



FCC RADIO TEST REPORT

FCC ID : 2AJOTTA-1112
Equipment : Smart Phone
Brand Name : NOKIA
Model Name : TA-1112
Applicant : HMD Global Oy
Karaportti 2, 02610 Espoo, Finland
Manufacturer : HMD Global Oy
Karaportti 2, 02610 Espoo, Finland
Standard : 47 CFR Part 2, 22(H), 24(E), 27(L)

The product was received on May 24, 2018 and testing was started from Jun. 16, 2018 and completed on Jul. 03, 2018. We, SPORTON INTERNATIONAL INC., 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant 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.

Approved by: Jones Tsai

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
FG852420-01A	01	Initial issue of report	Jul. 05, 2018

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		
	§24.232 (c)	Equivalent Isotropic Radiated Power		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power		
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	Pass	-
3.5	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Band Edge Measurement	Pass	-
3.6	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Conducted Emission	Pass	-
3.7	§2.1055 §22.355	Frequency Stability Temperature & Voltage	Pass	-
	§2.1055 §24.235 §27.54			-
4.4	§2.1053 §22.917 (a) §24.238 (a) §27.53 (h)	Field Strength of Spurious Radiation	Pass	Under limit 21.12 dB at 2472.000 MHz
Remark: This is a variant report which can be referred Product Equality Declaration. Since the test result is not affected by the changes, the FG852420-01A test report reuses test data from the FG852420A test report.				

Reviewed by: Joseph Lin

Report Producer: Maggie Chiang

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, FM Receiver, and GNSS

Product Specification subjective to this standard	
Antenna Type	WWAN: Monopole Antenna WLAN: Monopole Antenna Bluetooth: Monopole Antenna GPS/Glonass/BDS/Galileo: PIFA Antenna FM: using earphone as antenna

1.2 Modification of EUT

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

1.3 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
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

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

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
	03CH11-HY

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



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
- ♦ 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

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.



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. The worst cases (Z 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.

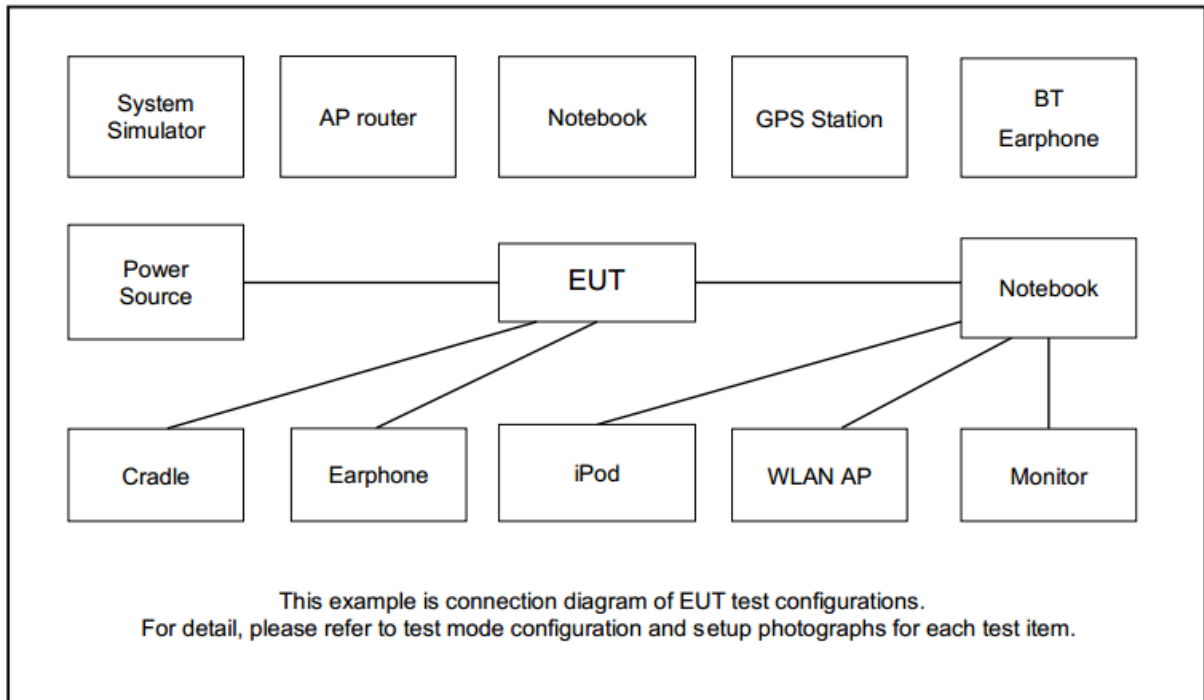
All modes and data rates and positions were investigated.

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

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM 850	■ GPRS Class 8 Link	■ GPRS Class 8 Link
	■ EDGE Class 8 Link	■ EDGE Class 8 Link
GSM 1900	■ GPRS Class 8 Link	■ GPRS Class 8 Link
	■ EDGE 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

Remark: All the radiated emission test cases were performed with Adapter 1.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade 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:

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$



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

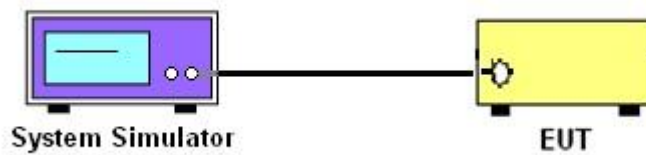
3 Conducted Test Result

3.1 Measuring Instruments

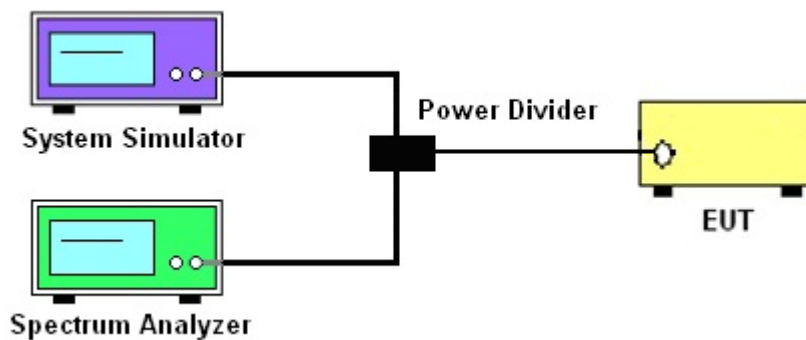
See list of measuring instruments of this test report.

3.1.1 Test Setup

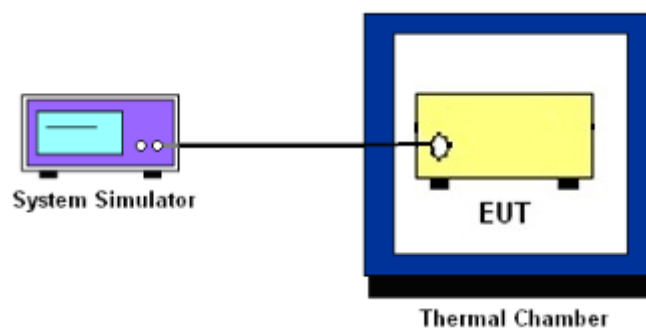
3.1.2 Conducted Output Power



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 FCC KDB 971168 D01 v03r01 Section 5.7.1

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 FCC KDB 971168 D01 v03r01 Section 4.2

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 6.0.

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 $43 + 10\log(P)$ 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 6.0.

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 $43 + 10\log(P)$ 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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) 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 $20\pm 5^{\circ}\text{C}$ 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.

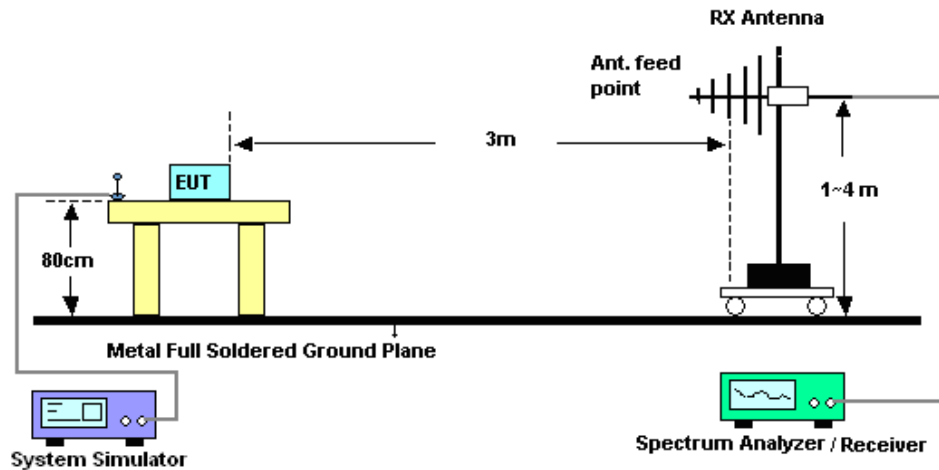
4 Radiated Test Items

4.1 Measuring Instruments

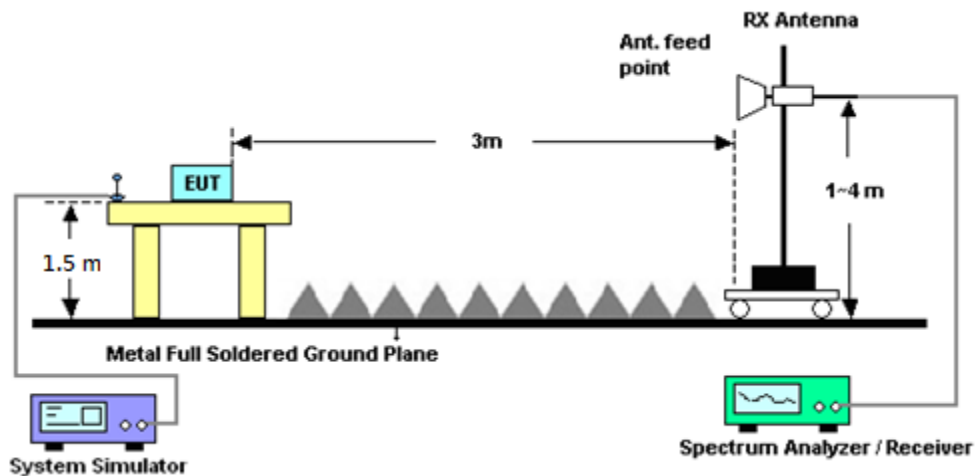
See list of measuring instruments of this test report.

4.2 Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.



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 5.8 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. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Jun. 26, 2017	Jun. 16, 2018	Jun. 25, 2018	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Dec. 06, 2017	Jun. 16, 2018	Dec. 05, 2019	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL883644	Voltage:0~20V; Current:0~5A	Dec. 06, 2017	Jun. 16, 2018	Dec. 05, 2019	Conducted (TH03-HY)
Base Station (Measure)	Rohde & Schwarz	CMU200	117995	GSM / GPRS / WCDMA / CDMA	Aug. 09, 2017	Jun. 16, 2018	Aug. 08, 2018	Conducted (TH03-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 18, 2017	Jun. 23, 2018~ Jul. 03, 2018	Jul. 17, 2018	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Jun. 23, 2018~ Jul. 03, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT- N0602	30MHz~1GHz	Oct. 14, 2017	Jun. 23, 2018~ Jul. 03, 2018	Oct. 13, 2018	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 16, 2017	Jun. 23, 2018~ Jul. 03, 2018	Oct. 15, 2018	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1328	1GHz ~ 18GHz	Oct. 20, 2017	Jun. 23, 2018~ Jul. 03, 2018	Oct. 19, 2018	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Jun. 23, 2018~ Jul. 03, 2018	Nov. 22, 2019	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Jun. 23, 2018~ Jul. 03, 2018	Nov. 09, 2018	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2017	Jun. 23, 2018~ Jul. 03, 2018	Oct. 18, 2018	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-1080 -1200-1500-60 SS	SN2	1.2G High Pass	Sep. 18, 2017	Jun. 23, 2018~ Jul. 03, 2018	Sep. 17, 2018	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OSS	SN3	2.7G High Pass	Sep. 18, 2017	Jun. 23, 2018~ Jul. 03, 2018	Sep. 17, 2018	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jun. 23, 2018~ Jul. 03, 2018	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jun. 23, 2018~ Jul. 03, 2018	N/A	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Nov. 02, 2017	Jun. 23, 2018~ Jul. 03, 2018	Nov. 01, 2018	Radiation (03CH11-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 21, 2018	Jun. 23, 2018~ Jul. 03, 2018	May 20, 2019	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917058 4	18GHz- 40GHz	Nov. 27, 2017	Jun. 23, 2018~ Jul. 03, 2018	Nov. 26, 2018	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Jun. 23, 2018~ Jul. 03, 2018	N/A	Radiation (03CH11-HY)

6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.37
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.67
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.03
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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
GSM	33.59	33.61	33.60	30.85	30.81	30.79
GPRS class 8	33.62	33.66	33.63	30.87	30.82	30.79
GPRS class 10	30.33	30.41	30.40	27.03	27.19	27.34
GPRS class 11	28.46	28.54	28.50	24.92	25.09	25.25
GPRS class 12	27.37	27.45	27.45	23.89	24.05	24.22
EGPRS class 8	25.92	25.94	25.93	26.24	26.25	26.24
EGPRS class 10	23.92	23.91	23.93	24.42	24.43	24.41
EGPRS class 11	22.05	22.04	22.05	22.45	22.43	22.46
EGPRS class 12	20.99	20.99	21.03	21.40	21.32	21.34

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	24.02	23.95	23.86	24.70	24.69	24.65
HSDPA Subtest-1	23.72	23.66	23.58	24.21	24.25	24.17
HSDPA Subtest-2	23.71	23.59	23.58	24.15	24.13	24.04
HSDPA Subtest-3	23.19	23.08	23.04	23.58	23.67	23.53
HSDPA Subtest-4	23.21	23.04	22.94	23.54	23.64	23.53
HSUPA Subtest-1	21.71	21.64	21.59	22.76	22.31	22.21
HSUPA Subtest-2	21.71	21.62	21.55	22.21	22.25	22.12
HSUPA Subtest-3	22.68	22.63	22.61	23.28	23.22	23.19
HSUPA Subtest-4	21.18	21.16	21.01	21.73	21.71	21.66
HSUPA Subtest-5	22.70	22.60	22.60	23.20	23.20	23.10

