3.42 dB
10 %	1.68 dB
1 %	2.60 dB
.1 %	3.12 dB
.01 %	3.36 dB

Date: 5.NOV.2021 15:20:56

Middle Channel

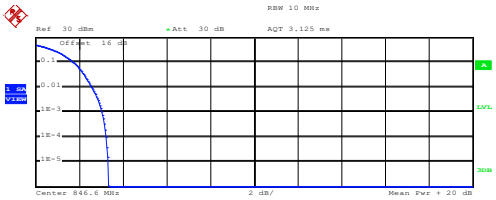


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.22 dBm
Peak	23.62 dBm
Crest	3.40 dB
10 %	1.76 dB
1 %	2.60 dB
.1 %	3.12 dB
.01 %	3.32 dB

Date: 5.NOV.2021 15:21:13

Highest Channel



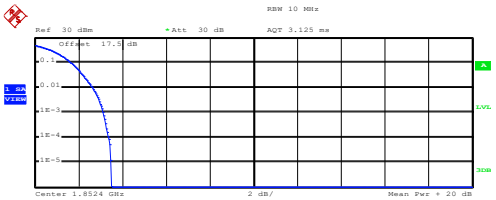
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.77 dBm
Peak	24.12 dBm
Crest	3.35 dB
10 %	1.76 dB
1 %	2.60 dB
.1 %	3.04 dB
.01 %	3.24 dB

Date: 5.NOV.2021 15:21:30

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

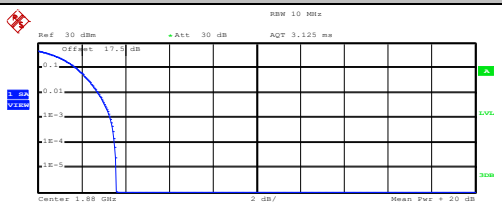


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.84 dBm
Peak	24.33 dBm
Crest	3.49 dB
10 %	1.68 dB
1 %	2.64 dB
.1 %	3.12 dB
.01 %	3.40 dB

Date: 5.NOV.2021 14:52:03

Middle Channel

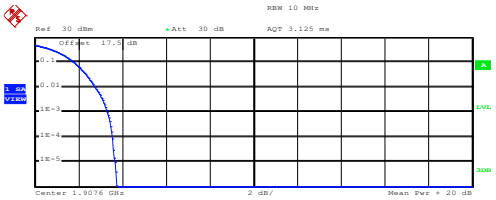


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.58 dBm
Peak	25.17 dBm
Crest	3.59 dB
10 %	1.76 dB
1 %	2.76 dB
.1 %	3.32 dB
.01 %	3.52 dB

Date: 5.NOV.2021 14:52:19

Highest Channel



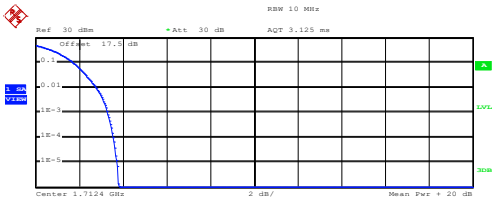
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.00 dBm
Peak	25.74 dBm
Crest	3.74 dB
10 %	1.80 dB
1 %	2.76 dB
.1 %	3.32 dB
.01 %	3.56 dB

Date: 5.NOV.2021 14:52:36

WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel

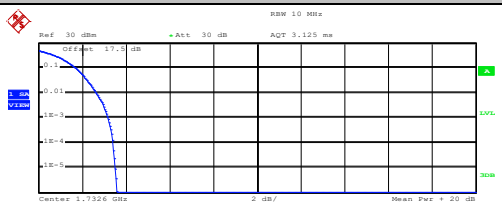


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.50 dBm
Peak	26.30 dBm
Crest	3.80 dB
10 %	1.72 dB
1 %	2.76 dB
.1 %	3.32 dB
.01 %	3.56 dB

Date: 5.NOV.2021 15:06:56

Middle Channel

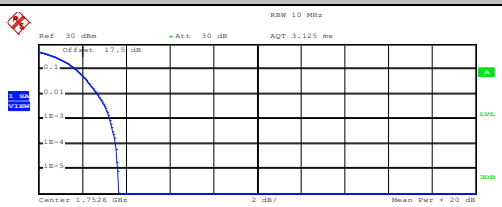


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.10 dBm
Peak	24.68 dBm
Crest	3.58 dB
10 %	1.72 dB
1 %	2.64 dB
.1 %	3.20 dB
.01 %	3.40 dB

