FCC RADIO TEST REPORT

FCC ID	:	**UZ7MC27BK**
Equipment	:	**Mobile computer**
Brand Name	:	**Zebra**
Model Name	:	**MC27BK**
Applicant	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**FCC 47 CFR Part 2, 22(H), 24(E), 27(L)**

The product was received on Jul. 20, 2020 and testing was started from Sep. 01, 2020 and completed on Sep. 30, 2020. 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, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FG052913-02A	01	Initial issue of report	Oct. 28, 2020

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)(2)	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 15.87 dB at 1672.000 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: Wii Chang

Report Producer: Ruby Zou

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile computer
Brand Name	Zebra
Model Name	MC27BK
FCC ID	UZ7MC27BK
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC/GNSS WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	EV
SW Version	10-11-31.00-QG-U00-PRD-HEL-04
OS Version	Android 10
MFD	02JUN20
EUT Stage	Engineering sample

Remark: The above EUT's information was declared by manufacturer.

Specification of Accessories				
AC Adapter	**Brand Name**	Zebra	**Part Number**	PWR-WUA5V12W0US
Battery	**Brand Name**	Zebra	**Part Number**	BT-000418-10
USB Cable (TypeA plug to TypeC plug)	**Brand Name**	Zebra	**Part Number**	CBL-TC2X-USBC-01
Trigger Handle	**Brand Name**	Zebra	**Part Number**	TRG-MC2X-SNP1-01
Holster	**Brand Name**	Zebra	**Part Number**	SG-MC2X-HLSTR-01
Holster	**Brand Name**	Zebra	**Part Number**	SG-MC3021212-01R

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	**GSM:** GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz **WCDMA:** Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz
Rx Frequency	**GSM:** GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz **WCDMA:** Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz Band IV: 2112.4 MHz ~ 2152.6 MHz
Maximum Output Power to Antenna	**GSM:** GSM850: 33.75 dBm GSM1900: 31.30 dBm **WCDMA:** Band V: 25.42 dBm Band II: 25.18 dBm Band IV: 24.89 dBm
Antenna Type	PIFA Antenna
Antenna Gain	Cellular Band: 2.20 dBi PCS Band: 1.70 dBi AWS Band: 3.04 dBi
Type of Modulation	GSM / GPRS: GMSK EGPRS: GMSK for MCS 0 ~ 4 & 8PSK for MCS5 ~9 WCDMA: QPSK HSDPA: 64QAM HSUPA: QPSK

1.3 Modification of EUT

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

1.4 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	Frequency Range (MHz)	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	824.2 ~848.8	GSM850 GPRS class 8	GMSK	2.3988	0.0108 ppm	247KGXW
Part 22	824.2 ~848.8	GSM850 EDGE class 8	8PSK	0.6109	0.0108 ppm	250KG7W
Part 22	826.4 ~846.6	WCDMA Band V RMC 12.2Kbps	QPSK	0.3524	0.0155 ppm	4M16F9W
Part 24	1850.2 ~1909.8	GSM1900 GPRS class 8	GMSK	1.9953	0.0106 ppm	248KGXW
Part 24	1850.2 ~1909.8	GSM1900 EDGE class 8	8PSK	0.7586	0.0191 ppm	249KG7W
Part 24	1852.4 ~1907.6	WCDMA Band II RMC 12.2Kbps	QPSK	0.7129	0.0037 ppm	4M16F9W
Part 27	1712.4 ~ 1752.6	WCDMA Band IV RMC 12.2Kbps	QPSK	0.6209	0.0173 ppm	4M14F9W

1.5 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, 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°C	23~25°C
Relative Humidity	51~55%	50~56%

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

FCC Designation No.: TW1190

1.6 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, pre-scanned in three orthogonal panels, X, Y, Z and SIM slot (SIM1 and eSIM). The worst cases (Y plane) were recorded in this report.

Radiated emissions were investigated as following frequency range:

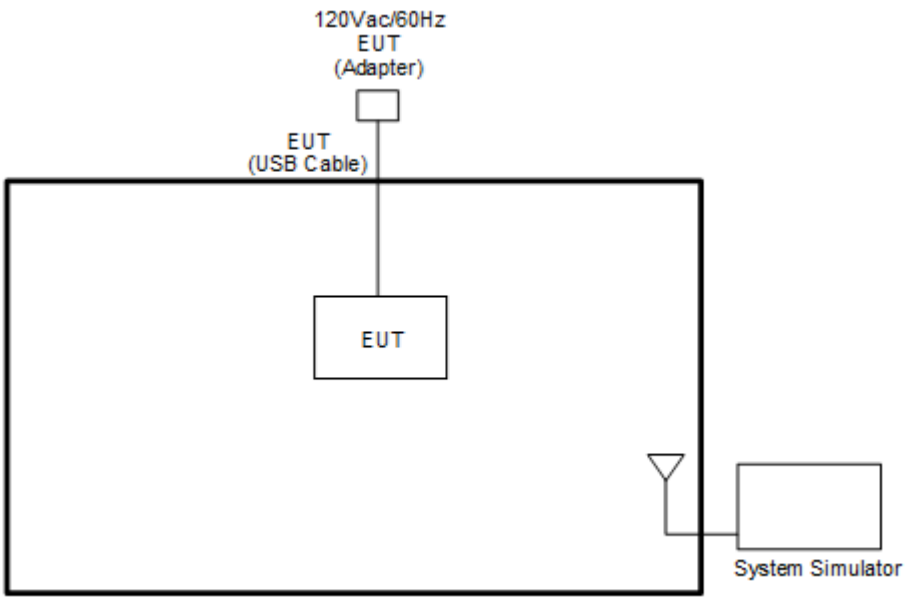
1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V
2. 30 MHz to 18000 MHz for WCDMA Band IV
3. 30 MHz to 19100 MHz for GSM1900 and WCDMA Band II

All modes and 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	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 10dB 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

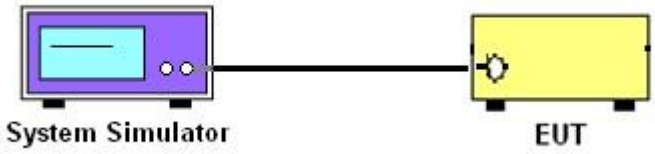
3 Conducted Test Result

3.1 Measuring Instruments

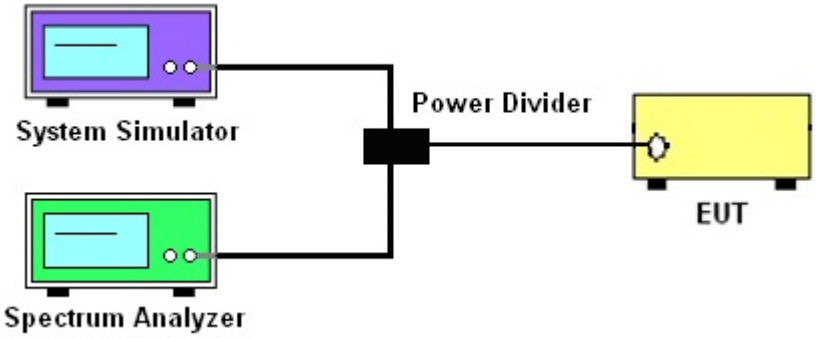
See list of measuring instruments of this test report.

3.1.1 Test Setup

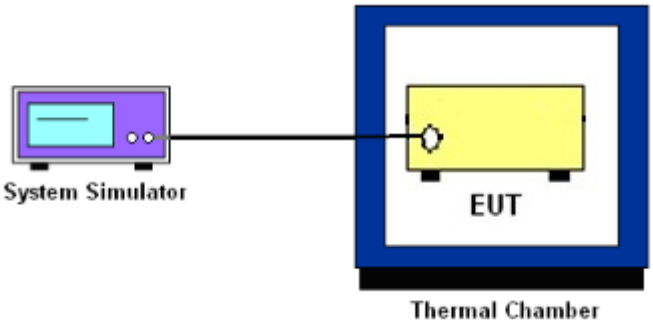
3.1.2 Conducted Output Power



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 lowest, middle, and 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.

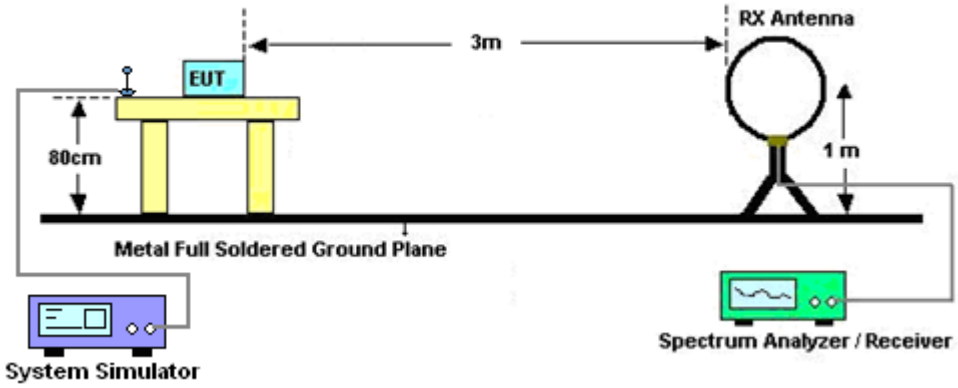
4 Radiated Test Items

4.1 Measuring Instruments

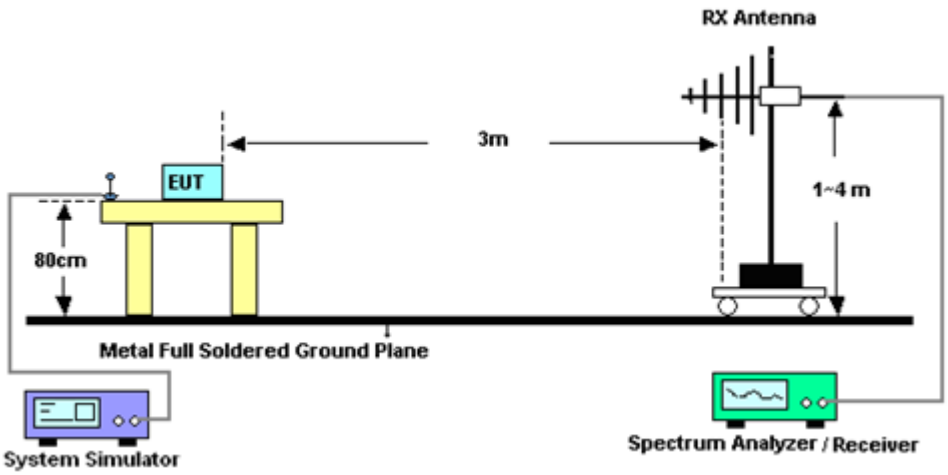
See list of measuring instruments of this test report.

4.2 Test Setup

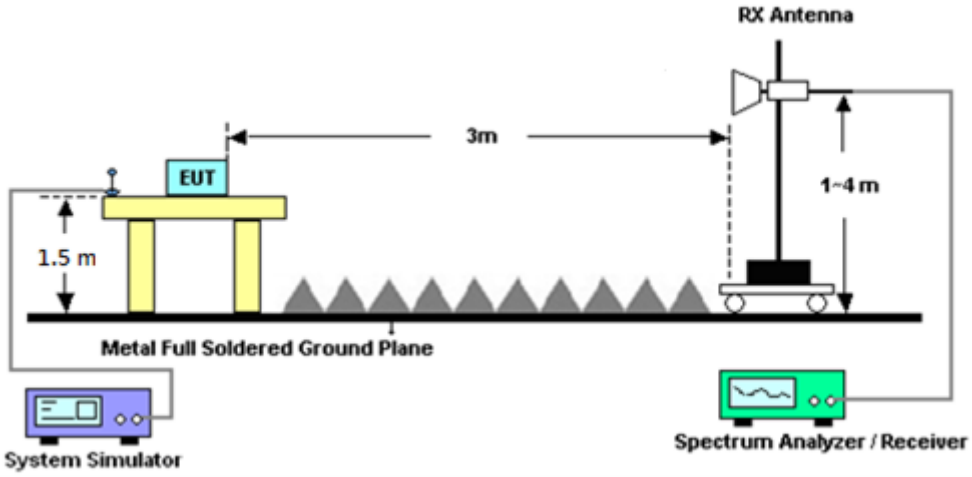
For radiated test below 30MHz



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 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data 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 1GHz and 1.5 meter for frequency above 1GHz 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 = 1MHz, VBW = 3MHz, 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. Taking 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. 29, 2020	Sep. 26, 2020~ Sep. 30, 2020	Apr. 28, 2021	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 06, 2019	Sep. 26, 2020~ Sep. 30, 2020	Dec. 05, 2020	Radiation (03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	May 21, 2020	Sep. 26, 2020~ Sep. 30, 2020	May 20, 2021	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jun. 09, 2020	Sep. 26, 2020~ Sep. 30, 2020	Jun. 08, 2021	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	May 19, 2020	Sep. 26, 2020~ Sep. 30, 2020	May 18, 2021	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Nov. 01, 2019	Sep. 26, 2020~ Sep. 30, 2020	Oct. 31, 2020	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2,80 1606/2	18GHz~40GHz	Feb. 25, 2020	Sep. 26, 2020~ Sep. 30, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	30MHz~1GHz	Feb. 25, 2020	Sep. 26, 2020~ Sep. 30, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4, MY24971/4, MY15682/4	1GHz~18GHz	Feb. 25, 2020	Sep. 26, 2020~ Sep. 30, 2020	Feb. 24, 2021	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF78020836 8	Control Ant Mast	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
Horn Antenna	EMCO	3117	00143261	1GHz~18GHz	Jan. 10, 2020	Sep. 26, 2020~ Sep. 30, 2020	Jan. 09, 2021	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Nov. 26, 2019	Sep. 26, 2020~ Sep. 30, 2020	Nov. 25, 2020	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 13, 2019	Sep. 26, 2020~ Sep. 30, 2020	Dec. 12, 2020	Radiation (03CH07-HY)
Software	Audix	E3 6.2009-8-24	N/A	N/A	N/A	Sep. 26, 2020~ Sep. 30, 2020	N/A	Radiation (03CH07-HY)
Signal Generator	Anritsu	MG3710A	6261943042	2G / 3G / LTE / 5G FR1	May 10, 2020	Sep. 26, 2020~ Sep. 30, 2020	May 09, 2021	Radiation (03CH07-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	Testo	608-H1	34893241	N/A	Mar. 26, 2020	Sep. 01, 2020	Mar. 25, 2021	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Sep. 04, 2019	Sep. 01, 2020	Sep. 03, 2020	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Nov. 26, 2019	Sep. 01, 2020	Nov. 25, 2020	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~4A	Oct. 09, 2019	Sep. 01, 2020	Oct. 08, 2020	Conducted (TH03-HY)
Base Station (Measure)	Rohde & Schwarz	CMU200	117997	GSM / GPRS / WCDMA / CDMA	Sep. 09, 2019	Sep. 01, 2020	Sep. 08, 2020	Conducted (TH03-HY)
Power Divider	Warison	WCOU-0.4-26.5S-20	#A	N/A	Nov. 06, 2019	Sep. 01, 2020	Nov. 05, 2020	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))	**3.35**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.81**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.85**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