**FCC RF RADIO TEST REPORT**

Report No. : FG852420-01A

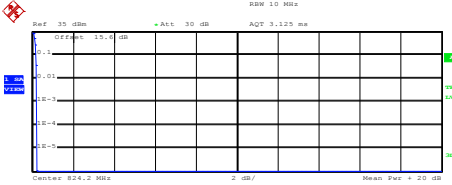
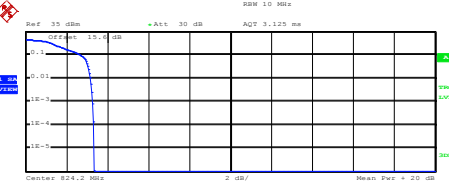
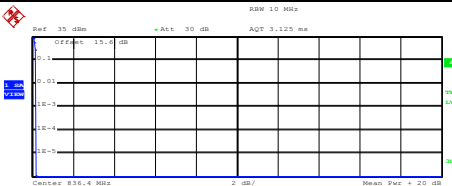
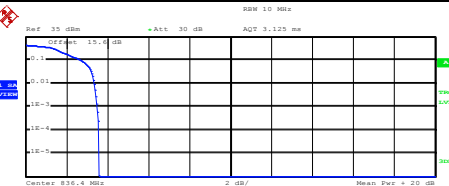
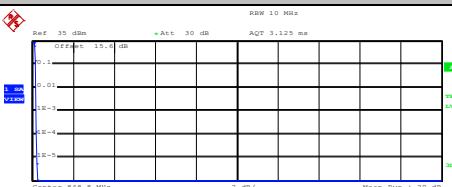
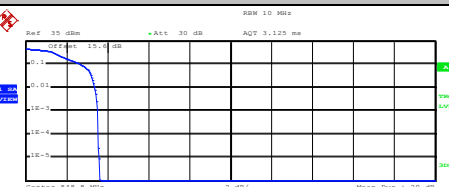
Conducted Power (*Unit: dBm)			
Band	WCDMA Band IV		
Channel	1312	1413	1513
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	24.85	24.99	25.00
HSDPA Subtest-1	24.08	24.13	24.25
HSDPA Subtest-2	24.01	24.11	24.23
HSDPA Subtest-3	23.49	23.62	23.79
HSDPA Subtest-4	23.50	23.61	23.79
HSUPA Subtest-1	22.07	22.15	22.20
HSUPA Subtest-2	21.97	22.13	22.10
HSUPA Subtest-3	23.00	23.14	22.99
HSUPA Subtest-4	21.66	21.71	21.00
HSUPA Subtest-5	22.90	23.00	22.70



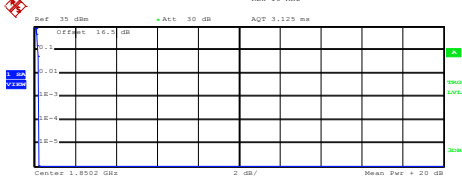
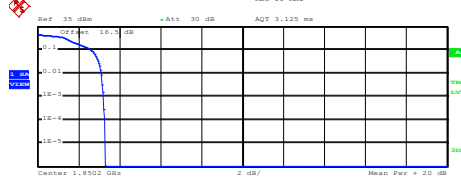
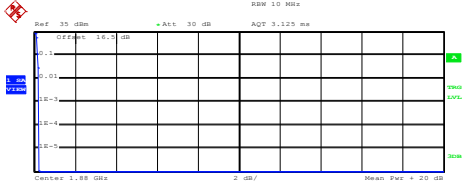
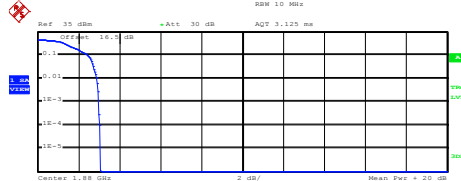
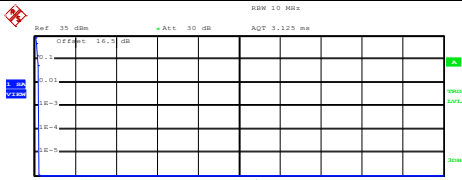
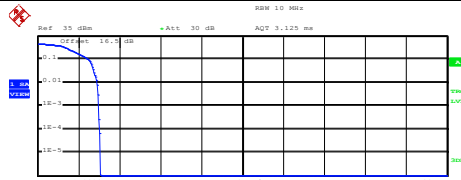
A2. GSM

Peak-to-Average Ratio

Mode	GSM850		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.24	3.28	PASS
Middle CH	0.20	3.48	
Highest CH	0.20	3.52	
Mode	GSM1900		Limit: 13dB
Mod.	GPRS class 8	EDGE class 8	Result
Lowest CH	0.24	3.20	PASS
Middle CH	0.24	3.00	
Highest CH	0.24	3.00	

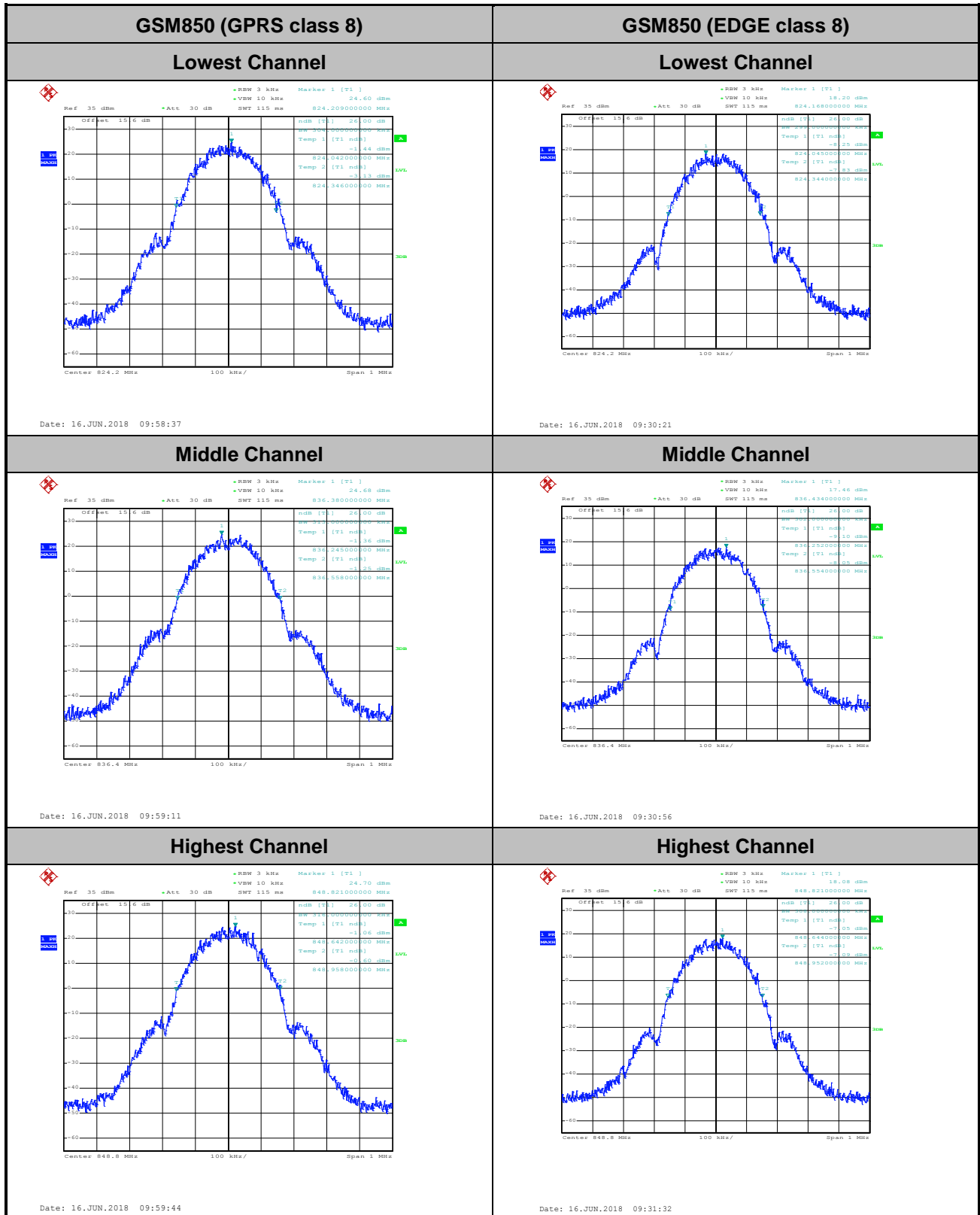
GSM850 (GPRS class 8)	GSM850 (EDGE class 8)
Lowest Channel	Lowest Channel
 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 824.2 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 31.80 dBm Peak 32.01 dBm Crest 0.21 dB</p> <p>10 % 0.20 dB 1 % 0.24 dB .1 % 0.24 dB .01 % 0.24 dB</p> <p>Date: 16.JUN.2018 10:04:26</p>	 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 824.2 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 26.00 dBm Peak 29.32 dBm Crest 3.32 dB</p> <p>10 % 2.72 dB 1 % 3.16 dB .1 % 3.28 dB .01 % 3.32 dB</p> <p>Date: 16.JUN.2018 09:37:11</p>
Middle Channel	Middle Channel
 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 836.4 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 31.88 dBm Peak 32.08 dBm Crest 0.20 dB</p> <p>10 % 0.20 dB 1 % 0.20 dB .1 % 0.20 dB .01 % 0.20 dB</p> <p>Date: 16.JUN.2018 10:04:40</p>	 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 836.4 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 25.73 dBm Peak 29.32 dBm Crest 3.59 dB</p> <p>10 % 2.72 dB 1 % 3.36 dB .1 % 3.48 dB .01 % 3.60 dB</p> <p>Date: 16.JUN.2018 09:37:34</p>
Highest Channel	Highest Channel
 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 848.8 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 31.98 dBm Peak 32.22 dBm Crest 0.24 dB</p> <p>10 % 0.16 dB 1 % 0.20 dB .1 % 0.20 dB .01 % 0.20 dB</p> <p>Date: 16.JUN.2018 10:04:58</p>	 <p>Ref 35 dBm Att 30 dB AQT 3.125 ms</p> <p>Center 848.8 MHz 2 dB/ Mean Pwr + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples)</p> <p>Trace 1</p> <p>Mean 25.85 dBm Peak 29.47 dBm Crest 3.62 dB</p> <p>10 % 2.72 dB 1 % 3.36 dB .1 % 3.52 dB .01 % 3.56 dB</p> <p>Date: 16.JUN.2018 09:37:50</p>



GSM1900 (GPRS class 8)		GSM1900 (EDGE class 8)	
Lowest Channel		Lowest Channel	
 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.8502 GHz, 2 dB/</p> <p>Mean: 28.47 dBm, Peak: 28.69 dBm, Crest: 0.22 dB</p> <p>10 %: 0.20 dB, 1 %: 0.24 dB, .1 %: 0.24 dB, .01 %: 0.24 dB</p> <p>Date: 16.JUN.2018 09:51:49</p>		 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.8502 GHz, 2 dB/</p> <p>Mean: 24.76 dBm, Peak: 28.05 dBm, Crest: 3.30 dB</p> <p>10 %: 2.64 dB, 1 %: 3.12 dB, .1 %: 3.20 dB, .01 %: 3.28 dB</p> <p>Date: 16.JUN.2018 09:11:21</p>	
Middle Channel		Middle Channel	
 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.88 GHz, 2 dB/</p> <p>Mean: 28.60 dBm, Peak: 28.83 dBm, Crest: 0.24 dB</p> <p>10 %: 0.16 dB, 1 %: 0.24 dB, .1 %: 0.24 dB, .01 %: 0.24 dB</p> <p>Date: 16.JUN.2018 09:52:06</p>		 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.88 GHz, 2 dB/</p> <p>Mean: 25.00 dBm, Peak: 28.05 dBm, Crest: 3.05 dB</p> <p>10 %: 2.44 dB, 1 %: 2.88 dB, .1 %: 3.00 dB, .01 %: 3.04 dB</p> <p>Date: 16.JUN.2018 09:11:43</p>	
Highest Channel		Highest Channel	
 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.9098 GHz, 2 dB/</p> <p>Mean: 28.68 dBm, Peak: 28.90 dBm, Crest: 0.22 dB</p> <p>10 %: 0.20 dB, 1 %: 0.24 dB, .1 %: 0.24 dB, .01 %: 0.24 dB</p> <p>Date: 16.JUN.2018 09:52:23</p>		 <p>Ref: 35 dBm, Att: 30 dB, AGT: 3.125 ms</p> <p>Center: 1.9098 GHz, 2 dB/</p> <p>Mean: 24.87 dBm, Peak: 27.91 dBm, Crest: 3.05 dB</p> <p>10 %: 2.48 dB, 1 %: 2.92 dB, .1 %: 3.00 dB, .01 %: 3.04 dB</p> <p>Date: 16.JUN.2018 09:12:01</p>	

**26dB Bandwidth**

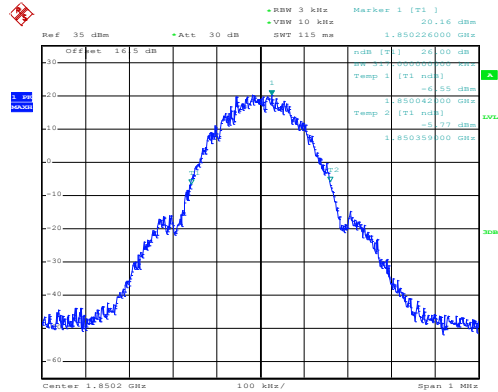
Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.304	0.299
Middle CH	0.313	0.302
Highest CH	0.316	0.308
Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.317	0.315
Middle CH	0.314	0.307
Highest CH	0.309	0.308





GSM1900 (GPRS class 8)