Date: 5.NOV.2021 15:07:11

Highest Channel



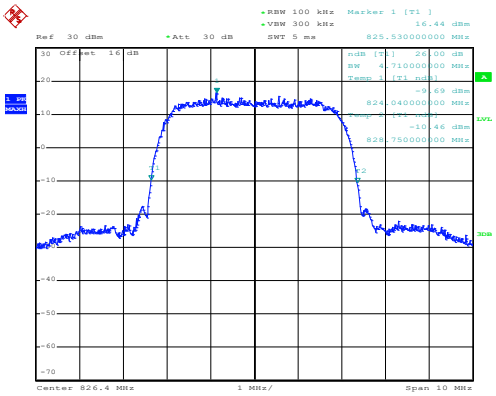
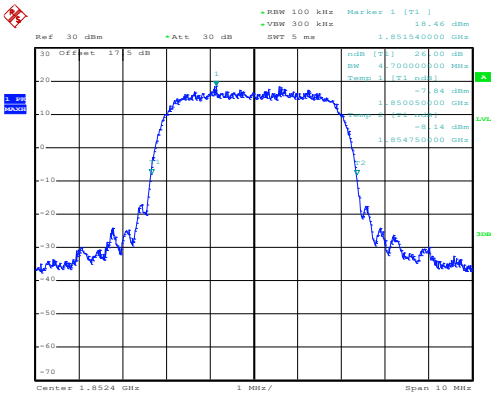
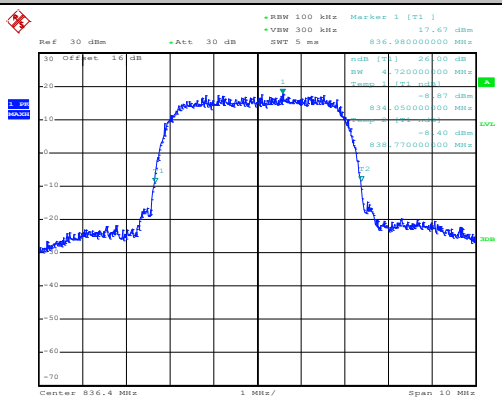
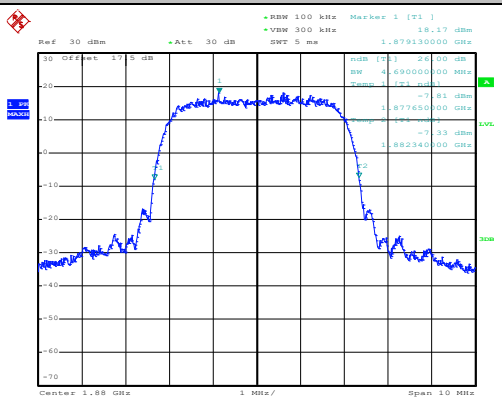
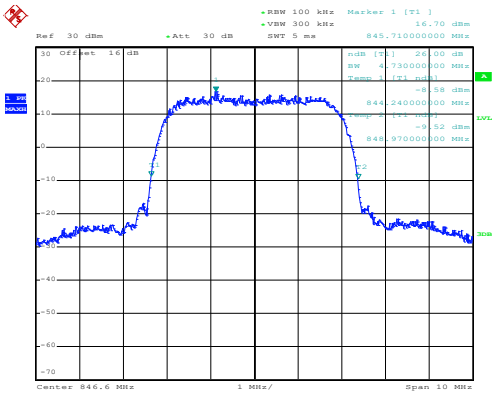
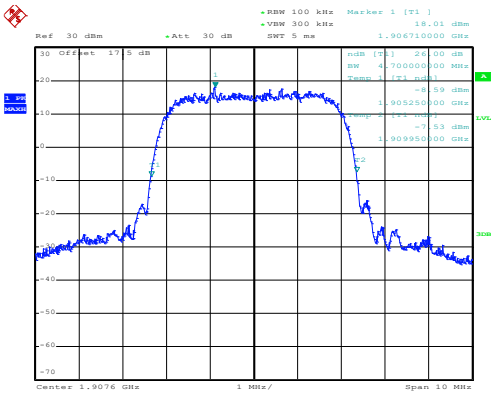
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.01 dBm
Peak	25.67 dBm
Crest	3.66 dB
10 %	1.72 dB
1 %	2.68 dB
.1 %	3.28 dB
.01 %	3.52 dB

Date: 5.NOV.2021 15:07:26

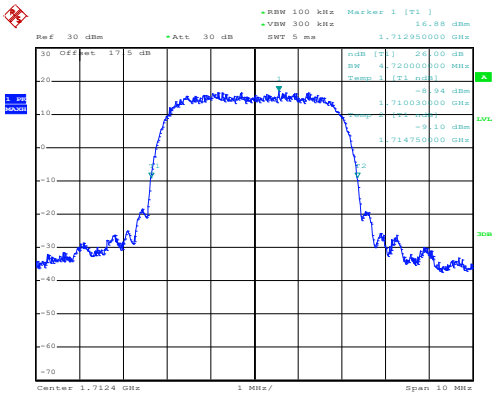
26dB Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.71	4.70	4.72
Middle CH	4.72	4.69	4.70
Highest CH	4.73	4.70	4.71

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Date: 5.NOV.2021 15:08:19	Date: 5.NOV.2021 14:39:52
Middle Channel	**Middle Channel**
	
Date: 5.NOV.2021 15:08:57	Date: 5.NOV.2021 14:40:28
Highest Channel	**Highest Channel**
	
Date: 5.NOV.2021 15:09:33	Date: 5.NOV.2021 14:41:05

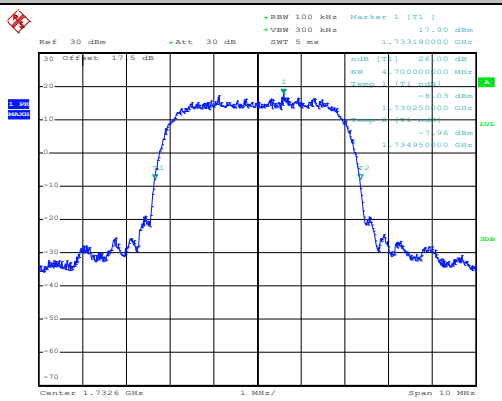
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



