FCC RADIO TEST REPORT

FCC ID	:	APYHRO00327
Equipment	:	Smart phone
Brand Name	:	SHARP
Model Name	:	APYHRO00327
Applicant	:	SHARP CORPORATION 1 Takumi-Cho, Sakai-Ku, Sakai-Shi, Osaka 590-8522, Japan
Manufacturer	:	SHARP CORPORATION 1 Takumi-Cho, Sakai-Ku, Sakai-Shi, Osaka 590-8522, Japan
Standard	:	FCC 47 CFR Part 2, 22(H), 24(E)

The product was received on Mar. 14, 2023 and testing was performed from Apr. 15, 2023 to Apr. 27, 2023. 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 from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

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

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History of this test report

Report No.	Version	Description	Issue Date
FG322209A	01	Initial issue of report	May 11, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
	§22.913 (a)(5)	Effective Radiated Power (GSM850) (WCDMA Band V)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (GSM1900)		
		Equivalent Isotropic Radiated Power		
3.3	§24.232 (d)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049 §22.917 (b) §24.238 (b)	Occupied Bandwidth (GSM850) (WCDMA Band V) (GSM1900)	Pass	-
3.5	§2.1051 §22.917 (a) §24.238 (a)	Band Edge Measurement (GSM850) (WCDMA Band V) (GSM1900)	Pass	-
3.6	§2.1051 §22.917 (a) §24.238 (a)	Conducted Emission (GSM850) (WCDMA Band V) (GSM1900)	Pass	-
3.7	§2.1055 §22.355 §24.235	Frequency Stability Temperature & Voltage	Pass	-
4.4	§2.1053 §22.917 (a) §24.238 (a)	Field Strength of Spurious Radiation (GSM850) (WCDMA Band V) (GSM1900)	Pass	8.30 dB under the limit at 1673.000 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng

Report Producer: Doris Chen

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, FM Receiver, NFC, and GNSS. **Antenna Type** WWAN: <Ant. 0>: Monopole Antenna <Ant. 1>: PIFA Antenna <Ant. 2>: Monopole Antenna WLAN: Loop Antenna Bluetooth: Loop Antenna GPS / Glonass / BDS / Galileo: PIFA Antenna NFC: Loop Antenna FM: Using earphone as antenna	
Antenna Gain	Cellular Band: -4.6 dBi PCS Band: -0.8 dBi

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

SKU List				
Item	**Main**		**2nd Source**	
	Main Sample		**Sample 2**	
	Vendor	**Model Number**	**Vendor**	**Model Number**
Battery	SCUD	BPSX1000010	UTL	BPSX300001S
Main PCB	Wuzhu	SB0SX31BW0C	ZDT	SB0SX31BK0C
CPU	MTK	SA06833V010 (MT6833V_NZA)	MTK	SA06833V010 (MT6833V_NZA)
G- sensor	Bosch	SA0MI320020(BMI320)	TDK	SA042670020(ICM-42670-N)
rear housing	DY	MESX361010A	LF	MESX361011A
FPC_USB	SUNFLEX	MESX114012A	PBH	MESX314004A
FPC_AJ	SUNFLEX	MESX114013A	PBH	MESX314003A
FPC_Main	SUNFLEX	MESX314002A	PBH	MESX314012A
FPC_SPK	AKM	MESX114005A	PBH	MESX314005A
FPC_Side_Key	SUNFLEX	MESX314001A	PBH	MESX314011A
Memory	SAMSUNG	KM5P9001DM-B424	SAMSUNG	KM5P9001DM-B424

SKU List				
Item	2nd Source			
	Sample 3		Sample 4	
	Vendor	Model Number	Vendor	Model Number
Battery	SCUD	BPSX1000010	SCUD	BPSX1000010
Main PCB	Wuzhu	SB0SX31BW0C	Wuzhu	SB0SX31BW0C
CPU	MTK	SA06833V011 (MT6833V_ZA)	MTK	SA06833V010 (MT6833V_NZA)
G- sensor	Bosch	SA0MI320020(BMI320)	Bosch	SA0MI320020(BMI320)
rear housing	DY	MESX361030A	DY	MESX361010A
FPC_USB	PBH	MESX314004A	PBH	MESX314004A
FPC_AJ	PBH	MESX314003A	PBH	MESX314003A
FPC_Main	SUNFLEX	MESX314002A	SUNFLEX	MESX314002A
FPC_SPK	AKM	MESX114005A	AKM	MESX114005A
FPC_Side_Key	SUNFLEX	MESX314001A	SUNFLEX	MESX314001A
Memory	SAMSUNG	KM5P9001DM-B424	Hynix	H9QG9G5AN6X154

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH03-HY
Test Engineer	Eric Wu
Temperature (℃)	22.2~24.2
Relative Humidity (%)	34.9~36.9

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH23-HY (TAF Code: 3786)
Test Engineer	Leo Li
Temperature (℃)	18~21
Relative Humidity (%)	68~70
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

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

FCC Designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications declared by 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)
- 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 the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

Radiated emissions were investigated as following frequency range:

Radiated emissions were investigated as following frequency range:

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

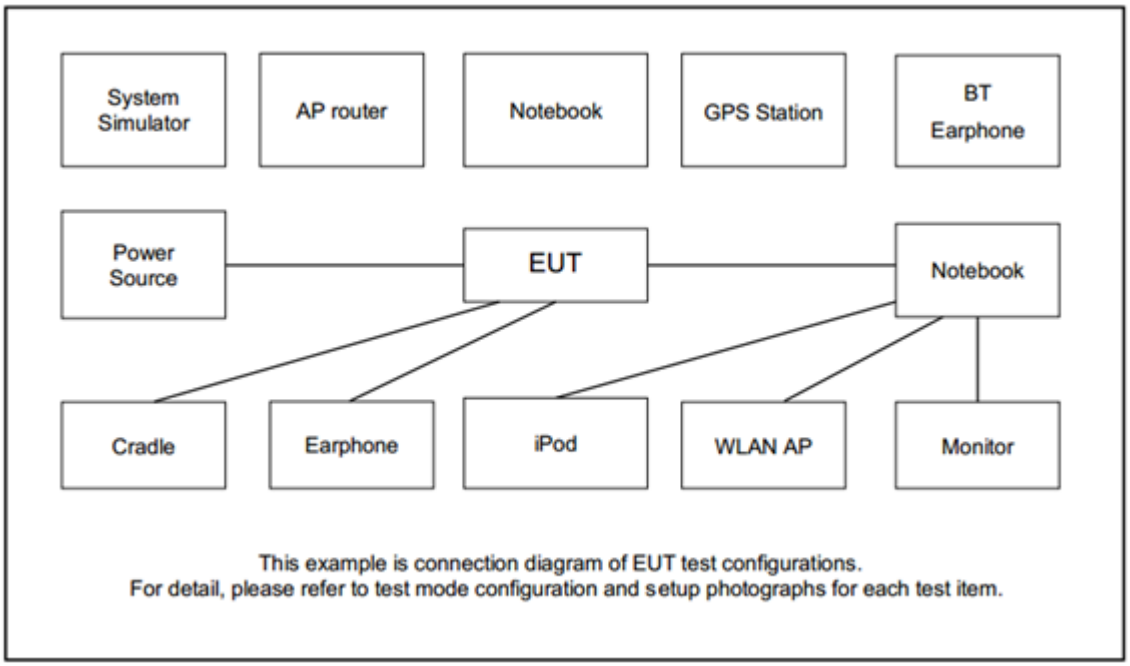
All modes, data rates and positions were investigated.