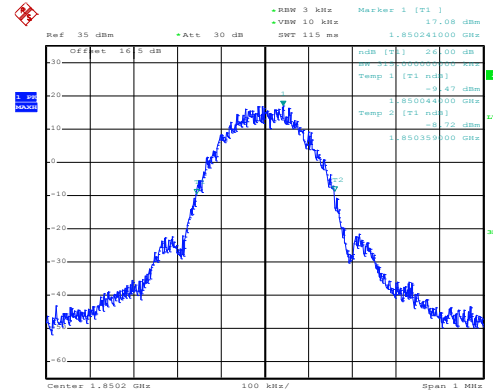
Lowest Channel



Date: 16.JUN.2018 09:45:40

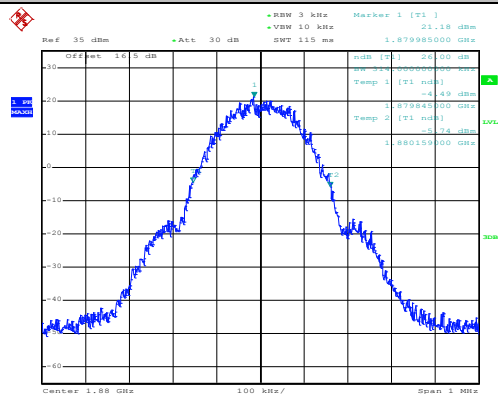
GSM1900 (EDGE class 8)

Lowest Channel



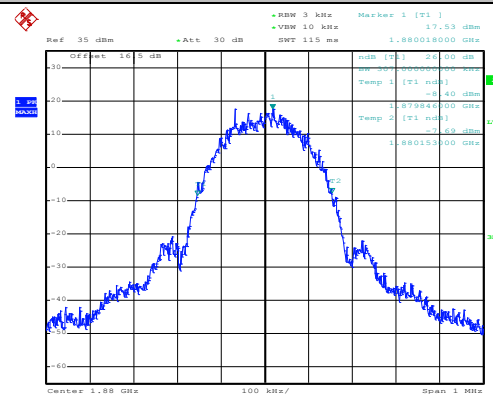
Date: 16.JUN.2018 09:06:44

Middle Channel



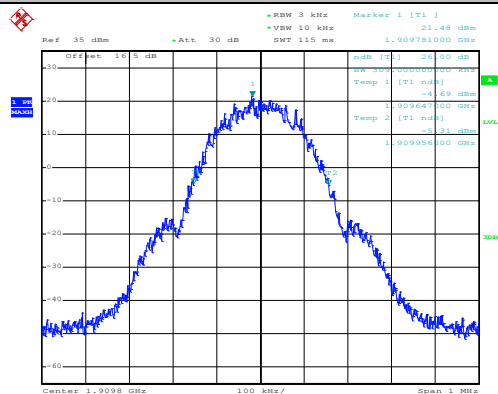
Date: 16.JUN.2018 09:46:15

Middle Channel



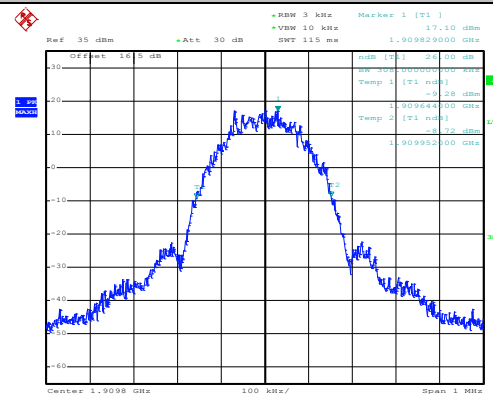
Date: 16.JUN.2018 09:07:32

Highest Channel



Date: 16.JUN.2018 09:46:47

Highest Channel



Date: 16.JUN.2018 09:08:07

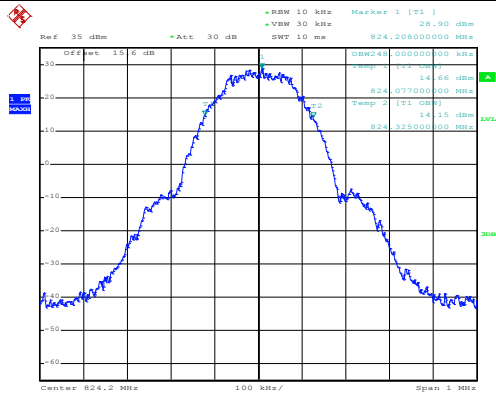
**Occupied Bandwidth**

Mode	GSM850	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.248	0.244
Middle CH	0.243	0.245
Highest CH	0.247	0.248
Mode	GSM1900	
Mod.	GPRS class 8	EDGE class 8
Lowest CH	0.244	0.245
Middle CH	0.249	0.248
Highest CH	0.246	0.249



GSM850 (GPRS class 8)

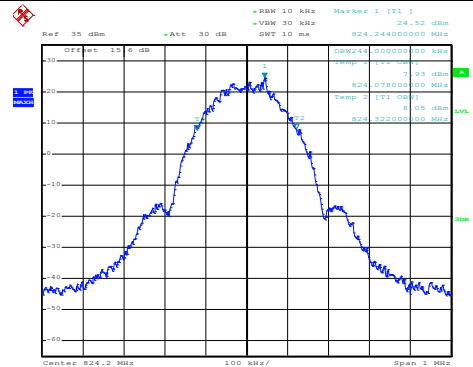
Lowest Channel



Date: 16.JUN.2018 10:00:23

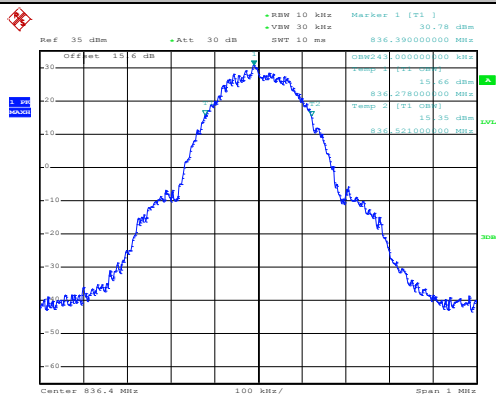
GSM850 (EDGE class 8)

Lowest Channel



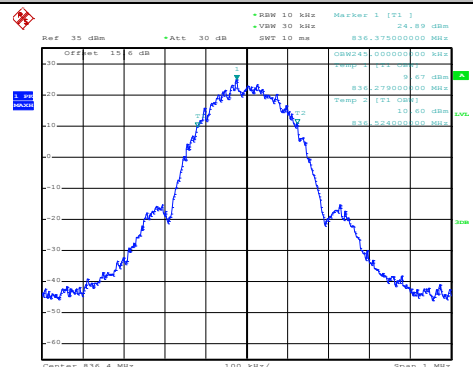
Date: 16.JUN.2018 09:34:57

Middle Channel



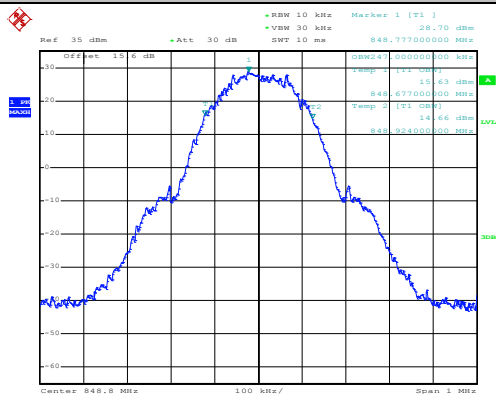
Date: 16.JUN.2018 10:00:58

Middle Channel



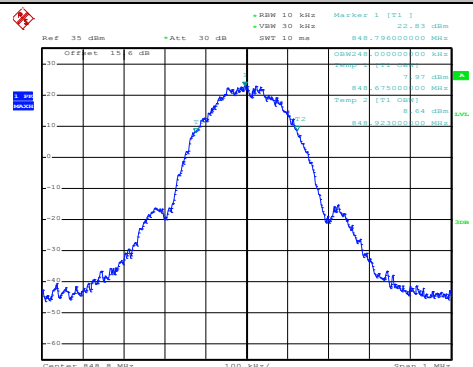
Date: 16.JUN.2018 09:35:30

Highest Channel



Date: 16.JUN.2018 10:01:31

Highest Channel

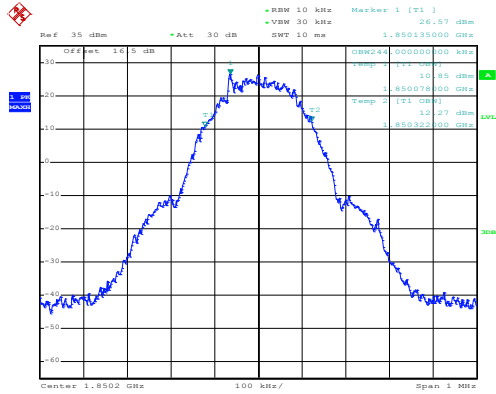


Date: 16.JUN.2018 09:36:04



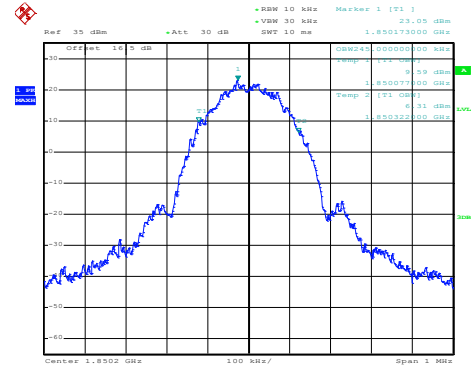
GSM1900 (GPRS class 8)

Lowest Channel

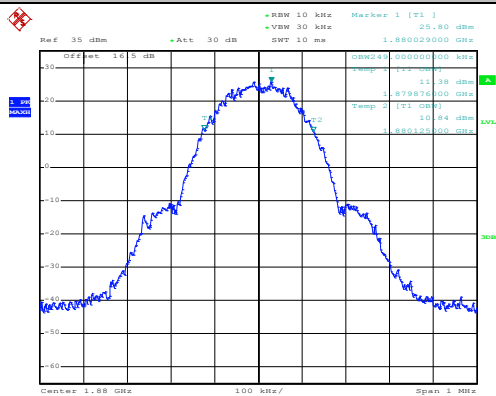


GSM1900 (EDGE class 8)

