Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China

TEST REPORT

FCC Part 22 Subpart H / Part 24 Subpart E

Report Reference No.....:	**GTS20191021009-1-9-1**
FCC ID.....:	**2AUUB-S900PLUS**
Compiled by (position+printed name+signature) .:	File administrators Jimmy Wang
Supervised by (position+printed name+signature) .:	Test Engineer Aaron Tan
Approved by (position+printed name+signature) .:	Manager Jason Hu
Date of issue.....:	Oct. 24, 2019

Testing Laboratory Name .....:	**Shenzhen Global Test Service Co.,Ltd.**
Address .....:	No.7-101 and 8A-104,Building 7 and 8,DCC Cultural and Creative Garden No.98,Pingxin North Road,Shangmugu,Pinghu Street, Longgang District,Shenzhen,Guangdong,China
Applicant's name.....:	**BOXCHIP CO.,LTD**
Address .....:	Room 302, Building A, Huahan Technology, No. 16 Langshan Road, Nanshan District, Shenzhen, China
Test specification .....:	
Standard .....:	**FCC CFR Title 47 Part 2, Part 22H, Part 24E** **ANSI/TIA-603-E-2016** **KDB 971168 D01**

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Test item description.....:	Smart Terminal
Trade Mark .....:	BOXCHIP
Manufacturer.....:	**BOXCHIP CO.,LTD**
Model/Type reference.....:	S900Plus
Listed Models .....:	S900A_Plus, S900B_Plus, S1000, TVX-588d
Ratings .....:	DC 3.8V from battery
Modulation .....:	GMSK, 8PSK, QPSK
Hardware version .....:	TVH30_S900+_MB_V2.0
Software version .....:	V1.0
Frequency.....	GSM850, PCS1900, UMTS Band II, UMTS Band V
Result.....:	**PASS**

TEST REPORT

Test Report No. :	GTS20191021009-1-9-1	Oct. 24, 2019 Date of issue

Equipment under Test	:	Smart Terminal
Model /Type	:	S900Plus
Listed Models	:	S900A_Plus, S900B_Plus, S1000, TVX-588d
Applicant	:	**BOXCHIP CO.,LTD**
Address	:	Room 302, Building A, Huahan Technology, No. 16 Langshan Road, Nanshan District, Shenzhen, China
Manufacturer	:	**BOXCHIP CO.,LTD**
Address	:	Room 302, Building A, Huahan Technology, No. 16 Langshan Road, Nanshan District, Shenzhen, China

Test result	Pass *

＊ In the configuration tested, the EUT complied with the standards specified page 4.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1 SUMMARY

1.1 TEST STANDARDS

The tests were performed according to following standards:

FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS
FCC Part 22 Subpart H: PRIVATE LAND MOBILE RADIO SERVICES.
FCC Part 24 Subpart E: PUBLIC MOBILE SERVICES
ANSI/TIA-603-E-2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
ANSI C63.10-2013 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
FCCKDB971168D01 Power Meas License Digital Systems

Test Description

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Peak-to-Average Ratio	Part 24.232 (d)	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability	Part 2.1055 Part 22.355 Part 24.235	Pass

1.2 Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 165725

Shenzhen Global Test Service Co.,Ltd EMC Laborns Commission. The acceptance letter from the FCC is maintained in our files.
atory has been registered and fully described in a report filed with the (FCC) Federal Communicatio

A2LA-Lab Cert. No.: 4758.01

Shenzhen Global Test Service Co.,Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

CNAS-Lab Code: L8169

Shenzhen Global Test Service Co.,Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories. Date of Registration: Dec. 11, 2015. Valid time is until Dec. 10, 2024.

1.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 1"and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd.quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Global Test Service Co.,Ltd.is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)
Conducted Power	9KHz~18GHz	0.61 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occupied Bandwidth	9KHz~40GHz	-	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

2 GENERAL INFORMATION

2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 General Description of EUT

Product Name:	Smart Terminal
Model/Type reference:	S900Plus
Power supply:	DC 3.8V from battery
GSM	
Operation Band:	GSM850, PCS1900
Supported Type:	GSM/GPRS/EGPRS
Power Class:	GSM850:Power Class 4 PCS1900:Power Class 1
Modulation Type:	GMSK for GPRS, 8-PSK for EGPRS
GSM Release Version	R99
GPRS Multislot Class	12
EGPRS Multislot Class	12
Antenna type:	FPC antenna
WCDMA	
Operation Band:	FDD Band II, FDD Band V
Power Class:	Power Class 3
Modilation Type:	QPSK for HSUPA/HSDPA
WCDMA Release Version:	Rel-5
HSDPA Category:	Category 14
HSUPA Category:	Category 6
Antenna type:	FPC antenna

Note: For more details, refer to the user’s manual of the EUT.

2.3 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The CUM200 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.

Test Frequency:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
190	836.60	661	1880.00
251	848.80	810	1909.80

FDD Band II		FDD Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.4	4132	826.40
9400	1880.0	4182	836.60
9538	1907.6	4233	846.60

Test Modes:

The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	Test Modes Description
Mode 1	GSM system, GSM, GMSK modulation
Mode 2	GSM system, GPRS, GMSK modulation
Mode 3	GSM system, EDGE, 8PSK modulation
Mode 4	WCDMA system, QPSK modulation
Mode 5	HSDPA system, QPSK modulation
Mode 6	HSUPA system, QPSK modulation

Note:

1. As GPRS and GSM with the same emission designator, test result recorded in this report at the worst case Mode 1 only after exploratory scan.
2. As HSDPA and HSUPA with the same emission designator, test result recorded in this report at the worst case Mode 4 with RCM 12.2Kbps only after exploratory scan.