Conducted Power (*Unit: dBm)						
Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency	824.2	836.4	848.8	1850.2	1880	1909.8
GPRS class 8	33.57	**33.75**	33.70	31.11	31.20	**31.30**
GPRS class 10	30.75	30.89	30.85	28.39	28.41	28.37
GPRS class 11	28.87	28.98	28.94	26.26	26.32	26.33
GPRS class 12	27.87	27.97	27.97	25.19	25.22	25.19
EGPRS class 8	27.61	**27.81**	27.77	27.04	**27.10**	**27.10**
EGPRS class 10	24.35	24.55	24.55	24.20	24.22	24.20
EGPRS class 11	22.52	22.69	22.64	21.96	21.96	21.94
EGPRS class 12	21.36	21.55	21.53	21.22	21.22	21.22

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6
RMC 12.2K	25.39	**25.42**	25.24	24.75	25.15	**25.18**
HSDPA Subtest-1	23.64	23.49	23.50	23.84	24.18	24.19
HSDPA Subtest-2	23.66	23.53	23.57	23.95	24.21	24.28
HSDPA Subtest-3	23.09	23.09	23.09	23.42	23.66	23.66
HSDPA Subtest-4	23.19	23.00	23.05	23.35	23.71	23.62
HSUPA Subtest-1	23.64	23.48	23.52	23.84	24.18	24.27
HSUPA Subtest-2	21.58	21.51	21.54	21.77	22.17	22.21
HSUPA Subtest-3	22.66	22.57	22.55	22.87	23.19	23.22
HSUPA Subtest-4	21.61	21.56	21.51	21.86	22.18	22.22
HSUPA Subtest-5	23.68	23.54	23.45	23.89	24.11	24.12

Conducted Power (*Unit: dBm)			
Band	WCDMA Band IV		
Channel	1312	1413	1513
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	24.65	24.76	24.89
HSDPA Subtest-1	23.73	23.78	23.95
HSDPA Subtest-2	23.74	23.83	23.96
HSDPA Subtest-3	23.27	23.30	23.47
HSDPA Subtest-4	23.27	23.36	23.42
HSUPA Subtest-1	23.69	23.77	23.87
HSUPA Subtest-2	21.73	21.74	21.86
HSUPA Subtest-3	22.73	22.86	22.98
HSUPA Subtest-4	21.72	21.80	21.93
HSUPA Subtest-5	23.70	23.81	23.88

A2. GSM

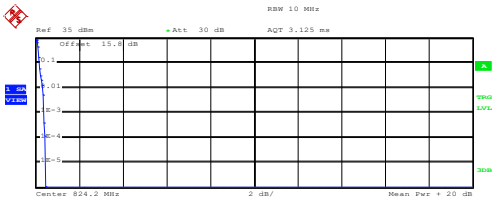
Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.40	3.16	PASS
Middle CH	0.40	3.08	
Highest CH	0.40	3.08	

Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.48	3.48	PASS
Middle CH	0.44	3.36	
Highest CH	0.48	3.32	

GSM850 (GPRS class 8)

Lowest Channel

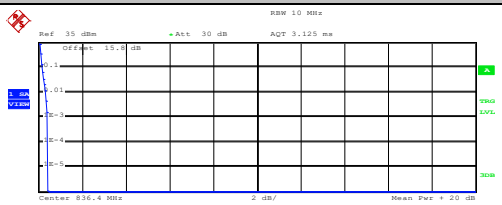


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.34 dBm
Peak	33.80 dBm
Crest	0.46 dB
10 %	0.20 dB
1 %	0.32 dB
.1 %	0.40 dB
.01 %	0.44 dB

Date: 1.SEP.2020 11:01:31

Middle Channel

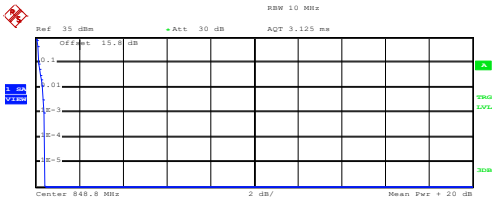


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.45 dBm
Peak	33.87 dBm
Crest	0.42 dB
10 %	0.20 dB
1 %	0.32 dB
.1 %	0.40 dB
.01 %	0.44 dB

Date: 1.SEP.2020 11:01:53

Highest Channel



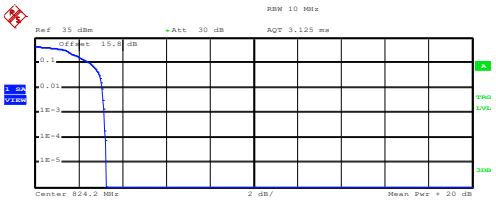
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	33.50 dBm
Peak	33.94 dBm
Crest	0.44 dB
10 %	0.16 dB
1 %	0.32 dB
.1 %	0.40 dB
.01 %	0.44 dB

Date: 1.SEP.2020 11:02:16

GSM850 (EDGE class 8)

Lowest Channel

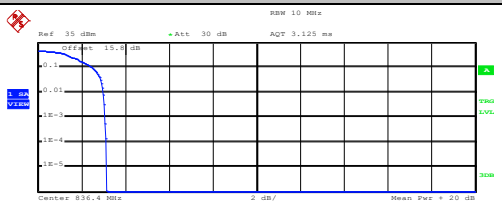


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	28.28 dBm
Peak	31.54 dBm
Crest	3.26 dB
10 %	2.52 dB
1 %	3.08 dB
.1 %	3.16 dB
.01 %	3.24 dB

Date: 1.SEP.2020 11:04:53

Middle Channel

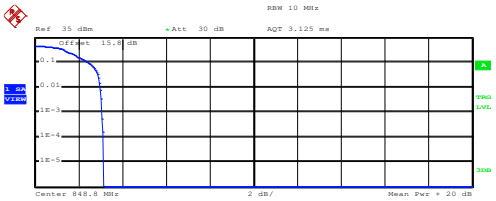


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	28.41 dBm
Peak	31.54 dBm
Crest	3.13 dB
10 %	2.48 dB
1 %	3.00 dB
.1 %	3.08 dB
.01 %	3.12 dB

Date: 1.SEP.2020 11:05:21

Highest Channel



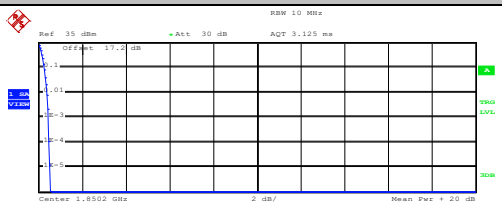
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	28.46 dBm
Peak	31.61 dBm
Crest	3.15 dB
10 %	2.44 dB
1 %	3.00 dB
.1 %	3.08 dB
.01 %	3.12 dB

Date: 1.SEP.2020 11:05:41

GSM1900 (GPRS class 8)

Lowest Channel

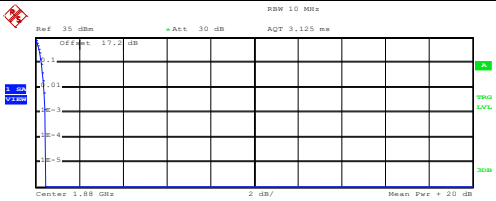


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	30.03 dBm
Peak	30.55 dBm
Crest	0.52 dB
10 %	0.28 dB
1 %	0.40 dB
.1 %	0.48 dB
.01 %	0.48 dB

Date: 1.SEP.2020 10:40:59

Middle Channel

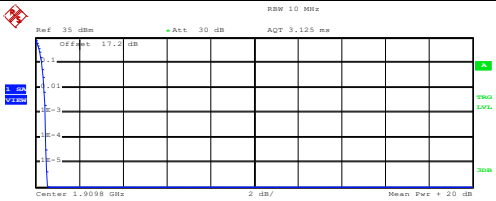


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.68 dBm
Peak	30.13 dBm
Crest	0.45 dB
10 %	0.28 dB
1 %	0.40 dB
.1 %	0.44 dB
.01 %	0.48 dB

Date: 1.SEP.2020 10:41:26

Highest Channel



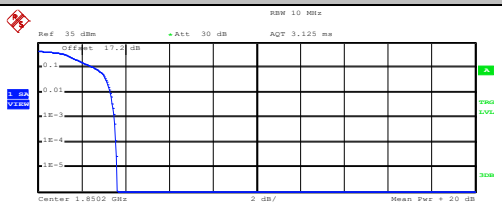
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.11 dBm
Peak	29.63 dBm
Crest	0.53 dB
10 %	0.28 dB
1 %	0.40 dB
.1 %	0.48 dB
.01 %	0.48 dB

Date: 1.SEP.2020 10:41:47

GSM1900 (EDGE class 8)

Lowest Channel

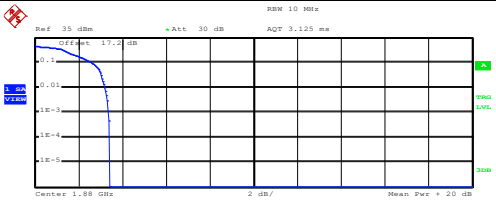


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	27.02 dBm
Peak	30.62 dBm
Crest	3.61 dB
10 %	2.60 dB
1 %	3.32 dB
.1 %	3.48 dB
.01 %	3.56 dB

Date: 1.SEP.2020 10:58:10

Middle Channel

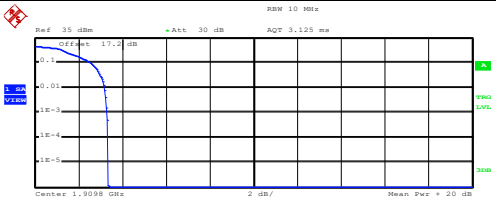


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	27.13 dBm
Peak	30.55 dBm
Crest	3.43 dB
10 %	2.64 dB
1 %	3.20 dB
.1 %	3.36 dB
.01 %	3.44 dB

Date: 1.SEP.2020 10:58:32

Highest Channel



Complementary Cumulative Distribution Function (100000 samples)