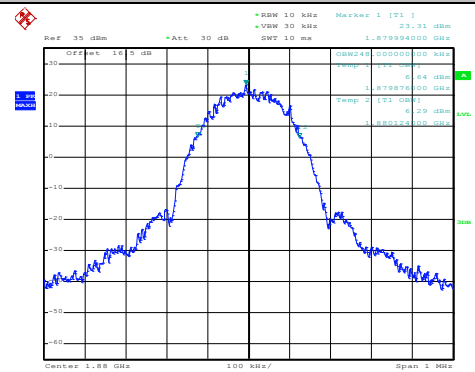
Lowest Channel



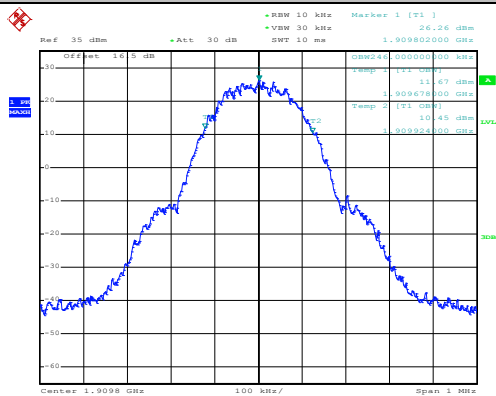
Middle Channel



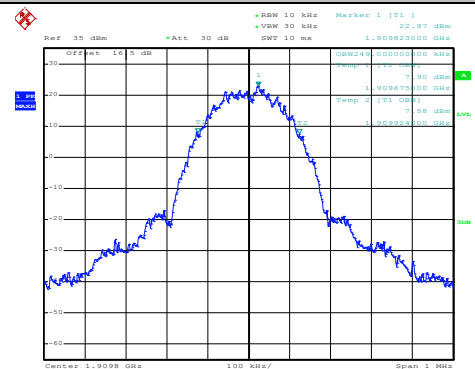
Middle Channel

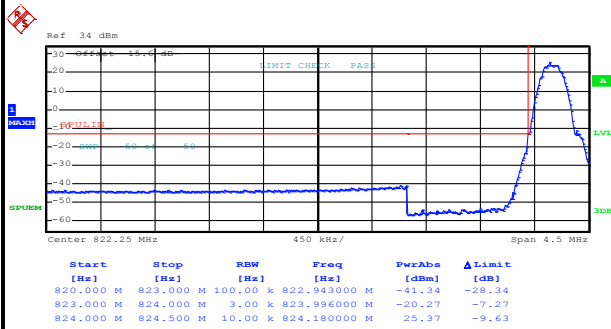


Highest Channel

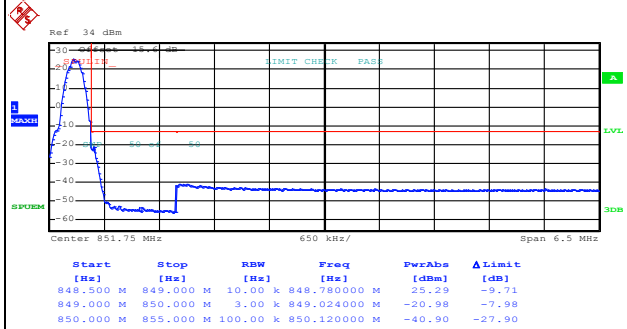


Highest Channel

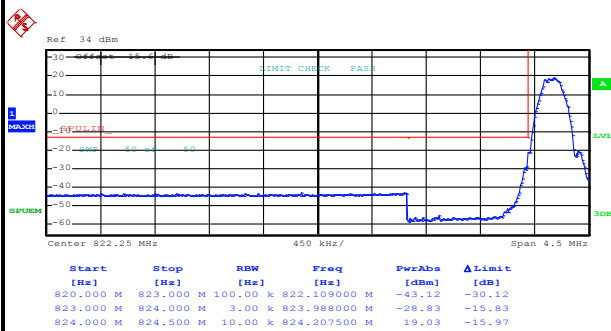


**Conducted Band Edge****GSM850 (GPRS class 8)****Lowest Band Edge**

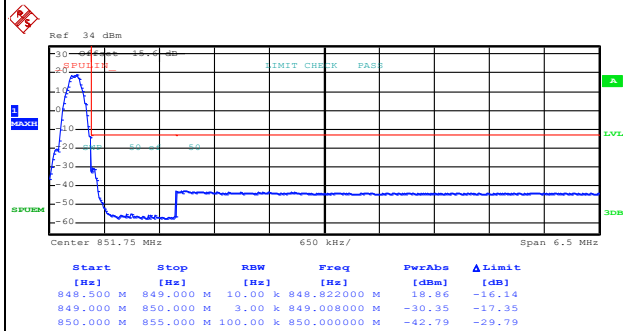
Date: 16.JUN.2018 10:06:40

Highest Band Edge

Date: 16.JUN.2018 10:08:12

GSM850 (EDGE class 8)**Lowest Band Edge**

Date: 16.JUN.2018 09:40:15

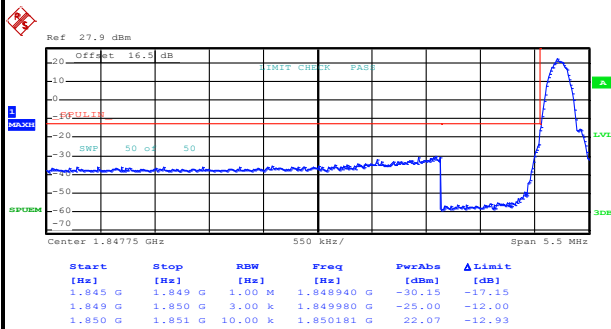
Highest Band Edge

Date: 16.JUN.2018 09:41:49



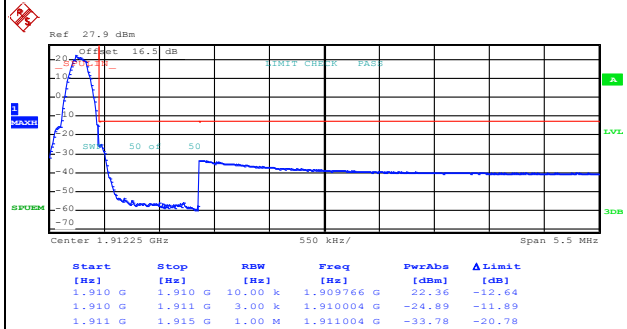
GSM1900 (GPRS class 8)

Lowest Band Edge



Date: 16.JUN.2018 09:54:18

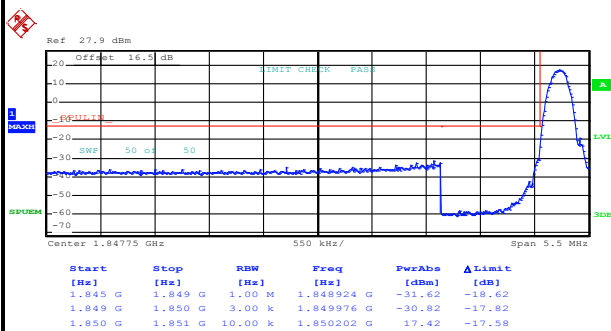
Highest Band Edge



Date: 16.JUN.2018 09:55:49

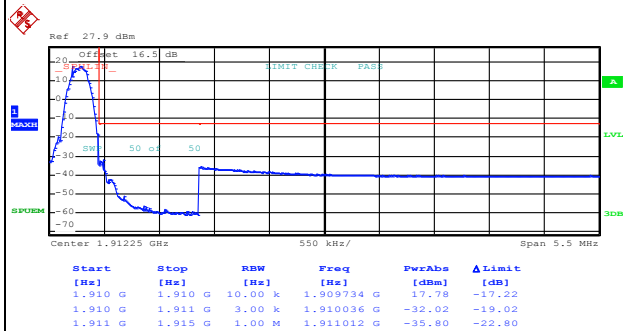
GSM1900 (EDGE class 8)

Lowest Band Edge



Date: 16.JUN.2018 09:15:23

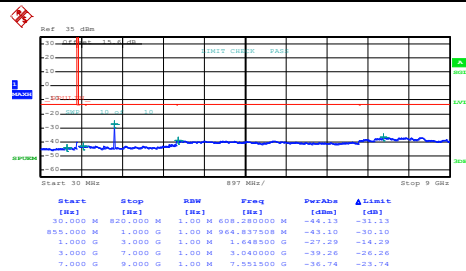
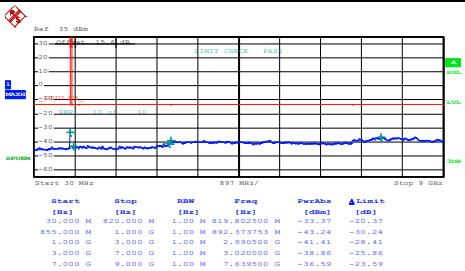
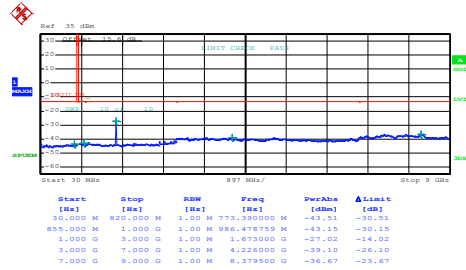
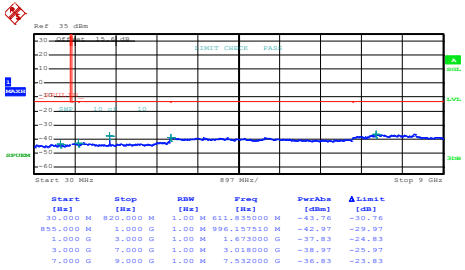
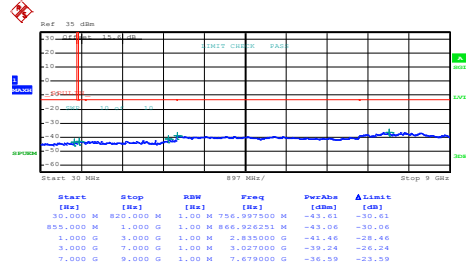
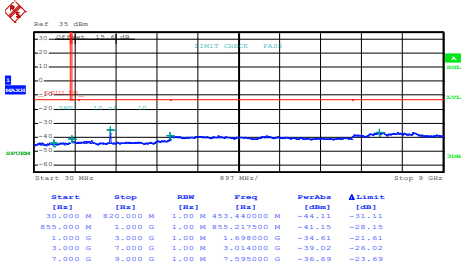
Highest Band Edge

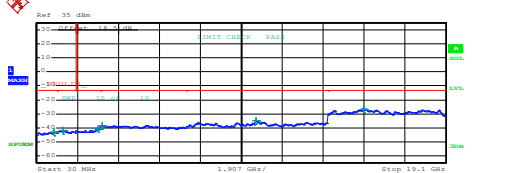
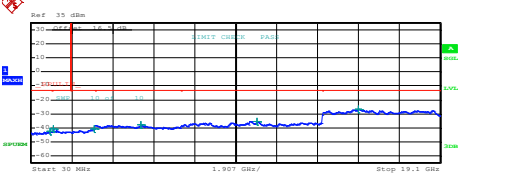
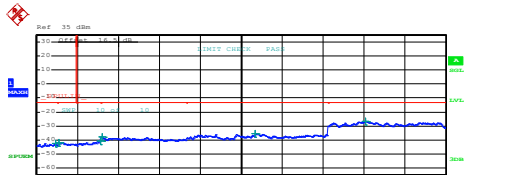
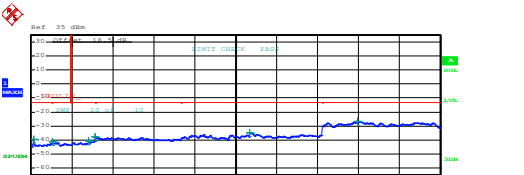
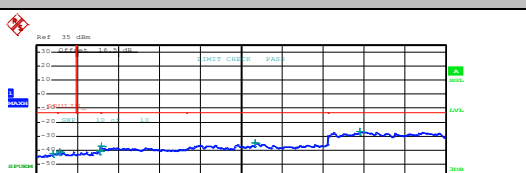
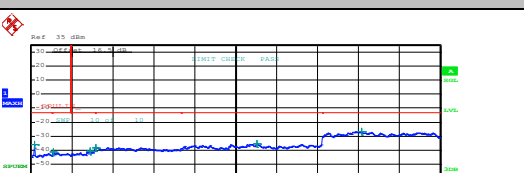


Date: 16.JUN.2018 09:17:11



Conducted Spurious Emission

GSM850 (GPRS class 8)		GSM850 (EDGE class 8)																																																																																					
Lowest Channel		Lowest Channel																																																																																					
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GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)																																																																																				
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<div><p>Ref: 35 dBm</p><p>Start 30 MHz Stop 19.1 GHz</p><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RW [Hz]</th><th>Freq [Hz]</th><th>PwrAve [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>1.000 G</td><td>1.00 M</td><td>840.435000 M</td><td>-42.86</td><td>-29.86</td></tr><tr><td>1.000 G</td><td>1.845 G</td><td>1.00 M</td><td>1.265964 G</td><td>-43.80</td><td>-28.80</td></tr><tr><td>1.845 G</td><td>3.000 G</td><td>1.00 M</td><td>2.903364 G</td><td>-40.86</td><td>-27.86</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.091000 G</td><td>-38.16</td><td>-25.16</td></tr><tr><td>7.000 G</td><td>13.600 G</td><td>1.00 M</td><td>10.236475 G</td><td>-35.10</td><td>-22.10</td></tr><tr><td>13.600 G</td><td>19.100 G</td><td>1.00 M</td><td>15.301562 G</td><td>-26.70</td><td>-13.70</td></tr></tbody></table></div> <p>Date: 16.JUN.2018 09:49:44</p>	Start [Hz]	Stop [Hz]	RW [Hz]	Freq [Hz]	PwrAve [dBm]	Δ Limit [dB]	30.000 M	1.000 G	1.00 M	840.435000 M	-42.86	-29.86	1.000 G	1.845 G	1.00 M	1.265964 G	-43.80	-28.80	1.845 G	3.000 G	1.00 M	2.903364 G	-40.86	-27.86	3.000 G	7.000 G	1.00 M	3.091000 G	-38.16	-25.16	7.000 G	13.600 G	1.00 M	10.236475 G	-35.10	-22.10	13.600 G	19.100 G	1.00 M	15.301562 G	-26.70	-13.70	<div><p>Ref: 35 dBm</p><p>Start 30 MHz Stop 19.1 GHz</p><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RW [Hz]</th><th>Freq [Hz]</th><th>PwrAve [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>1.000 G</td><td>1.00 M</td><td>806.335000 M</td><td>-42.71</td><td>-29.71</td></tr><tr><td>1.000 G</td><td>1.845 G</td><td>1.00 M</td><td>1.069290 G</td><td>-40.65</td><td>-27.65</td></tr><tr><td>1.845 G</td><td>3.000 G</td><td>1.00 M</td><td>2.951389 G</td><td>-43.00</td><td>-28.00</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>5.123000 G</td><td>-37.91</td><td>-24.91</td></tr><tr><td>7.000 G</td><td>13.600 G</td><td>1.00 M</td><td>10.540900 G</td><td>-35.50</td><td>-22.50</td></tr><tr><td>13.600 G</td><td>19.100 G</td><td>1.00 M</td><td>15.292625 G</td><td>-26.59</td><td>-13.59</td></tr></tbody></table></div> <p>Date: 16.JUN.2018 09:09:06</p>	Start [Hz]	Stop [Hz]	RW [Hz]	Freq [Hz]	PwrAve [dBm]	Δ Limit [dB]	30.000 M	1.000 G	1.00 M	806.335000 M	-42.71	-29.71	1.000 G	1.845 G	1.00 M	1.069290 G	-40.65	-27.65	1.845 G	3.000 G	1.00 M	2.951389 G	-43.00	-28.00	3.000 G	7.000 G	1.00 M	5.123000 G	-37.91	-24.91	7.000 G	13.600 G	1.00 M	10.540900 G	-35.50	-22.50	13.600 G	19.100 G	1.00 M	15.292625 G	-26.59	-13.59
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<div><p>Ref: 35 dBm</p><p>Start 30 MHz Stop 19.1 GHz</p><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RW [Hz]</th><th>Freq [Hz]</th><th>PwrAve [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>1.000 G</td><td>1.00 M</td><td>918.030000 M</td><td>-42.43</td><td>-29.43</td></tr><tr><td>1.000 G</td><td>1.845 G</td><td>1.00 M</td><td>1.058728 G</td><td>-43.94</td><td>-28.94</td></tr><tr><td>1.845 G</td><td>3.000 G</td><td>1.00 M</td><td>2.998372 G</td><td>-40.85</td><td>-27.85</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.079000 G</td><td>-38.09</td><td>-25.09</td></tr><tr><td>7.000 G</td><td>13.600 G</td><td>1.00 M</td><td>10.207600 G</td><td>-35.51</td><td>-22.51</td></tr><tr><td>13.600 G</td><td>19.100 G</td><td>1.00 M</td><td>15.366188 G</td><td>-26.81</td><td>-13.81</td></tr></tbody></table></div> <p>Date: 16.JUN.2018 09:50:34</p>	Start [Hz]	Stop [Hz]	RW [Hz]	Freq [Hz]	PwrAve [dBm]	Δ Limit [dB]	30.000 M	1.000 G	1.00 M	918.030000 M	-42.43	-29.43	1.000 G	1.845 G	1.00 M	1.058728 G	-43.94	-28.94	1.845 G	3.000 G	1.00 M	2.998372 G	-40.85	-27.85	3.000 G	7.000 G	1.00 M	3.079000 G	-38.09	-25.09	7.000 G	13.600 G	1.00 M	10.207600 G	-35.51	-22.51	13.600 G	19.100 G	1.00 M	15.366188 G	-26.81	-13.81	<div><p>Ref: 35 dBm</p><p>Start 30 MHz Stop 19.1 GHz</p><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RW [Hz]</th><th>Freq [Hz]</th><th>PwrAve [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30.000 M</td><td>1.000 G</td><td>1.00 M</td><td>141.050000 M</td><td>-39.53</td><td>-26.53</td></tr><tr><td>1.000 G</td><td>1.845 G</td><td>1.00 M</td><td>1.024083 G</td><td>-43.42</td><td>-28.42</td></tr><tr><td>1.845 G</td><td>3.000 G</td><td>1.00 M</td><td>2.713289 G</td><td>-40.62</td><td>-27.62</td></tr><tr><td>3.000 G</td><td>7.000 G</td><td>1.00 M</td><td>3.002000 G</td><td>-38.07</td><td>-25.07</td></tr><tr><td>7.000 G</td><td>13.600 G</td><td>1.00 M</td><td>10.213375 G</td><td>-35.11</td><td>-22.11</td></tr><tr><td>13.600 G</td><td>19.100 G</td><td>1.00 M</td><td>15.247250 G</td><td>-26.67</td><td>-13.67</td></tr></tbody></table></div> <p>Date: 16.JUN.2018 09:09:58</p>	Start [Hz]	Stop [Hz]	RW [Hz]	Freq [Hz]	PwrAve [dBm]	Δ Limit [dB]	30.000 M	1.000 G	1.00 M	141.050000 M	-39.53	-26.53	1.000 G	1.845 G	1.00 M	1.024083 G	-43.42	-28.42	1.845 G	3.000 G	1.00 M	2.713289 G	-40.62	-27.62	3.000 G	7.000 G	1.00 M	3.002000 G	-38.07	-25.07	7.000 G	13.600 G	1.00 M	10.213375 G	-35.11	-22.11	13.600 G	19.100 G	1.00 M	15.247250 G	-26.67	-13.67
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Frequency Stability