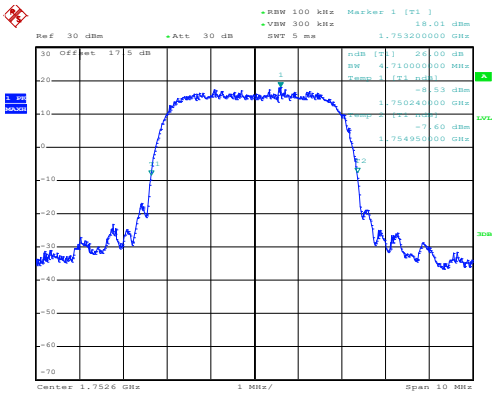
Date: 5.NOV.2021 14:53:49

Middle Channel



Date: 5.NOV.2021 14:54:24

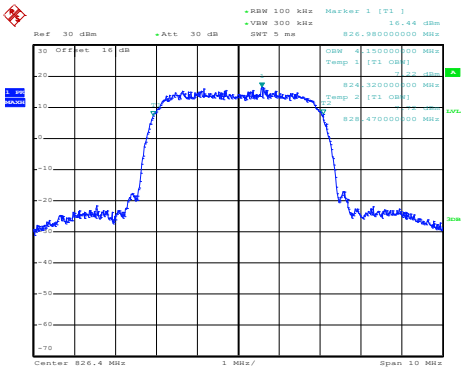
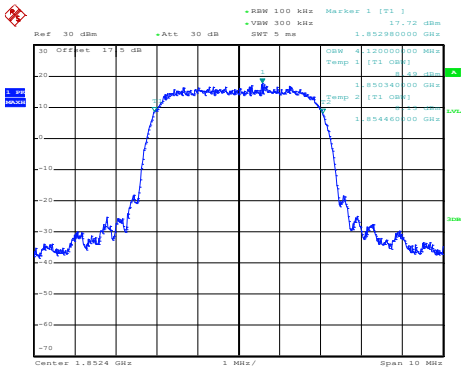
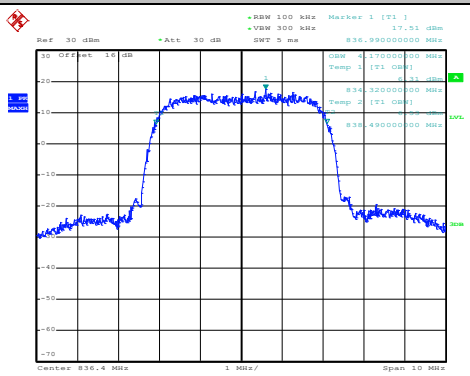
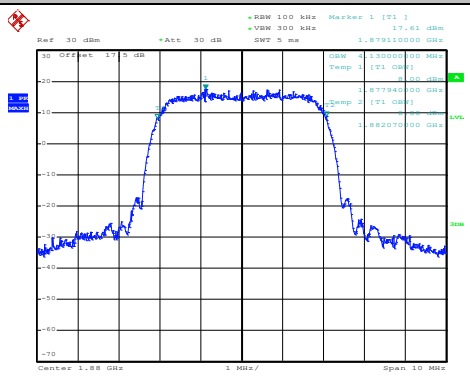
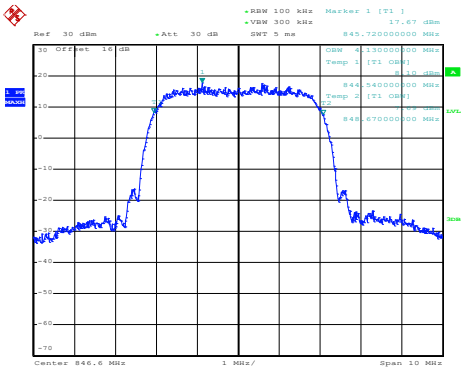
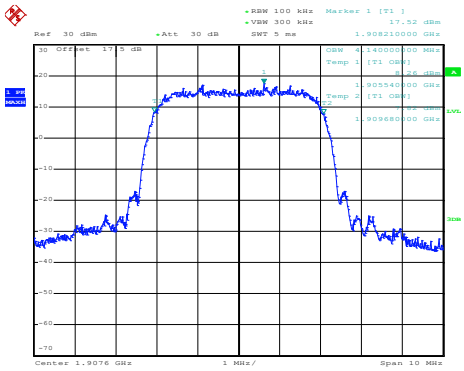
Highest Channel



Date: 5.NOV.2021 14:55:00

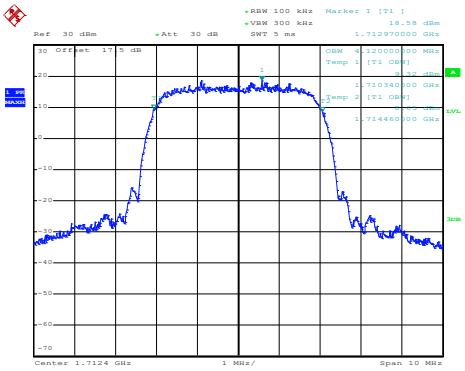
Occupied Bandwidth

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.15	4.12	4.12
Middle CH	4.17	4.13	4.13
Highest CH	4.13	4.14	4.13

