

# Shenzhen Huatongwei International Inspection Co., Ltd.

1/F,Bldg 3,Hongfa Hi-tech Industrial Park,Genyu Road,Tianliao,Gongming,Shenzhen,China Phone:86-755-26748019 Fax:86-755-26748089 http://www.szhtw.com.cn



# **FCC REPORT**

**Report Reference No.....: TRE1708019401** R/C.....: 33601

FCC ID.....: 2AM6Q-W1452

Applicant's name.....: GRUPO SOLONE SA DE CV

DEL. MIGUEL HIDALGO, CIUDAD DE MEXICO.

Manufacturer...... GUANGDONG ENOK COMMUNICATION CO,.LTD

Dongguan, Guangdong China

Test item description .....: Smart Phone

Trade Mark .....: SOLONE

Model/Type reference...... W1452

Listed Model(s) ..... -

Standard .....: FCC Part 22: PUBLIC MOBILE SERVICES

FCC Part 24: PERSONAL COMMUNICATIONS SERVICES

Candy Lies, Cron Con Hours ru

FCC Part 27: MISCELLANEOUS WIRELESS

**COMMUNICATIONS SERVICES** 

Date of testing...... Aug.30, 2017 - Sep.12, 2017

Date of issue...... Sep.14, 2017

Result...... Pass

Compiled by

( position+printedname+signature)...: File administrators Candy Liu

Supervised by

(position+printedname+signature)...: Project Engineer Lion Cai

Approved by

(position+printedname+signature)....: Manager Hans Hu

Testing Laboratory Name .....: Shenzhen Huatongwei International Inspection Co., Ltd.

Gongming, Shenzhen, China

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# 1. Test standards and Report version

# 1.1. Applicable Standards

The tests were performed according to following standards:

FCC Part 22: PRIVATE LAND MOBILE RADIO SERVICES.

FCC Part 24: PUBLIC MOBILE SERVICES

FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

<u>TIA/EIA 603 D June 2010:</u>Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REGULATIONS

<u>971168 D01 Power Meas License Digital Systems v02r02:</u>provides a methodology for fully characterizing the fundamental power of wideband (> 1 MHz) digitally modulated RF signals acceptable to the FCC for demonstrating compliance for licensed transmitters.

# 1.2. Report version

Version No.	Date of issue	Description
00	Sep.14, 2017	Original

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# 2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
RF Output Power	Part 2.1046 Part 22.913(a) Part 24.232(c) Part 27.50	Pass	William Wang
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b)	Pass	William Wang
Conducted Spurious Emissions	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass	William Wang
Band Edge	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass	William Wang
ERP and EIRP	Part 22.913(a) Part 24.232(b)	Pass	William Wang
Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass	William Wang
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 22.355 Part 24.235 Part 27.54	Pass	William Wang
Frequency stability vs. voltage	Part 2.1055(d)(1)(2) Part 22.355 Part 24.235 Part 27.54	Pass	William Wang
Peak-Average Ratio	Part 24.232 Part 27.50	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

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# 3. **SUMMARY**

# 3.1. Client Information

Applicant:	GRUPO SOLONE SA DE CV
Address:	AV. LOMAS DE SOTELO NO. 1112 PB,COL. LOMA HERMOSA, DEL. MIGUEL HIDALGO,CIUDAD DE MEXICO.
Manufacturer:	GUANGDONG ENOK COMMUNICATION CO,.LTD
Address:	139&137Lixiang road ,Songmushan Dalang town,Dongguan, Guangdong China