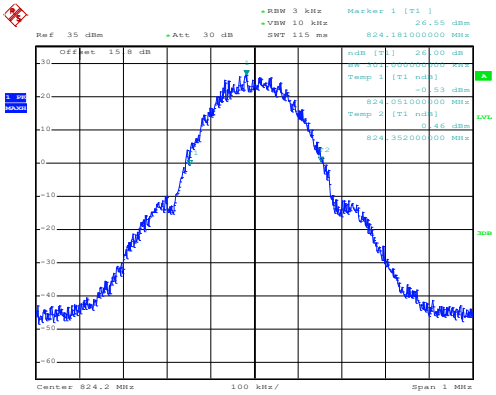
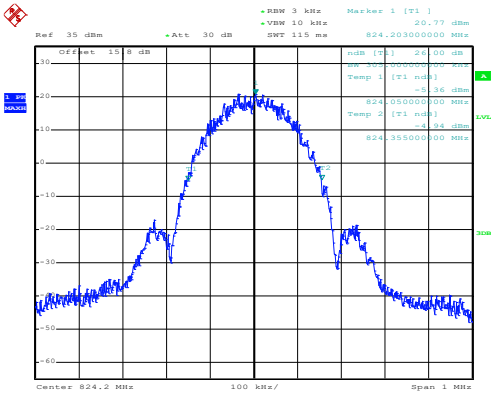
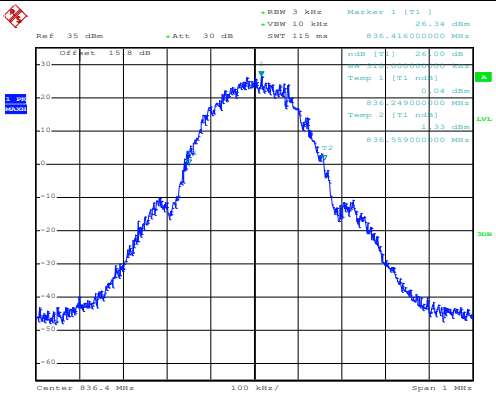
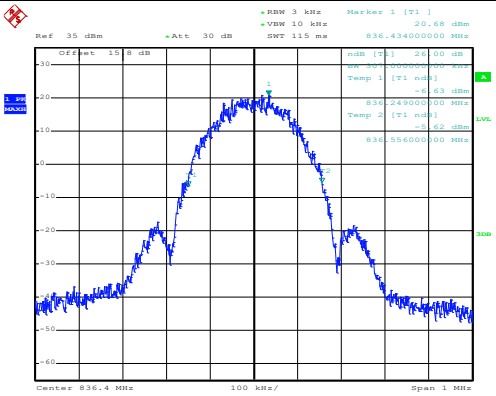
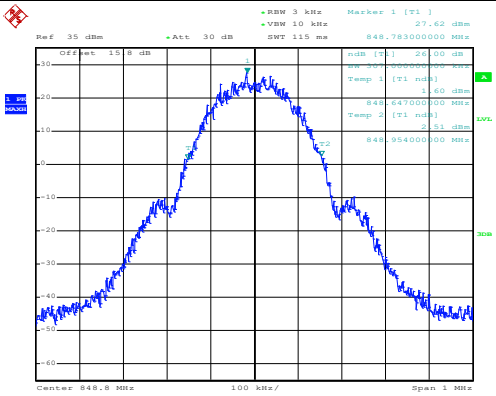
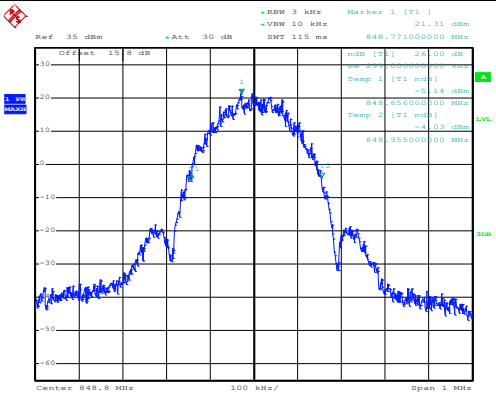
	Trace 1
Mean	27.13 dBm
Peak	30.48 dBm
Crest	3.35 dB
10 %	2.56 dB
1 %	3.20 dB
.1 %	3.32 dB
.01 %	3.36 dB

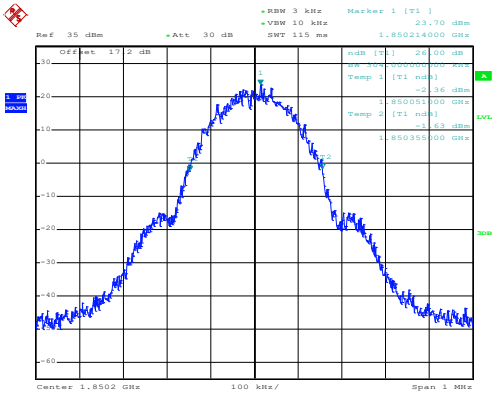
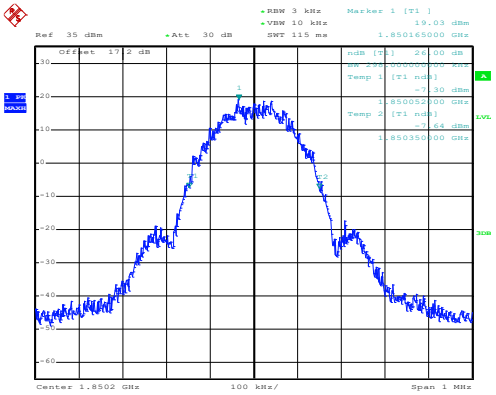
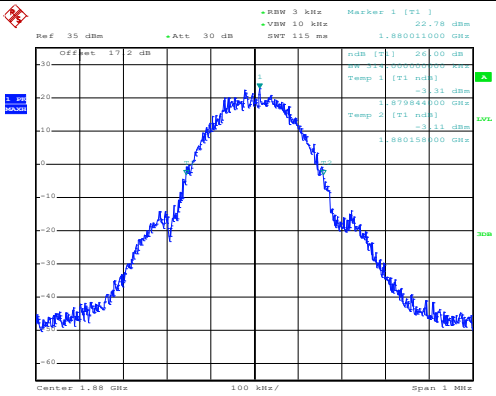
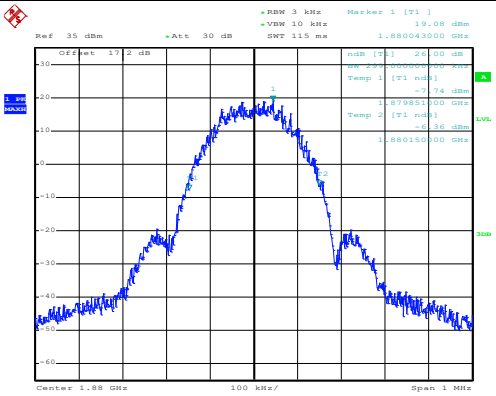
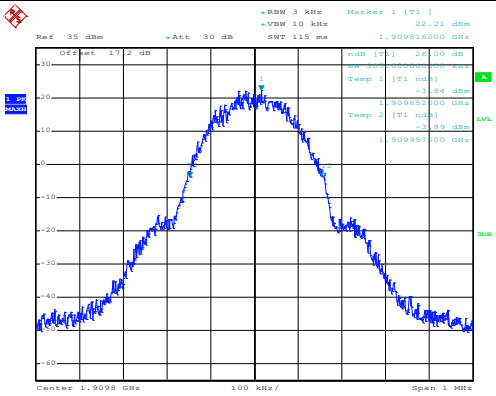
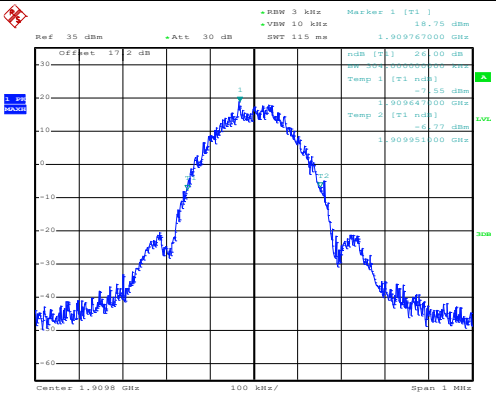
Date: 1.SEP.2020 10:58:56

26dB Bandwidth

Mode	GSM850: 26dB BW(MHz)	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.301	0.305
Middle CH	0.310	0.307
Highest CH	0.307	0.299

Mode	GSM1900: 26dB BW(MHz)	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.304	0.298
Middle CH	0.302	0.299
Highest CH	0.305	0.304

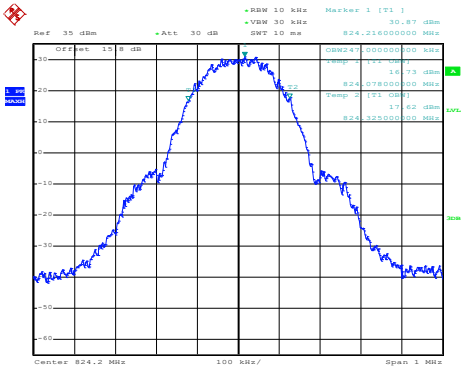
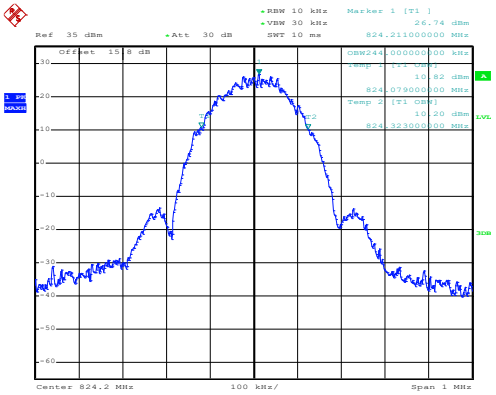
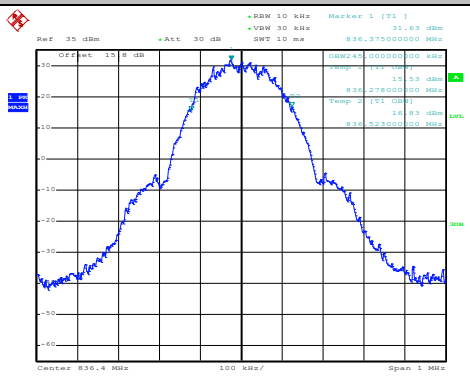
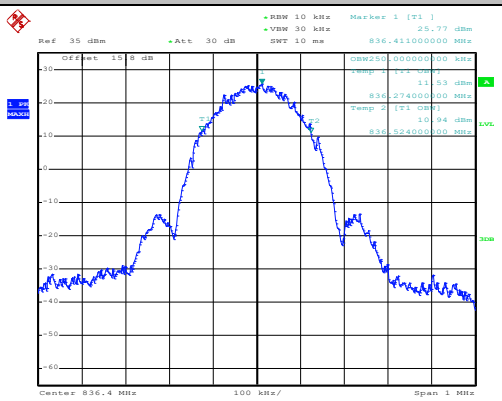
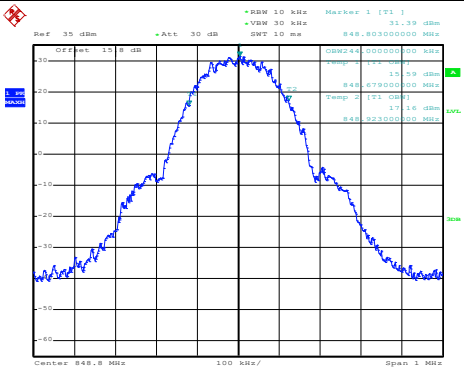
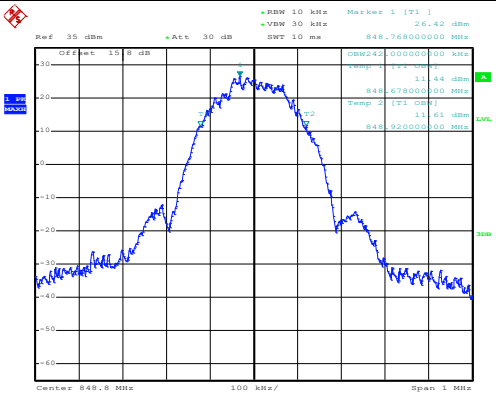
GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Date: 31.AUG.2020 18:10:23	Date: 31.AUG.2020 18:30:15
Middle Channel	**Middle Channel**
	
Date: 31.AUG.2020 18:11:00	Date: 31.AUG.2020 18:30:51
Highest Channel	**Highest Channel**
	
Date: 31.AUG.2020 18:11:35	Date: 31.AUG.2020 18:31:27

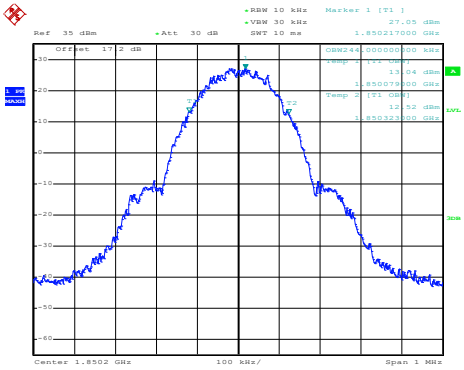
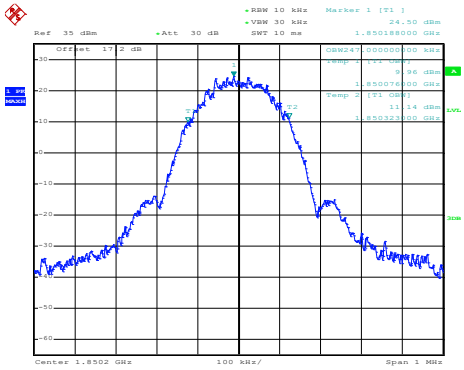
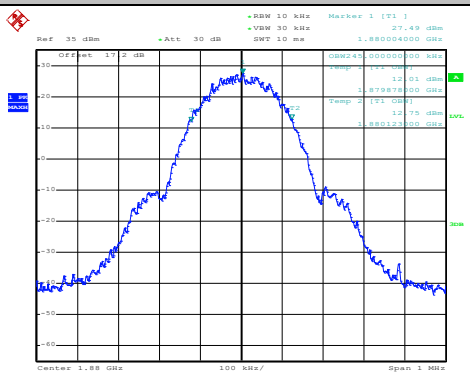
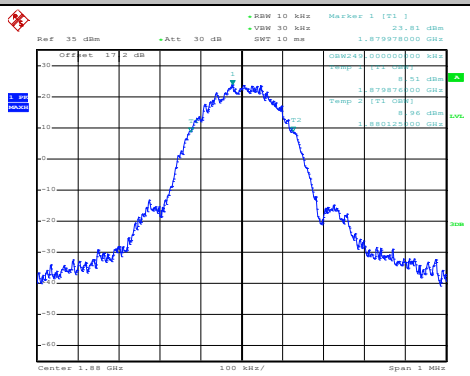
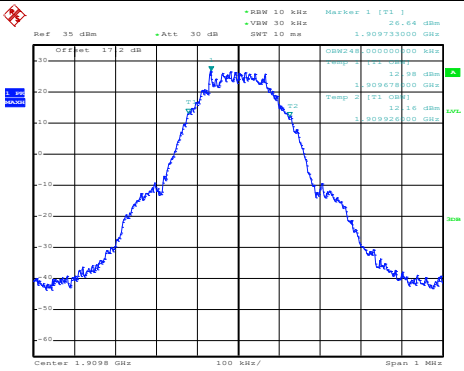
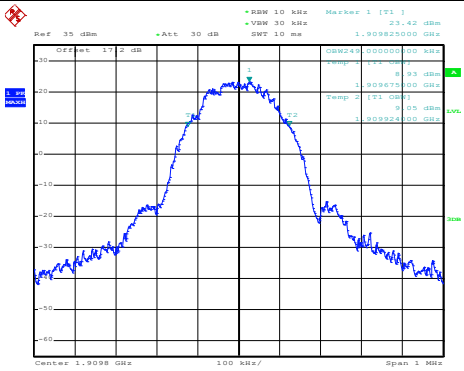
GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Date: 1.SEP.2020 09:39:58	Date: 1.SEP.2020 10:46:04
Middle Channel	**Middle Channel**
	