2.4 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.08	2019/09/20	2020/09/19
LISN	R&S	ESH2-Z5	893606/008	2019/09/20	2020/09/19
Bilog Antenna	Schwarzbeck	VULB9163	976	2019/09/20	2020/09/19
Bilog Antenna	Schwarzbeck	VULB9163	979	2019/09/20	2020/09/19
EMI Test Receiver	R&S	ESCI7	101102	2019/09/20	2020/09/19
Spectrum Analyzer	Agilent	N9020A	MY48010425	2019/09/20	2020/09/19
Spectrum Analyzer	R&S	FSP40	100019	2019/09/20	2020/09/19
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2019/09/20	2020/09/19
Horn Antenna	Schwarzbeck	BBHA 9120D	01652	2019/09/20	2020/09/19
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2019/09/20	2020/09/19
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	971	2019/09/20	2020/09/19
Amplifier	Schwarzbeck	BBV 9743	#202	2019/09/20	2020/09/19
Amplifier	EMCI	EMC051845B	980355	2019/09/20	2020/09/19
Temperature/Humidity Meter	Gangxing	CTH-608	02	2019/09/20	2020/09/19
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2019/09/20	2020/09/19
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2019/09/20	2020/09/19
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2019/09/20	2020/09/19
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2019/09/20	2020/09/19
Data acquisition card	Agilent	U2531A	TW53323507	2019/09/20	2020/09/19
Power Sensor	Agilent	U2021XA	MY5365004	2019/09/20	2020/09/19
EMI Test Software	R&S	ES-K1	V1.7.1	2019/09/20	2020/09/19
EMI Test Software	JS Tonscend	JS32-RE	2.0.1.5	2019/09/20	2020/09/19
EMI Test Software	Audix	E3	2..1.1	2019/09/20	2020/09/19

2.5 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID:2AUUB-S900PLUS filing to comply with of the FCC Part 22 and Part 24 Rules.

2.6 Modifications

No modifications were implemented to meet testing criteria.

3 TEST CONDITIONS AND RESULTS

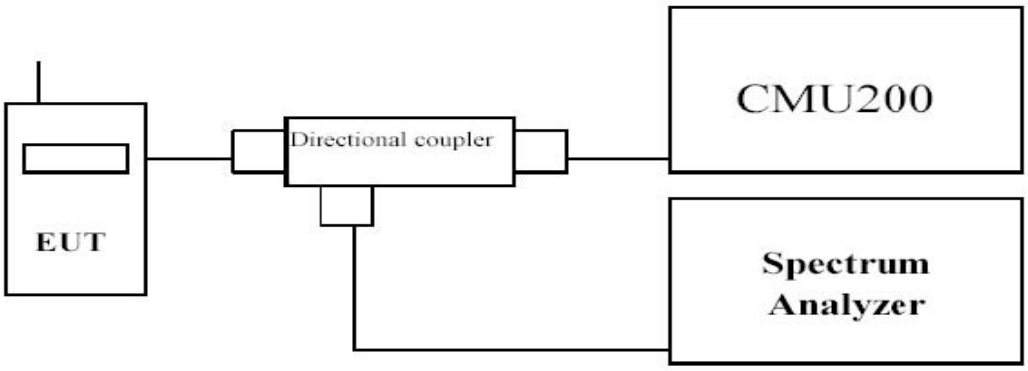
3.1 Output Power

LIMIT

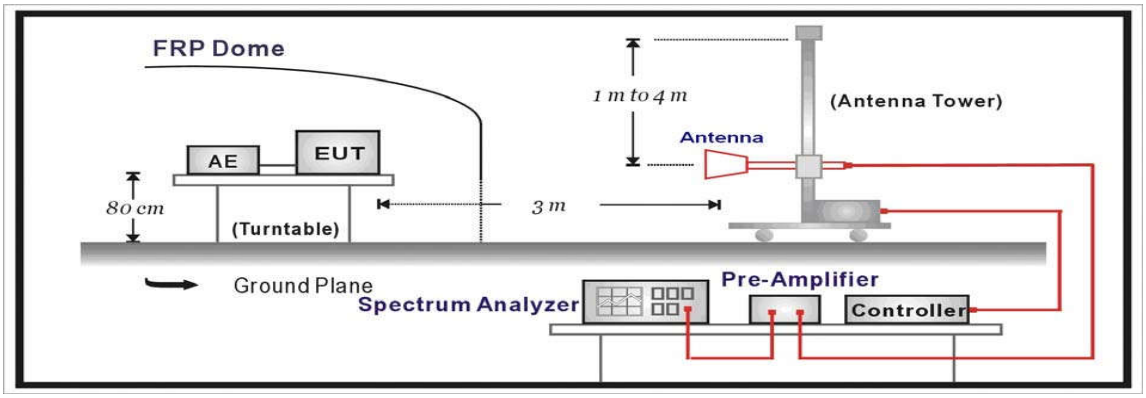
GSM850/WCDMA Band V: 7W
PCS1900/WCDMA Band II: 2W
WCDMA Band IV: 1W
The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION

Conducted Power Measurement



Radiated Power Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Power Measurement:

a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
c) EUT Communicate with CMU200 then selects a channel for testing.
d) Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c) The output of the test antenna shall be connected to the measuring receiver.
d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.

e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

h) The maximum signal level detected by the measuring receiver shall be noted.

i) The transmitter shall be replaced by a substitution antenna.

j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

k) The substitution antenna shall be connected to a calibrated signal generator.

l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

TEST RESULTS

Conducted Measurement:

EUT Mode	Channel	Frequency (MHz)	Avg.Burst Power (dBm)	Peak-to-Average Ratio (dB)	Result
GSM850 (GMSK,1Slot)	128	824.20	32.44	0.60	Pass
	190	836.60	32.36	0.93	
	251	848.80	32.38	0.55	
GPRS850 (GMSK,1Slot)	128	824.20	32.47	0.66	Pass
	190	836.60	32.55	0.46	
	251	848.80	32.61	0.78	
EGPRS850 (8PSK,1Slot)	128	824.20	26.39	3.25	Pass
	190	836.60	26.47	3.27	
	251	848.80	26.52	3.28	
GSM1900 (GMSK,1Slot)	512	1850.20	30.21	0.28	Pass
	661	1880.00	30.42	0.68	
	810	1909.80	30.38	0.56	
GPRS1900 (GMSK,1Slot)	512	1850.20	30.28	0.37	Pass
	661	1880.00	30.66	0.63	
	810	1909.80	30.18	0.86	
EGPRS1900 (8PSK,1Slot)	512	1850.20	24.61	3.32	Pass
	661	1880.00	24.65	3.35	
	810	1909.80	24.52	3.56	
HSDPA Band II (QPSK)	9262	1852.40	23.86	3.76	Pass
	9400	1880.00	23.66	3.64	
	9538	1907.60	23.68	3.87	
HSUPA Band V (QPSK)	4132	826.40	23.46	3.60	Pass
	4183	836.60	23.49	3.82	
	4233	846.60	23.39	3.11	

Note: 1.Peak-to-Average Ratio= maximum PK burst power-maximum Avg. burst power.