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
 Date: 5.NOV.2021 15:13:01	 Date: 5.NOV.2021 14:44:40
Middle Channel	**Middle Channel**
 Date: 5.NOV.2021 15:13:38	 Date: 5.NOV.2021 14:45:16
Highest Channel	**Highest Channel**
 Date: 5.NOV.2021 15:14:48	 Date: 5.NOV.2021 14:45:52

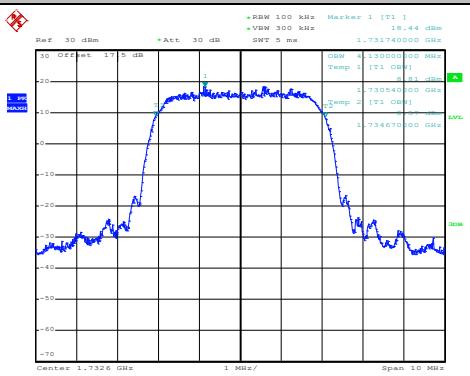
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



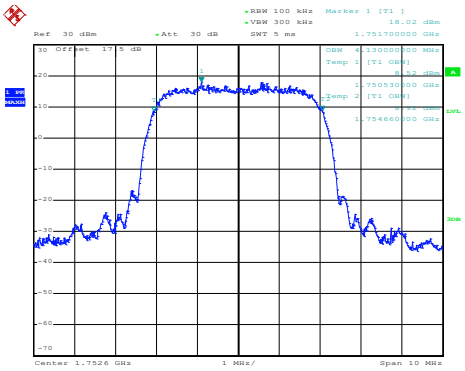
Date: 5.NOV.2021 14:59:32

Middle Channel



Date: 5.NOV.2021 15:00:08

Highest Channel

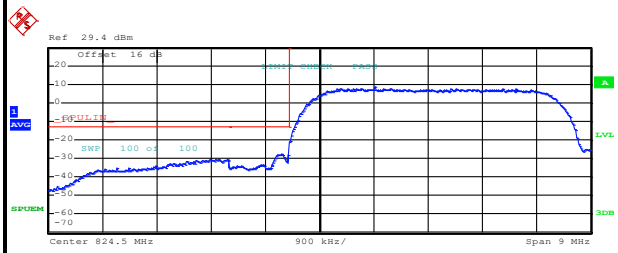


Date: 5.NOV.2021 15:00:44

Conducted Band Edge

WCDMA Band V (RMC 12.2Kbps)

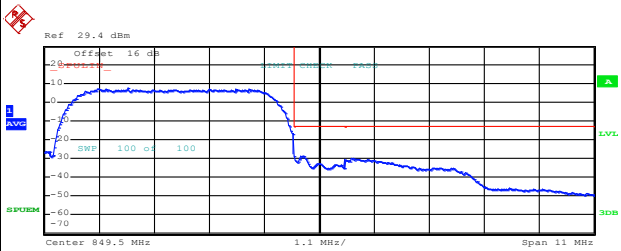
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.832000 M	-30.27	-17.27
823.000 M	824.000 M	50.00 k	823.860000 M	-27.55	-14.55
824.000 M	829.000 M	100.00 k	825.420000 M	8.43	-26.57

Date: 5.NOV.2021 15:17:44

Highest Band Edge

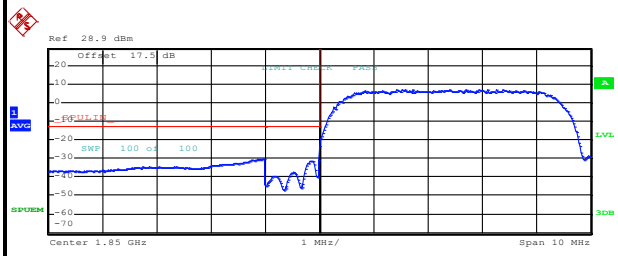


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
844.000 M	849.000 M	100.00 k	845.660000 M	7.38	-27.62
849.000 M	850.000 M	50.00 k	849.120000 M	-28.83	-15.83
850.000 M	855.000 M	100.00 k	850.170000 M	-29.88	-16.88

Date: 5.NOV.2021 15:20:36

WCDMA Band II (RMC 12.2Kbps)

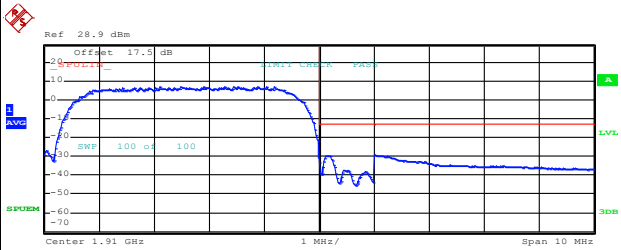
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848852 G	-30.19	-17.19
1.849 G	1.850 G	50.00 k	1.849844 G	-31.52	-18.52
1.850 G	1.855 G	100.00 k	1.851425 G	7.18	-27.82