# 3.2. Product Description

Name of EUT:         Smart Phone           Trade Mark:         SOLONE           Model No.:         W1452           Listed Model(s):         -           IMEI:         353806090000004           Power supply:         DC 3.8V From internal battery           Adapter information:         Input: 100-240Va.c.,50/60Hz,0.3A           Output: 5Vd.c.,1000mA         Output: 5Vd.c.,1000mA           Hardware version:         T1           Software version:         K522 test-keys           2G:         Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK         GSM850: 824.20MHz-848.80MHz           PCS1900: 1850.20MHz-1909.80MHz         PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           GPRS Class:         12           EGPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi         PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         <	<u></u>	
Model No.:   W1452	Name of EUT:	Smart Phone
Listed Model(s):	Trade Mark:	SOLONE
IMEI:         353806090000004           Power supply:         DC 3.8V From internal battery           Adapter information:         Input: 100-240Va.c.,50/60Hz,0.3A           Output: 5Vd.c.,1000mA           Hardware version:         T1           Software version:         K522 test-keys           2G:         Support Network:           Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PC\$1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK         GSM850: 824.20MHz-848.80MHz           PC\$1900: 1850.20MHz-1909.80MHz         PC\$1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PC\$1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Model No.:	W1452
Power supply:         DC 3.8V From internal battery           Adapter information:         Input: 100-240Va.c.,50/60Hz,0.3A           Output: 5Vd.c.,1000mA           Hardware version:         T1           Software version:         K522 test-keys           2G:         Support Network:           Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK           Transmit Frequency:         GSM850: 824.20MHz-848.80MHz           PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-1909.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:           Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Listed Model(s):	-
Adapter information:  Input: 100-240Va.c.,50/60Hz,0.3A Output: 5Vd.c.,1000mA  Hardware version:  T1  Software version:  K522 test-keys  2G:  Support Network:  GSM, GPRS, EGPRS Support Band:  GSM850, PCS1900  Modulation:  GSM/GPRS/EGPRS: GMSK EGPRS: 8PSK  Transmit Frequency:  GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz  Receive Frequency:  GSM850: 869.20MHz-993.80MHz GPRS Class:  12  GPRS Class:  12  Antenna type:  Antenna gain:  GSM850: 1.8dBi PCS1900: 3.8dBi	IMEI:	353806090000004
Adapter information:         Output: 5Vd.c.,1000mA           Hardware version:         T1           Software version:         K522 test-keys           2G:         Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK         GSM850: 824.20MHz-848.80MHz           Transmit Frequency:         PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           GPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Power supply:	DC 3.8V From internal battery
Software version:  K522 test-keys  2G:  Support Network:  GSM, GPRS, EGPRS  Support Band:  GSM850, PCS1900  Modulation:  GSM/GPRS/EGPRS: GMSK EGPRS: 8PSK  Transmit Frequency:  GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz  Receive Frequency:  GSM850: 869.20MHz-893.80MHz PCS1900: 1930.20MHz-1989.80MHz  GPRS Class:  12  EGPRS Class:  12  Antenna type:  PIFA Antenna  Antenna gain:  GSM850: 1.8dBi PCS1900: 3.8dBi  3G:  Operation Band:  FDD Band II and FDD Band IV, FDD Band V Power Class:  Power Class:  Power Class:  Power Class:  FDD Band II and FDD Band IV, FDD Band V	Adapter information:	'
2G:           Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK         EGPRS: 8PSK           Transmit Frequency:         GSM850: 824.20MHz-848.80MHz           PCS1900: 1850.20MHz-1909.80MHz         PCS1900: 1850.20MHz-1909.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Hardware version:	T1
Support Network:         GSM, GPRS, EGPRS           Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK           EGPRS: 8PSK         GSM850: 824.20MHz-848.80MHz           Transmit Frequency:         GSM850: 869.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Software version:	K522 test-keys
Support Band:         GSM850, PCS1900           Modulation:         GSM/GPRS/EGPRS: GMSK EGPRS: 8PSK           Transmit Frequency:         GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz PCS1900: 1930.20MHz-1989.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	2G:	
Modulation:         GSM/GPRS/EGPRS: GMSK EGPRS: 8PSK           Transmit Frequency:         GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz PCS1900: 1930.20MHz-1989.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi PCS1900: 3.8dBi           PCS1900: 3.8dBi         PCS1900: 3.8dBi           Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Support Network:	GSM, GPRS, EGPRS
Modulation:         EGPRS: 8PSK           Transmit Frequency:         GSM850: 824.20MHz-848.80MHz           PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           PCS1900: 1930.20MHz-1989.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:         Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Support Band:	GSM850, PCS1900
Iransmit Frequency:         PCS1900: 1850.20MHz-1909.80MHz           Receive Frequency:         GSM850: 869.20MHz-893.80MHz           PCS1900: 1930.20MHz-1989.80MHz         PCS1900: 1930.20MHz-1989.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:           Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Modulation:	
Receive Frequency:         PCS1900: 1930.20MHz-1989.80MHz           GPRS Class:         12           EGPRS Class:         12           Antenna type:         PIFA Antenna           Antenna gain:         GSM850: 1.8dBi           PCS1900: 3.8dBi           3G:           Operation Band:         FDD Band II and FDD Band IV, FDD Band V           Power Class:         Power Class 3	Transmit Frequency:	
EGPRS Class:  Antenna type:  PIFA Antenna  GSM850: 1.8dBi PCS1900: 3.8dBi  3G:  Operation Band:  FDD Band II and FDD Band IV, FDD Band V Power Class:  Power Class 3	Receive Frequency:	
Antenna type:  Antenna gain:  GSM850: 1.8dBi PCS1900: 3.8dBi  3G:  Operation Band:  FDD Band II and FDD Band IV, FDD Band V Power Class:  Power Class 3	GPRS Class:	12
Antenna gain:  GSM850: 1.8dBi PCS1900: 3.8dBi  3G:  Operation Band:  FDD Band II and FDD Band IV, FDD Band V Power Class:  Power Class 3	EGPRS Class:	12
Antenna gain:  PCS1900: 3.8dBi  Geration Band:  FDD Band II and FDD Band IV, FDD Band V  Power Class:  Power Class 3	Antenna type:	PIFA Antenna
Operation Band: FDD Band II and FDD Band IV, FDD Band V Power Class: Power Class 3	Antenna gain:	
Power Class 3	3G:	
	Operation Band:	FDD Band II and FDD Band IV, FDD Band V
Modilation Type: QPSK/16QAM/64QAM/HSUPA/HSDPA	Power Class:	Power Class 3
	Modilation Type: QPSK/16QAM/64QAM/HSUPA/HSDPA	
DC-HSUPA Release Version: Not Supported	DC-HSUPA Release Version: Not Supported	
Antenna type: PIFA Antenna	Antenna type:	PIFA Antenna
Antenna gain: Band II: 3.8 dBi, Band IV: 3.4dBi ,Band V: 1.9dBi	Antenna gain:	Band II: 3.8 dBi, Band IV: 3.4dBi ,Band V: 1.9dBi