Date: 1.SEP.2020 09:40:34	Date: 1.SEP.2020 10:46:39
Highest Channel	**Highest Channel**
	
Date: 1.SEP.2020 09:41:14	Date: 1.SEP.2020 10:47:16

Occupied Bandwidth

Mode	GSM850: 99% OBW (MHz)	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.247	0.244
Middle CH	0.245	0.250
Highest CH	0.244	0.242

Mode	GSM1900: 99% OBW (MHz)	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.244	0.247
Middle CH	0.245	0.249
Highest CH	0.248	0.249

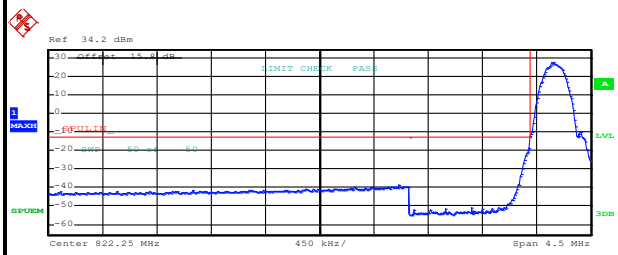
GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	**Lowest Channel**
 Date: 31.AUG.2020 18:15:14	 Date: 31.AUG.2020 18:39:03
Middle Channel	**Middle Channel**
 Date: 31.AUG.2020 18:15:49	 Date: 31.AUG.2020 18:39:39
Highest Channel	**Highest Channel**
 Date: 31.AUG.2020 18:16:22	 Date: 31.AUG.2020 18:40:12

GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)
Lowest Channel	**Lowest Channel**
	
Date: 1.SEP.2020 10:12:51	Date: 1.SEP.2020 10:52:23
Middle Channel	**Middle Channel**
	
Date: 1.SEP.2020 10:13:34	Date: 1.SEP.2020 10:53:26
Highest Channel	**Highest Channel**
	
Date: 1.SEP.2020 10:14:12	Date: 1.SEP.2020 10:54:01

Conducted Band Edge

GSM850 (GPRS class 8)

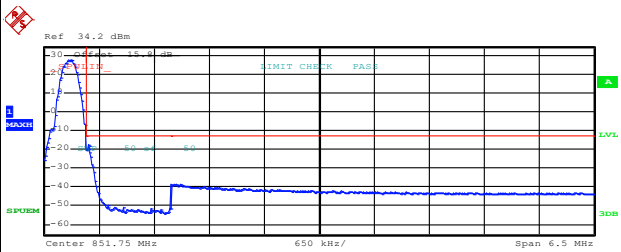
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.907000 M	-38.87	-25.87
823.000 M	824.000 M	3.00 k	823.984000 M	-18.90	-5.90
824.000 M	824.500 M	10.00 k	824.176500 M	27.44	-7.56

Date: 31.AUG.2020 18:18:02

Highest Band Edge

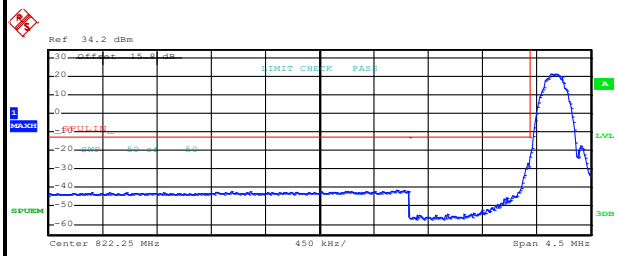


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.500 M	849.000 M	10.00 k	848.781500 M	27.54	-7.46
849.000 M	850.000 M	3.00 k	849.020000 M	-17.74	-4.74
850.000 M	855.000 M	100.00 k	850.000000 M	-38.73	-25.73

Date: 31.AUG.2020 18:19:39

GSM850 (EDGE class 8)

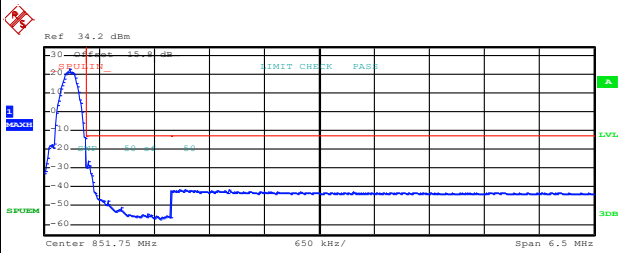
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.895000 M	-41.25	-28.25
823.000 M	824.000 M	3.00 k	823.976000 M	-27.01	-14.01
824.000 M	824.500 M	10.00 k	824.204000 M	21.20	-13.80

Date: 31.AUG.2020 18:35:52

Highest Band Edge

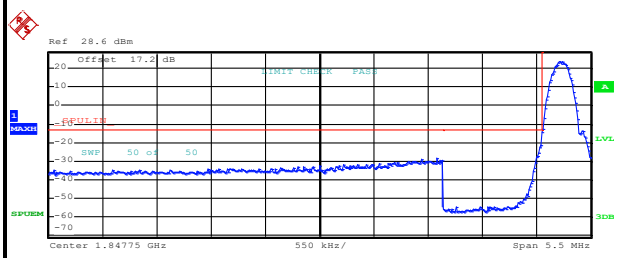


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.500 M	849.000 M	10.00 k	848.796000 M	22.77	-12.23
849.000 M	850.000 M	3.00 k	849.012000 M	-26.13	-13.13
850.000 M	855.000 M	100.00 k	850.155000 M	-41.50	-28.50

Date: 31.AUG.2020 18:38:20

GSM1900 (GPRS class 8)

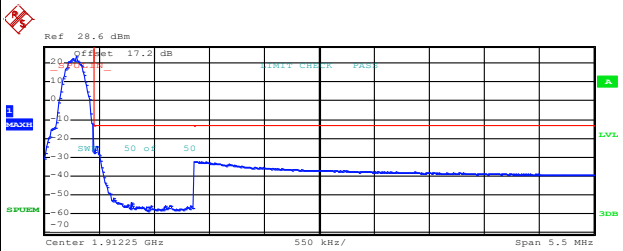
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848932 G	-28.14	-15.14
1.849 G	1.850 G	3.00 k	1.849996 G	-21.60	-8.60
1.850 G	1.851 G	10.00 k	1.850185 G	23.62	-11.38

Date: 1.SEP.2020 10:16:31

Highest Band Edge

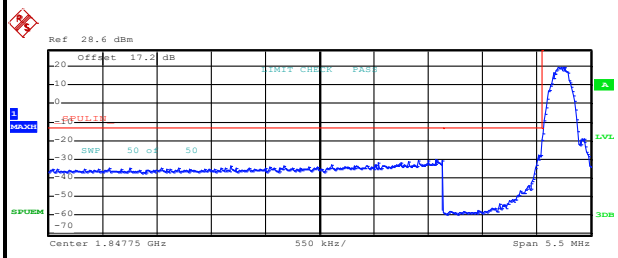


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909816 G	23.86	-11.14
1.910 G	1.911 G	3.00 k	1.910020 G	-24.21	-11.21
1.911 G	1.915 G	1.00 M	1.911012 G	-32.49	-19.49

Date: 1.SEP.2020 10:18:10

GSM1900 (EDGE class 8)

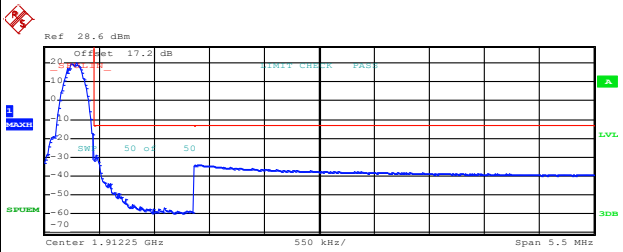
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848924 G	-30.38	-17.38
1.849 G	1.850 G	3.00 k	1.849996 G	-27.93	-14.93
1.850 G	1.851 G	10.00 k	1.850223 G	19.73	-15.27

Date: 1.SEP.2020 10:55:43

Highest Band Edge



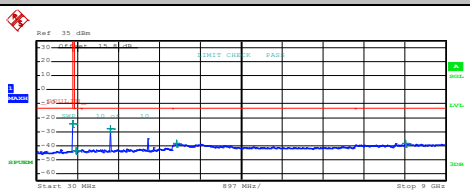
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909821 G	19.87	-15.13
1.910 G	1.911 G	3.00 k	1.910012 G	-29.23	-16.23
1.911 G	1.915 G	1.00 M	1.911024 G	-34.07	-21.07

Date: 1.SEP.2020 10:57:31

Conducted Spurious Emission

GSM850 (GPRS class 8)

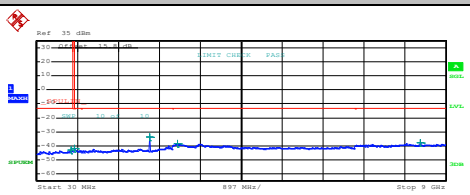
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	819.802500 M	-24.54	-11.54
855.000 M	1.000 G	1.00 M	893.171253 M	-43.39	-30.39
1.000 G	3.000 G	1.00 M	1.648500 G	-27.73	-14.73
3.000 G	7.000 G	1.00 M	3.102000 G	-38.42	-25.42
7.000 G	9.000 G	1.00 M	8.129000 G	-38.13	-25.13

Date: 31.AUG.2020 18:12:43

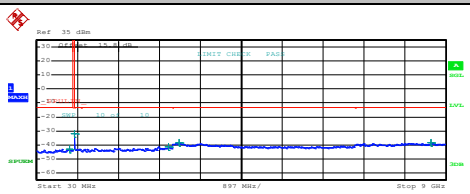
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	779.512500 M	-43.27	-30.27
855.000 M	1.000 G	1.00 M	856.522500 M	-41.76	-28.76
1.000 G	3.000 G	1.00 M	2.509500 G	-33.47	-20.47
3.000 G	7.000 G	1.00 M	3.109000 G	-38.67	-25.67
7.000 G	9.000 G	1.00 M	8.438500 G	-38.09	-25.09

Date: 31.AUG.2020 18:13:37

Highest Channel

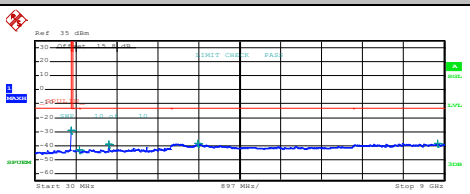


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	754.232500 M	-43.22	-30.22
855.000 M	1.000 G	1.00 M	855.036250 M	-32.04	-19.04
1.000 G	3.000 G	1.00 M	2.911000 G	-41.20	-28.20
3.000 G	7.000 G	1.00 M	3.147000 G	-38.66	-25.66
7.000 G	9.000 G	1.00 M	8.672000 G	-38.38	-25.38

Date: 31.AUG.2020 18:14:31

GSM850 (EDGE class 8)

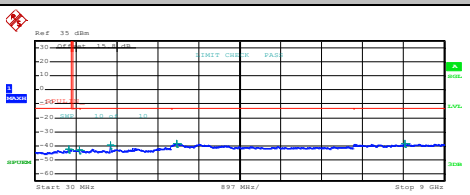
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	819.802500 M	-29.02	-16.02
855.000 M	1.000 G	1.00 M	996.483760 M	-43.06	-30.06
1.000 G	3.000 G	1.00 M	1.648500 G	-38.71	-25.71
3.000 G	7.000 G	1.00 M	3.599000 G	-38.39	-25.39
7.000 G	9.000 G	1.00 M	8.849500 G	-38.28	-25.28

Date: 31.AUG.2020 18:32:25

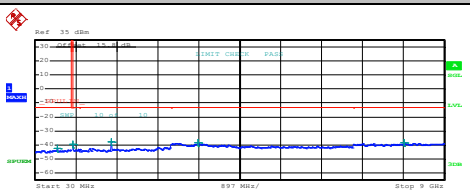
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	769.045000 M	-42.70	-29.70
855.000 M	1.000 G	1.00 M	994.707510 M	-43.31	-30.31
1.000 G	3.000 G	1.00 M	1.673500 G	-39.54	-26.54
3.000 G	7.000 G	1.00 M	3.142000 G	-38.29	-25.29
7.000 G	9.000 G	1.00 M	8.132500 G	-38.60	-25.60