Date: 5.NOV.2021 14:48:50

Highest Band Edge

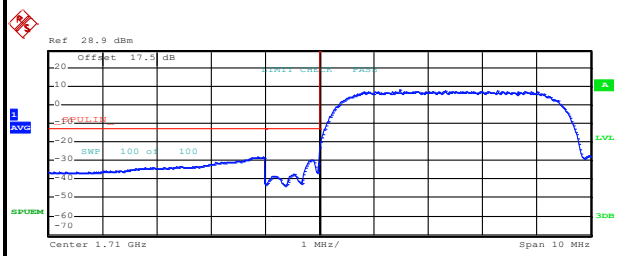


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.905 G	1.910 G	100.00 k	1.908435 G	7.16	-27.84
1.910 G	1.911 G	50.00 k	1.910124 G	-29.73	-16.73
1.911 G	1.915 G	1.00 M	1.911004 G	-29.45	-16.45

Date: 5.NOV.2021 14:51:42

WCDMA Band IV (RMC 12.2Kbps)

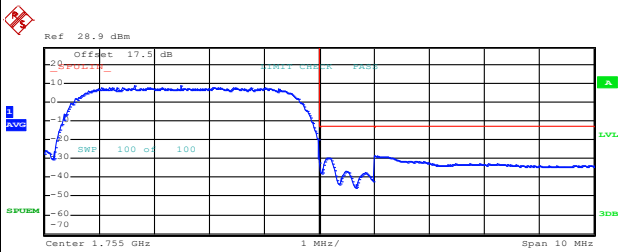
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	1.00 M	1.708964 G	-28.32	-15.32
1.709 G	1.710 G	50.00 k	1.709832 G	-29.99	-16.99
1.710 G	1.715 G	100.00 k	1.711475 G	7.89	-27.11

Date: 5.NOV.2021 15:03:40

Highest Band Edge



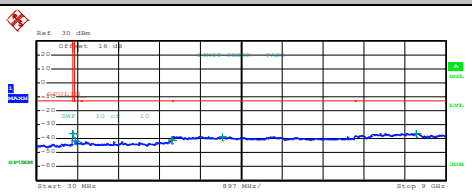
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.751640 G	8.84	-26.16
1.755 G	1.756 G	50.00 k	1.755152 G	-29.74	-16.74
1.756 G	1.760 G	1.00 M	1.756000 G	-28.81	-15.81

Date: 5.NOV.2021 15:06:34

Conducted Spurious Emission

WCDMA Band V (RMC 12.2Kbps)

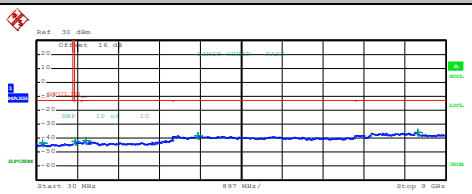
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	818.617500 M	-36.13	-23.13
855.000 M	1.000 G	1.00 M	867.506251 M	-41.71	-28.71
1.000 G	3.000 G	1.00 M	2.993500 G	-41.09	-28.09
3.000 G	7.000 G	1.00 M	4.105000 G	-38.51	-25.51
7.000 G	9.000 G	1.00 M	8.353500 G	-36.29	-23.29

Date: 5.NOV.2021 15:10:30

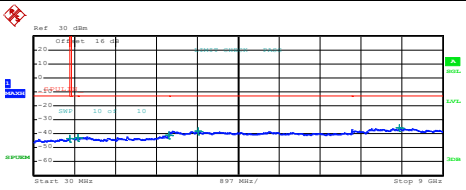
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	160.350000 M	-43.59	-30.59
855.000 M	1.000 G	1.00 M	874.720001 M	-42.14	-29.14
1.000 G	3.000 G	1.00 M	1.102500 G	-41.35	-28.35
3.000 G	7.000 G	1.00 M	3.572000 G	-38.21	-25.21
7.000 G	9.000 G	1.00 M	8.384500 G	-35.80	-22.80

Date: 5.NOV.2021 15:11:25

Highest Channel

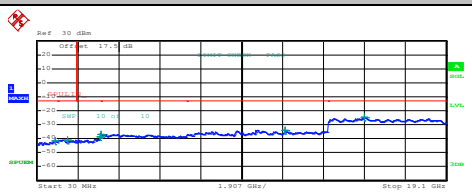


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	812.890000 M	-43.28	-30.28
855.000 M	1.000 G	1.00 M	990.285009 M	-43.05	-30.05
1.000 G	3.000 G	1.00 M	2.988000 G	-41.11	-28.11
3.000 G	7.000 G	1.00 M	3.637000 G	-38.21	-25.21
7.000 G	9.000 G	1.00 M	8.047000 G	-35.77	-22.77

Date: 5.NOV.2021 15:12:19

WCDMA Band II (RMC 12.2Kbps)

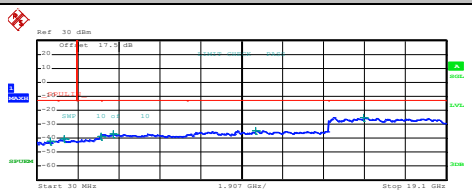
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	866.140000 M	-41.80	-28.80
1.000 G	1.845 G	1.00 M	1.431795 G	-40.85	-27.85
1.915 G	3.000 G	1.00 M	2.985352 G	-38.57	-25.57
3.000 G	7.000 G	1.00 M	3.004000 G	-36.70	-23.70
7.000 G	13.600 G	1.00 M	11.591950 G	-34.08	-21.08
13.600 G	19.100 G	1.00 M	15.304313 G	-24.70	-11.70