Radiated Measurement:

Note: 1. The field strength of radiation emission was measured in the following position: EUT stand-up position (Zaxis), lie-down position (X, Y axis). The data show in this report only with the worst case setup. After exploratory measurement the worst case of Z axis was reported.
Note: 2. We test the H direction and V direction and V direction is worse.

GSM850

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Correction (dB)	P_{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-9.16	2.42	8.45	2.15	36.82	31.54	38.45	6.91	V
190	-8.88	2.46	8.45	2.15	36.82	31.78	38.45	6.67	V
251	-9.05	2.53	8.36	2.15	36.82	31.45	38.45	7.00	V

GPRS850

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Correction (dB)	P_{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-9.72	2.42	8.45	2.15	36.82	30.98	38.45	7.47	V
190	-9.79	2.46	8.45	2.15	36.82	30.87	38.45	7.58	V
251	-9.35	2.53	8.36	2.15	36.82	31.15	38.45	7.30	V

EGPRS850

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Correction (dB)	P_{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-15.05	2.42	8.45	2.15	36.82	25.65	38.45	12.80	V
190	-14.97	2.46	8.45	2.15	36.82	25.69	38.45	12.76	V
251	-15.61	2.53	8.36	2.15	36.82	24.89	38.45	13.56	V

PCS1900

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-9.38	3.41	10.24	33.6	31.05	33.01	1.96	V
661	-9.51	3.49	10.24	33.6	30.84	33.01	2.17	V
810	-9.13	3.55	10.23	33.6	31.15	33.01	1.86	V

GPRS1900

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-9.21	3.41	10.24	33.6	31.22	33.01	1.79	V
661	-9.03	3.49	10.24	33.6	31.32	33.01	1.69	V
810	-9.14	3.55	10.23	33.6	31.14	33.01	1.87	V

EGPRS1900

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-17.31	3.41	10.24	33.6	23.12	33.01	9.89	V
661	-17.56	3.49	10.24	33.6	22.79	33.01	10.22	V
810	-16.87	3.55	10.23	33.6	23.41	33.01	9.60	V

WCDMA BAND II

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	-19.20	3.41	10.24	33.60	21.23	33.01	11.78	V
9400	-18.61	3.49	10.24	33.60	21.74	33.01	11.27	V
9538	-19.73	3.55	10.23	33.60	20.55	33.01	12.46	V

WCDMA BAND V

Channel	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Correction (dB)	P_{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4132	-19.29	2.42	8.45	2.15	36.82	21.41	38.45	17.04	V
4183	-19.13	2.46	8.45	2.15	36.82	21.53	38.45	16.92	V
4233	-19.66	2.53	8.36	2.15	36.82	20.84	38.45	17.61	V

Remark:

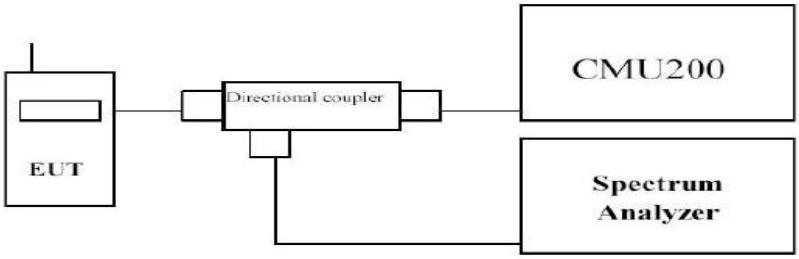
1. *EIRP=P_{Mea}(dBm)-P_{cl}(dB)+P_{Ag}(dB)+G_a(dBi)*
2. *ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.*

3.2 Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBW was set to about 1% of emission BW, VBW⩾3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM850 (GMSK,1Slot)	128	824.20	243.91	309.90
	190	836.60	242.01	312.00
	251	848.80	243.79	313.70
EGPRS850 (8PSK,1Slot)	128	824.20	246.63	30.80
	190	836.60	244.21	317.70
	251	848.80	247.10	307.30
GSM1900 (GMSK,1Slot)	512	1850.20	246.95	313.90
	661	1880.00	247.50	308.40
	810	1909.80	244.39	305.20
EGPRS1900 (8PSK,1Slot)	512	1850.20	244.79	317.10
	661	1880.00	243.54	304.40
	810	1909.80	245.77	310.20
WCDMA Band II (QPSK)	9262	1852.4	4148.10	4627.00
	9400	1880.0	4153.60	4614.00
	9538	1907.6	4147.10	4628.00
WCDMA Band V (QPSK)	4132	826.4	4166.40	4639.00
	4183	836.6	4137.30	4609.00
	4233	846.6	4156.90	4653.00

Test plots as follow:

GSM850 For GMSK Modulation

Channel 128

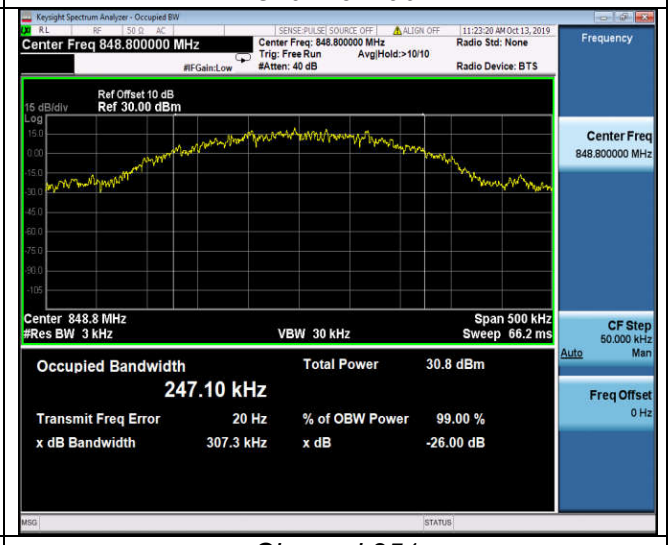
EGPRS850 For 8-PSK Modulation

Channel 128

Channel 190

Channel 190

Channel 251



Channel 251

GSM1900 For GMSK Modulation

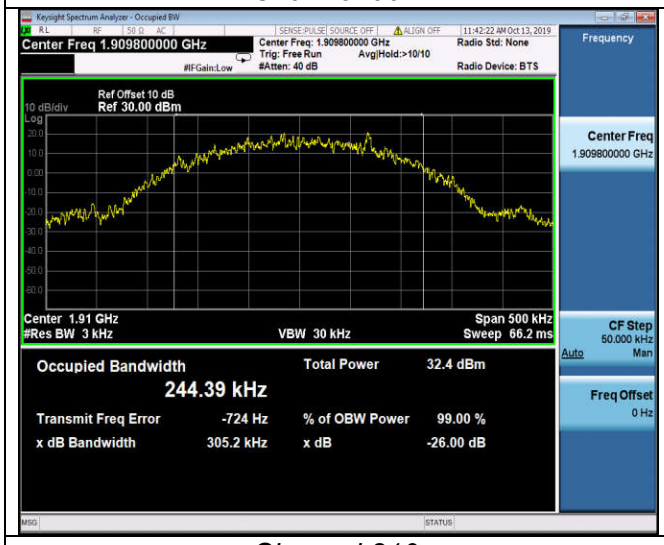
Channel 512

EGPRS1900 For 8-PSK Modulation

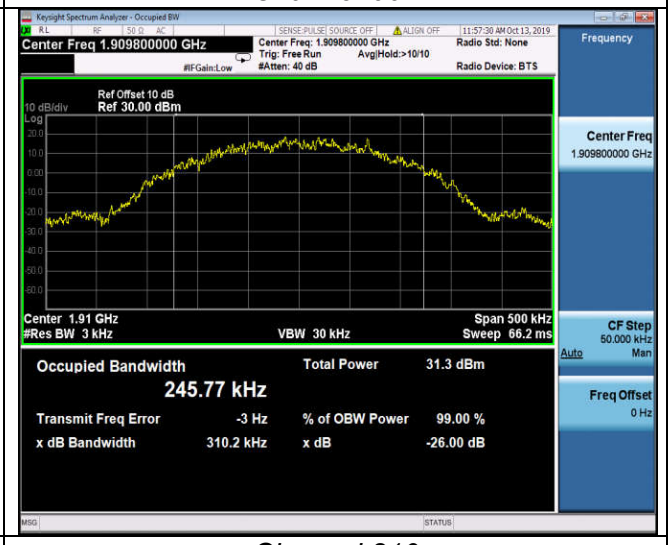
Channel 512

Channel 661

Channel 661



Channel 810



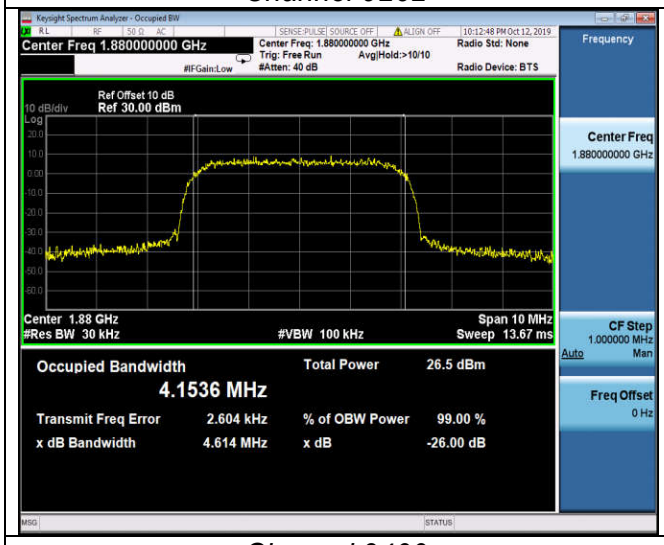
Channel 810

WCDMA Band II

Channel 9262

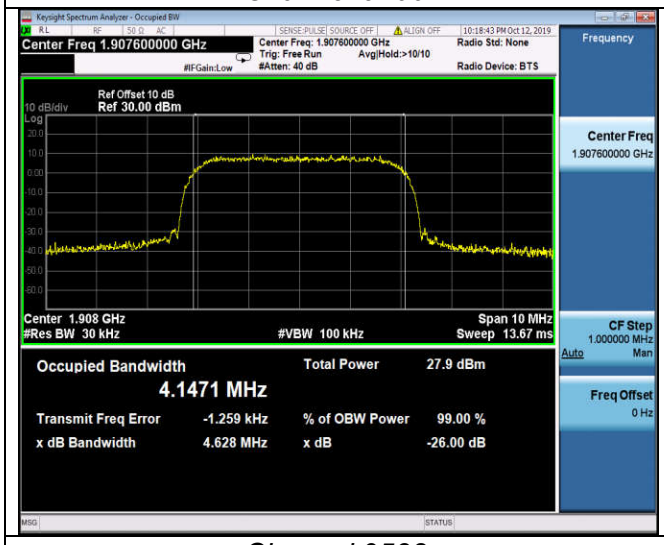
WCDMA Band V

Channel 4132



Channel 9400

Channel 4183



Channel 9538