Date: 31.AUG.2020 18:33:19

Highest Channel

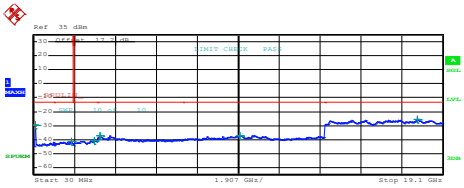


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	511.702500 M	-42.31	-29.31
855.000 M	1.000 G	1.00 M	855.253750 M	-39.59	-26.59
1.000 G	3.000 G	1.00 M	1.697500 G	-37.94	-24.94
3.000 G	7.000 G	1.00 M	3.603000 G	-38.50	-25.50
7.000 G	9.000 G	1.00 M	8.112500 G	-38.42	-25.42

Date: 31.AUG.2020 18:34:13

GSM1900 (GPRS class 8)

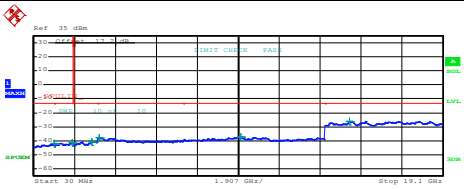
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	111.965000 M	-29.87	-16.87
1.000 G	1.845 G	1.00 M	1.786695 G	-41.12	-28.12
1.915 G	3.000 G	1.00 M	2.870885 G	-40.64	-27.64
3.000 G	7.000 G	1.00 M	3.135000 G	-37.16	-24.16
7.000 G	13.600 G	1.00 M	9.622675 G	-37.20	-24.20
13.600 G	19.100 G	1.00 M	17.932625 G	-25.77	-12.77

Date: 1.SEP.2020 09:42:17

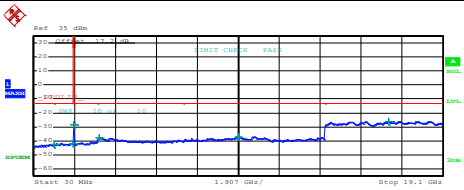
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	991.027500 M	-41.67	-28.67
1.000 G	1.845 G	1.00 M	1.809510 G	-41.48	-28.48
1.915 G	3.000 G	1.00 M	2.723867 G	-40.50	-27.50
3.000 G	7.000 G	1.00 M	3.087000 G	-38.01	-25.01
7.000 G	13.600 G	1.00 M	9.661450 G	-37.25	-24.25
13.600 G	19.100 G	1.00 M	14.737125 G	-26.09	-13.09

Date: 1.SEP.2020 09:43:11

Highest Channel

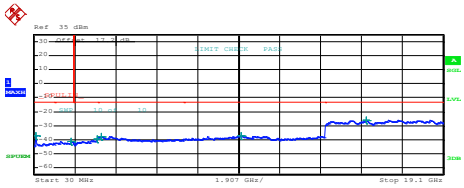


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	999.272500 M	-42.50	-29.50
1.000 G	1.845 G	1.00 M	1.843099 G	-41.61	-28.61
1.915 G	3.000 G	1.00 M	1.915271 G	-28.33	-15.33
3.000 G	7.000 G	1.00 M	3.087000 G	-37.58	-24.58
7.000 G	13.600 G	1.00 M	9.566575 G	-37.27	-24.27
13.600 G	19.100 G	1.00 M	16.579625 G	-25.93	-12.93

Date: 1.SEP.2020 09:44:06

GSM1900 (EDGE class 8)

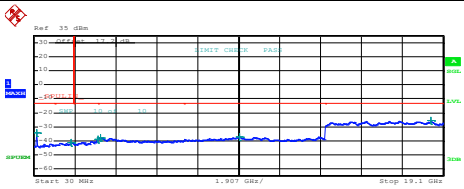
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	111.965000 M	-37.29	-24.29
1.000 G	1.845 G	1.00 M	1.756064 G	-41.32	-28.32
1.915 G	3.000 G	1.00 M	2.951989 G	-39.59	-26.59
3.000 G	7.000 G	1.00 M	3.148000 G	-37.84	-24.84
7.000 G	13.600 G	1.00 M	9.686200 G	-37.06	-24.06
13.600 G	19.100 G	1.00 M	15.528438 G	-25.86	-12.86

Date: 1.SEP.2020 10:49:40

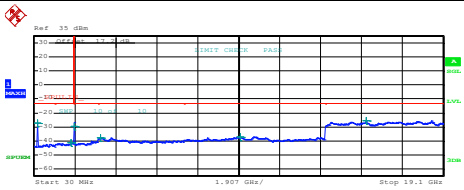
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	142.035000 M	-34.21	-21.21
1.000 G	1.845 G	1.00 M	1.739375 G	-41.32	-28.32
1.915 G	3.000 G	1.00 M	2.998101 G	-39.26	-26.26
3.000 G	7.000 G	1.00 M	3.136000 G	-38.00	-25.00
7.000 G	13.600 G	1.00 M	9.599575 G	-36.94	-23.94
13.600 G	19.100 G	1.00 M	18.538313 G	-25.79	-12.79

Date: 1.SEP.2020 10:50:35

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	-27.29	-14.29
1.000 G	1.845 G	1.00 M	1.730291 G	-41.59	-28.59
1.915 G	3.000 G	1.00 M	1.915271 G	-29.78	-16.78
3.000 G	7.000 G	1.00 M	3.110000 G	-37.84	-24.84
7.000 G	13.600 G	1.00 M	9.625150 G	-37.29	-24.29
13.600 G	19.100 G	1.00 M	15.503000 G	-25.73	-12.73

Date: 1.SEP.2020 10:51:29

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	0.0096	0.0036	PASS
40	Normal Voltage	0.0048	0.0000	
30	Normal Voltage	0.0024	0.0012	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0072	0.0012	
0	Normal Voltage	0.0048	0.0024	
-10	Normal Voltage	0.0060	0.0000	
-20	Normal Voltage	0.0048	0.0012	
-30	Normal Voltage	0.0048	0.0000	
20	Maximum Voltage	0.0012	0.0012	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0108	0.0108	

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	0.0106	0.0027	PASS
40	Normal Voltage	0.0032	0.0011	
30	Normal Voltage	0.0005	0.0016	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0021	0.0021	
0	Normal Voltage	0.0016	0.0106	
-10	Normal Voltage	0.0027	0.0128	
-20	Normal Voltage	0.0053	0.0165	
-30	Normal Voltage	0.0074	0.0191	
20	Maximum Voltage	0.0037	0.0059	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0021	0.0021	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.2 V.；Maximum Voltage =4.2 V

2. The frequency fundamental emissions stay within the authorized frequency block.

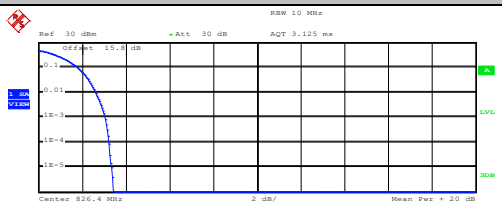
A3. WCDMA

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	3.04	3.40	3.24	PASS
Middle CH	3.28	3.24	3.48	
Highest CH	3.36	3.12	3.52	

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel



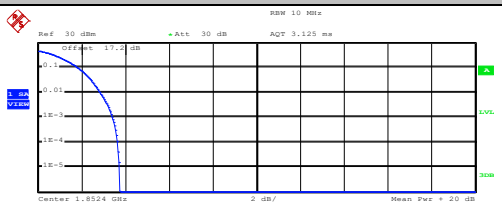
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.96 dBm
Peak	27.39 dBm
Crest	3.42 dB
10 %	1.80 dB
1 %	2.64 dB
.1 %	3.04 dB
.01 %	3.24 dB

Date: 31.AUG.2020 17:32:39

WCDMA Band II (RMC 12.2Kbps)

Lowest Channel

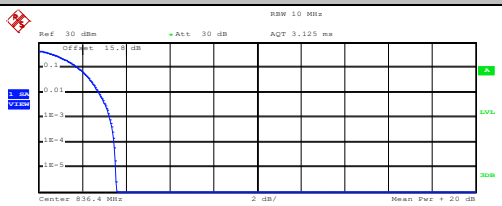


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.07 dBm
Peak	26.82 dBm
Crest	3.75 dB
10 %	1.84 dB
1 %	2.84 dB
.1 %	3.40 dB
.01 %	3.64 dB

Date: 31.AUG.2020 18:06:47

Middle Channel

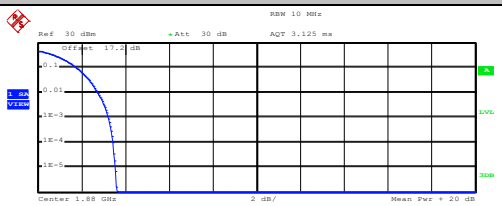


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.77 dBm
Peak	26.33 dBm
Crest	3.56 dB
10 %	1.80 dB
1 %	2.76 dB
.1 %	3.28 dB
.01 %	3.48 dB

Date: 31.AUG.2020 17:32:59

Middle Channel

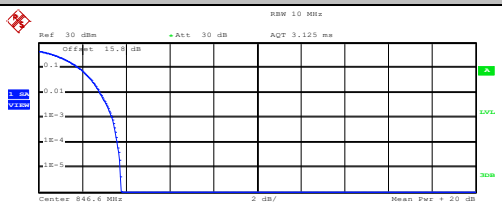


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.29 dBm
Peak	26.89 dBm
Crest	3.61 dB
10 %	1.80 dB
1 %	2.72 dB
.1 %	3.24 dB
.01 %	3.44 dB

Date: 31.AUG.2020 18:07:06

Highest Channel

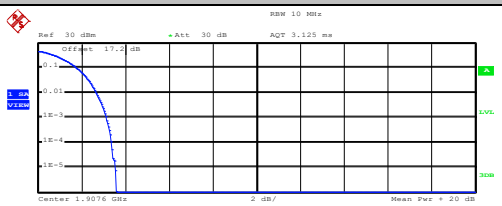


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.62 dBm
Peak	27.39 dBm
Crest	3.76 dB
10 %	1.84 dB
1 %	2.80 dB
.1 %	3.36 dB
.01 %	3.60 dB

Date: 31.AUG.2020 17:33:17

Highest Channel



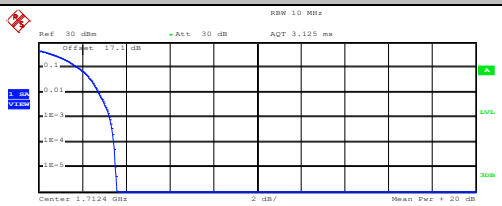
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.17 dBm
Peak	26.75 dBm
Crest	3.58 dB
10 %	1.80 dB
1 %	2.68 dB
.1 %	3.12 dB
.01 %	3.36 dB

Date: 31.AUG.2020 18:07:26

WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel

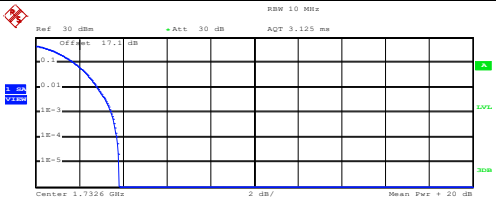


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.17 dBm
Peak	26.75 dBm
Crest	3.58 dB
10 %	1.84 dB
1 %	2.76 dB
.1 %	3.24 dB
.01 %	3.44 dB

Date: 31.AUG.2020 17:50:38

Middle Channel

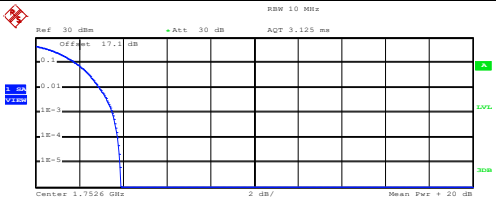


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.16 dBm
Peak	25.98 dBm
Crest	3.81 dB
10 %	1.76 dB
1 %	2.84 dB
.1 %	3.48 dB
.01 %	3.72 dB