Test Conditions	Middle Channel	GSM850 (GPRS class 8)	GSM850 (EDGE class 8)	Limit
		Deviation (ppm)		2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)		Result
50	Normal Voltage	0.0024	0.0287	PASS
40	Normal Voltage	0.0000	0.0036	
30	Normal Voltage	0.0024	0.0323	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0024	0.0048	
0	Normal Voltage	0.0012	0.0036	
-10	Normal Voltage	0.0024	0.0048	
-20	Normal Voltage	0.0060	0.0227	
-30	Normal Voltage	0.0000	0.0024	
20	Maximum Voltage	0.0036	0.0048	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0096	0.0012	

Test Conditions	Middle Channel	GSM1900 (GPRS class 8)	GSM1900 (EDGE class 8)	Limit
		Deviation (ppm)		Note 2.
Temperature (°C)	Voltage (Volt)			Result
50	Normal Voltage	0.0000	0.0021	PASS
40	Normal Voltage	0.0000	0.0000	
30	Normal Voltage	0.0112	0.0122	
20(Ref.)	Normal Voltage	0.0000	0.0000	
10	Normal Voltage	0.0000	0.0122	
0	Normal Voltage	0.0101	0.0112	
-10	Normal Voltage	0.0112	0.0027	
-20	Normal Voltage	0.0128	0.0144	
-30	Normal Voltage	0.0261	0.0128	
20	Maximum Voltage	0.0106	0.0165	
20	Normal Voltage	0.0000	0.0000	
20	Battery End Point	0.0005	0.0011	

Note:

1. Normal Voltage = 3.8 V. ; Battery End Point (BEP) = 3.5 V. ; Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block.

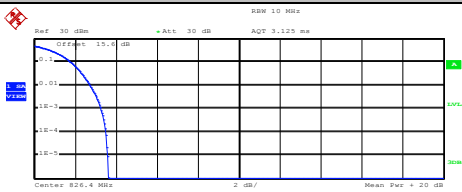
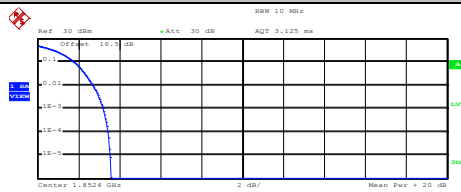
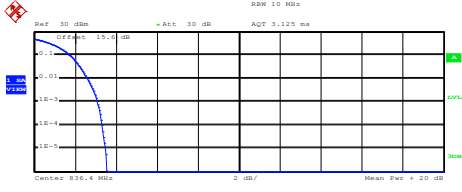
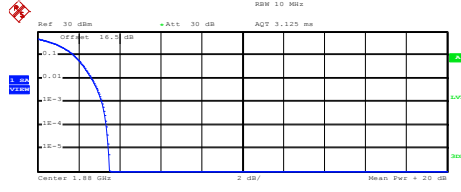
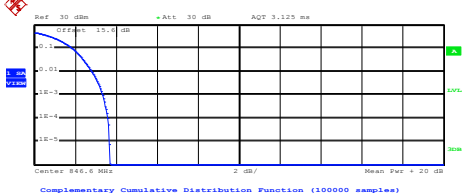
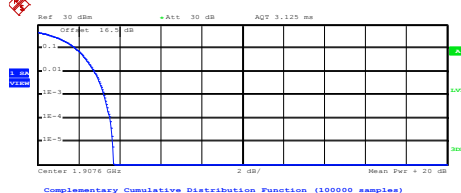


A3. WCDMA

Peak-to-Average Ratio

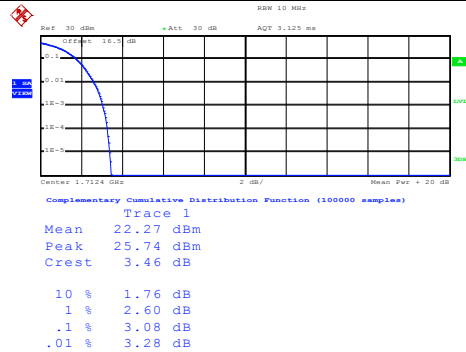
Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV	Limit: 13dB
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps	Result
Lowest CH	3.24	3.20	3.08	PASS
Middle CH	3.08	3.12	2.92	
Highest CH	3.36	3.24	3.08	



WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)																
Lowest Channel	Lowest Channel																
 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 826.4 MHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.74 dBm Peak: 26.37 dBm Crest: 3.63 dB</p> <table><tr><td>10 %</td><td>1.80 dB</td></tr><tr><td>1 %</td><td>2.72 dB</td></tr><tr><td>.1 %</td><td>3.24 dB</td></tr><tr><td>.01 %</td><td>3.52 dB</td></tr></table> <p>Date: 16.JUN.2018 10:48:37</p>	10 %	1.80 dB	1 %	2.72 dB	.1 %	3.24 dB	.01 %	3.52 dB	 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 1.8524 GHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.58 dBm Peak: 26.16 dBm Crest: 3.58 dB</p> <table><tr><td>10 %</td><td>1.80 dB</td></tr><tr><td>1 %</td><td>2.72 dB</td></tr><tr><td>.1 %</td><td>3.20 dB</td></tr><tr><td>.01 %</td><td>3.44 dB</td></tr></table> <p>Date: 16.JUN.2018 10:18:35</p>	10 %	1.80 dB	1 %	2.72 dB	.1 %	3.20 dB	.01 %	3.44 dB
10 %	1.80 dB																
1 %	2.72 dB																
.1 %	3.24 dB																
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Middle Channel	Middle Channel																
 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 830.4 MHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.75 dBm Peak: 26.30 dBm Crest: 3.55 dB</p> <table><tr><td>10 %</td><td>1.76 dB</td></tr><tr><td>1 %</td><td>2.60 dB</td></tr><tr><td>.1 %</td><td>3.08 dB</td></tr><tr><td>.01 %</td><td>3.32 dB</td></tr></table> <p>Date: 16.JUN.2018 10:48:54</p>	10 %	1.76 dB	1 %	2.60 dB	.1 %	3.08 dB	.01 %	3.32 dB	 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 1.85 GHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.79 dBm Peak: 26.30 dBm Crest: 3.51 dB</p> <table><tr><td>10 %</td><td>1.76 dB</td></tr><tr><td>1 %</td><td>2.64 dB</td></tr><tr><td>.1 %</td><td>3.12 dB</td></tr><tr><td>.01 %</td><td>3.36 dB</td></tr></table> <p>Date: 16.JUN.2018 10:18:47</p>	10 %	1.76 dB	1 %	2.64 dB	.1 %	3.12 dB	.01 %	3.36 dB
10 %	1.76 dB																
1 %	2.60 dB																
.1 %	3.08 dB																
.01 %	3.32 dB																
10 %	1.76 dB																
1 %	2.64 dB																
.1 %	3.12 dB																
.01 %	3.36 dB																
Highest Channel	Highest Channel																
 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 846.6 MHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.83 dBm Peak: 26.51 dBm Crest: 3.68 dB</p> <table><tr><td>10 %</td><td>1.88 dB</td></tr><tr><td>1 %</td><td>2.80 dB</td></tr><tr><td>.1 %</td><td>3.36 dB</td></tr><tr><td>.01 %</td><td>3.60 dB</td></tr></table> <p>Date: 16.JUN.2018 10:49:06</p>	10 %	1.88 dB	1 %	2.80 dB	.1 %	3.36 dB	.01 %	3.60 dB	 <p>Ref: 30 dBm Att: 30 dB AGT: 3.125 ms Center: 1.9076 GHz 2 dB/ Mean: Per + 20 dB</p> <p>Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean: 22.72 dBm Peak: 26.44 dBm Crest: 3.72 dB</p> <table><tr><td>10 %</td><td>1.84 dB</td></tr><tr><td>1 %</td><td>2.76 dB</td></tr><tr><td>.1 %</td><td>3.24 dB</td></tr><tr><td>.01 %</td><td>3.52 dB</td></tr></table> <p>Date: 16.JUN.2018 10:18:59</p>	10 %	1.84 dB	1 %	2.76 dB	.1 %	3.24 dB	.01 %	3.52 dB
10 %	1.88 dB																
1 %	2.80 dB																
.1 %	3.36 dB																
.01 %	3.60 dB																
10 %	1.84 dB																
1 %	2.76 dB																
.1 %	3.24 dB																
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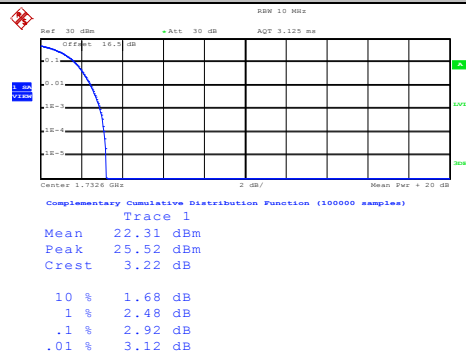
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



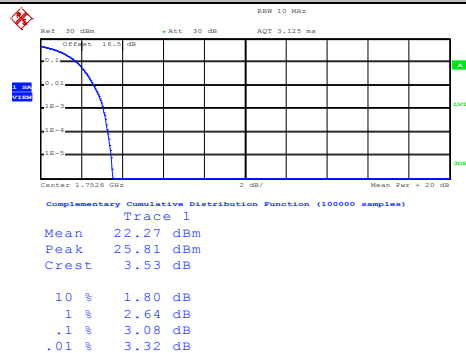
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Middle Channel



Date: 16.JUN.2018 10:34:02

Highest Channel



Date: 16.JUN.2018 10:34:14

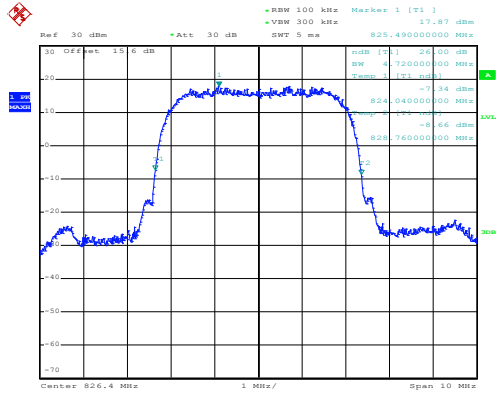
**26dB Bandwidth**

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



WCDMA Band V (RMC 12.2Kbps)

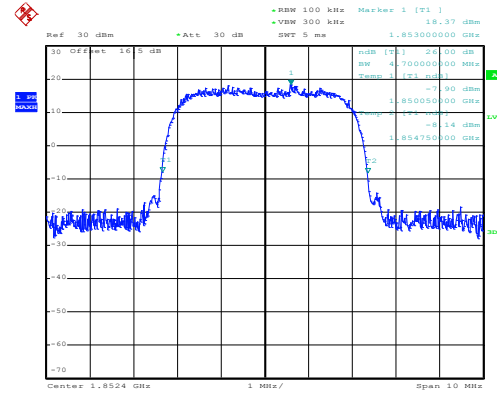
Lowest Channel



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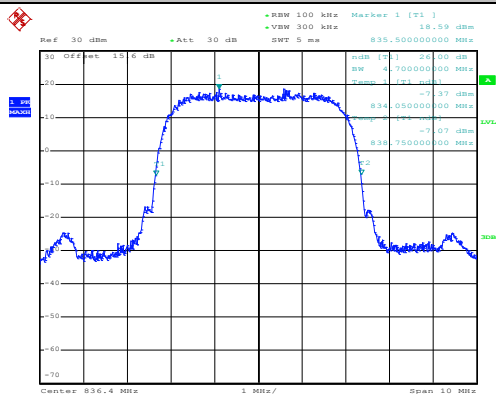
WCDMA Band II (RMC 12.2Kbps)

Lowest Channel



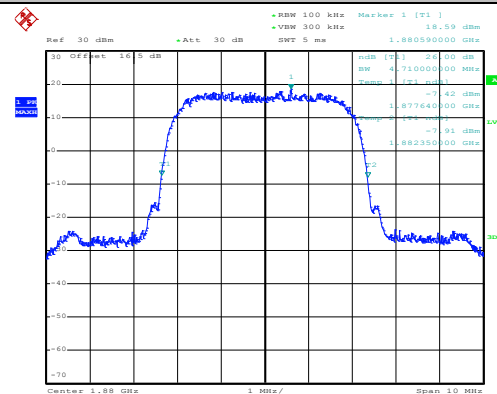
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Middle Channel