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

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

Remark: All the radiated test cases were performed with Battery 1 and Main Sample.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

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

Example:

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

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

Frequency List				
Band	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
GSM850	Channel	128	189	251
	Frequency	824.2	836.4	848.8
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
GSM1900	Channel	512	661	810
	Frequency	1850.2	1880.0	1909.8

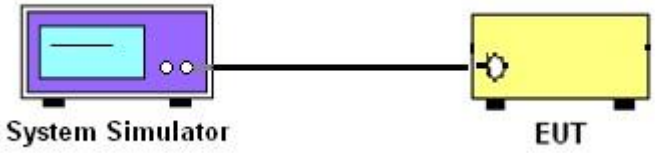
3 Conducted Test Result

3.1 Measuring Instruments

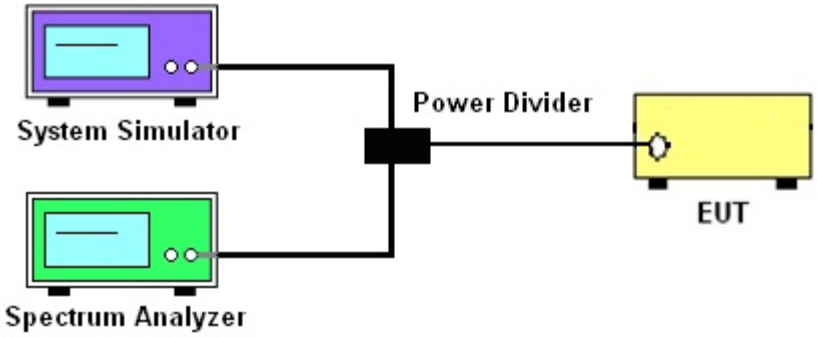
Please refer to the measuring equipment list in this test report.

3.1.1 Test Setup

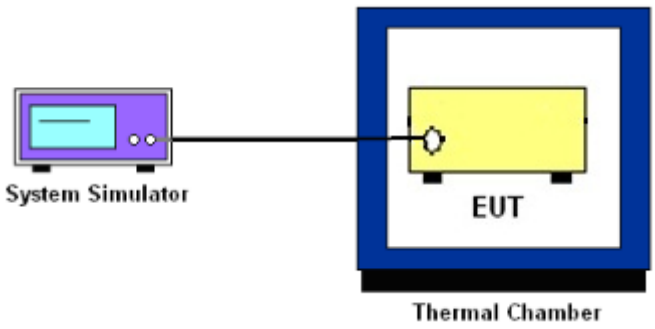
3.1.2 Conducted Output Power



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

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

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

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

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT is 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 is 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 is connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT is connected to the spectrum analyzer by an RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. The band edges of low and high channels for the highest RF powers are measured.
4. The RF fundamental frequency shall 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 10^{th} harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT is connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT is connected to the spectrum analyzer by an RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency is measured.
4. The conducted spurious emission for the whole frequency range is taken.
5. The RF fundamental frequency shall 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

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 is set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature is decreased to -30°C and the EUT is stabilized before testing. Power is applied and the maximum change in frequency is recorded within one minute.
3. With power OFF, the temperature is raised in 10°C steps up to 50°C. The EUT is stabilized at each step for at least half an hour. Power is applied and the maximum frequency change is 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 is placed in a temperature chamber at 20±5° C and connected with the system simulator.
2. The power supply voltage to the EUT is varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency is measured for the worst case.

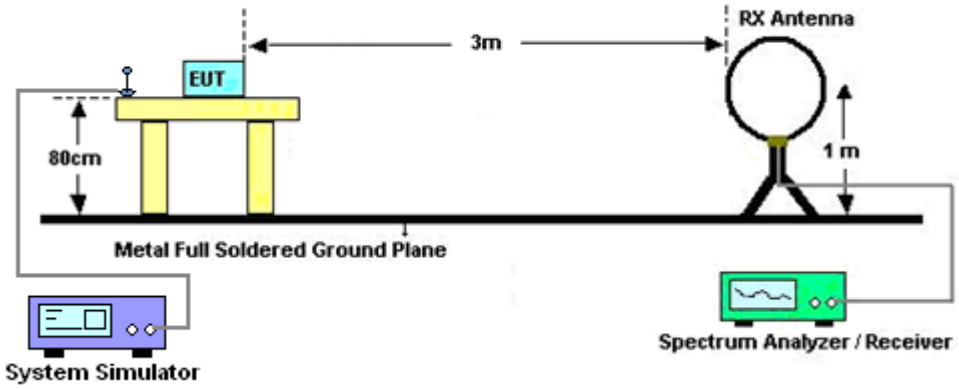
4 Radiated Test Items

4.1 Measuring Instruments

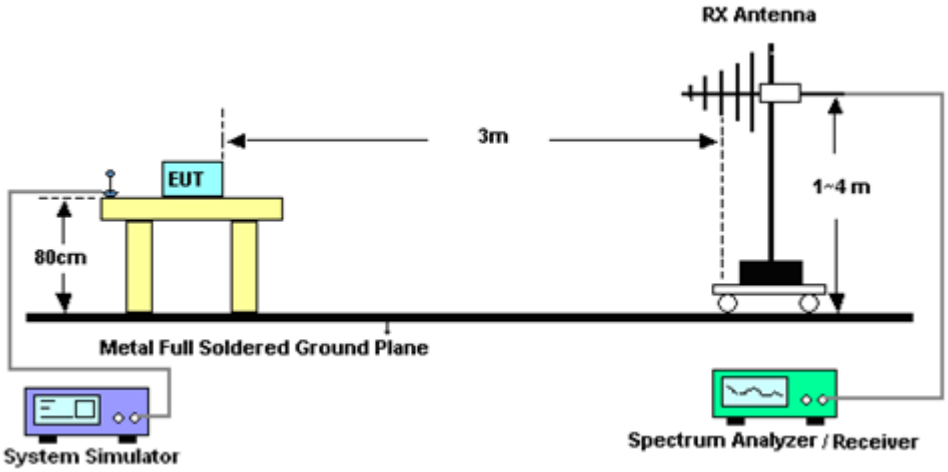
Please refer to the measuring equipment list in this test report.