Date: 31.AUG.2020 17:50:59

Highest Channel



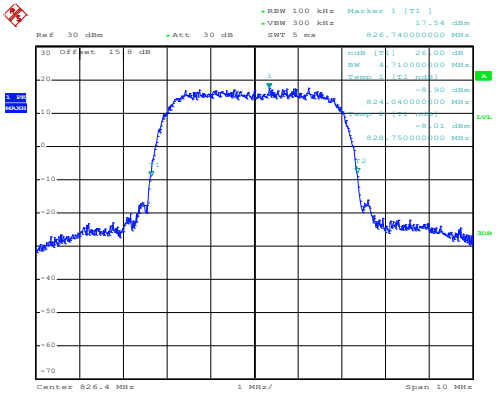
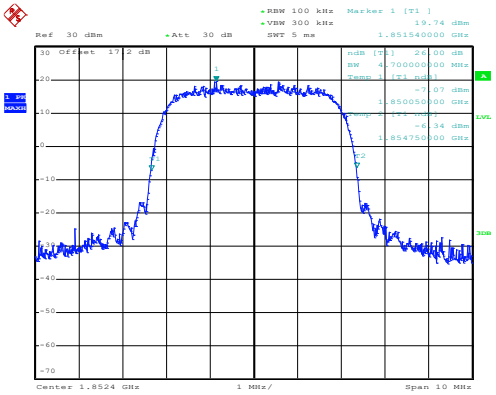
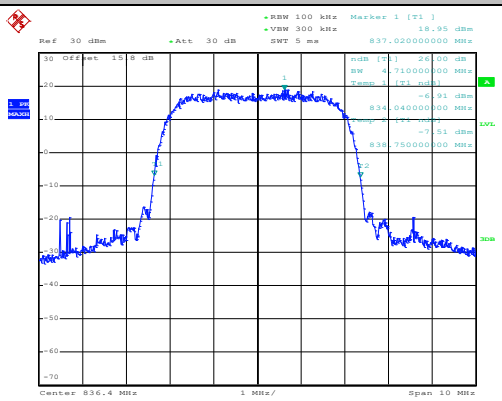
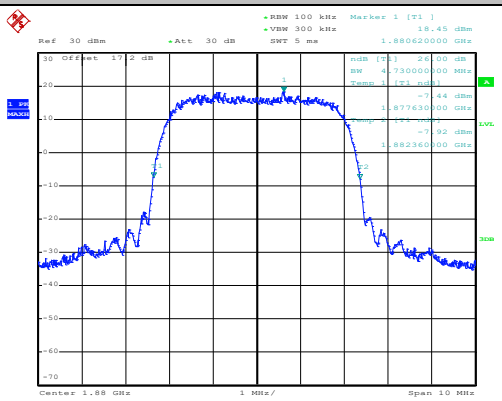
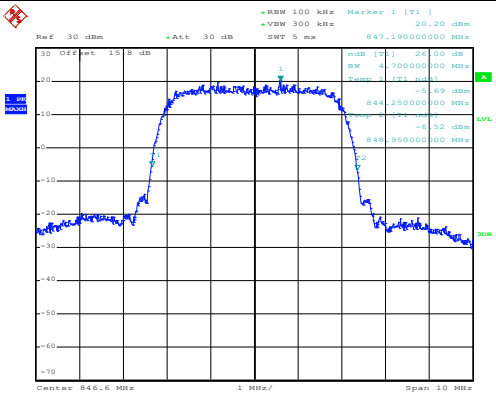
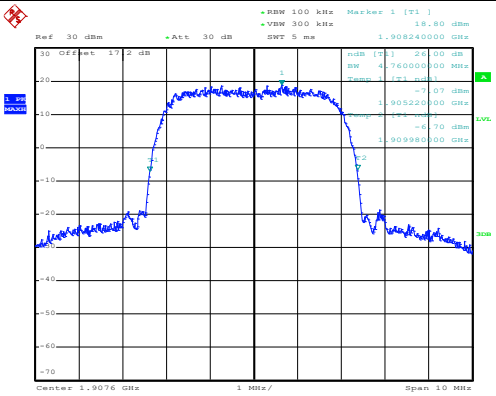
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.34 dBm
Peak	26.26 dBm
Crest	3.92 dB
10 %	1.84 dB
1 %	2.92 dB
.1 %	3.52 dB
.01 %	3.76 dB

Date: 31.AUG.2020 17:51:19

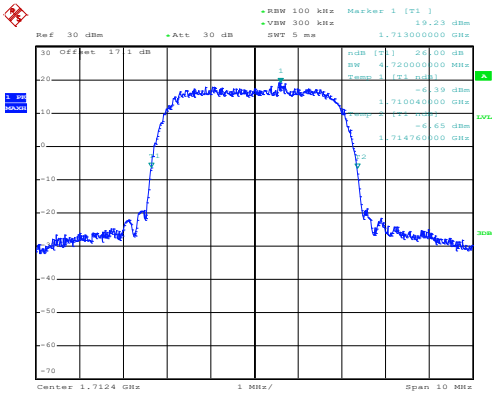
26dB Bandwidth

Mode	WCDMA Band V: 26dB BW (MHz)	WCDMA Band II: 26dB BW (MHz)	WCDMA Band IV: 26dB BW (MHz)
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.71	4.70	4.72
Middle CH	4.71	4.73	4.71
Highest CH	4.70	4.76	4.71

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
	
Date: 31.AUG.2020 17:16:35	Date: 31.AUG.2020 17:53:15
Middle Channel	**Middle Channel**
	
Date: 31.AUG.2020 17:17:18	Date: 31.AUG.2020 17:53:57
Highest Channel	**Highest Channel**
	
Date: 31.AUG.2020 17:17:56	Date: 31.AUG.2020 17:54:39

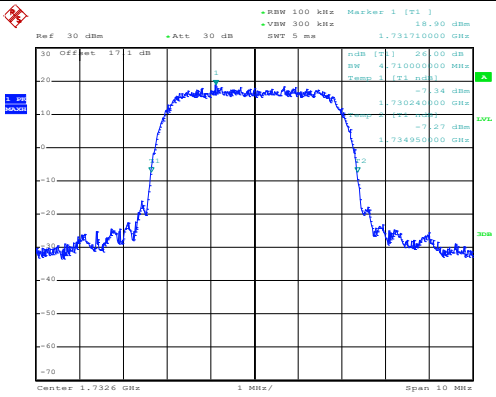
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



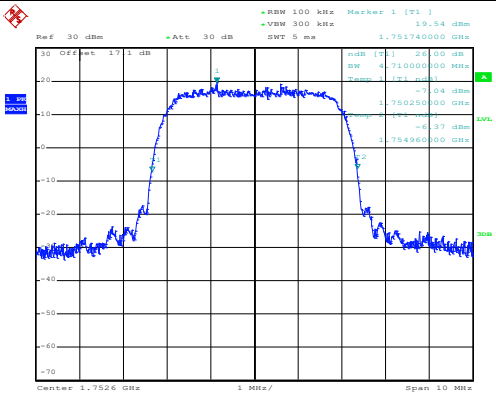
Date: 31.AUG.2020 17:35:03

Middle Channel



Date: 31.AUG.2020 17:35:46

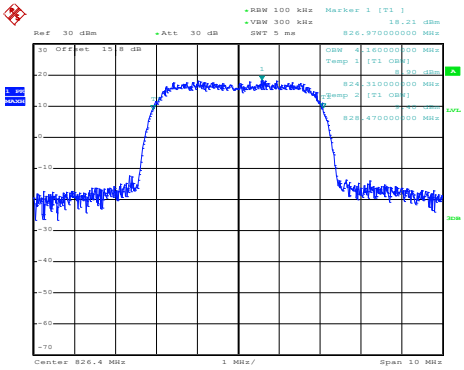
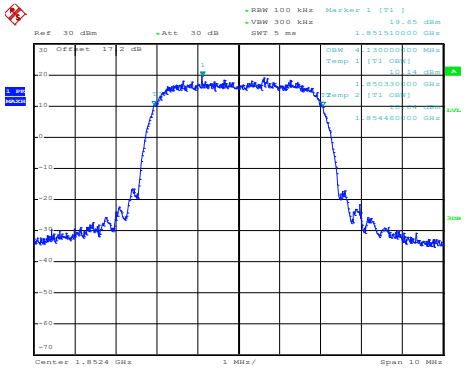
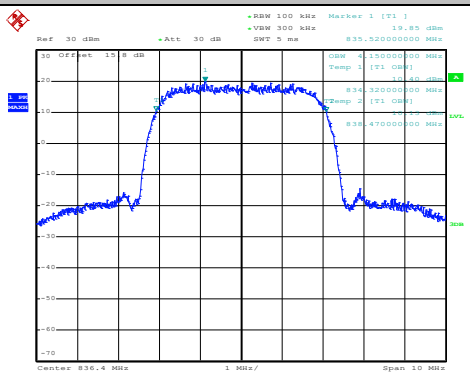
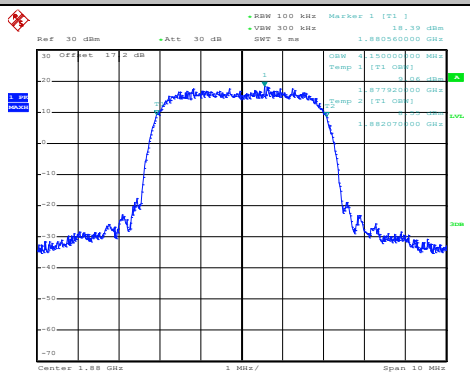
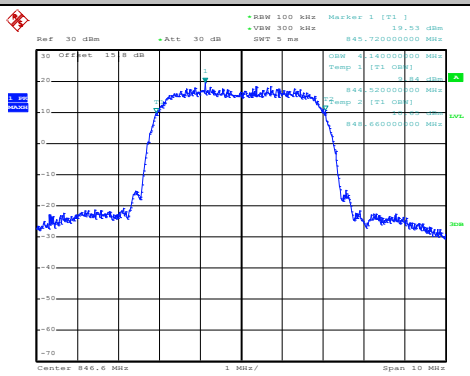
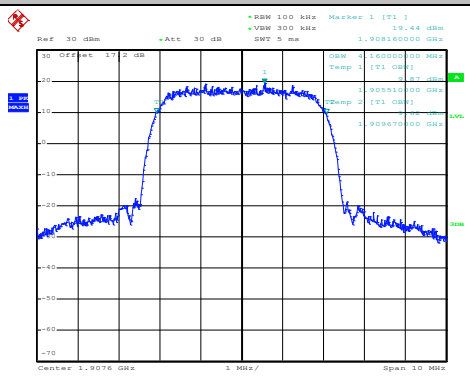
Highest Channel



Date: 31.AUG.2020 17:37:17

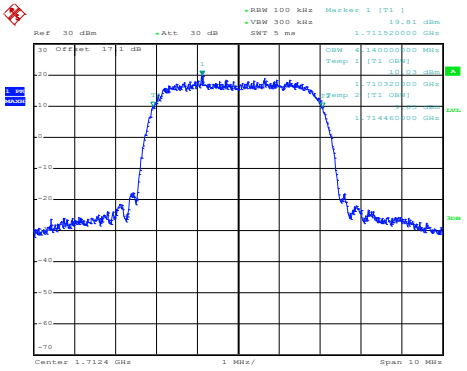
Occupied Bandwidth

Mode	WCDMA Band V: 99% OBW (MHz)	WCDMA Band II: 99% OBW (MHz)	WCDMA Band IV: 99% OBW (MHz)
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.16	4.13	4.14
Middle CH	4.15	4.15	4.14
Highest CH	4.14	4.16	4.13

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)
Lowest Channel	**Lowest Channel**
 Date: 31.AUG.2020 17:22:08	 Date: 31.AUG.2020 17:58:41
Middle Channel	**Middle Channel**
 Date: 31.AUG.2020 17:22:51	 Date: 31.AUG.2020 17:59:18
Highest Channel	**Highest Channel**
 Date: 31.AUG.2020 17:23:30	 Date: 31.AUG.2020 17:59:56

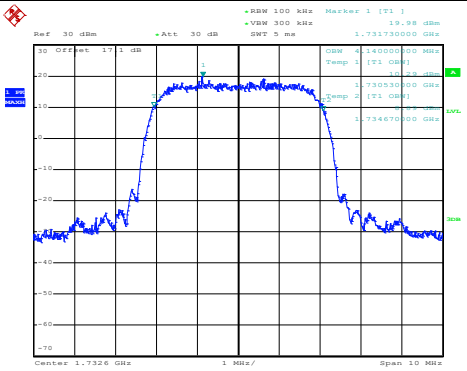
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



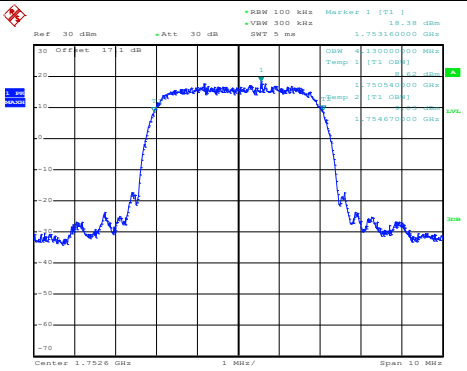
Date: 31.AUG.2020 17:42:47

Middle Channel



Date: 31.AUG.2020 17:43:24

Highest Channel

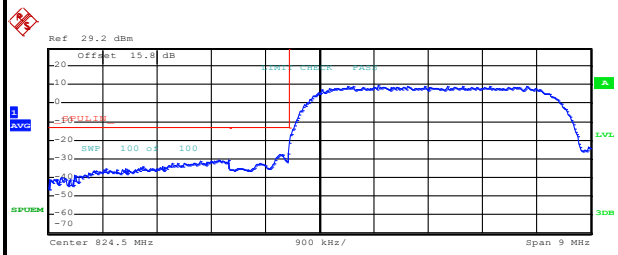


Date: 31.AUG.2020 17:44:01

Conducted Band Edge

WCDMA Band V (RMC 12.2Kbps)

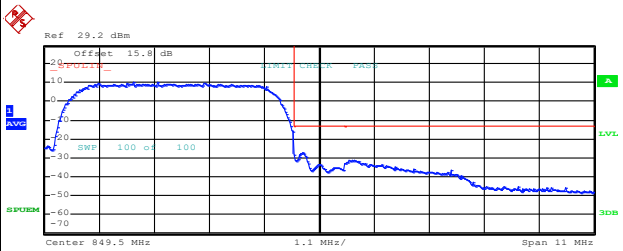
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.823000 M	-30.70	-17.70
823.000 M	824.000 M	50.00 k	823.880000 M	-27.73	-14.73
824.000 M	829.000 M	100.00 k	825.475000 M	9.56	-25.44