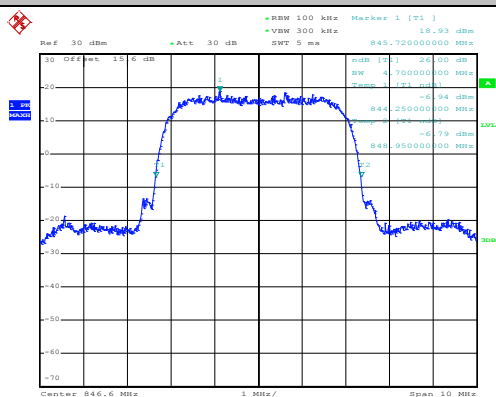
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Middle Channel



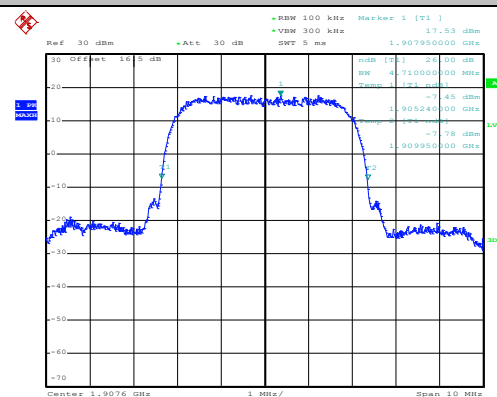
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Highest Channel



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Highest Channel

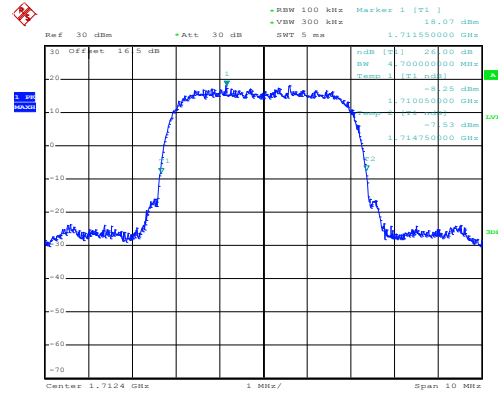


Date: 16.JUN.2018 10:14:07



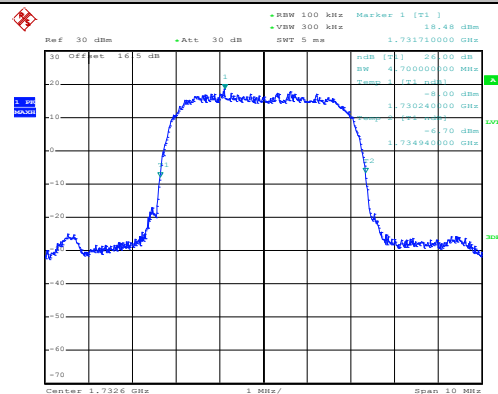
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



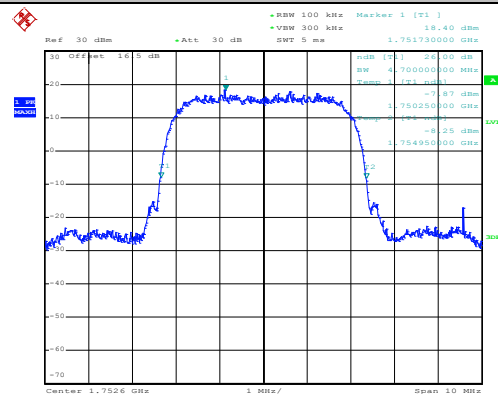
Date: 16.JUN.2018 10:25:47

Middle Channel



Date: 16.JUN.2018 10:26:21

Highest Channel



Date: 16.JUN.2018 10:26:54

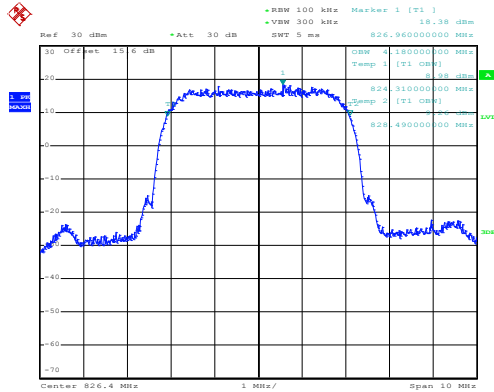
**Occupied Bandwidth**

Mode	WCDMA Band V	WCDMA Band II	WCDMA Band IV
Mod.	RMC 12.2Kbps	RMC 12.2Kbps	RMC 12.2Kbps
Lowest CH	4.18	4.17	4.17
Middle CH	4.17	4.18	4.16
Highest CH	4.17	4.17	4.18



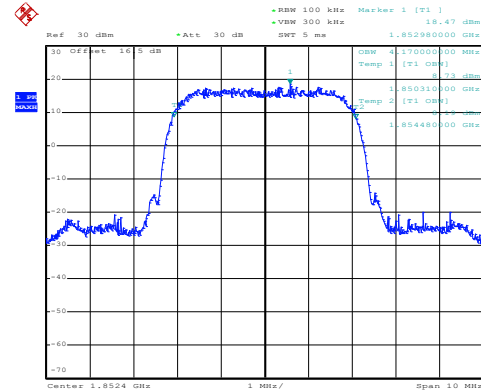
WCDMA Band V (RMC 12.2Kbps)

Lowest Channel

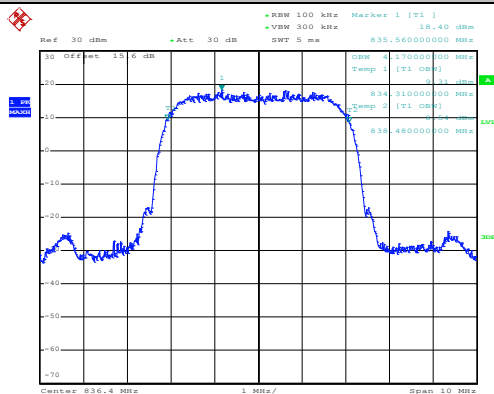


WCDMA Band II (RMC 12.2Kbps)

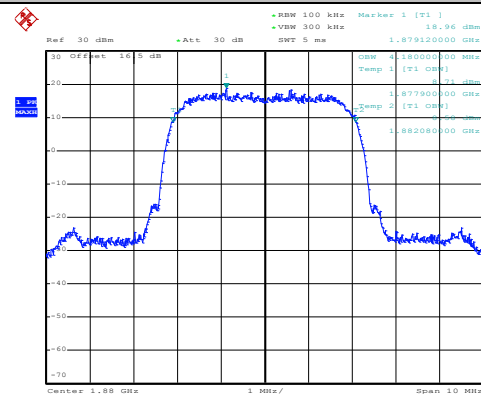
Lowest Channel



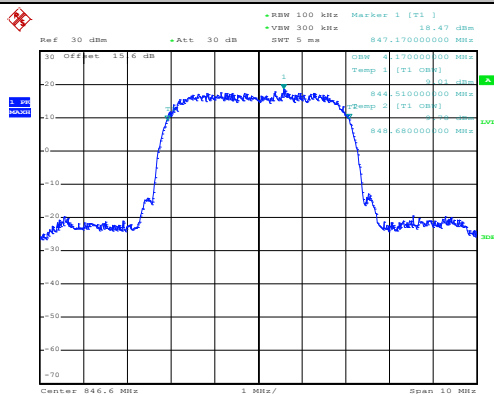
Middle Channel



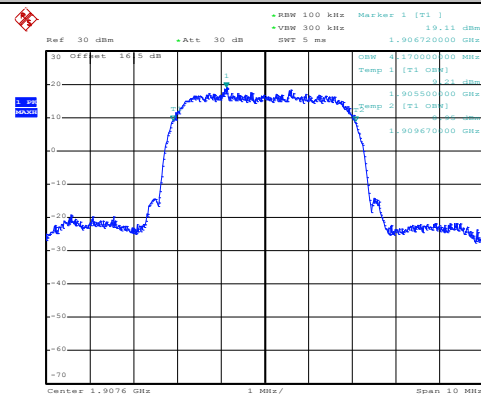
Middle Channel



Highest Channel



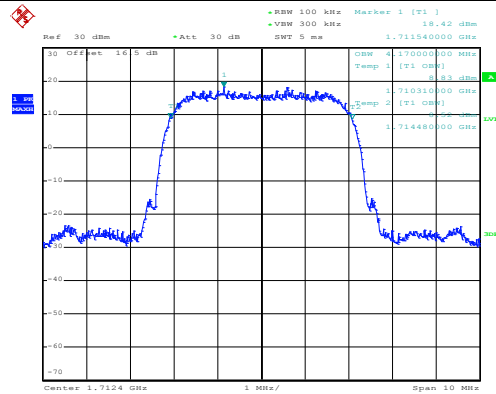
Highest Channel





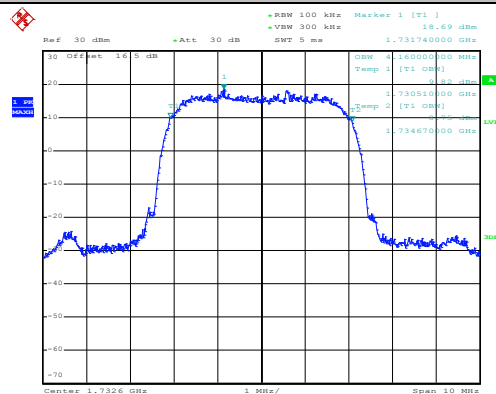
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



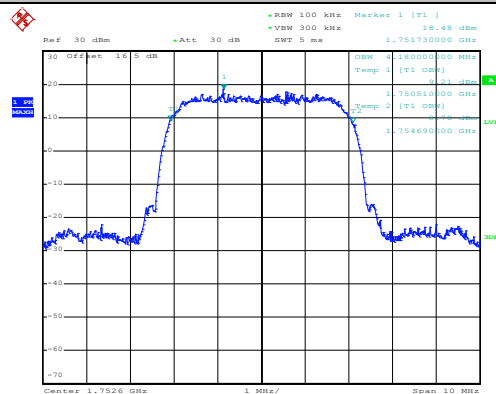
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Middle Channel

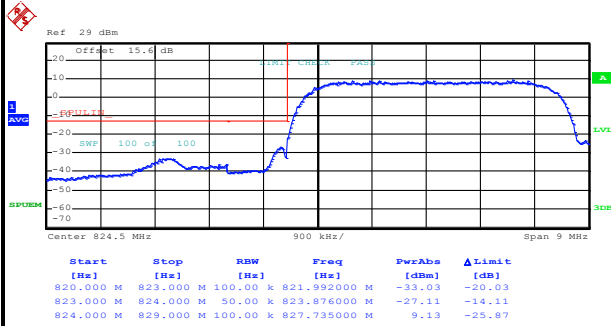


Date: 16.JUN.2018 10:29:33

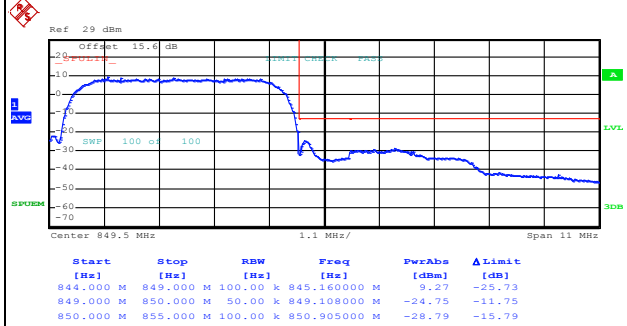
Highest Channel



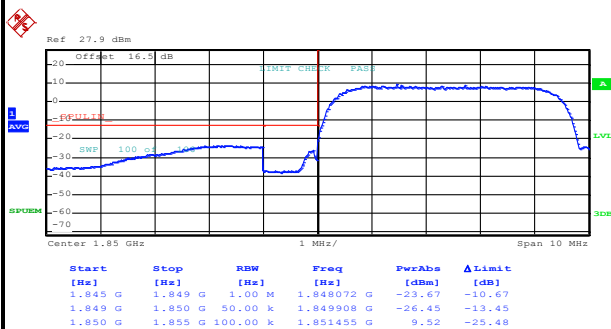
Date: 16.JUN.2018 10:30:07

**Conducted Band Edge****WCDMA Band V (RMC 12.2Kbps)****Lowest Band Edge**

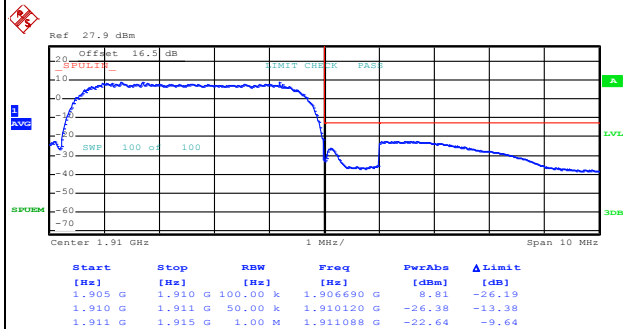
Date: 16.JUN.2018 10:52:00

Highest Band Edge

Date: 16.JUN.2018 10:54:45

WCDMA Band II (RMC 12.2Kbps)**Lowest Band Edge**

Date: 16.JUN.2018 10:21:48

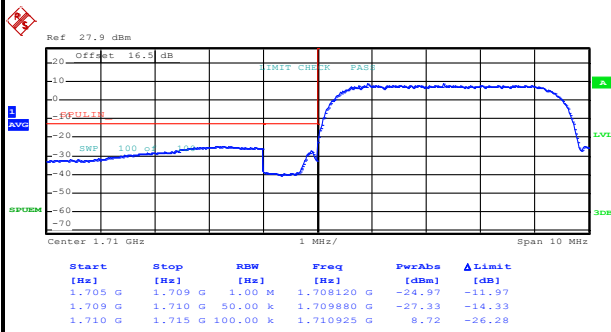
Highest Band Edge

Date: 16.JUN.2018 10:24:41



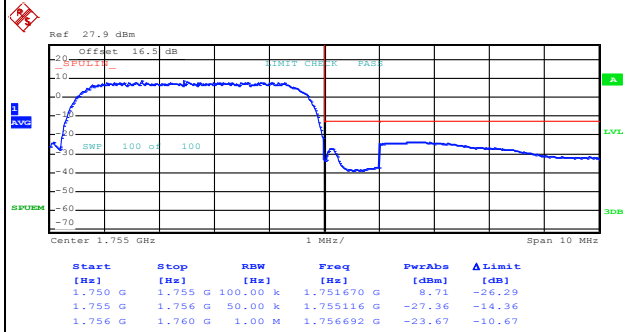
WCDMA Band IV (RMC 12.2Kbps)