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# 3.3. Operation state

# > Test frequency list

GSN	<b>1850</b>	PCS	1900
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 IV	FDD Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.4	1313	1712.6	4132	826.40
9400	1880.0	1450	1740.0	4183	836.60
9538	1907.6	1512	1752.4	4233	846.60

## Test mode

### For RF test items

The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maimum output power status.

# 3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- supplied by the manufacturer
- supplied by the lab

Length (m): /	
Shield: /	
Detachable: /	
Manufacturer: /	
Model No.: /	

# 3.5. Modifications

No modifications were implemented to meet testing criteria.

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# 4. TEST ENVIRONMENT

# 4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

# 4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection 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.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

### IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

## ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

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# 4.3. Equipments Used during the Test

RF Cor	RF Conducted					
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.	
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2016/11/13	
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	1201.0002K50	2016/11/13	
3	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2016/11/13	
4	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	2016/11/13	
5	Splitter	Mini-Circuit	ZAPD-4	400059	2016/11/13	
6	Climate Chamber	ESPEC	EL-10KA	05107008	2016/11/13	

RF Ra	diated				
No.	Equipment	Manufacturer	Model No.	SerialNo.	Last Cal.
1	UNIVERSAL RADIO COMMUNICATION	Rohde&Schwarz	CMU200	112012	2016/11/13
2	WIDEB.RADIO COMM.TESRER	Rohde&Schwarz	CMW500	1201.0002K50	2016/11/13
3	Spectrum Analyzer	Rohde&Schwarz	FSU26	201141	2016/11/13
4	HORNANTENNA	ShwarzBeck	9120D	1012	2016/11/13
5	HORNANTENNA	ShwarzBeck	9120D	1011	2016/11/13
6	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2016/11/13
7	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2016/11/13
8	TURNTABLE	MATURO	TT2.0		N/A
9	ANTENNA MAST	MATURO	TAM-4.0-P		N/A
10	EMI Test Software	Audix	E3	N/A	N/A
11	EMI Test Receiver	Rohde&Schwarz	ESIB 26	100009	2016/11/13
12	RF Test Panel	Rohde&Schwarz	TS / RSP	335015/0017	2016/11/13
13	High pass filter	Compliance Direction systems	BSU-6	34202	2016/11/13
14	Splitter	Mini-Circuit	ZAPD-4	400059	2016/11/13
15	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2016/11/13
16	Horn Antenna	SCHWARZBECK	BBHA9170	25842	2016/11/13
17	Preamplifier	ShwarzBeck	BBV 9718	BBV 9718	2016/11/13
18	Broadband Preamplifier	ShwarzBeck	BBV743	9743-0079	2016/11/13
19	Signal Generator	Rohde&Schwarz	SMF100A	101932	2016/11/13
20	Amplifer	Compliance Direction systems	PAP1-4060	120	2016/11/13
21	TURNTABLE	ETS	2088	2149	2016/11/13
22	ANTENNA MAST	ETS	2075	2346	2016/11/13
23	HORNANTENNA	Rohde&Schwarz	HF906	100068	2016/11/13
24	HORNANTENNA	Rohde&Schwarz	HF906	100039	2016/11/13

The calibration interval was one year.

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# 4.4. Environmental conditions

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

Normal Temperature/Tnor:	15~35°C
lative Humidity	30~60 %
Air Pressure	950-1050 hPa

# 4.5. 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 compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1"and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection 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 Huatongwei laboratory is reported:

Test Items	MeasurementUncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth		(1)

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

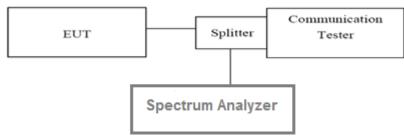
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# 5. TEST CONDITIONS AND RESULTS

# 5.1. Conducted Output Power

LIMIT N/A

## **TEST CONFIGURATION**



### **TEST PROCEDURE**

- 1. The transmitter output port was connected to base station.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement.
- 3. Set EUT at maximum power through base station.
- 4. Select lowest, middle, and highest channels for each band and different modulation.
- 5. Measure the maximum burst average power.