Date: 31.AUG.2020 17:26:31

Highest Band Edge

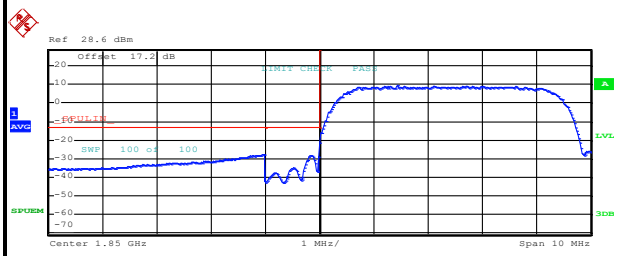


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
844.000 M	849.000 M	100.00 k	845.770000 M	9.93	-25.07
849.000 M	850.000 M	50.00 k	849.164000 M	-27.46	-14.46
850.000 M	855.000 M	100.00 k	850.160000 M	-31.22	-18.22

Date: 31.AUG.2020 17:29:24

WCDMA Band II (RMC 12.2Kbps)

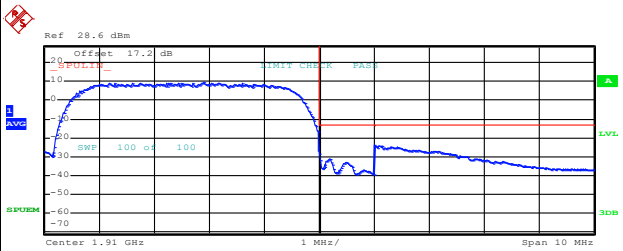
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.849000 G	-27.60	-14.60
1.849 G	1.850 G	50.00 k	1.849848 G	-28.40	-15.40
1.850 G	1.855 G	100.00 k	1.851430 G	9.52	-25.48

Date: 31.AUG.2020 18:02:55

Highest Band Edge

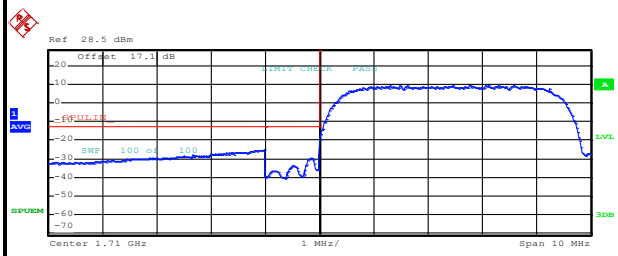


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.905 G	1.910 G	100.00 k	1.907900 G	9.43	-25.57
1.910 G	1.911 G	50.00 k	1.910004 G	-27.79	-14.79
1.911 G	1.915 G	1.00 M	1.911000 G	-23.76	-10.76

Date: 31.AUG.2020 18:06:03

WCDMA Band IV (RMC 12.2Kbps)

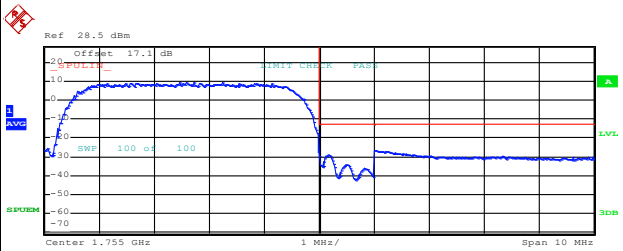
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	1.00 M	1.708984 G	-25.28	-12.28
1.709 G	1.710 G	50.00 k	1.709996 G	-28.07	-15.07
1.710 G	1.715 G	100.00 k	1.713120 G	9.70	-25.30

Date: 31.AUG.2020 17:47:21

Highest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.753230 G	9.71	-25.29
1.755 G	1.756 G	50.00 k	1.755004 G	-28.56	-15.56
1.756 G	1.760 G	1.00 M	1.756036 G	-26.84	-13.84

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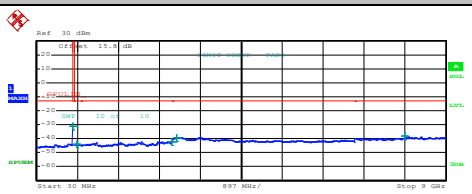
Conducted Spurious Emission

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	819.802500 M	-31.24	-18.24
855.000 M	1.000 G	1.00 M	915.465004 M	-43.80	-30.80
1.000 G	3.000 G	1.00 M	2.984500 G	-42.00	-29.00
3.000 G	7.000 G	1.00 M	3.096000 G	-39.12	-26.12
7.000 G	9.000 G	1.00 M	8.104500 G	-38.32	-25.32

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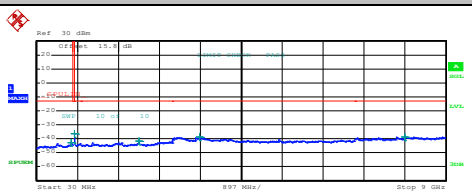
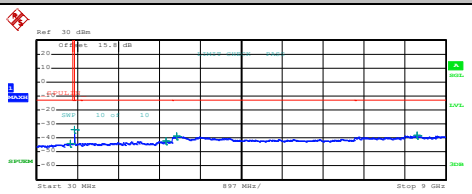
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	787.017500 M	-42.79	-29.79
855.000 M	1.000 G	1.00 M	855.725000 M	-36.21	-23.21
1.000 G	3.000 G	1.00 M	2.279500 G	-41.68	-28.68
3.000 G	7.000 G	1.00 M	3.595000 G	-38.92	-25.92
7.000 G	9.000 G	1.00 M	8.104500 G	-38.47	-25.47

Date: 31.AUG.2020 17:20:19

Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	770.032500 M	-43.69	-30.69
855.000 M	1.000 G	1.00 M	855.145000 M	-34.31	-21.31
1.000 G	3.000 G	1.00 M	2.867500 G	-42.06	-29.06
3.000 G	7.000 G	1.00 M	3.091000 G	-38.60	-25.60
7.000 G	9.000 G	1.00 M	8.374000 G	-38.03	-25.03

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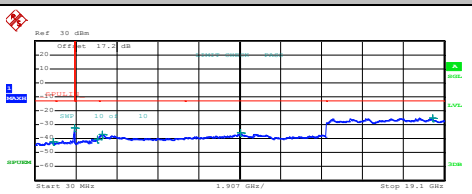
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	865.655000 M	-42.07	-29.07
1.000 G	1.845 G	1.00 M	1.842254 G	-32.45	-19.45
1.915 G	3.000 G	1.00 M	2.926763 G	-40.49	-27.49
3.000 G	7.000 G	1.00 M	3.155000 G	-37.14	-24.14
7.000 G	13.600 G	1.00 M	9.584725 G	-36.05	-23.05
13.600 G	19.100 G	1.00 M	18.547938 G	-25.04	-12.04

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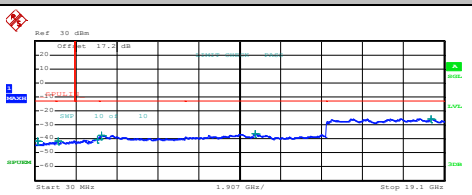
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	142.520000 M	-41.71	-28.71
1.000 G	1.845 G	1.00 M	1.103301 G	-41.47	-28.47
1.915 G	3.000 G	1.00 M	2.929204 G	-40.56	-27.56
3.000 G	7.000 G	1.00 M	3.138000 G	-37.60	-24.60
7.000 G	13.600 G	1.00 M	10.274425 G	-36.60	-23.60
13.600 G	19.100 G	1.00 M	18.477125 G	-25.74	-12.74

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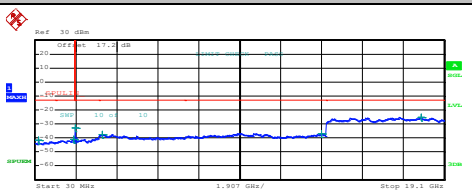
Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	170.165000 M	-41.89	-28.89
1.000 G	1.845 G	1.00 M	1.822185 G	-41.33	-28.33
1.915 G	3.000 G	1.00 M	1.915271 G	-32.67	-19.67
3.000 G	7.000 G	1.00 M	3.149000 G	-37.61	-24.61
7.000 G	13.600 G	1.00 M	13.385500 G	-36.94	-23.94
13.600 G	19.100 G	1.00 M	18.027500 G	-25.41	-12.41

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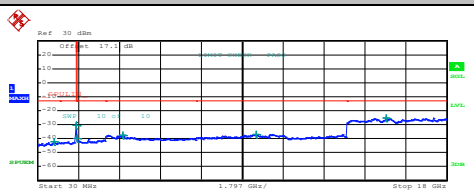
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	764.290000 M	-42.02	-29.02
1.000 G	1.705 G	1.00 M	1.704119 G	-30.39	-17.39
1.760 G	3.000 G	1.00 M	1.765270 G	-40.02	-27.02
3.000 G	7.000 G	1.00 M	3.770000 G	-37.67	-24.67
7.000 G	13.600 G	1.00 M	9.621025 G	-36.98	-23.98
13.600 G	18.000 G	1.00 M	15.350650 G	-25.50	-12.50

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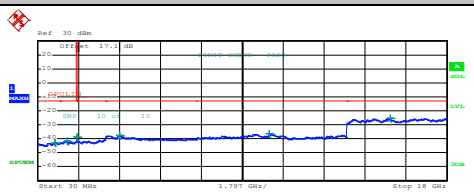
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	769.140000 M	-42.63	-29.63
1.000 G	1.705 G	1.00 M	1.339458 G	-41.63	-28.63
1.760 G	3.000 G	1.00 M	1.769610 G	-38.85	-25.85
3.000 G	7.000 G	1.00 M	3.620000 G	-37.60	-24.60
7.000 G	13.600 G	1.00 M	10.216675 G	-36.57	-23.57
13.600 G	18.000 G	1.00 M	15.523350 G	-25.44	-12.44

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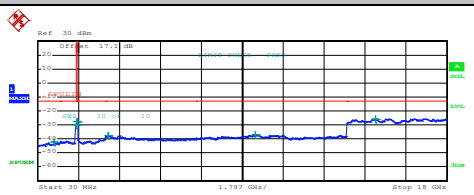
Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	759.925000 M	-42.28	-29.28
1.000 G	1.705 G	1.00 M	1.704295 G	-29.77	-16.77
1.760 G	3.000 G	1.00 M	1.764030 G	-27.45	-14.45
3.000 G	7.000 G	1.00 M	3.107000 G	-37.80	-24.80
7.000 G	13.600 G	1.00 M	9.597100 G	-36.83	-23.83
13.600 G	18.000 G	1.00 M	14.857850 G	-25.62	-12.62

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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	0.0155	PASS
40	Normal Voltage	0.0108	
30	Normal Voltage	0.0060	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0012	
0	Normal Voltage	0.0012	
-10	Normal Voltage	0.0000	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0024	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.2 V.；Maximum Voltage =4.2 V

2. The frequency fundamental emissions stay within the authorized frequency block.

Test Conditions	Middle Channel	WCDMA Band II (RMC 12.2Kbps)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0037	PASS
40	Normal Voltage	0.0016	
30	Normal Voltage	0.0011	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0032	
0	Normal Voltage	0.0021	
-10	Normal Voltage	0.0005	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0037	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0011	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.2 V.；Maximum Voltage =4.2 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	0.0115	PASS
40	Normal Voltage	0.0029	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0087	
0	Normal Voltage	0.0139	
-10	Normal Voltage	0.0173	
-20	Normal Voltage	0.0156	
-30	Normal Voltage	0.0162	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0006	

Note:

3. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.2 V.；Maximum Voltage =4.2 V

4. The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of ERP/EIRP and Radiated Test

ERP/EIRP

Channel	Mode	Conducted		ERP	
		Power (dBm)	Power (Watts)	ERP(dBm)	ERP(W)
Lowest	GSM850	33.57	2.2751	33.62	2.3014
Middle	GPRS class 8	33.75	2.3714	33.80	2.3988
Highest	(GT - LC = 2.2 dB)	33.70	2.3442	33.75	2.3714
Lowest	GSM850	27.61	0.5768	27.66	0.5834
Middle	EDGE class 8	27.81	0.6039	27.86	0.6109
Highest	(GT - LC = 2.2 dB)	27.77	0.5984	27.82	0.6053
Lowest	WCDMA Band V	25.39	0.3459	25.44	0.3499
Middle	RMC 12.2Kbps	25.42	0.3483	25.47	0.3524
Highest	(GT - LC = 2.2 dB)	25.24	0.3342	25.29	0.3381
Limit	ERP < 7W	Result		PASS	

Channel	Mode	Conducted		EIRP	
		Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900	31.11	1.2912	32.81	1.9099
Middle	GPRS class 8	31.20	1.3183	32.90	1.9498
Highest	(GT - LC = 1.7 dB)	31.30	1.3490	33.00	1.9953
Lowest	GSM1900	27.04	0.5058	28.74	0.7482
Middle	EDGE class 8	27.10	0.5129	28.80	0.7586
Highest	(GT - LC = 1.7 dB)	27.10	0.5129	28.80	0.7586
Lowest	WCDMA Band II	24.75	0.2985	28.10	0.6457
Middle	RMC 12.2Kbps	25.15	0.3273	28.50	0.7079
Highest	(GT - LC = 3.35 dB)	25.18	0.3296	28.53	0.7129
Limit	EIRP < 2W	Result		PASS	