Date: 5.NOV.2021 14:42:12

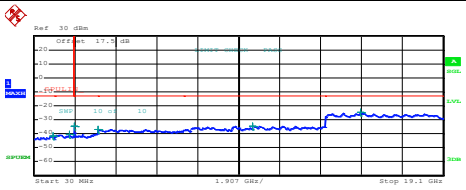
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	623.882500 M	-42.02	-29.02
1.000 G	1.845 G	1.00 M	1.277583 G	-40.62	-27.62
1.915 G	3.000 G	1.00 M	2.997288 G	-38.83	-25.83
3.000 G	7.000 G	1.00 M	3.588000 G	-36.91	-23.91
7.000 G	13.600 G	1.00 M	10.217500 G	-34.37	-21.37
13.600 G	19.100 G	1.00 M	15.251375 G	-25.02	-12.02

Date: 5.NOV.2021 14:43:06

Highest Channel

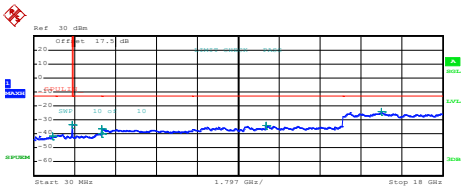


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	892.330000 M	-41.65	-28.65
1.000 G	1.845 G	1.00 M	1.677901 G	-40.74	-27.74
1.915 G	3.000 G	1.00 M	1.915542 G	-34.49	-21.49
3.000 G	7.000 G	1.00 M	3.000000 G	-36.78	-23.78
7.000 G	13.600 G	1.00 M	10.226575 G	-34.39	-21.39
13.600 G	19.100 G	1.00 M	15.237625 G	-24.75	-11.75

Date: 5.NOV.2021 14:44:00

WCDMA Band IV (RMC 12.2Kbps)

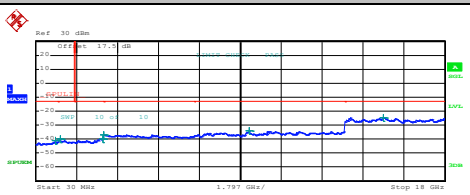
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	862.745000 M	-41.67	-28.67
1.000 G	1.705 G	1.00 M	1.704471 G	-33.28	-20.28
1.760 G	3.000 G	1.00 M	2.996280 G	-39.77	-26.77
3.000 G	7.000 G	1.00 M	3.000000 G	-36.65	-23.65
7.000 G	13.600 G	1.00 M	10.243075 G	-34.26	-21.26
13.600 G	18.000 G	1.00 M	15.299500 G	-24.23	-11.23

Date: 5.NOV.2021 14:55:57

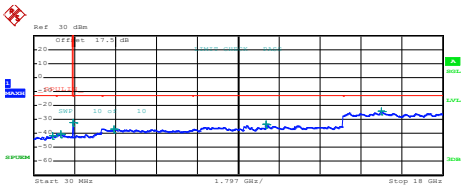
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	910.275000 M	-41.32	-28.32
1.000 G	1.705 G	1.00 M	1.099053 G	-40.15	-27.15
1.760 G	3.000 G	1.00 M	2.984810 G	-39.70	-26.70
3.000 G	7.000 G	1.00 M	3.004000 G	-36.96	-23.96
7.000 G	13.600 G	1.00 M	9.418075 G	-33.99	-20.99
13.600 G	18.000 G	1.00 M	15.290150 G	-24.41	-11.41

Date: 5.NOV.2021 14:57:57

Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	856.440000 M	-41.86	-28.86
1.000 G	1.705 G	1.00 M	1.220136 G	-40.33	-27.33
1.760 G	3.000 G	1.00 M	1.760620 G	-32.56	-19.56
3.000 G	7.000 G	1.00 M	3.570000 G	-36.75	-23.75
7.000 G	13.600 G	1.00 M	10.229875 G	-33.72	-20.72
13.600 G	18.000 G	1.00 M	15.313250 G	-24.00	-11.00

Date: 5.NOV.2021 14:58:51

Frequency Stability

Test Conditions	Middle Channel	WCDMA Band V (RMC 12.2Kbps)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0024	PASS
40	Normal Voltage	0.0000	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0108	
0	Normal Voltage	0.0120	
-10	Normal Voltage	0.0155	
-20	Normal Voltage	0.0155	
-30	Normal Voltage	0.0167	
20	Maximum Voltage	0.0072	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0024	

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0048	PASS
40	Normal Voltage	0.0037	
30	Normal Voltage	0.0011	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0069	
0	Normal Voltage	0.0074	
-10	Normal Voltage	0.0080	
-20	Normal Voltage	0.0090	
-30	Normal Voltage	0.0112	
20	Maximum Voltage	0.0064	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0027	

Note:

1. Normal Voltage = 12V. ；Battery End Point (BEP) = 8 V.；Maximum Voltage =40 V
2. The frequency fundamental emissions stay within the authorized frequency block.