#### **TEST MODE:**

Please refer to the clause 3.3

### **TEST RESULTS**

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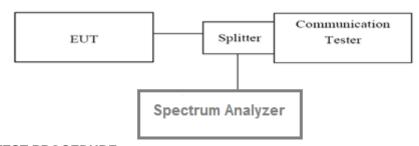
EUT Mode	Channel	Frequency (MHz)	Power (dBm)
-	128	824.20	32.68
GSM 850 (GMSK)	190	836.60	32.69
(Civiort)	251	848.80	32.60
	128	824.20	32.69
GPRS850 (GMSK,1Slot)	190	836.60	32.70
(Giviori, rolot)	251	848.80	32.63
E000000	128	824.20	27.83
EGPRS850 (8PSK,1Slot)	190	836.60	27.87
(01 311, 13101)	251	848.80	27.61
PCS1900 (GMSK)	512	1850.20	28.82
	661	1880.00	28.64
	810	1909.80	28.64
	512	1850.20	28.84
GPRS1900 (GMSK,1Slot)	661	1880.00	28.64
(Giviorx, rolot)	810	1909.80	28.65
505504000	512	1850.20	25.14
EGPRS1900 (8PSK,1Slot)	661	1880.00	25.09
(oron, 13101)	810	1909.80	25.19
	9262	1852.40	22.68
WCDMA Band II	9400	1880.00	22.89
	9538	1907.60	22.65
	1313	1712.6	22.72
WCDMA Band IV	1450	1740.0	23.57
	1512	1752.4	23.61
	4132	826.40	23.29
WCDMA Band V	4183	836.60	23.07
	4233	846.60	23.29

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# 5.2. 99% & -26 dB 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. RBWwas 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 MODE:**