4.2 Test Setup

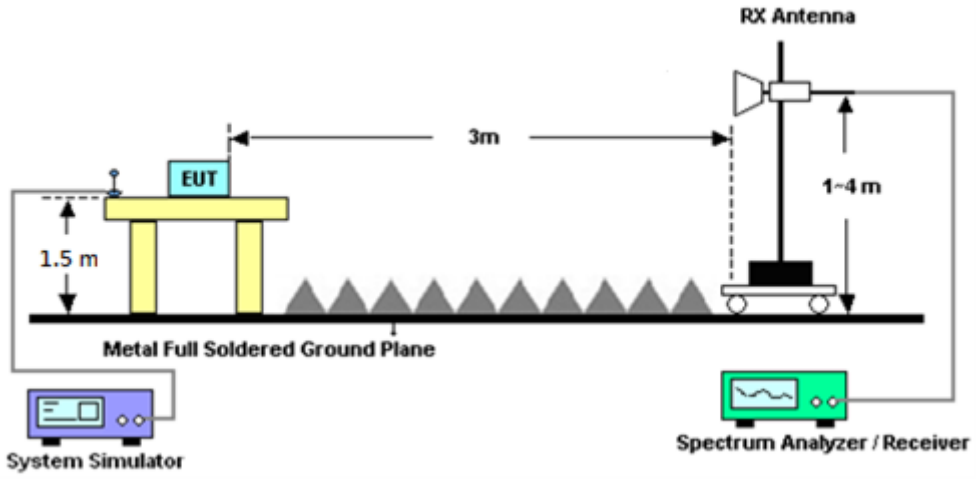
For radiated test below 30MHz



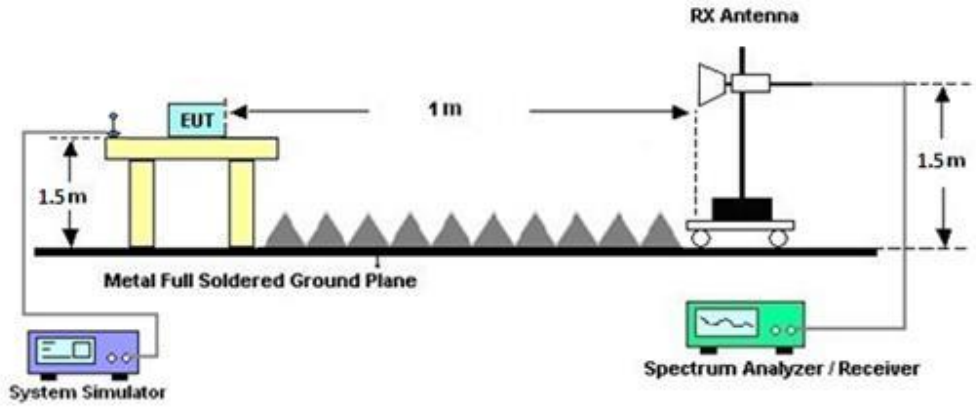
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

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

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

4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

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

4.4.2 Test Procedures

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

1. The EUT is placed on a rotatable wooden table 0.8 meters for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz above the ground.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the antenna tower.
3. The table is rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1 MHz, VBW = 3 MHz, taking record of maximum spurious emission.
6. A horn antenna is substituted in place of the EUT and is driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Take the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency shall 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
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 20, 2022	Apr. 15, 2023~ Apr. 26, 2023	Sep. 19, 2023	Radiation (03CH23-HY)
Bilog Antenna with 6dB pad	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	62028 & 003	N/A	Oct. 11, 2022	Apr. 15, 2023~ Apr. 26, 2023	Oct. 10, 2023	Radiation (03CH23-HY)
Amplifier	SONOMA	310N	421582	N/A	Jul. 16, 2022	Apr. 15, 2023~ Apr. 26, 2023	Jul. 15, 2023	Radiation (03CH23-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C05A18EN	1GHz~18GHz	Jul. 06, 2022	Apr. 15, 2023~ Apr. 26, 2023	Jul. 05, 2023	Radiation (03CH23-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00991	18GHz-40GHz	May 14, 2022	Apr. 15, 2023~ Apr. 26, 2023	May 13, 2023	Radiation (03CH23-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 29, 2022	Apr. 15, 2023~ Apr. 26, 2023	Sep. 28, 2023	Radiation (03CH23-HY)
Preamplifier	EMEC	EM18G40G	060872	18-40GHz	Sep. 28, 2022	Apr. 15, 2023~ Apr. 26, 2023	Sep. 27, 2023	Radiation (03CH23-HY)
Signal Analyzer	Keysight	N9010B	MY62170337	N/A	Sep. 11, 2022	Apr. 15, 2023~ Apr. 26, 2023	Sep. 10, 2023	Radiation (03CH23-HY)
Hygrometer	TECPEL	DTM-303B	TP211542	N/A	Nov. 17, 2022	Apr. 15, 2023~ Apr. 26, 2023	Nov. 16, 2023	Radiation (03CH23-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 15, 2023~ Apr. 26, 2023	N/A	Radiation (03CH23-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 15, 2023~ Apr. 26, 2023	N/A	Radiation (03CH23-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Apr. 15, 2023~ Apr. 26, 2023	N/A	Radiation (03CH23-HY)
Software	Audix	E3 6.09824_2019122	RK-002347	N/A	N/A	Apr. 15, 2023~ Apr. 26, 2023	N/A	Radiation (03CH23-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 07, 2023	Apr. 15, 2023~ Apr. 26, 2023	Mar. 06, 2024	Radiation (03CH23-HY)
RF Cablejavascript : void(0)	HUBER + SUHNER	SUCOFLEX 102	804392/2,804610/2,804613/2	N/A	Oct. 25, 2022	Apr. 15, 2023~ Apr. 26, 2023	Oct. 24, 2023	Radiation (03CH23-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Sep. 27, 2022	Apr. 18, 2023~ Apr. 27, 2023	Sep. 26, 2023	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~4A	Sep. 29, 2022	Apr. 18, 2023~ Apr. 27, 2023	Sep. 28, 2023	Conducted (TH03-HY)
Base Station (Measure)	Rohde & Schwarz	CMU200	117995	GSM / GPRS / WCDMA / CDMA	Aug. 02, 2022	Apr. 18, 2023~ Apr. 27, 2023	Aug. 01, 2023	Conducted (TH03-HY)
Thermal Chamber	ESPEC	SH-641	92013720	-40℃~90℃	Sep. 07, 2022	Apr. 18, 2023~ Apr. 27, 2023	Sep. 06, 2023	Conducted (TH03-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 17, 2022	Apr. 18, 2023~ Apr. 27, 2023	Nov. 16, 2023	Conducted (TH03-HY)

6 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.97 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.38 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.94 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) & ERP / EIRP

GSM850 Maximum Average Power [dBm] (GT - LC = -4.6 dB)					
Channel	128	189	251	ERP (dBm)	ERP (W)
Frequency	824.2	836.4	848.8		
GSM	**31.65**	31.62	31.52	24.90	0.3090
GPRS class 8	31.61	31.60	31.56		
GPRS class 10	29.77	29.73	29.65		
GPRS class 11	28.14	27.99	27.82		
GPRS class 12	25.96	25.74	25.80		
Limit	ERP < 7W			Result	Pass

GSM1900 Maximum Average Power [dBm] (GT - LC = -0.8 dB)					
Channel	512	661	810	EIRP (dBm)	EIRP (W)
Frequency	1850.2	1880	1909.8		
GSM	29.47	29.51	**29.62**	28.82	0.7621
GPRS class 8	29.40	29.43	29.19		
GPRS class 10	26.43	26.42	26.25		
GPRS class 11	24.85	24.81	24.67		
GPRS class 12	23.68	23.61	23.43		
Limit	EIRP < 2W			Result	Pass

WCDMA Band V Maximum Average Power [dBm] (GT - LC = -4.6 dB)					
Channel	4132	4182	4233	ERP (dBm)	ERP (W)
Frequency	826.4	836.4	846.6		
RMC 12.2K	**22.61**	22.50	22.54	15.86	0.0385
HSDPA Subtest-1	21.56	21.56	21.56		
HSDPA Subtest-2	21.59	21.53	21.55		
HSDPA Subtest-3	21.10	21.05	21.07		
HSDPA Subtest-4	21.08	21.06	21.05		
HSUPA Subtest-1	19.53	19.48	19.58		
HSUPA Subtest-2	19.53	19.52	19.51		
HSUPA Subtest-3	20.58	20.53	20.57		
HSUPA Subtest-4	19.04	19.02	19.04		
HSUPA Subtest-5	20.50	20.50	20.50		
Limit	ERP < 7W			Result	Pass

A2. GSM

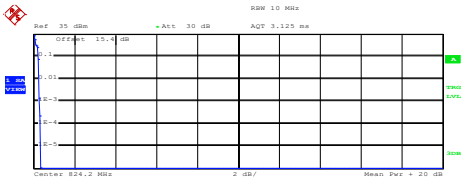
Peak-to-Average Ratio

Mode	GSM850	Limit: 13dB
Mod.	GSM	Result
Lowest CH	0.28	PASS
Middle CH	0.24	
Highest CH	0.32	