Test Conditions	Middle Channel	WCDMA Band IV (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0104	PASS
40	Normal Voltage	0.0040	
30	Normal Voltage	0.0023	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0092	
0	Normal Voltage	0.0139	
-10	Normal Voltage	0.0156	
-20	Normal Voltage	0.0167	
-30	Normal Voltage	0.0185	
20	Maximum Voltage	0.0058	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0046	

Note:

1. Normal Voltage = 12V. ；Battery End Point (BEP) = 8 V.；Maximum Voltage =40 V
2. The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

GSM850

GSM 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-38.53	-13	-25.53	-5041	-40.29	0.98	4.89	H
	2472	-43.47	-13	-30.47	-60.68	-45.35	1.28	5.32	H
	3296	-57.54	-13	-44.54	-76.88	-60.95	1.54	7.10	H
									H
									H
									H
	1648	-48.22	-13	-35.22	-60.57	-49.98	0.98	4.89	V
	2472	-44.12	-13	-31.12	-61.77	-46	1.28	5.32	V
	3296	-57.58	-13	-44.58	-77.25	-60.99	1.54	7.10	V
									V
									V
									V
Middle	1672	-39.24	-13	-26.24	-51.42	-40.92	0.99	4.82	H
	2512	-41.09	-13	-28.09	-58.34	-43.06	1.29	5.41	H
	3345	-58.06	-13	-45.06	-77.67	-61.67	1.56	7.32	H
									H
									H
									H
	1672	-43.11	-13	-30.11	-55.75	-44.79	0.99	4.82	V
	2512	-40.07	-13	-27.07	-57.78	-42.04	1.29	5.41	V
	3345	-57.43	-13	-44.43	-77.25	-61.04	1.56	7.32	V
									V
									V
									V

Highest	1696	-38.87	-13	-25.87	-51.21	-40.47	1.00	4.75	H
	2544	-36.95	-13	-23.95	-54.17	-38.93	1.30	5.44	H
	3393	-57.67	-13	-44.67	-77.56	-61.48	1.57	7.53	H
									H
									H
									H
	1696	-39.95	-13	-26.95	-52.73	-41.55	1.00	4.75	V
	2544	-38.57	-13	-25.57	-56.29	-40.55	1.30	5.44	V
	3393	-57.40	-13	-44.40	-77.38	-61.21	1.57	7.53	V
									V
									V
									V

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

WCDMA 850

WCDMA 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-60.39	-13	-47.39	-72.27	-62.15	0.98	4.89	H
	3304	-56.09	-13	-43.09	-75.52	-59.53	1.54	7.14	H
	4130	-57.13	-13	-44.13	-77.82	-61.77	1.84	8.63	H
									H
									H
									H
									H
	1648	-58.75	-13	-45.75	-71.1	-60.51	0.98	4.89	V
	3304	-55.02	-13	-42.02	-74.73	-58.46	1.54	7.14	V
	4130	-55.69	-13	-42.69	-76.53	-60.33	1.84	8.63	V
									V
									V
									V
									V
Middle	1672	-60.39	-13	-47.39	-72.57	-62.07	0.99	4.82	H
	3345	-57.58	-13	-44.58	-77.19	-61.19	1.56	7.32	H
	4182	-57.30	-13	-44.30	-78.13	-61.92	1.87	8.64	H
									H
									H
									H
									H
	1672	-59.84	-13	-46.84	-72.48	-61.52	0.99	4.82	V
	3345	-56.29	-13	-43.29	-76.11	-59.9	1.56	7.32	V
	4182	-55.83	-13	-42.83	-76.8	-60.45	1.87	8.64	V
									V
									V
									V
									V

Highest	1696	-60.40	-13	-47.40	-72.74	-62	1.00	4.75	H
	3392	-56.08	-13	-43.08	-75.97	-59.88	1.57	7.52	H
	4240	-56.96	-13	-43.96	-77.99	-61.56	1.90	8.65	H
									H
									H
									H
									H
	1696	-60.77	-13	-47.77	-73.55	-62.37	1.00	4.75	V
	3392	-55.66	-13	-42.66	-75.64	-59.46	1.57	7.52	V
	4240	-55.92	-13	-42.92	-77.08	-60.52	1.90	8.65	V
									V
									V
									V
									V

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

WCDMA 1700

WCDMA 1700									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3426	-54.06	-13	-41.06	-74.71	-60.15	1.58	7.67	H
	5142	-53.08	-13	-40.08	-77.36	-60.36	2.42	9.70	H
	6852	-51.97	-13	-38.97	-78.71	-59.95	2.64	10.62	H
	8556	-51.72	-13	-38.72	-80.82	-61.86	2.39	12.52	H
									H
									H
									H
	3426	-51.59	-13	-38.59	-72.36	-57.68	1.58	7.67	V
	5142	-50.87	-13	-37.87	-75.01	-58.15	2.42	9.70	V
	6852	-49.65	-13	-36.65	-76.33	-57.63	2.64	10.62	V
	8556	-49.31	-13	-36.31	-78.77	-59.45	2.39	12.52	V
									V
									V
									V
Middle	3462	-54.11	-13	-41.11	-74.88	-60.35	1.59	7.83	H
	5196	-52.99	-13	-39.99	-77.45	-60.24	2.45	9.70	H
	6930	-51.33	-13	-38.33	-78.33	-59.43	2.61	10.72	H
	8658	-52.31	-13	-39.31	-81.47	-62.46	2.41	12.56	H
									H
									H
									H
	3462	-51.15	-13	-38.15	-71.82	-57.39	1.59	7.83	V
	5196	-49.88	-13	-36.88	-74.17	-57.13	2.45	9.70	V
	6930	-48.66	-13	-35.66	-75.56	-56.76	2.61	10.72	V
	8658	-50.11	-13	-37.11	-79.59	-60.26	2.41	12.56	V
									V
									V
									V