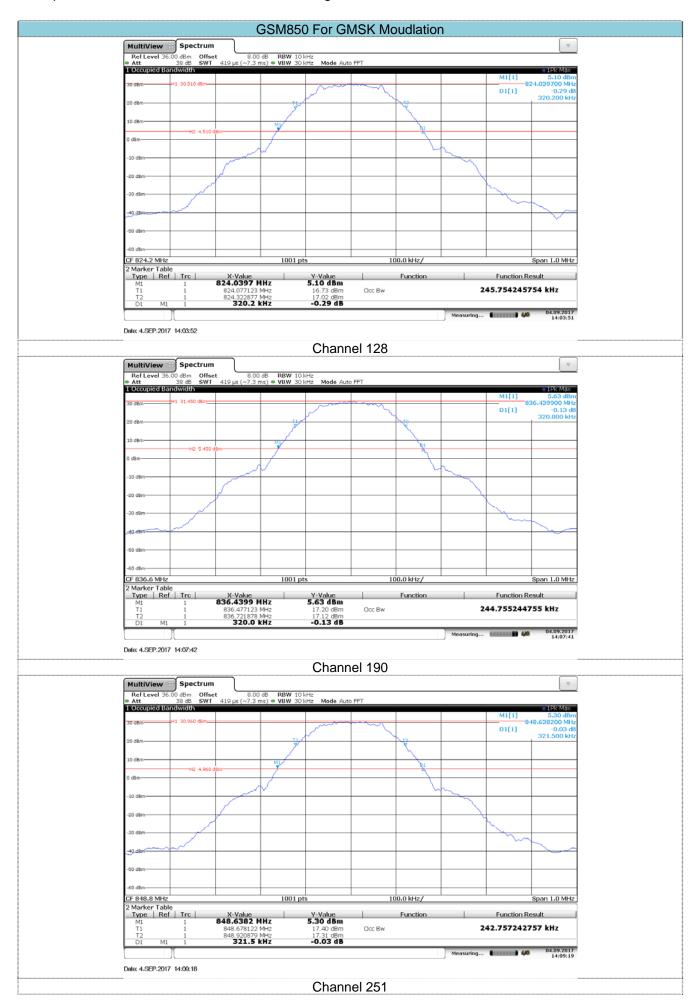
Please refer to the clause 3.3

# **TEST RESULTS**

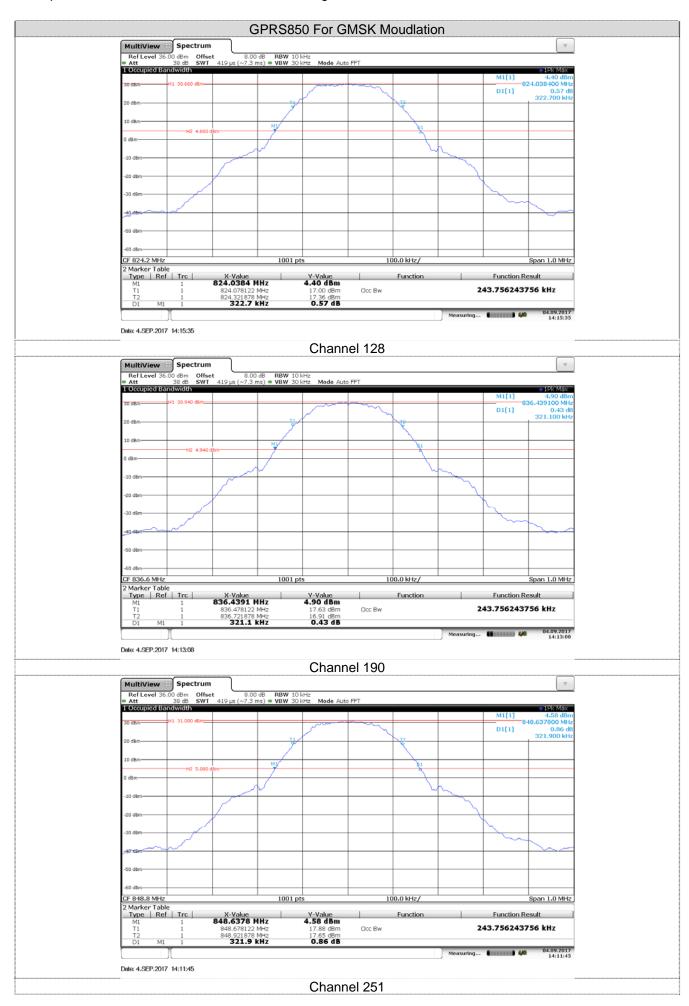
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EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
	128	824.20	245.75	320.20
GSM 850 (GMSK)	190	836.60	244.75	320.00
(Giviort)	251	848.80	242.75	321.50
	128	824.20	243.75	322.70
GPRS850 (GMSK,1Slot)	190	836.60	243.75	321.10
	251	848.80	243.75	321.90
FORROSS	128	824.20	245.75	321.40
EGPRS850 (8PSK,1Slot)	190	836.60	240.75	313.10
(0PSK, 1S101)	251	848.80	243.75	312.90
	512	1850.20	243.75	320.20
PCS1900 (GMSK)	661	1880.00	243.75	325.10
	810	1909.80	245.75	321.10
	512	1850.20	242.75	317.90
GPRS1900 (GMSK,1Slot)	661	1880.00	245.75	324.00
(OMOR, FOICE)	810	1909.80	243.75	322.70
	512	1850.20	235.76	319.50
EGPRS1900 (8PSK,1Slot)	661	1880.00	237.76	318.20
(61 611, 16161)	810	1909.80	238.76	319.50
	9262	1852.40	4165.83	4683.00
WCDMA Band II	9400	1880.00	4155.84	4686.00
	9538	1907.60	4155.84	4696.00
	1313	1712.60	4335.66	4877.00
WCDMA Band IV	1450	1740.00	4145.85	4677.00
	1512	1752.40	4155.84	4687.00
	4132	826.40	4145.85	4686.00
WCDMA Band V	4183	836.60	4155.84	4702.00
	4233	846.60	4145.85	4699.00