Mode	GSM1900	Limit: 13dB
Mod.	GSM	Result
Lowest CH	0.20	PASS
Middle CH	0.24	
Highest CH	0.24	

GSM850 (GSM)

Lowest Channel

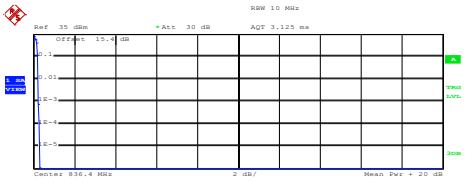


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	31.68 dBm
Peak	32.01 dBm
Crest	0.33 dB
10 %	0.24 dB
1 %	0.28 dB
.1 %	0.28 dB
.01 %	0.36 dB

Date: 19.APR.2023 11:27:46

Middle Channel

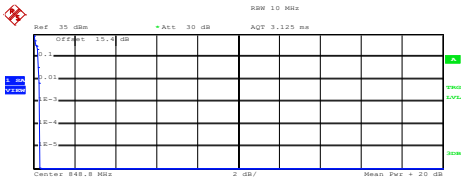


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	31.65 dBm
Peak	31.93 dBm
Crest	0.29 dB
10 %	0.20 dB
1 %	0.24 dB
.1 %	0.24 dB
.01 %	0.28 dB

Date: 19.APR.2023 11:28:11

Highest Channel



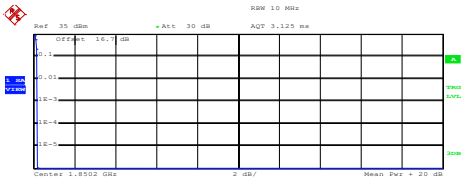
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	31.55 dBm
Peak	31.86 dBm
Crest	0.32 dB
10 %	0.24 dB
1 %	0.28 dB
.1 %	0.32 dB
.01 %	0.32 dB

Date: 19.APR.2023 11:28:40

GSM1900 (GSM)

Lowest Channel



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.42 dBm
Peak	29.61 dBm
Crest	0.18 dB
10 %	0.20 dB
1 %	0.20 dB
.1 %	0.20 dB
.01 %	0.20 dB

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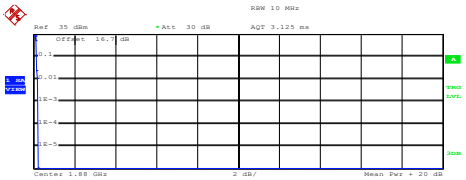
Middle Channel

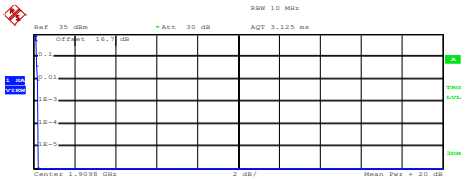


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.31 dBm
Peak	29.54 dBm
Crest	0.23 dB
10 %	0.16 dB
1 %	0.20 dB
.1 %	0.24 dB
.01 %	0.24 dB

Date: 19.APR.2023 15:53:19

Highest Channel



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.30 dBm
Peak	29.54 dBm
Crest	0.23 dB
10 %	0.16 dB
1 %	0.20 dB
.1 %	0.24 dB
.01 %	0.24 dB

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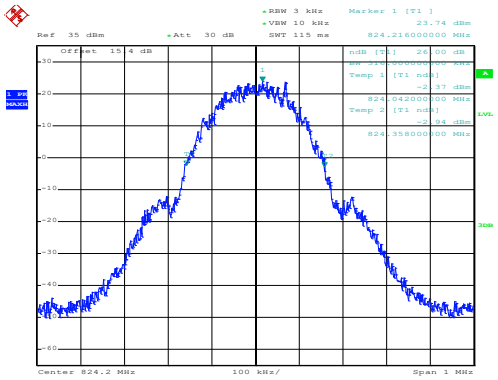
26dB Bandwidth

Mode	GSM850: 26dB BW(MHz)
Mod.	GSM
Lowest CH	0.316
Middle CH	0.314
Highest CH	0.317

Mode	GSM1900: 26dB BW(MHz)
Mod.	GSM
Lowest CH	0.300
Middle CH	0.289
Highest CH	0.313

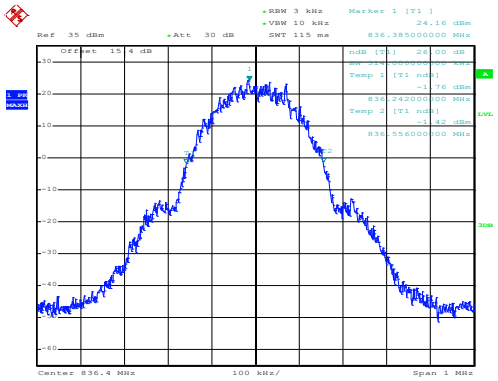
GSM850 (GSM)

Lowest Channel



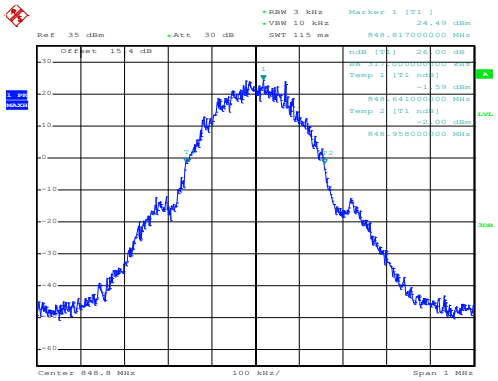
Date: 19.APR.2023 11:17:15

Middle Channel



Date: 19.APR.2023 11:17:55

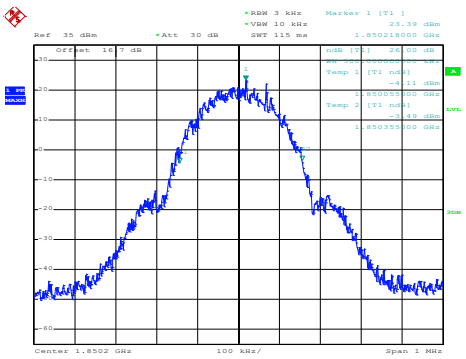
Highest Channel



Date: 19.APR.2023 11:18:33

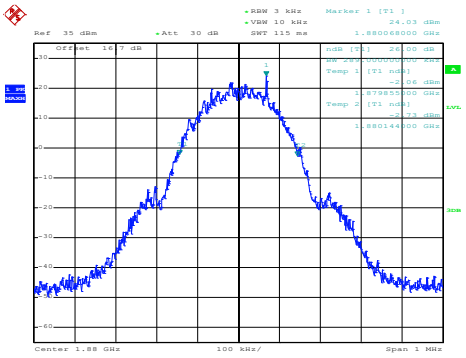
GSM1900 (GSM)