Highest	3504	-54.64	-13	-41.64	-75.65	-61.04	1.61	8.00	H
	5256	-51.56	-13	-38.56	-76.26	-58.78	2.48	9.70	H
	7008	-49.31	-13	-36.31	-76.32	-57.54	2.59	10.82	H
	8766	-52.28	-13	-39.28	-81.42	-62.45	2.43	12.61	H
									H
									H
									H
	3504	-51.26	-13	-38.26	-72.12	-57.66	1.61	8.00	V
	5256	-49.14	-13	-36.14	-73.71	-56.36	2.48	9.70	V
	7008	-45.88	-13	-32.88	-72.96	-54.11	2.59	10.82	V
	8766	-49.66	-13	-36.66	-79.17	-59.83	2.43	12.61	V
									V
									V
									V

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

GPRS 1900

GPRS 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-56.57	-13	-43.57	-77.42	-63.14	1.67	8.24	H
	5550	-48.99	-13	-35.99	-74.52	-56.06	2.65	9.72	H
	7398	-50.84	-13	-37.84	-77.95	-59.97	2.46	11.60	H
									H
									H
									H
									H
	3700	-56.05	-13	-43.05	-76.91	-62.62	1.67	8.24	V
	5550	-47.31	-13	-34.31	-72.81	-54.38	2.65	9.72	V
	7398	-49.25	-13	-36.25	-76.56	-58.38	2.46	11.60	V
									V
									V
									V
									V
Middle	3760	-57.03	-13	-44.03	-77.88	-63.66	1.69	8.31	H
	5640	-48.04	-13	-35.04	-73.78	-55.09	2.71	9.76	H
	7518	-50.76	-13	-37.76	-77.97	-60.15	2.42	11.81	H
									H
									H
									H
									H
	3760	-55.86	-13	-42.86	-76.73	-62.49	1.69	8.31	V
	5640	-46.10	-13	-33.10	-71.82	-53.15	2.71	9.76	V
	7518	-48.11	-13	-35.11	-75.56	-57.5	2.42	11.81	V
									V
									V
									V
									V

Highest	3820	-57.91	-13	-44.91	-78.69	-64.59	1.70	8.38	H
	5730	-48.10	-13	-35.10	-74.15	-55.13	2.76	9.79	H
	7638	-50.64	-13	-37.64	-78.15	-60.14	2.38	11.88	H
									H
									H
									H
									H
	3820	-58.02	-13	-45.02	-78.87	-64.7	1.70	8.38	V
	5730	-43.87	-13	-30.87	-69.91	-50.9	2.76	9.79	V
	7638	-48.80	-13	-35.80	-76.57	-58.3	2.38	11.88	V
									V
									V
									V
									V

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

WCDMA 1900

WCDMA 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3704	-57.34	-13	-44.34	-78.21	-63.92	1.67	8.24	H
	5562	-52.28	-13	-39.28	-77.8	-59.34	2.66	9.72	H
	7410	-51.69	-13	-38.69	-78.81	-60.85	2.46	11.62	H
									H
									H
									H
									H
	3704	-55.61	-13	-42.61	-76.47	-62.19	1.67	8.24	V
	5562	-50.94	-13	-37.94	-76.44	-58	2.66	9.72	V
	7410	-48.66	-13	-35.66	-75.99	-57.82	2.46	11.62	V
									V
									V
									V
									V
Middle	3762	-57.13	-13	-44.13	-77.85	-63.76	1.69	8.31	H
	5640	-49.42	-13	-36.42	-75.16	-56.47	2.71	9.76	H
	7524	-48.15	-13	-35.15	-75.36	-57.54	2.42	11.81	H
	9399	-49.61	-13	-36.61	-80.73	-59.58	2.57	12.54	H
									H
									H
									H
	3762	-54.68	-13	-41.68	-75.55	-61.31	1.69	8.31	V
	5640	-45.99	-13	-32.99	-71.71	-53.04	2.71	9.76	V
	7524	-43.62	-13	-30.62	-71.13	-53.01	2.42	11.81	V
	9399	-46.11	-13	-33.11	-77.52	-56.08	2.57	12.54	V
									V
									V
									V

Highest	3816	-57.58	-13	-44.58	-78.37	-64.26	1.70	8.38	H
	5718	-48.97	-13	-35.97	-74.97	-56.01	2.75	9.79	H
	7626	-46.76	-13	-33.76	-74.26	-56.25	2.39	11.88	H
	9535	-49.88	-13	-36.88	-81.25	-59.76	2.60	12.48	H
									H
									H
									H
	3816	-55.38	-13	-42.38	-76.26	-62.06	1.70	8.38	V
	5718	-45.84	-13	-32.84	-71.89	-52.88	2.75	9.79	V
	7626	-42.52	-13	-29.52	-70.28	-52.01	2.39	11.88	V
	9535	-45.47	-13	-32.47	-77.11	-55.35	2.60	12.48	V
									V
									V
									V

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