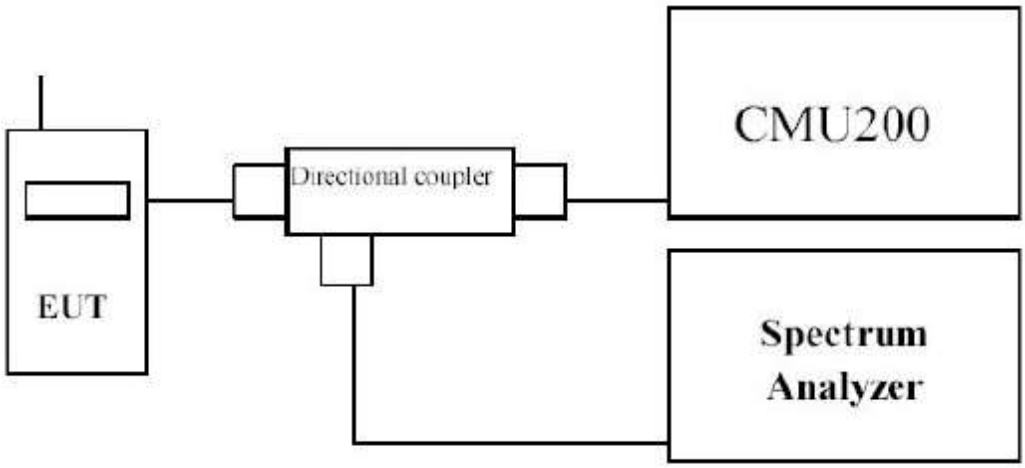
Channel 4233

3.3 Band Edge compliance

LIMIT

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

TEST CONFIGURATION

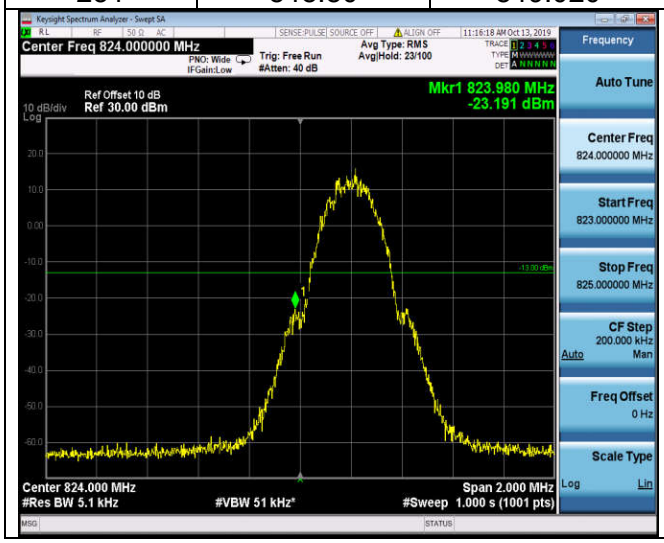


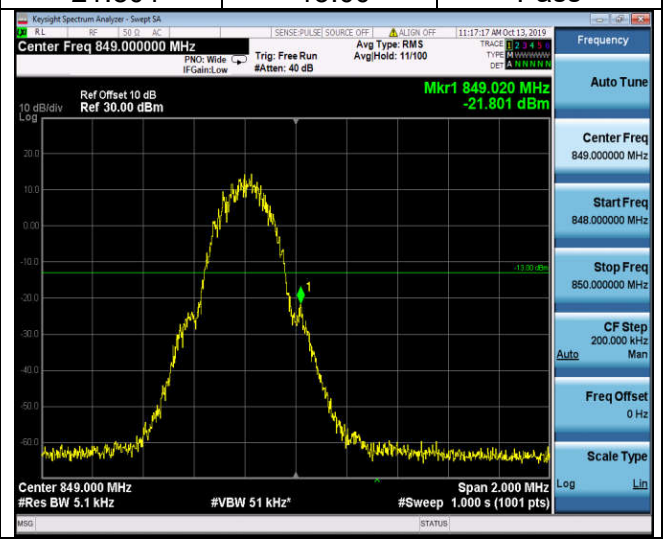
TEST PROCEDURE

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

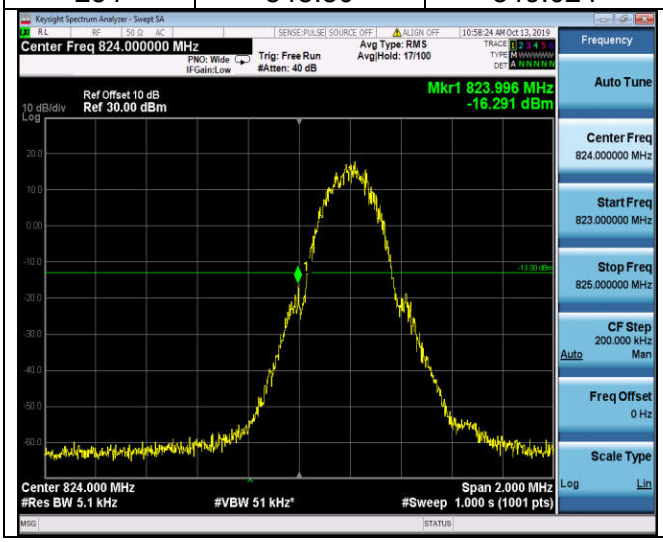
TEST RESULTS

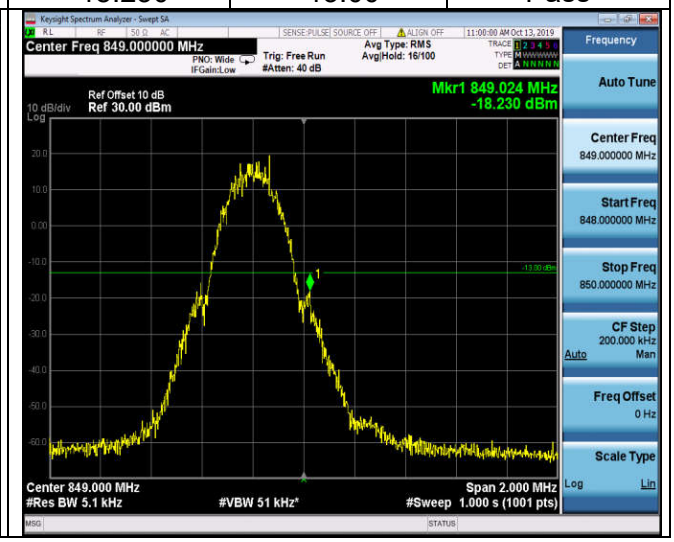
GPRS850					
Channel Number	Frequency (MHz)	Max Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
128	824.20	823.980	-23.191	-13.00	Pass
251	848.80	849.020	-21.801	-13.00	Pass