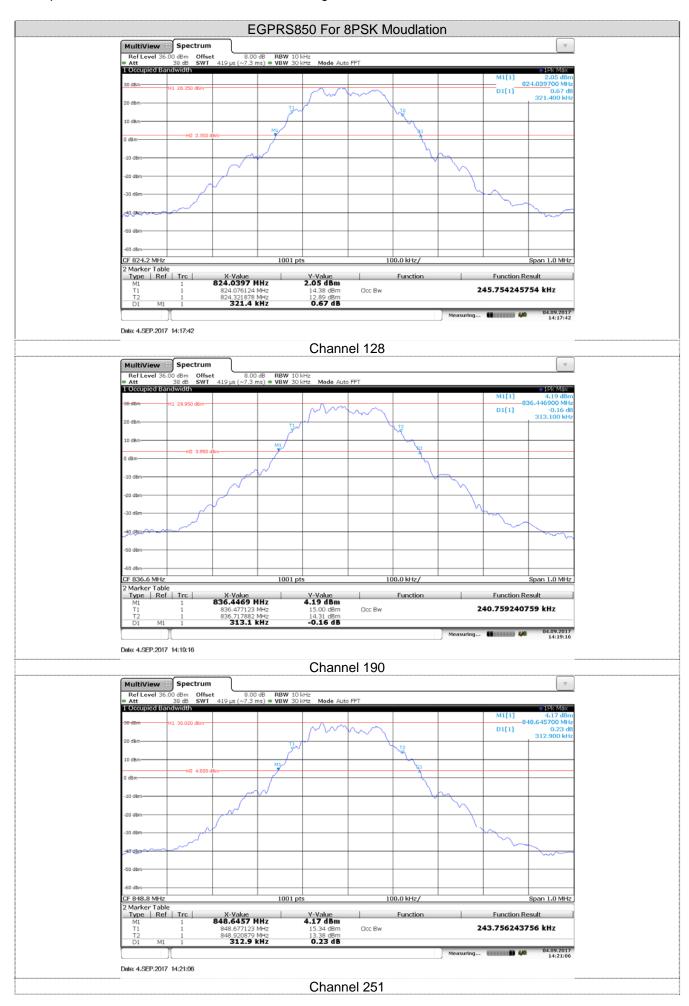
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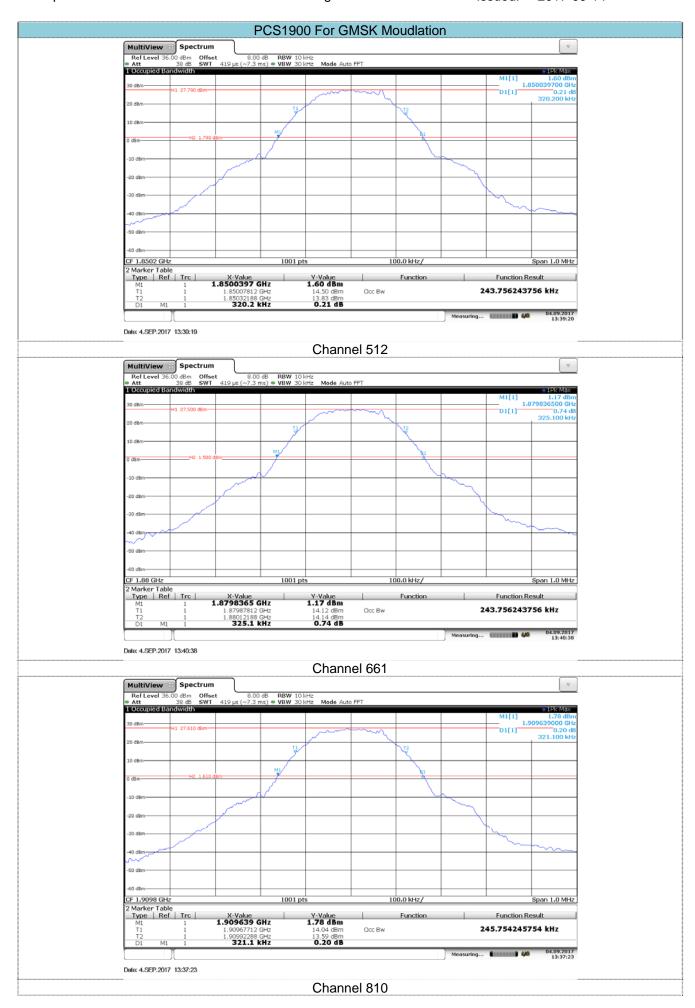
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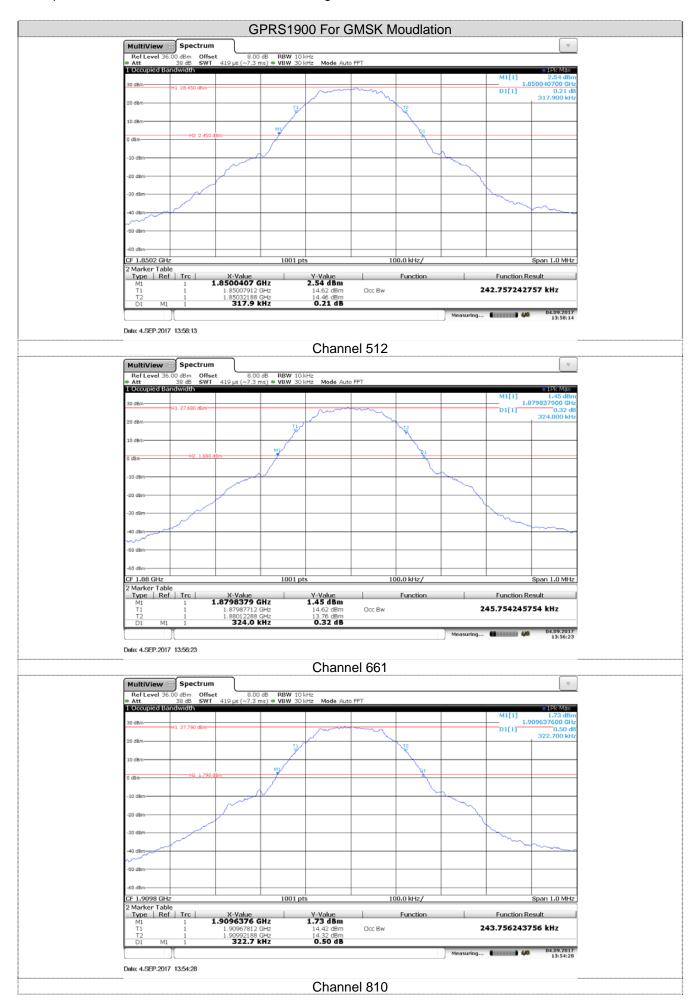