Channel	Mode	Conducted		EIRP	
		Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	WCDMA Band IV	24.65	0.2917	27.69	0.5875
Middle	RMC 12.2Kbps	24.76	0.2992	27.80	0.6026
Highest	(GT - LC = 3.04 dB)	24.89	0.3083	27.93	0.6209
Limit	EIRP < 1W	Result		PASS	

Radiated Spurious Emission

<For SIM 1>

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	-39.06	-13	-26.06	-51.35	-40.82	0.98	4.89	H
	2472	-39.15	-13	-26.15	-56.47	-41.03	1.28	5.32	H
	3296	-40.61	-13	-27.61	-60.02	-44.02	1.54	7.10	H
	4120	-49.72	-13	-36.72	-70.2	-54.36	1.83	8.62	H
	4944	-52.06	-13	-39.06	-75.21	-57.19	2.30	9.59	H
									H
	1648	-31.67	-13	-18.67	-44.33	-33.43	0.98	4.89	V
	2472	-38.53	-13	-25.53	-56.29	-40.41	1.28	5.32	V
	3296	-46.71	-13	-33.71	-66.5	-50.12	1.54	7.10	V
	4120	-51.91	-13	-38.91	-72.61	-56.55	1.83	8.62	V
	4944	-52.89	-13	-39.89	-75.84	-58.02	2.30	9.59	V
									V
Middle	1672	-35.01	-13	-22.01	-47.44	-36.69	0.99	4.82	H
	2512	-35.25	-13	-22.25	-52.6	-37.22	1.29	5.41	H
	3344	-37.64	-13	-24.64	-57.41	-41.25	1.56	7.31	H
	4184	-44.05	-13	-31.05	-64.91	-48.67	1.87	8.64	H
	5016	-49.18	-13	-36.18	-72.57	-54.38	2.35	9.70	H
									H
	1672	-28.87	-13	-15.87	-41.78	-30.55	0.99	4.82	V
	2512	-34.26	-13	-21.26	-52.09	-36.23	1.29	5.41	V
	3344	-41.67	-13	-28.67	-61.67	-45.28	1.56	7.31	V
	4184	-45.35	-13	-32.35	-66.14	-49.97	1.87	8.64	V
	5016	-51.68	-13	-38.68	-74.89	-56.88	2.35	9.70	V

Highest	1696	-35.42	-13	-22.42	-48.07	-37.02	1.00	4.75	H
	2544	-33.58	-13	-20.58	-50.93	-35.56	1.30	5.44	H
	3392	-39.36	-13	-26.36	-59.41	-43.16	1.57	7.52	H
	4248	-45.84	-13	-32.84	-66.79	-50.44	1.90	8.65	H
	5096	-51.85	-13	-38.85	-75.5	-57.01	2.39	9.70	H
									H
									H
	1696	-29.62	-13	-16.62	-42.71	-31.22	1.00	4.75	V
	2544	-35.05	-13	-22.05	-52.98	-37.03	1.30	5.44	V
	3392	-41.41	-13	-28.41	-61.55	-45.21	1.57	7.52	V
	4248	-45.42	-13	-32.42	-66.46	-50.02	1.90	8.65	V
	5096	-52.48	-13	-39.48	-76	-57.64	2.39	9.70	V
									V
									V

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

EDGE 850

EDGE 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	-49.64	-13	-36.64	-61.69	-51.4	0.98	4.89	H
	2472	-49.62	-13	-36.62	-66.61	-51.5	1.28	5.32	H
	3296	-58.09	-13	-45.09	-77.54	-61.5	1.54	7.10	H
									H
									H
	1648	-43.74	-13	-30.74	-56.28	-45.5	0.98	4.89	V
	2472	-54.22	-13	-41.22	-71.9	-56.1	1.28	5.32	V
	3296	-57.89	-13	-44.89	-77.55	-61.3	1.54	7.10	V
									V
									V
Middle	1672	-46.47	-13	-33.47	-59	-48.15	0.99	4.82	H
	2512	-45.59	-13	-32.59	-63	-47.56	1.29	5.41	H
	3344	-55.91	-13	-42.91	-75.61	-59.52	1.56	7.31	H
									H
									H
	1672	-41.84	-13	-28.84	-54.8	-43.52	0.99	4.82	V
	2512	-49.04	-13	-36.04	-66.87	-51.01	1.29	5.41	V
	3344	-57.75	-13	-44.75	-77.79	-61.36	1.56	7.31	V
									V
									V

Highest	1696	-47.10	-13	-34.10	-59.18	-48.7	1.00	4.75	H
	2544	-49.42	-13	-36.42	-66.84	-51.4	1.30	5.44	H
	3392	-55.40	-13	-42.40	-75.65	-59.2	1.57	7.52	H
									H
									H
	1696	-41.70	-13	-28.70	-54.5	-43.3	1.00	4.75	V
	2544	-51.62	-13	-38.62	-69.46	-53.6	1.30	5.44	V
	3392	-58.30	-13	-45.30	-78.21	-62.1	1.57	7.52	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	-49.64	-13	-36.64	-61.69	-51.4	0.98	4.89	H
	2472	-49.62	-13	-36.62	-66.61	-51.5	1.28	5.32	H
	3296	-58.09	-13	-45.09	-77.54	-61.5	1.54	7.10	H
									H
									H
	1648	-43.74	-13	-30.74	-56.28	-45.5	0.98	4.89	V
	2472	-54.22	-13	-41.22	-71.9	-56.1	1.28	5.32	V
	3296	-57.89	-13	-44.89	-77.55	-61.3	1.54	7.10	V
									V
									V
Middle	1672	-58.22	-13	-45.22	-70.29	-59.9	0.99	4.82	H
	2512	-59.83	-13	-46.83	-77.01	-61.8	1.29	5.41	H
	3344	-58.49	-13	-45.49	-77.91	-62.1	1.56	7.31	H
									H
									H
	1672	-52.42	-13	-39.42	-65	-54.1	0.99	4.82	V
	2512	-59.23	-13	-46.23	-77.09	-61.2	1.29	5.41	V
	3344	-58.29	-13	-45.29	-77.88	-61.9	1.56	7.31	V
									V
									V

Highest	1688	-59.07	-13	-46.07	-71.06	-60.7	1.00	4.77	H
	2540	-59.42	-13	-46.42	-76.79	-61.4	1.30	5.43	H
	3386	-58.32	-13	-45.32	-77.81	-62.1	1.57	7.50	H
									H
									H
	1688	-53.47	-13	-40.47	-66.05	-55.1	1.00	4.77	V
	2540	-59.42	-13	-46.42	-77.04	-61.4	1.30	5.43	V
	3386	-58.02	-13	-45.02	-77.75	-61.8	1.57	7.50	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	-56.96	-13	-43.96	-77.74	-63.05	1.58	7.67	H
	5136	-55.85	-13	-42.85	-79.81	-63.13	2.42	9.70	H
	6848	-54.17	-13	-41.17	-81.18	-62.15	2.64	10.62	H
									H
									H
	3426	-57.02	-13	-44.02	-77.81	-63.11	1.58	7.67	V
	5136	-56.69	-13	-43.69	-80.49	-63.97	2.42	9.70	V
	6848	-54.24	-13	-41.24	-81.2	-62.22	2.64	10.62	V
									V
									V
Middle	3468	-56.63	-13	-43.63	-77.56	-62.89	1.59	7.86	H
	5196	-54.94	-13	-41.94	-79.1	-62.19	2.45	9.70	H
	6930	-54.40	-13	-41.40	-81.59	-62.5	2.61	10.72	H
									H
									H
	3468	-56.94	-13	-43.94	-77.8	-63.2	1.59	7.86	V
	5196	-56.20	-13	-43.20	-80.22	-63.45	2.45	9.70	V
	6930	-53.88	-13	-40.88	-81.07	-61.98	2.61	10.72	V
									V
									V

Highest	3504	-56.47	-13	-43.47	-77.57	-62.87	1.61	8.00	H
	5257	-55.81	-13	-42.81	-80.12	-63.02	2.49	9.70	H
	7010	-54.10	-13	-41.10	-81.45	-62.33	2.59	10.82	H
									H
									H
	3504	-57.10	-13	-44.10	-78.05	-63.5	1.61	8.00	V
	5257	-56.35	-13	-43.35	-80.54	-63.56	2.49	9.70	V
	7010	-54.06	-13	-41.06	-81.47	-62.29	2.59	10.82	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	3702	-52.59	-13	-39.59	-73.43	-59.16	1.67	8.24	H
	5550	-36.43	-13	-23.43	-61.6	-43.5	2.65	9.72	H
	7400	-53.36	-13	-40.36	-80.99	-62.5	2.46	11.60	H
									H
									H
	3702	-51.51	-13	-38.51	-72.34	-58.08	1.67	8.24	V
	5550	-35.87	-13	-22.87	-61.01	-42.94	2.65	9.72	V
	7400	-53.13	-13	-40.13	-80.96	-62.27	2.46	11.60	V
									V
									V
Middle	3762	-46.17	-13	-33.17	-66.93	-52.8	1.69	8.31	H
	5640	-37.46	-13	-24.46	-62.84	-44.51	2.71	9.76	H
	7520	-53.05	-13	-40.05	-80.86	-62.44	2.42	11.81	H
									H
									H
	3762	-50.18	-13	-37.18	-70.96	-56.81	1.69	8.31	V
	5640	-33.67	-13	-20.67	-59.03	-40.72	2.71	9.76	V
	7520	-52.50	-13	-39.50	-80.56	-61.89	2.42	11.81	V
									V
									V

Highest	3702	-52.59	-13	-39.59	-73.43	-59.16	1.67	8.24	H
	5550	-36.43	-13	-23.43	-61.6	-43.5	2.65	9.72	H
	7400	-53.36	-13	-40.36	-80.99	-62.5	2.46	11.60	H
									H
									H
	3702	-51.51	-13	-38.51	-72.34	-58.08	1.67	8.24	V
	5550	-35.87	-13	-22.87	-61.01	-42.94	2.65	9.72	V
	7400	-53.13	-13	-40.13	-80.96	-62.27	2.46	11.60	V
									V
									V

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

EDGE1900

EDGE 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	3702	-54.12	-13	-41.12	-74.96	-60.69	1.67	8.24	H
	5550	-39.08	-13	-26.08	-64.28	-46.15	2.65	9.72	H
	7398	-53.42	-13	-40.42	-80.99	-62.55	2.46	11.60	H
									H
									H
	3702	-57.45	-13	-44.45	-78.28	-64.02	1.67	8.24	V
	5550	-44.32	-13	-31.32	-69.45	-51.39	2.65	9.72	V
	7398	-53.12	-13	-40.12	-81	-62.25	2.46	11.60	V
									V
									V
Middle	3762	-53.99	-13	-40.99	-74.68	-60.62	1.69	8.31	H
	5640	-39.96	-13	-26.96	-65.29	-47.01	2.71	9.76	H
	7518	-53.05	-13	-40.05	-80.9	-62.44	2.42	11.81	H
									H
									H
	3762	-57.19	-13	-44.19	-77.9	-63.82	1.69	8.31	V
	5640	-40.25	-13	-27.25	-65.47	-47.3	2.71	9.76	V
	7518	-52.96	-13	-39.96	-80.91	-62.35	2.42	11.81	V
									V
									V

Highest	3822	-56.14	-13	-43.14	-76.7	-62.82	1.71	8.39	H
	5730	-47.34	-13	-34.34	-72.96	-54.37	2.76	9.79	H
	7638	-53.03	-13	-40.03	-81.09	-62.53	2.38	11.88	H
									H
									H
	3822	-57.14	-13	-44.14	-77.86	-63.82	1.71	8.39	V
	5730	-47.42	-13	-34.42	-73.03	-54.45	2.76	9.79	V
	7638	-52.73	-13	-39.73	-81.11	-62.23	2.38	11.88	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	3708	-57.47	-13	-44.47	-78.34	-64.05	1.67	8.25	H
	5562	-52.52	-13	-39.52	-77.68	-59.58	2.66	9.72	H
	7416	-53.83	-13	-40.83	-81.43	-63.01	2.46	11.63	H
									H
									H
	3708	-57.84	-13	-44.84	-78.68	-64.42	1.67	8.25	V
	5562	-54.03	-13	-41.03	-79.27	-61.09	2.66	9.72	V
	7416	-53.78	-13	-40.78	-81.56	-62.96	2.46	11.63	V
									V
									V
Middle	3762	-57.62	-13	-44.62	-78.35	-64.25	1.69	8.31	H
	5640	-54.66	-13	-41.66	-80.03	-61.71	2.71	9.76	H
	7518	-53.22	-13	-40.22	-81.03	-62.61	2.42	11.81	H
									H
									H
	3762	-57.82	-13	-44.82	-78.64	-64.45	1.69	8.31	V
	5640	-53.42	-13	-40.42	-78.83	-60.47	2.71	9.76	V
	7518	-53.05	-13	-40.05	-81.18	-62.44	2.42	11.81	V
									V
									V

Highest	3810	-58.15	-13	-45.15	-78.83	-64.82	1.70	8.37	H
	5718	-53.28	-13	-40.28	-78.8	-60.32	2.75	9.79	H
	7626	-52.98	-13	-39.98	-80.98	-62.47	2.39	11.88	H
									H
									H
	3810	-58.33	-13	-45.33	-79.05	-65	1.70	8.37	V
	5718	-55.19	-13	-42.19	-80.8	-62.23	2.75	9.79	V
	7626	-52.75	-13	-39.75	-81.05	-62.24	2.39	11.88	V
									V
									V

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