Lowest Channel



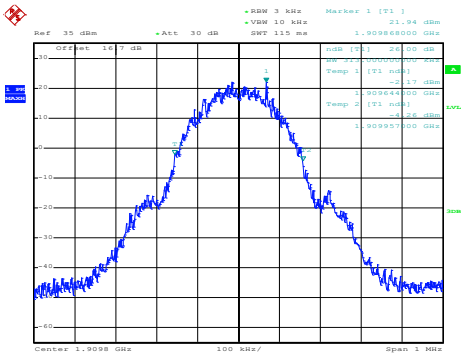
Date: 19.APR.2023 15:40:45

Middle Channel



Date: 19.APR.2023 15:41:31

Highest Channel



Date: 19.APR.2023 15:42:14

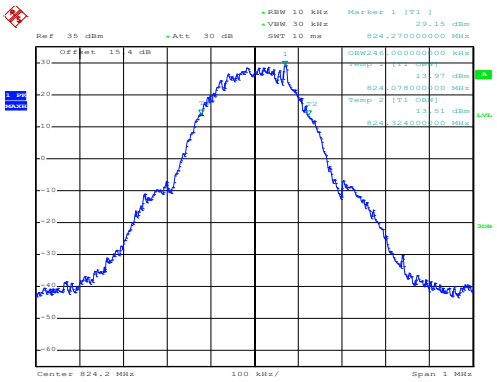
Occupied Bandwidth

Mode	GSM850: 99%OBW(MHz)
Mod.	GSM
Lowest CH	0.246
Middle CH	0.245
Highest CH	0.245

Mode	GSM1900: 99%OBW(MHz)
Mod.	GSM
Lowest CH	0.243
Middle CH	0.244
Highest CH	0.245

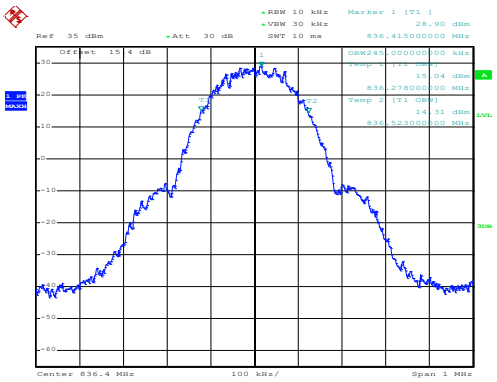
GSM850 (GSM)

Lowest Channel



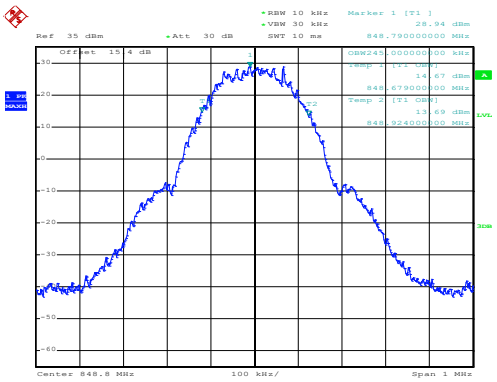
Date: 19.APR.2023 11:19:39

Middle Channel



Date: 19.APR.2023 11:20:15

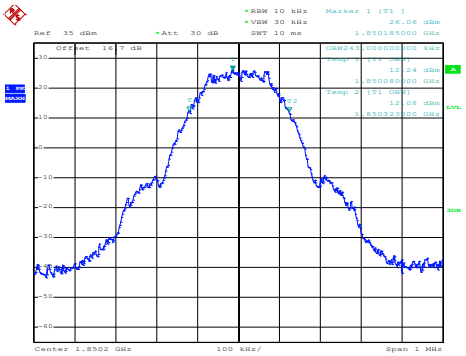
Highest Channel



Date: 19.APR.2023 11:20:52

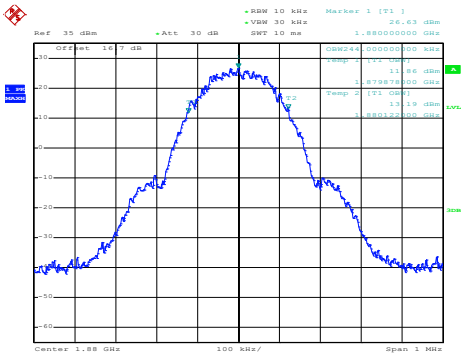
GSM1900 (GSM)

Lowest Channel



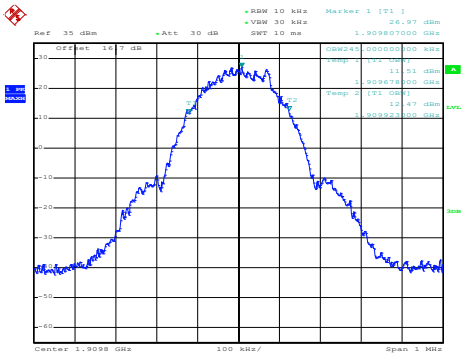
Date: 19.APR.2023 15:43:58

Middle Channel



Date: 19.APR.2023 15:44:38

Highest Channel

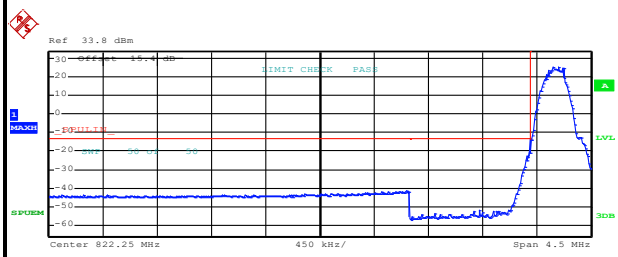


Date: 19.APR.2023 15:45:19

Conducted Band Edge

GSM850 (GSM)

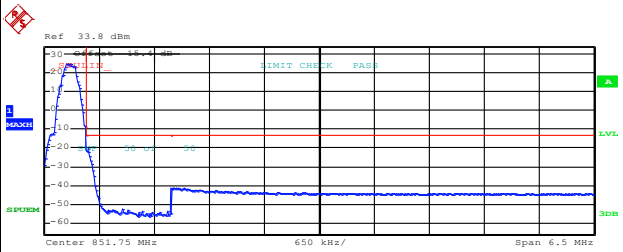
Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.964000 M	-41.42	-28.42
823.000 M	824.000 M	3.00 k	823.996000 M	-21.47	-8.47
824.000 M	824.500 M	10.00 k	824.226500 M	25.40	-9.60

Date: 19.APR.2023 11:22:43

Highest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
848.500 M	849.000 M	10.00 k	848.762000 M	24.81	-10.19
849.000 M	850.000 M	3.00 k	849.016000 M	-20.05	-7.05
850.000 M	855.000 M	100.00 k	850.020000 M	-41.25	-28.25

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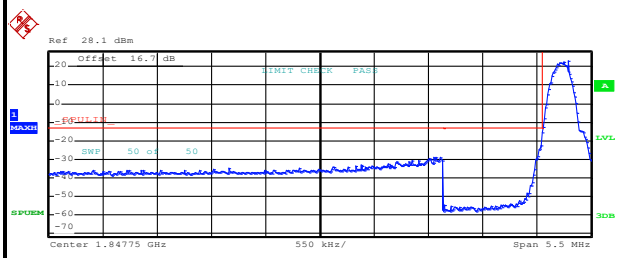
GSM1900 (GSM)

Lowest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.845 G	1.849 G	1.00 M	1.848904 G	-28.91	-15.91
1.849 G	1.850 G	3.00 k	1.849996 G	-22.43	-9.43
1.850 G	1.851 G	10.00 k	1.850270 G	22.93	-12.07

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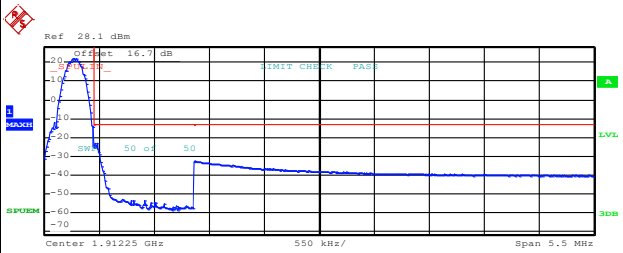
Highest Band Edge