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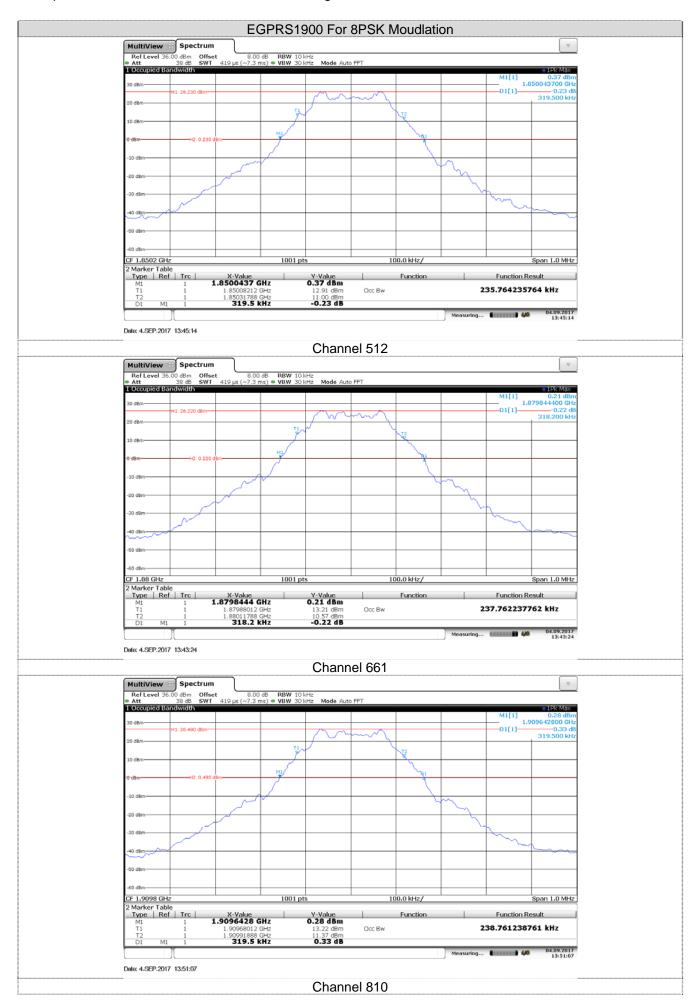
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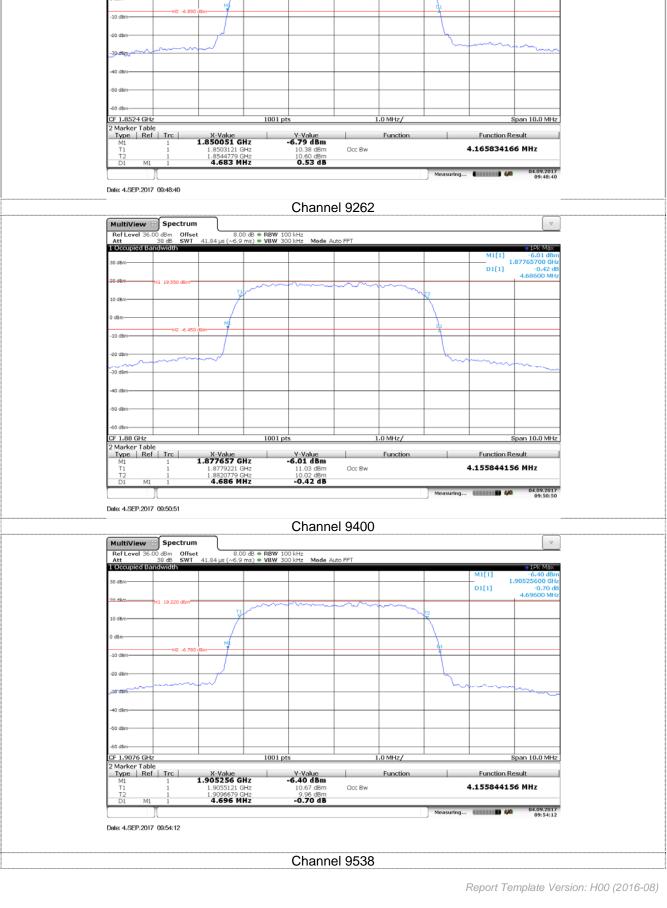
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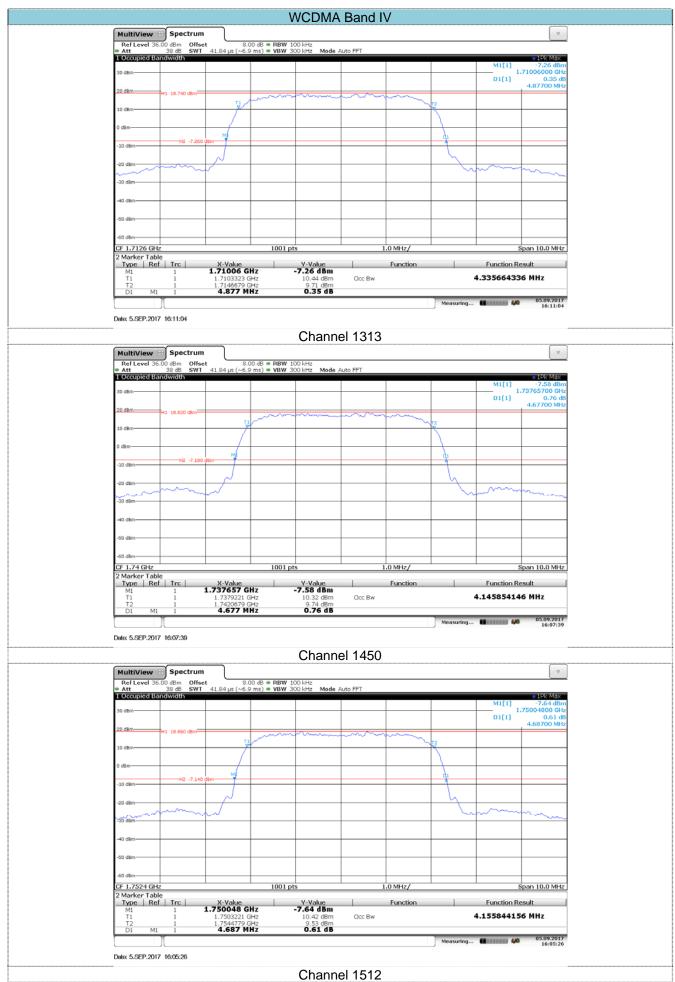