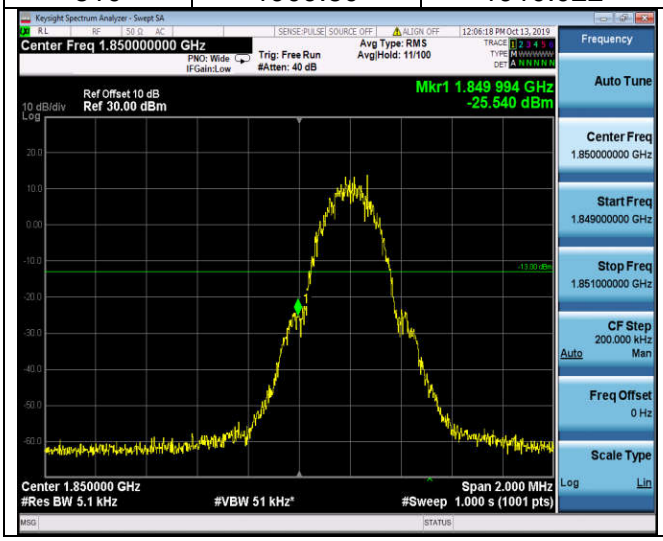


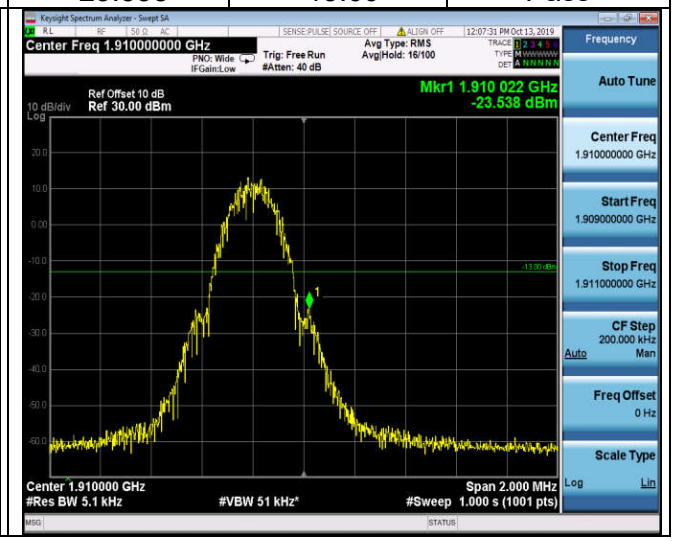
EGPRS850					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
128	824.20	823.996	-16.291	-13.00	Pass
251	848.80	849.024	-18.230	-13.00	Pass



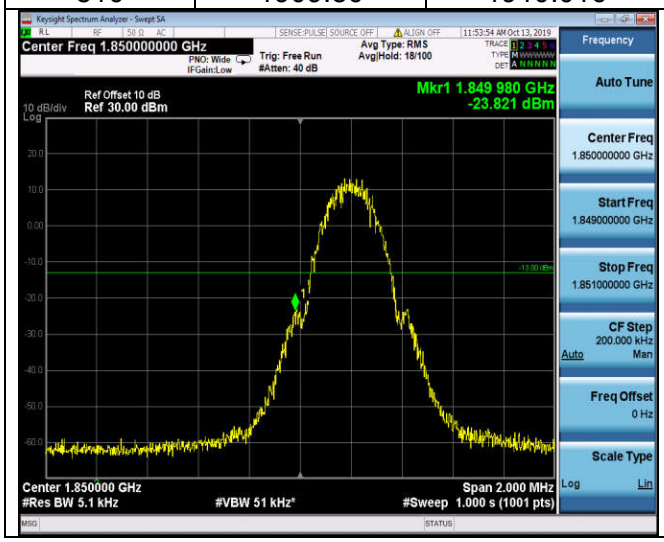


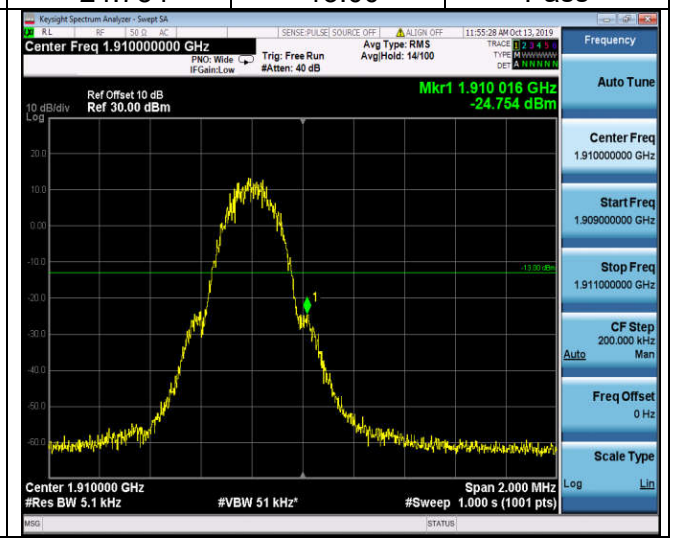
GSM1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
512	1850.20	1849.994	-25.540	-13.00	Pass
810	1909.80	1910.022	-23.538	-13.00	Pass



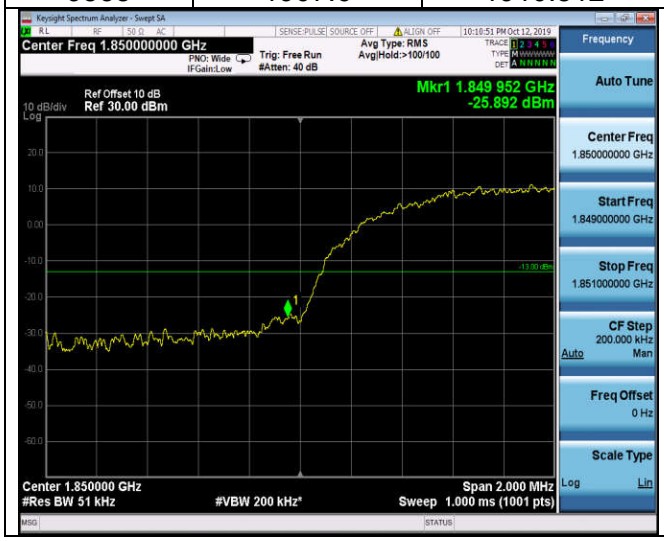


EGPRS1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
512	1850.20	1849.980	-23.821	-13.00	Pass
810	1909.80	1910.016	-24.754	-13.00	Pass