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.910 G	1.910 G	10.00 k	1.909814 G	22.19	-12.81
1.910 G	1.911 G	3.00 k	1.910020 G	-23.16	-10.16
1.911 G	1.915 G	1.00 M	1.911004 G	-32.58	-19.58

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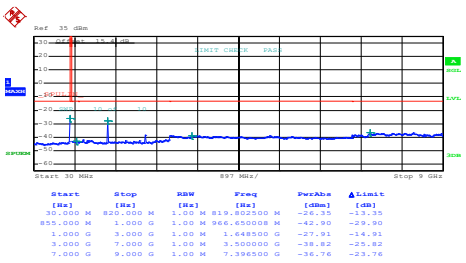
Conducted Spurious Emission

GSM850 (GSM)

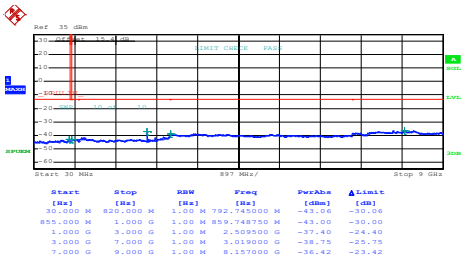
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	819.802500 M	-26.35	-13.35
855.000 M	1.000 G	1.00 M	966.650008 M	-42.90	-29.90
1.000 G	3.000 G	1.00 M	1.648500 G	-27.91	-14.91
3.000 G	7.000 G	1.00 M	3.500000 G	-38.82	-25.82
7.000 G	9.000 G	1.00 M	7.396500 G	-36.76	-23.76

Date: 19.APR.2023 11:25:24

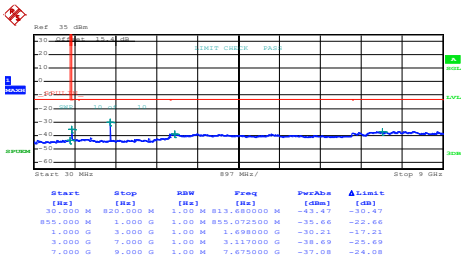
Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	792.745000 M	-43.06	-30.06
855.000 M	1.000 G	1.00 M	859.748750 M	-43.00	-30.00
1.000 G	3.000 G	1.00 M	2.509500 G	-37.40	-24.40
3.000 G	7.000 G	1.00 M	3.019000 G	-38.75	-25.75
7.000 G	9.000 G	1.00 M	8.157000 G	-36.42	-23.42

Date: 19.APR.2023 11:26:18

Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	813.680000 M	-43.47	-30.47
855.000 M	1.000 G	1.00 M	855.072500 M	-35.66	-22.66
1.000 G	3.000 G	1.00 M	1.698000 G	-30.21	-17.21
3.000 G	7.000 G	1.00 M	3.117000 G	-38.69	-25.69
7.000 G	9.000 G	1.00 M	7.675000 G	-37.08	-24.08

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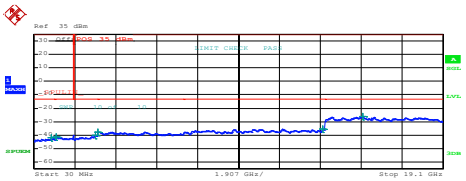
GSM1900 (GSM)

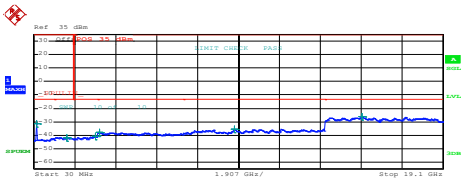
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	841.162500 M	-42.08	-29.08
1.000 G	1.845 G	1.00 M	1.073304 G	-41.07	-28.07
1.915 G	3.000 G	1.00 M	2.879294 G	-40.28	-27.28
3.000 G	7.000 G	1.00 M	3.000000 G	-37.86	-24.86
7.000 G	13.600 G	1.00 M	13.477900 G	-35.65	-22.65
13.600 G	19.100 G	1.00 M	15.363438 G	-26.10	-13.10

Date: 19.APR.2023 15:50:28

Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	141.792500 M	-31.12	-18.12
1.000 G	1.845 G	1.00 M	1.565516 G	-41.65	-28.65
1.915 G	3.000 G	1.00 M	2.884176 G	-40.48	-27.48
3.000 G	7.000 G	1.00 M	3.065000 G	-37.72	-24.72
7.000 G	13.600 G	1.00 M	9.386725 G	-35.53	-22.53
13.600 G	19.100 G	1.00 M	15.342813 G	-25.93	-12.93

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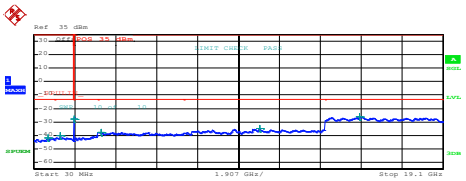
Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	1.000 G	1.00 M	697.117500 M	-42.13	-29.13
1.000 G	1.845 G	1.00 M	1.232164 G	-39.94	-26.94
1.915 G	3.000 G	1.00 M	1.915271 G	-28.09	-15.09
3.000 G	7.000 G	1.00 M	3.170000 G	-37.66	-24.66
7.000 G	13.600 G	1.00 M	10.562350 G	-35.15	-22.15
13.600 G	19.100 G	1.00 M	15.196375 G	-26.11	-13.11

Date: 19.APR.2023 15:52:15

Frequency Stability

Test Conditions	Middle Channel	GSM850 (GSM)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0036	PASS
40	Normal Voltage	0.0012	
30	Normal Voltage	0.0060	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0024	
0	Normal Voltage	0.0371	
-10	Normal Voltage	0.0036	
-20	Normal Voltage	0.0395	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0299	
20	Battery End Point	0.0048	

Test Conditions	Middle Channel	GSM1900 (GSM)	Limit Note 2.
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0112	PASS
40	Normal Voltage	0.0117	
30	Normal Voltage	0.0128	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0090	
0	Normal Voltage	0.0011	
-10	Normal Voltage	0.0064	
-20	Normal Voltage	0.0128	
-30	Normal Voltage	0.0144	
20	Maximum Voltage	0.0032	
20	Normal Voltage	0.0122	
20	Battery End Point	0.0053	

Note:

1. Normal Voltage = 3.87V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block.

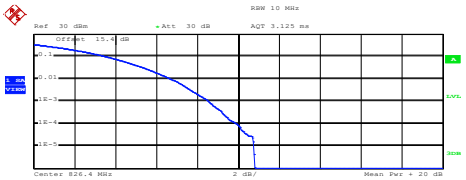
A2. WCDMA

Peak-to-Average Ratio

Mode	WCDMA Band V	Limit: 13dB
Mod.	RMC 12.2Kbps	Result
Lowest CH	8.56	PASS
Middle CH	8.60	
Highest CH	8.44	

WCDMA Band V (RMC 12.2Kbps)

Lowest Channel



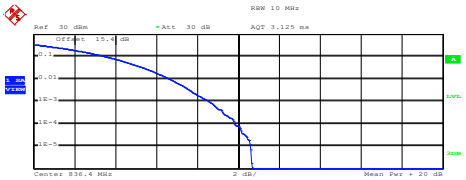
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	-29.65 dBm
Peak	-18.85 dBm
Crest	10.79 dB
10 %	3.64 dB
1 %	6.76 dB
.1 %	8.56 dB
.01 %	9.92 dB