Lowest Band Edge



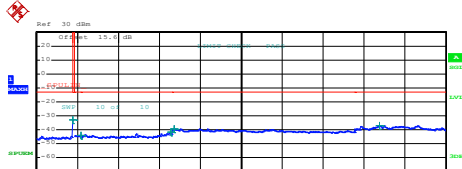
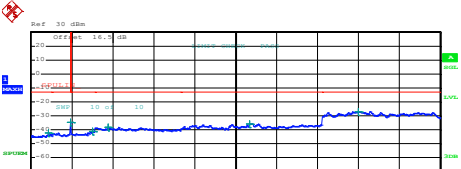
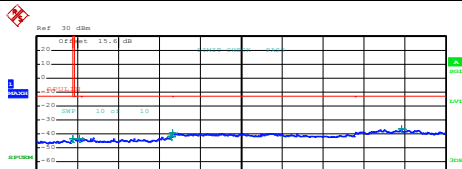
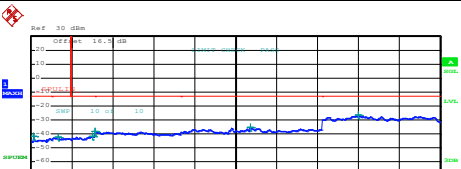
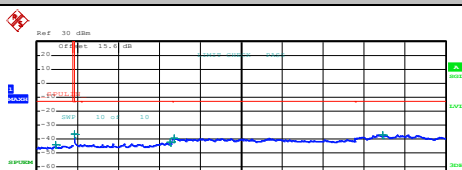
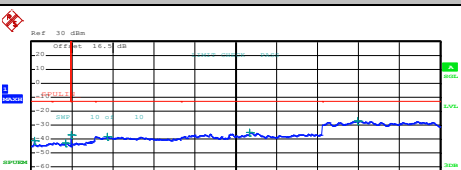
Date: 16.JUN.2018 10:37:04

Highest Band Edge



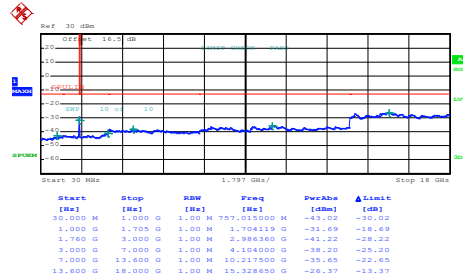
Date: 16.JUN.2018 10:39:50

Conducted Spurious Emission

WCDMA Band V (RMC 12.2Kbps)	WCDMA Band II (RMC 12.2Kbps)																																																																														
Lowest Channel	Lowest Channel																																																																														
<div><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbn [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30,000 M</td><td>820,000 M</td><td>1,000 M</td><td>819,802500 M</td><td>-33.13</td><td>-20.13</td></tr><tr><td>855,000 M</td><td>1,000 G</td><td>1,000 M</td><td>999,710010 M</td><td>-44.11</td><td>-31.11</td></tr><tr><td>1,000 G</td><td>3,000 G</td><td>1,000 M</td><td>2,969000 G</td><td>-41.47</td><td>-28.47</td></tr><tr><td>3,000 G</td><td>7,000 G</td><td>1,000 M</td><td>3,039000 G</td><td>-39.49</td><td>-26.49</td></tr><tr><td>7,000 G</td><td>9,000 G</td><td>1,000 M</td><td>7,542000 G</td><td>-37.01</td><td>-24.01</td></tr></tbody></table></div> <div>Date: 16.JUN.2018 10:46:33</div>	Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbn [dBm]	Δ Limit [dB]	30,000 M	820,000 M	1,000 M	819,802500 M	-33.13	-20.13	855,000 M	1,000 G	1,000 M	999,710010 M	-44.11	-31.11	1,000 G	3,000 G	1,000 M	2,969000 G	-41.47	-28.47	3,000 G	7,000 G	1,000 M	3,039000 G	-39.49	-26.49	7,000 G	9,000 G	1,000 M	7,542000 G	-37.01	-24.01	<div><table><thead><tr><th>Start [Hz]</th><th>Stop [Hz]</th><th>RBW [Hz]</th><th>Freq [Hz]</th><th>PerAbn [dBm]</th><th>Δ Limit [dB]</th></tr></thead><tbody><tr><td>30,000 M</td><td>1,000 G</td><td>1,000 M</td><td>832,432500 M</td><td>-42.45</td><td>-29.45</td></tr><tr><td>1,000 G</td><td>3,000 G</td><td>1,000 M</td><td>1,844789 G</td><td>-34.48</td><td>-21.48</td></tr><tr><td>1,915 G</td><td>3,000 G</td><td>1,000 M</td><td>2,891229 G</td><td>-41.25</td><td>-28.25</td></tr><tr><td>3,000 G</td><td>7,000 G</td><td>1,000 M</td><td>3,407000 G</td><td>-38.02</td><td>-25.02</td></tr><tr><td>7,000 G</td><td>13,600 G</td><td>1,000 M</td><td>10,228225 G</td><td>-35.57</td><td>-22.57</td></tr><tr><td>13,600 G</td><td>19,100 G</td><td>1,000 M</td><td>15,285750 G</td><td>-26.91</td><td>-13.91</td></tr></tbody></table></div> <div>Date: 16.JUN.2018 10:16:43</div>	Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PerAbn [dBm]	Δ Limit [dB]	30,000 M	1,000 G	1,000 M	832,432500 M	-42.45	-29.45	1,000 G	3,000 G	1,000 M	1,844789 G	-34.48	-21.48	1,915 G	3,000 G	1,000 M	2,891229 G	-41.25	-28.25	3,000 G	7,000 G	1,000 M	3,407000 G	-38.02	-25.02	7,000 G	13,600 G	1,000 M	10,228225 G	-35.57	-22.57	13,600 G	19,100 G	1,000 M	15,285750 G	-26.91	-13.91
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7,000 G	13,600 G	1,000 M	10,213375 G	-35.19	-22.19																																																																										
13,600 G	19,100 G	1,000 M	15,261000 G	-26.85	-13.85																																																																										

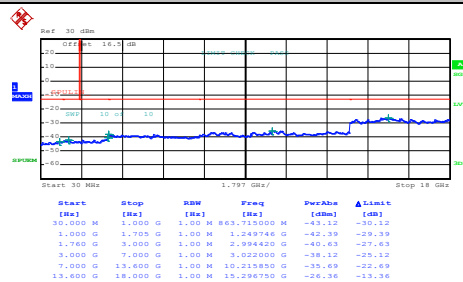
WCDMA Band IV (RMC 12.2Kbps)

Lowest Channel



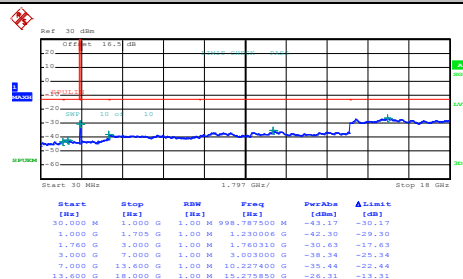
Date: 16.JUN.2018 10:31:04

Middle Channel



Date: 16.JUN.2018 10:31:53

Highest Channel



Date: 16.JUN.2018 10:32:43

**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	0.0012	PASS
40	Normal Voltage	0.0012	
30	Normal Voltage	0.0036	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0000	
0	Normal Voltage	0.0036	
-10	Normal Voltage	0.0024	
-20	Normal Voltage	0.0012	
-30	Normal Voltage	0.0036	
20	Maximum Voltage	0.0036	
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	0.0000	PASS
40	Normal Voltage	0.0005	
30	Normal Voltage	0.0005	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0027	
-10	Normal Voltage	0.0032	
-20	Normal Voltage	0.0011	
-30	Normal Voltage	0.0011	
20	Maximum Voltage	0.0069	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0021	

Test Conditions Temperature (°C)	Middle Channel Voltage (Volt)	WCDMA Band IV (RMC 12.2Kbps)	Limit
		Deviation (ppm)	Note 2.
50	Normal Voltage	0.0000	PASS
40	Normal Voltage	0.0005	
30	Normal Voltage	0.0005	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0027	
-10	Normal Voltage	0.0032	
-20	Normal Voltage	0.0011	
-30	Normal Voltage	0.0011	
20	Maximum Voltage	0.0069	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0021	

Note:

1. Normal Voltage = 3.8V. ; Battery End Point (BEP) = 3.5V. ; Maximum Voltage =4.2 V
2. 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	33.62	2.3014	29.19	0.8299
Middle	GPRS class 8	33.66	2.3227	29.23	0.8375
Highest	GT - LC = -2.28 dB	33.63	2.3067	29.20	0.8318
Lowest	GSM850	25.92	0.3908	21.49	0.1409
Middle	EDGE class 8	25.94	0.3926	21.51	0.1416
Highest	GT - LC = -2.28 dB	25.93	0.3917	21.50	0.1413
Lowest	WCDMA Band V	24.02	0.2523	19.59	0.0910
Middle	RMC 12.2Kbps	23.95	0.2483	19.52	0.0895
Highest	GT - LC = -2.28 dB	23.86	0.2432	19.43	0.0877
Limit	ERP < 7W	Result		PASS	

Channel	Mode	Conducted		EIRP	
		Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	GSM1900	30.87	1.2218	32.49	1.7742
Middle	GPRS class 8	30.82	1.2078	32.44	1.7539
Highest	(GT - LC = 1.62 dB)	30.79	1.1995	32.41	1.7418
Lowest	GSM1900	26.24	0.4207	27.86	0.6109
Middle	EDGE class 8	26.25	0.4217	27.87	0.6124
Highest	(GT - LC = 1.62 dB)	26.24	0.4207	27.86	0.6109
Lowest	WCDMA Band II	24.70	0.2951	26.32	0.4285
Middle	RMC 12.2Kbps	24.69	0.2944	26.31	0.4276
Highest	(GT - LC = 1.62 dB)	24.65	0.2917	26.27	0.4236
Limit	EIRP < 2W	Result		PASS	

Channel	Mode	Conducted		EIRP	
		Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	WCDMA Band IV	24.85	0.3055	24.54	0.2844
Middle	RMC 12.2Kbps	24.99	0.3155	24.68	0.2938
Highest	GT - LC = -0.31 dB	25.00	0.3162	24.69	0.2944
Limit	EIRP < 1W	Result		PASS	