WCDMA Band II					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
9262	1852.4	1849.952	-25.892	-13.00	Pass
9538	1907.6	1910.812	-32.460	-13.00	Pass



WCDMA Band V					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
4132	826.4	823.770	-25.219	-13.00	Pass
4233	846.6	849.010	-26.021	-13.00	Pass

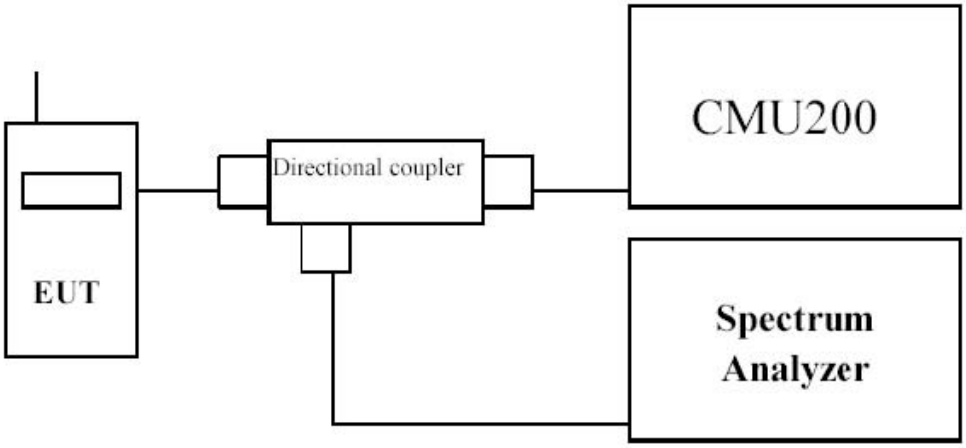
3.4 Spurious Emission

LIMIT

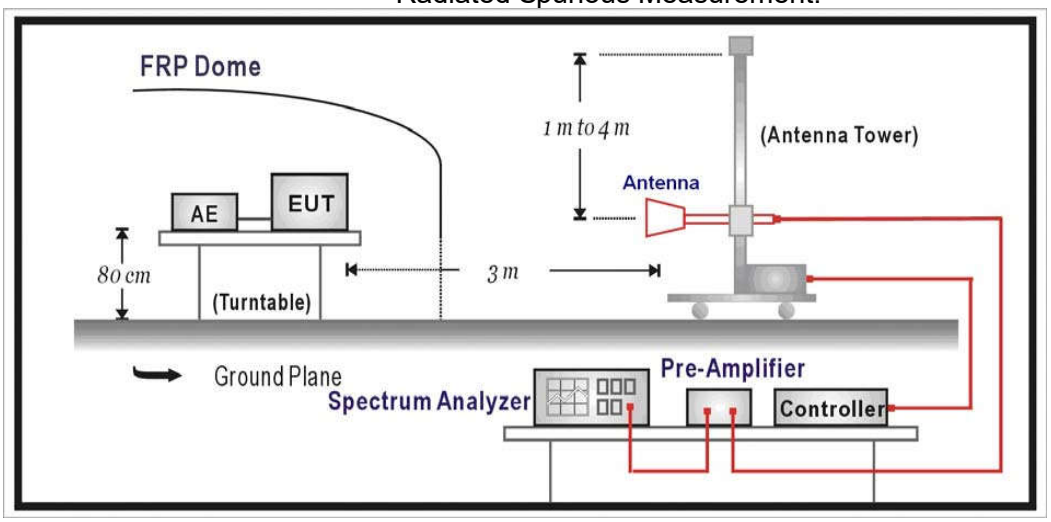
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log (P) dB.

TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Spurious Measurement:

a) Place the EUT on a bench and set it in transmitting mode.

b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.

c) EUT Communicate with CMU200 then selects a channel for testing.

d) Add a correction factor to the display of spectrum, and then test.

e) The resolution bandwidth of the spectrum analyzer was set at 1MHz for Part 22 and 1MHz for Part 24, sufficient scans were taken to show the out of band Emission if any up to10th harmonic.

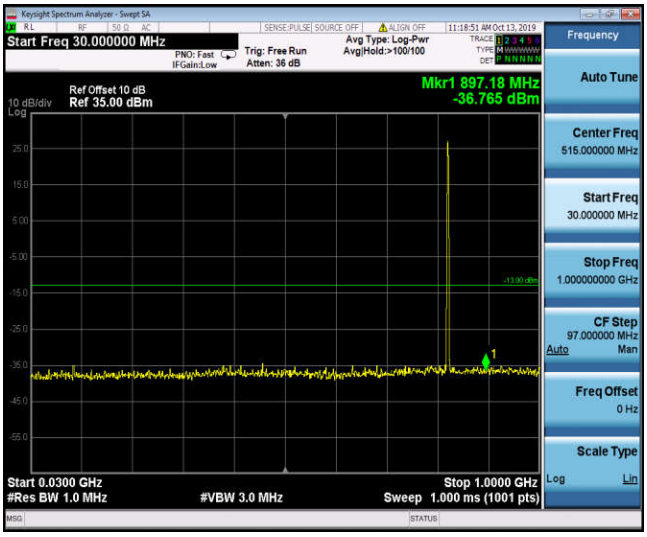
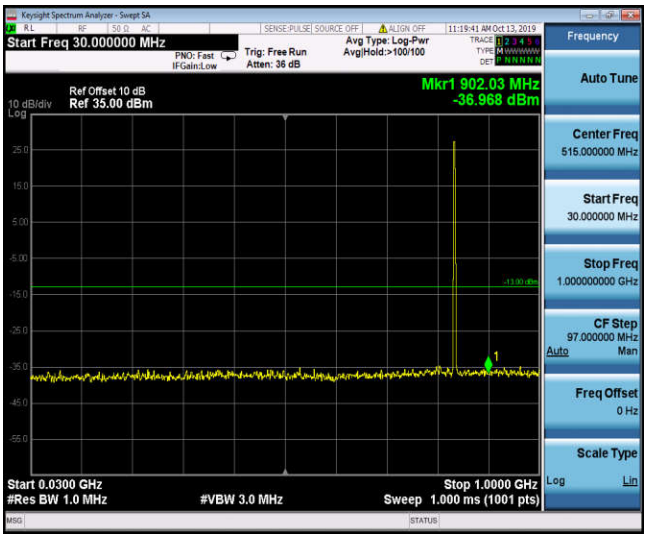
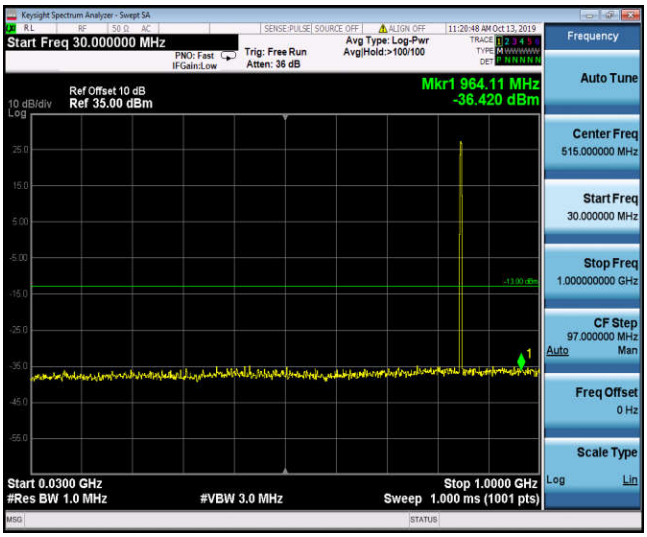
Radiated Spurious Measurement:

a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
c) The output of the test antenna shall be connected to the measuring receiver.
d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
f) The transmitter shall then be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
h) The maximum signal level detected by the measuring receiver shall be noted.
i) The transmitter shall be replaced by a substitution antenna.
j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
k) The substitution antenna shall be connected to a calibrated signal generator.
l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
q) The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.

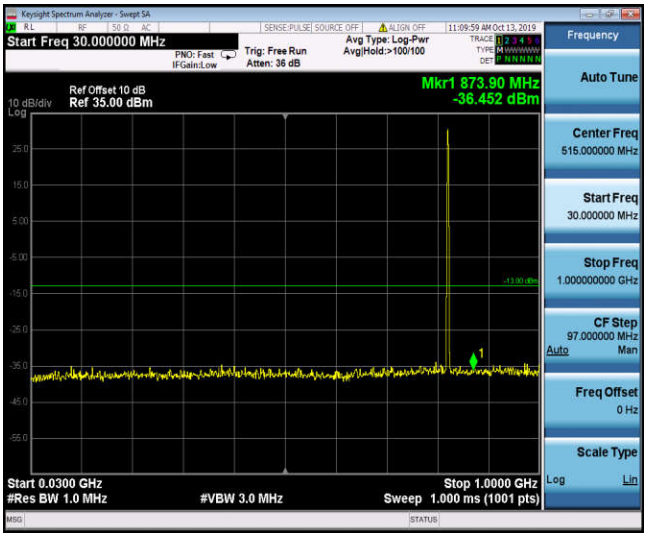
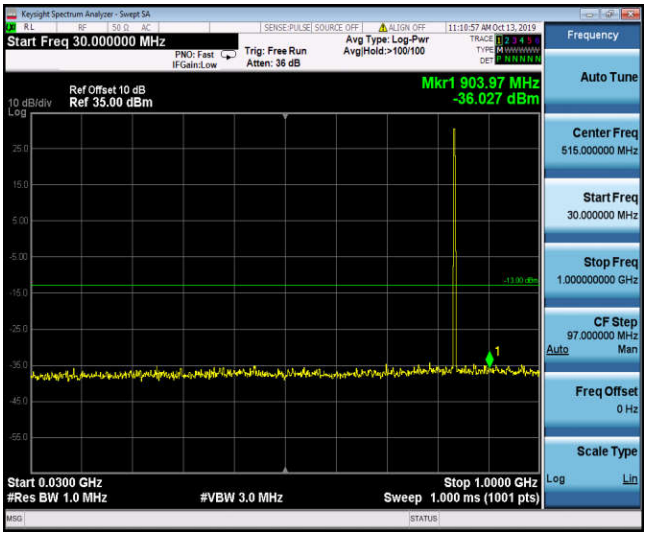
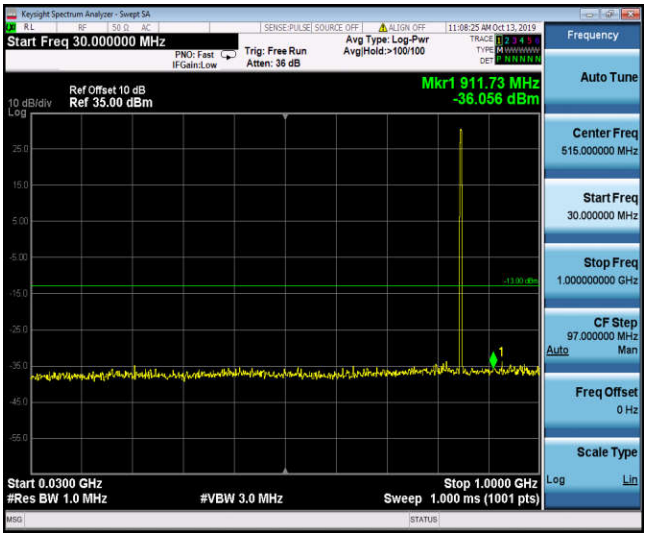
TEST RESULTS

Conducted Measurement:

GSM850

Channel:	128
	
30MHz~1GHz	*1GHz~10GHz*
Channel:	*190*
	
30MHz~1GHz	*1GHz~10GHz*
Channel:	*251*
	
30MHz~1GHz	*1GHz~10GHz*

EGPRS850

Channel:	*128*
	
30MHz~1GHz	*1GHz~10GHz*
Channel:	*190*
	
30MHz~1GHz	*1GHz~10GHz*
Channel:	*251*
	
30MHz~1GHz	*1GHz~10GHz*