Date: 18.APR.2023 17:04:04

Middle Channel



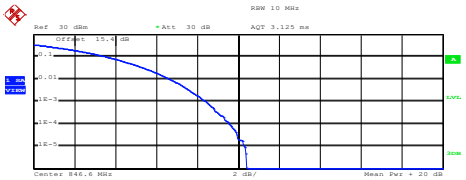
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	-29.66 dBm
Peak	-18.99 dBm
Crest	10.67 dB
10 %	3.68 dB
1 %	6.68 dB
.1 %	8.60 dB
.01 %	9.84 dB

Date: 18.APR.2023 17:04:20

Highest Channel



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	-29.69 dBm
Peak	-19.27 dBm
Crest	10.41 dB
10 %	3.68 dB
1 %	6.68 dB
.1 %	8.44 dB
.01 %	9.60 dB

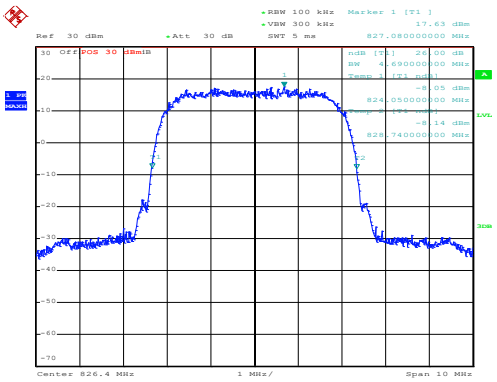
Date: 18.APR.2023 17:04:35

26dB Bandwidth

Mode	WCDMA Band V 26dB BW(MHz)
Mod.	RMC 12.2Kbps
Lowest CH	4.69
Middle CH	4.70
Highest CH	4.70

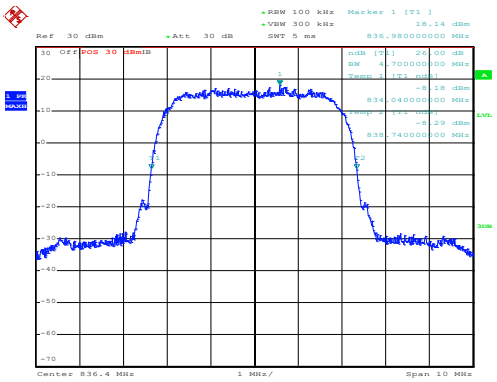
WCDMA Band V (RMC 12.2Kbps)

Lowest Channel



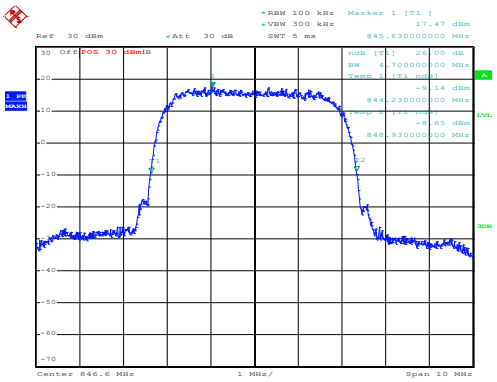
Date: 18.APR.2023 16:48:44

Middle Channel



Date: 18.APR.2023 16:49:39

Highest Channel



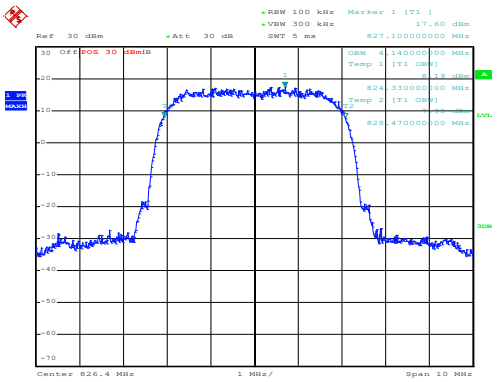
Date: 18.APR.2023 16:50:19

Occupied Bandwidth

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

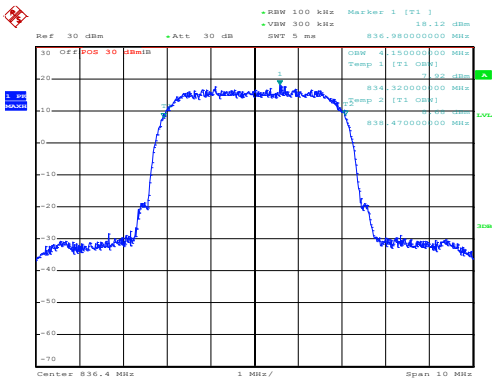
WCDMA Band V (RMC 12.2Kbps)

Lowest Channel



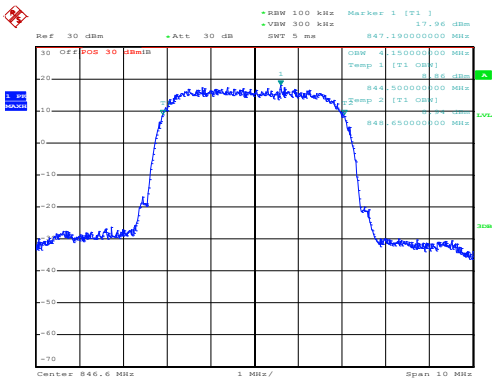
Date: 18.APR.2023 16:51:37

Middle Channel



Date: 18.APR.2023 16:52:20

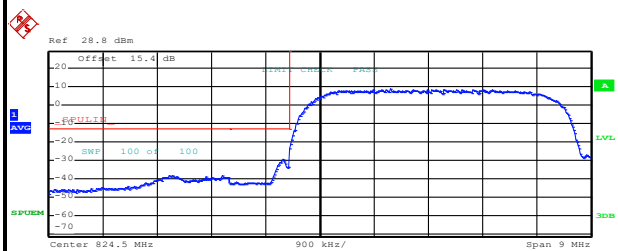
Highest Channel



Date: 18.APR.2023 16:53:00

Conducted Band Edge

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



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
820.000 M	823.000 M	100.00 k	822.871000 M	-38.13	-25.13
823.000 M	824.000 M	50.00 k	823.880000 M	-29.60	-16.60
824.000 M	829.000 M	100.00 k	825.665000 M	8.63	-26.37

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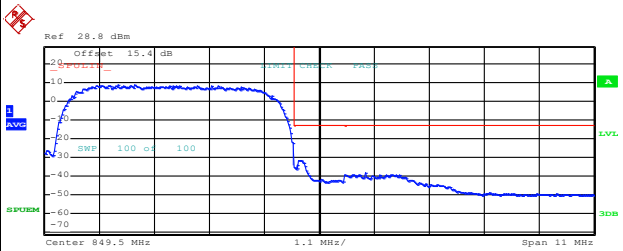


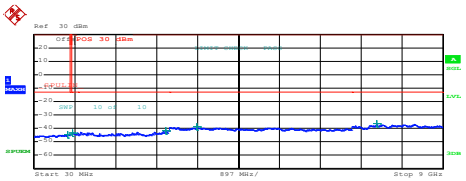
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
844.000 M	849.000 M	100.00 k	845.475000 M	8.84	-26.16
849.000 M	850.000 M	50.00 k	849.088000 M	-31.58	-18.58
850.000 M	855.000 M	100.00 k	850.415000 M	-38.45	-25.45

Date: 18.APR.2023 16:59:37

Conducted Spurious Emission

WCDMA Band V (RMC 12.2Kbps)

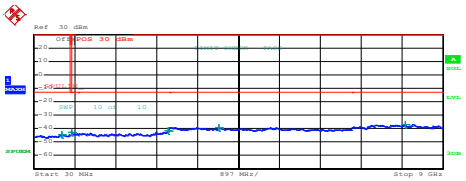
Lowest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	756.997500 M	-44.62	-31.62
855.000 M	1.000 G	1.00 M	864.932501 M	-43.31	-30.31
1.000 G	3.000 G	1.00 M	2.923500 G	-41.58	-28.58
3.000 G	7.000 G	1.00 M	3.595000 G	-38.98	-25.98
7.000 G	9.000 G	1.00 M	7.548000 G	-36.40	-23.40