Radiated Spurious Emission

<Main Antenna>

GPRS 850

GPRS 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	-49.35	-13	-36.35	-59.12	-56.3	0.53	9.63	H
	2472	-34.12	-13	-21.12	-47.34	-42.1	0.65	10.78	H
	3296	-58.42	-13	-45.42	-74.54	-67.5	0.76	11.99	H
									H
	1648	-42.35	-13	-29.35	-51.24	-49.3	0.53	9.63	V
	2472	-37.92	-13	-24.92	-51.4	-45.9	0.65	10.78	V
	3296	-58.72	-13	-45.72	-74.42	-67.8	0.76	11.99	V
									V
Middle	1672	-47.10	-13	-34.10	-56.91	-54.1	0.53	9.68	H
	2512	-42.20	-13	-29.20	-55.76	-50.2	0.66	10.81	H
	3344	-53.88	-13	-40.88	-69.7	-63.1	0.76	12.13	H
									H
	1672	-38.90	-13	-25.90	-48.44	-45.9	0.53	9.68	V
	2512	-40.90	-13	-27.90	-54.52	-48.9	0.66	10.81	V
	3344	-56.88	-13	-43.88	-72.41	-66.1	0.76	12.13	V
									V
Highest	1696	-45.15	-13	-32.15	-55.27	-52.2	0.53	9.73	H
	2544	-46.09	-13	-33.09	-58.89	-54.1	0.67	10.83	H
	3392	-55.44	-13	-42.44	-71.72	-64.8	0.77	12.28	H
									H
	1696	-38.45	-13	-25.45	-48.11	-45.5	0.53	9.73	V
	2544	-46.69	-13	-33.69	-60.52	-54.7	0.67	10.83	V
	3392	-56.84	-13	-43.84	-72.56	-66.2	0.77	12.28	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	-59.65	-13	-46.65	-69.72	-66.6	0.53	9.63	H
	2472	-48.02	-13	-35.02	-60.85	-56	0.65	10.78	H
	3296	-56.82	-13	-43.82	-72.84	-65.9	0.76	11.99	H
									H
	1648	-55.65	-13	-42.65	-65.22	-62.6	0.53	9.63	V
	2472	-48.32	-13	-35.32	-62.03	-56.3	0.65	10.78	V
	3296	-48.32	-13	-35.32	-74.26	-57.4	0.76	11.99	V
									V
Middle	1672	-57.60	-13	-44.60	-67.47	-64.6	0.53	9.68	H
	2512	-49.40	-13	-36.40	-62.75	-57.4	0.66	10.81	H
	3344	-58.88	-13	-45.88	-74.53	-68.1	0.76	12.13	H
									H
	1672	-56.80	-13	-43.80	-66.4	-63.8	0.53	9.68	V
	2512	-51.60	-13	-38.60	-64.86	-59.6	0.66	10.81	V
	3344	-58.48	-13	-45.48	-74.51	-67.7	0.76	12.13	V
									V
Highest	1696	-54.95	-13	-41.95	-64.96	-62	0.53	9.73	H
	2544	-52.09	-13	-39.09	-65.11	-60.1	0.67	10.83	H
	3392	-58.94	-13	-45.94	-74.6	-68.3	0.77	12.28	H
									H
	1696	-52.85	-13	-39.85	-62.26	-59.9	0.53	9.73	V
	2544	-55.49	-13	-42.49	-68.07	-63.5	0.67	10.83	V
	3392	-59.24	-13	-46.24	-74.81	-68.6	0.77	12.28	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	1656	-58.13	-13	-45.13	-67.75	-65.1	0.53	9.64	H
	2480	-59.58	-13	-46.58	-72.96	-67.56	0.65	10.78	H
	3304	-58.40	-13	-45.40	-74.16	-67.5	0.76	12.01	H
									H
	1656	-57.73	-13	-44.73	-67.19	-64.7	0.53	9.64	V
	2480	-57.32	-13	-44.32	-70.97	-65.3	0.65	10.78	V
	3304	-57.60	-13	-44.60	-73.55	-66.7	0.76	12.01	V
									V
Middle	1672	-57.30	-13	-44.30	-67.26	-64.3	0.53	9.68	H
	2512	-59.10	-13	-46.10	-72.31	-67.1	0.66	10.81	H
	3344	-57.68	-13	-44.68	-73.56	-66.9	0.76	12.13	H
									H
	1672	-58.40	-13	-45.40	-68.02	-65.4	0.53	9.68	V
	2512	-58.20	-13	-45.20	-71.74	-66.2	0.66	10.81	V
	3344	-57.18	-13	-44.18	-72.89	-66.4	0.76	12.13	V
									V
Highest	1696	-56.25	-13	-43.25	-66.05	-63.3	0.53	9.73	H
	2544	-59.19	-13	-46.19	-72.08	-67.2	0.67	10.83	H
	3384	-56.77	-13	-43.77	-72.91	-66.1	0.77	12.25	H
									H
	1696	-60.85	-13	-47.85	-70.53	-67.9	0.53	9.73	V
	2544	-57.39	-13	-44.39	-70.87	-65.4	0.67	10.83	V
	3384	-55.77	-13	-42.77	-71.34	-65.1	0.77	12.25	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	-51.05	-13	-38.05	-68.21	-62.65	0.77	12.38	H
	5136	-51.17	-13	-38.17	-71.87	-62.67	0.97	12.47	H
	6852	-50.56	-13	-37.56	-74.29	-61.35	0.83	11.63	H
									H
	3426	-55.46	-13	-42.46	-72.43	-67.06	0.77	12.38	V
	5136	-54.82	-13	-41.82	-75.69	-66.32	0.97	12.47	V
	6852	-51.04	-13	-38.04	-75.22	-61.83	0.83	11.63	V
									V
Middle	3462	-53.04	-13	-40.04	-70.24	-64.75	0.78	12.49	H
	5202	-52.96	-13	-39.96	-73.78	-64.57	0.99	12.60	H
	6930	-51.99	-13	-38.99	-75.86	-62.44	1.01	11.45	H
									H
	3462	-55.03	-13	-42.03	-72.62	-66.74	0.78	12.49	V
	5202	-55.42	-13	-42.42	-76.4	-67.03	0.99	12.60	V
	6930	-52.24	-13	-39.24	-76.49	-62.69	1.01	11.45	V
									V
Highest	3504	-50.25	-13	-37.25	-67.5	-62.07	0.78	12.60	H
	5256	-48.19	-13	-35.19	-69.16	-59.89	1.01	12.71	H
	7014	-49.60	-13	-36.60	-73.71	-59.71	1.17	11.27	H
									H
	3504	-54.55	-13	-41.55	-72.77	-66.37	0.78	12.60	V
	5256	-54.02	-13	-41.02	-75.13	-65.72	1.01	12.71	V
	7014	-50.33	-13	-37.33	-74.73	-60.44	1.17	11.27	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	-53.61	-13	-40.61	-70.42	-65.4	0.72	12.52	H
	5550	-51.73	-13	-38.73	-73.57	-63.9	1.00	13.17	H
	7404	-51.71	-13	-38.71	-76.39	-61.1	1.18	10.57	H
	9252	-36.89	-13	-23.89	-66.16	-47.4	1.39	11.89	H
									H
	3702	-54.51	-13	-41.51	-72.74	-66.3	0.72	12.52	V
	5550	-53.83	-13	-40.83	-75.26	-66	1.00	13.17	V
	7404	-52.41	-13	-39.41	-76.8	-61.8	1.18	10.57	V
	9252	-44.29	-13	-31.29	-73.3	-54.8	1.39	11.89	V
									V
Middle	1672	-47.10	-13	-34.10	-56.91	-54.1	0.53	9.68	H
	2512	-42.20	-13	-29.20	-55.76	-50.2	0.66	10.81	H
	3344	-53.88	-13	-40.88	-69.7	-63.1	0.76	12.13	H
									H
	1672	-38.90	-13	-25.90	-48.44	-45.9	0.53	9.68	V
	2512	-40.90	-13	-27.90	-54.52	-48.9	0.66	10.81	V
	3344	-56.88	-13	-43.88	-72.41	-66.1	0.76	12.13	V
									V
Highest	1696	-45.15	-13	-32.15	-55.27	-52.2	0.53	9.73	H
	2544	-46.09	-13	-33.09	-58.89	-54.1	0.67	10.83	H
	3392	-55.44	-13	-42.44	-71.72	-64.8	0.77	12.28	H
									H
	1696	-38.45	-13	-25.45	-48.11	-45.5	0.53	9.73	V
	2544	-46.69	-13	-33.69	-60.52	-54.7	0.67	10.83	V
	3392	-56.84	-13	-43.84	-72.56	-66.2	0.77	12.28	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	-55.81	-13	-42.81	-72.02	-67.6	0.72	12.52	H
	5550	-53.93	-13	-40.93	-75.27	-66.1	1.00	13.17	H
	7404	-51.91	-13	-38.91	-76.69	-61.3	1.18	10.57	H
	9252	-38.19	-13	-25.19	-67.26	-48.7	1.39	11.89	H
									H
	3702	-54.81	-13	-41.81	-72.74	-66.6	0.72	12.52	V
	5550	-54.63	-13	-41.63	-76.21	-66.8	1.00	13.17	V
	7404	-52.81	-13	-39.81	-77.2	-62.2	1.18	10.57	V
	9252	-44.19	-13	-31.19	-73.3	-54.7	1.39	11.89	V
									V
Middle	1672	-57.60	-13	-44.60	-67.47	-64.6	0.53	9.68	H
	2512	-49.40	-13	-36.40	-62.75	-57.4	0.66	10.81	H
	3344	-58.88	-13	-45.88	-74.53	-68.1	0.76	12.13	H
									H
	1672	-56.80	-13	-43.80	-66.4	-63.8	0.53	9.68	V
	2512	-51.60	-13	-38.60	-64.86	-59.6	0.66	10.81	V
	3344	-58.48	-13	-45.48	-74.51	-67.7	0.76	12.13	V
									V
Highest	1696	-54.95	-13	-41.95	-64.96	-62	0.53	9.73	H
	2544	-52.09	-13	-39.09	-65.11	-60.1	0.67	10.83	H
	3392	-58.94	-13	-45.94	-74.6	-68.3	0.77	12.28	H
									H
	1696	-52.85	-13	-39.85	-62.26	-59.9	0.53	9.73	V
	2544	-55.49	-13	-42.49	-68.07	-63.5	0.67	10.83	V
	3392	-59.24	-13	-46.24	-74.81	-68.6	0.77	12.28	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	3705	-49.11	-13	-36.11	-66.04	-60.9	0.72	12.52	H
	5562	-45.83	-13	-32.83	-67.36	-58	1.00	13.16	H
	7416	-49.83	-13	-36.83	-74.47	-59.2	1.18	10.55	H
	9252	-44.69	-13	-31.69	-74.11	-55.2	1.39	11.89	H
									H
	3705	-52.01	-13	-39.01	-70.05	-63.8	0.72	12.52	V
	5562	-52.33	-13	-39.33	-73.5	-64.5	1.00	13.16	V
	7416	-52.83	-13	-39.83	-77.01	-62.2	1.18	10.55	V
	9252	-46.09	-13	-33.09	-74.94	-56.6	1.39	11.89	V
									V
Middle	1672	-57.30	-13	-44.30	-67.26	-64.3	0.53	9.68	H
	2512	-59.10	-13	-46.10	-72.31	-67.1	0.66	10.81	H
	3344	-57.68	-13	-44.68	-73.56	-66.9	0.76	12.13	H
									H
	1672	-58.40	-13	-45.40	-68.02	-65.4	0.53	9.68	V
	2512	-58.20	-13	-45.20	-71.74	-66.2	0.66	10.81	V
	3344	-57.18	-13	-44.18	-72.89	-66.4	0.76	12.13	V
									V
Highest	1696	-56.25	-13	-43.25	-66.05	-63.3	0.53	9.73	H
	2544	-59.19	-13	-46.19	-72.08	-67.2	0.67	10.83	H
	3384	-56.77	-13	-43.77	-72.91	-66.1	0.77	12.25	H
									H
	1696	-60.85	-13	-47.85	-70.53	-67.9	0.53	9.73	V
	2544	-57.39	-13	-44.39	-70.87	-65.4	0.67	10.83	V
	3384	-55.77	-13	-42.77	-71.34	-65.1	0.77	12.25	V
									V

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



<Aux. Antenna>

GPRS 850

GPRS 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	-57.25	-13	-44.25	-66.84	-64.2	0.53	9.63	H
	2472	-49.12	-13	-36.12	-62.35	-57.1	0.65	10.78	H
	3296	-54.62	-13	-41.62	-70.55	-63.7	0.76	11.99	H
									H
	1648	-57.45	-13	-44.45	-66.98	-64.4	0.53	9.63	V
	2472	-40.72	-13	-27.72	-54.5	-48.7	0.65	10.78	V
	3296	-55.42	-13	-42.42	-71.11	-64.5	0.76	11.99	V
									V
Middle	1672	-55.90	-13	-42.90	-65.97	-62.9	0.53	9.68	H
	2512	-46.50	-13	-33.50	-59.97	-54.5	0.66	10.81	H
	3344	-50.48	-13	-37.48	-69.38	-59.7	0.76	12.13	H
									H
	1672	-56.60	-13	-43.60	-66.04	-63.6	0.53	9.68	V
	2512	-42.80	-13	-29.80	-56.61	-50.8	0.66	10.81	V
	3344	-55.68	-13	-42.68	-71.26	-64.9	0.76	12.13	V
									V
Highest	1696	-53.45	-13	-40.45	-63.47	-60.5	0.53	9.73	H
	2544	-50.19	-13	-37.19	-63.26	-58.2	0.67	10.83	H
	3392	-54.74	-13	-41.74	-70.63	-64.1	0.77	12.28	H
									H
	1696	-56.25	-13	-43.25	-65.6	-63.3	0.53	9.73	V
	2544	-42.09	-13	-29.09	-55.41	-50.1	0.67	10.83	V
	3392	-58.14	-13	-45.14	-73.97	-67.5	0.77	12.28	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	-59.55	-13	-46.55	-69.44	-66.5	0.53	9.63	H
	2472	-58.92	-13	-45.92	-72.21	-66.9	0.65	10.78	H
	3296	-58.02	-13	-45.02	-73.84	-67.1	0.76	11.99	H
									H
	1648	-60.75	-13	-47.75	-70.26	-67.7	0.53	9.63	V
	2472	-55.52	-13	-42.52	-69	-63.5	0.65	10.78	V
	3296	-58.32	-13	-45.32	-74.43	-67.4	0.76	11.99	V
									V
Middle	1672	-61.90	-13	-48.90	-71.96	-68.9	0.53	9.68	H
	2512	-58.80	-13	-45.80	-71.77	-66.8	0.66	10.81	H
	3344	-57.88	-13	-44.88	-73.46	-67.1	0.76	12.13	H
									H
	1672	-59.30	-13	-46.30	-68.71	-66.3	0.53	9.68	V
	2512	-54.20	-13	-41.20	-67.56	-62.2	0.66	10.81	V
	3344	-58.68	-13	-45.68	-74.69	-67.9	0.76	12.13	V
									V
Highest	1696	-60.65	-13	-47.65	-70.98	-67.7	0.53	9.73	H
	2544	-59.19	-13	-46.19	-72.16	-67.2	0.67	10.83	H
	3392	-56.74	-13	-43.74	-72.65	-66.1	0.77	12.28	H
									H
	1696	-57.05	-13	-44.05	-66.59	-64.1	0.53	9.73	V
	2544	-50.79	-13	-37.79	-64.58	-58.8	0.67	10.83	V
	3392	-59.14	-13	-46.14	-74.78	-68.5	0.77	12.28	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	1656	-57.63	-13	-44.63	-67.3	-64.6	0.53	9.64	H
	2480	-59.62	-13	-46.62	-72.97	-67.6	0.65	10.78	H
	3304	-58.10	-13	-45.10	-73.66	-67.2	0.76	12.01	H
									H
	1656	-58.53	-13	-45.53	-68.15	-65.5	0.53	9.64	V
	2480	-57.82	-13	-44.82	-71.4	-65.8	0.65	10.78	V
	3304	-58.10	-13	-45.10	-74.12	-67.2	0.76	12.01	V
									V
Middle	1672	-56.60	-13	-43.60	-66.47	-63.6	0.53	9.68	H
	2512	-59.60	-13	-46.60	-72.77	-67.6	0.66	10.81	H
	3344	-57.88	-13	-44.88	-73.5	-67.1	0.76	12.13	H
									H
	1672	-58.60	-13	-45.60	-67.87	-65.6	0.53	9.68	V
	2512	-57.90	-13	-44.90	-71.71	-65.9	0.66	10.81	V
	3344	-58.18	-13	-45.18	-73.84	-67.4	0.76	12.13	V
									V
Highest	1696	-55.35	-13	-42.35	-65.55	-62.4	0.53	9.73	H
	2544	-59.29	-13	-46.29	-72.25	-67.3	0.67	10.83	H
	3384	-56.97	-13	-43.97	-71	-66.3	0.77	12.25	H
									H
	1696	-60.05	-13	-47.05	-69.58	-67.1	0.53	9.73	V
	2544	-57.59	-13	-44.59	-71.1	-65.6	0.67	10.83	V
	3384	-55.57	-13	-42.57	-71.35	-64.9	0.77	12.25	V
									V

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