Date: 18.APR.2023 17:01:28

Middle Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	646.397500 M	-44.42	-31.42
855.000 M	1.000 G	1.00 M	856.812500 M	-42.98	-29.98
1.000 G	3.000 G	1.00 M	2.981000 G	-41.57	-28.57
3.000 G	7.000 G	1.00 M	4.085000 G	-39.13	-26.13
7.000 G	9.000 G	1.00 M	8.177000 G	-36.97	-23.97

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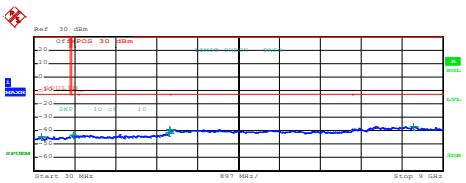
Highest Channel



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
30.000 M	820.000 M	1.00 M	183.457500 M	-44.57	-31.57
855.000 M	1.000 G	1.00 M	888.966252 M	-43.52	-30.52
1.000 G	3.000 G	1.00 M	2.998000 G	-41.81	-28.81
3.000 G	7.000 G	1.00 M	3.016000 G	-39.21	-26.21
7.000 G	9.000 G	1.00 M	8.348500 G	-36.90	-23.90

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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	0.0072	PASS
40	Normal Voltage	0.0048	
30	Normal Voltage	0.0060	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0084	
0	Normal Voltage	0.0036	
-10	Normal Voltage	0.0024	
-20	Normal Voltage	0.0012	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0036	
20	Normal Voltage	0.0084	
20	Battery End Point	0.0012	

Note:

1. Normal Voltage = 3.87V. ；Battery End Point (BEP) = 3.6 V.；Maximum Voltage =4.2 V
2. The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

GSM 850

GSM 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-24.00	-13	-11.00	-40.15	-30.37	0.71	9.24	H
	2473	-34.65	-13	-21.65	-54.71	-41.80	0.95	10.25	H
	3297	-58.11	-13	-45.11	-81.68	-65.65	1.10	10.79	H
									H
									H
									H
	1648	-29.87	-13	-16.87	-45.89	-36.24	0.71	9.24	V
	2473	-37.00	-13	-24.00	-57.09	-44.15	0.95	10.25	V
	3297	-58.82	-13	-45.82	-82.2	-66.36	1.10	10.79	V
									V
									V
									V
Middle	1673	-21.30	-13	-8.30	-37.47	-27.84	0.72	9.41	H
	2509	-32.53	-13	-19.53	-52.87	-39.64	0.95	10.21	H
	3346	-57.95	-13	-44.95	-81.51	-65.67	1.11	10.98	H
									H
									H
									H
	1673	-25.92	-13	-12.92	-41.97	-32.46	0.72	9.41	V
	2509	-34.48	-13	-21.48	-54.79	-41.59	0.95	10.21	V
	3346	-58.95	-13	-45.95	-82.4	-66.67	1.11	10.98	V
									V
									V
									V

Highest	1698	-26.88	-13	-13.88	-43.08	-33.60	0.72	9.59	H
	2546	-29.56	-13	-16.56	-50.19	-36.70	0.96	10.25	H
	3395	-58.61	-13	-45.61	-82.18	-66.52	1.12	11.18	H
									H
									H
									H
	1698	-31.38	-13	-18.38	-47.46	-38.10	0.72	9.59	V
	2546	-44.84	-13	-31.84	-65.38	-51.98	0.96	10.25	V
	3395	-58.58	-13	-45.58	-82.11	-66.49	1.12	11.18	V
									V
									V
									V

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

WCDMA 850

WCDMA 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-48.85	-13	-35.85	-65	-55.22	0.71	9.24	H
	2473	-56.92	-13	-43.92	-76.98	-64.07	0.95	10.25	H
	3297	-58.30	-13	-45.30	-81.87	-65.84	1.10	10.79	H
									H
									H
									H
									H
	1648	-49.50	-13	-36.50	-65.52	-55.87	0.71	9.24	V
	2473	-51.39	-13	-38.39	-71.48	-58.54	0.95	10.25	V
	3297	-58.50	-13	-45.50	-81.88	-66.04	1.10	10.79	V
									V
									V
									V
									V
Middle	1673	-47.74	-13	-34.74	-63.91	-54.28	0.72	9.41	H
	2509	-61.15	-13	-48.15	-81.49	-68.26	0.95	10.21	H
	3346	-58.56	-13	-45.56	-82.12	-66.28	1.11	10.98	H
									H
									H
									H
									H
	1673	-49.45	-13	-36.45	-65.5	-55.99	0.72	9.41	V
	2509	-61.31	-13	-48.31	-81.62	-68.42	0.95	10.21	V
	3346	-59.09	-13	-46.09	-82.54	-66.81	1.11	10.98	V
									V
									V
									V
									V

Highest	1698	-50.40	-13	-37.40	-66.6	-57.12	0.72	9.59	H
	2546	-60.46	-13	-47.46	-81.09	-67.60	0.96	10.25	H
	3395	-58.49	-13	-45.49	-82.06	-66.40	1.12	11.18	H
									H
									H
									H
									H
	1698	-52.43	-13	-39.43	-68.51	-59.15	0.72	9.59	V
	2546	-59.31	-13	-46.31	-79.85	-66.45	0.96	10.25	V
	3395	-58.82	-13	-45.82	-82.35	-66.73	1.12	11.18	V
									V
									V
									V
									V

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

GSM 1900

GSM 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-56.80	-13	-43.80	-81.72	-67.08	1.17	11.45	H
	5551	-53.37	-13	-40.37	-83.44	-63.88	1.49	12.00	H
	7401	-50.67	-13	-37.67	-84.13	-59.96	1.71	11.00	H
									H
									H
									H
									H
	3700	-56.79	-13	-43.79	-81.56	-67.07	1.17	11.45	V
	5551	-53.66	-13	-40.66	-83.4	-64.17	1.49	12.00	V
	7401	-50.75	-13	-37.75	-84.16	-60.04	1.71	11.00	V
									V
									V
									V
									V
Middle	3760	-55.76	-13	-42.76	-80.96	-65.94	1.18	11.36	H
	5640	-52.62	-13	-39.62	-83.02	-63.09	1.47	11.94	H
	7520	-50.58	-13	-37.58	-84.07	-60.32	1.68	11.42	H
									H
									H
									H
									H
	3760	-56.13	-13	-43.13	-81.15	-66.31	1.18	11.36	V
	5640	-52.60	-13	-39.60	-82.74	-63.07	1.47	11.94	V
	7520	-50.78	-13	-37.78	-84.18	-60.52	1.68	11.42	V
									V
									V
									V
									V

Highest	3820	-54.77	-13	-41.77	-81.24	-64.86	1.19	11.28	H
	5729	-51.21	-13	-38.21	-82.94	-61.30	1.50	11.58	H
	7639	-49.19	-13	-36.19	-83.74	-58.93	1.71	11.44	H
									H
									H
									H
									H
	3820	-54.75	-13	-41.75	-81.04	-64.84	1.19	11.28	V
	5729	-51.17	-13	-38.17	-82.97	-61.26	1.50	11.58	V
	7639	-49.14	-13	-36.14	-83.71	-58.88	1.71	11.44	V
									V
									V
									V
									V

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