Report No.: TRE1708019401 Page: 20 of 62 Issued: 2017-09-14 WCDMA Band II ▽ D1[1] CF 1.8524 GHz 2 Marker Table Type | Ref | Trc | Function Result X-Value 1.850051 GHz Y-Value -6.79 dBm Occ Bw 4.165834166 MHz .8544779 GHz 4.683 MHz 10.60 dBm 0.53 dB Date: 4.SEP.2017 09:48:40 Channel 9262 MultiView B Spectrum

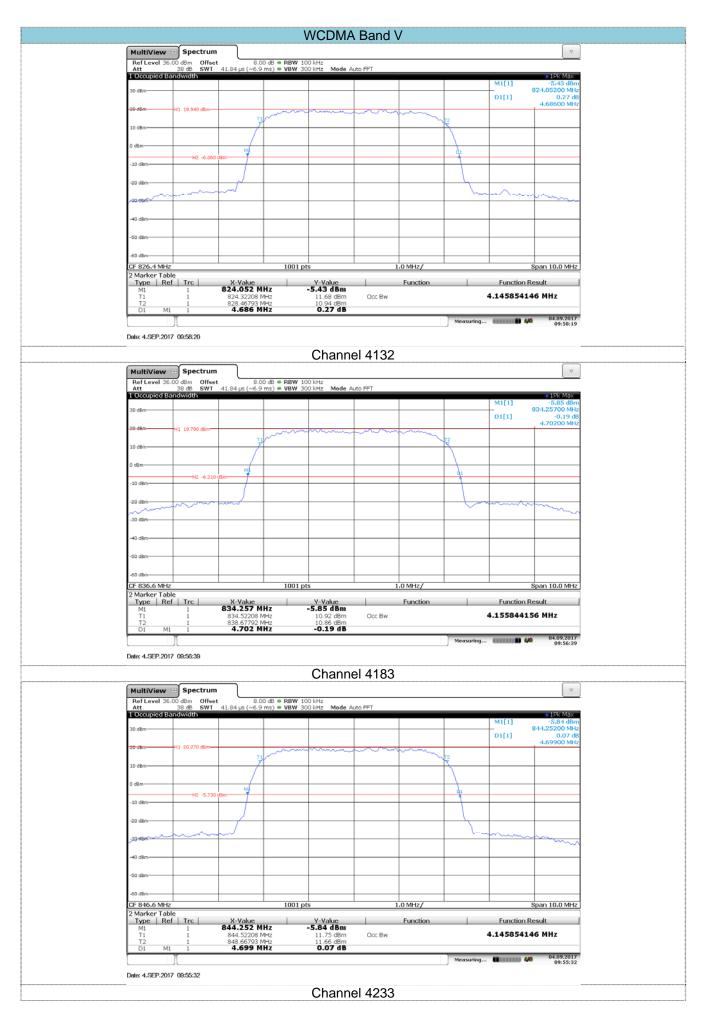
Ref Level 36.00 dBm Offset
Att 38 dB SWT

I Occupied Bandwidth D1[1] 1001 pts 1.0 MHz/ Span 10.0 MHz Type | Ref | Trc | Function Result X-Value 1.877657 GHz Y-Value -6.01 dBm Occ Bw 4.155844156 MHz .8820779 GHz 4.686 MHz 10.02 dBm -0.42 dB Date: 4.SEP.2017 09:50:51 Channel 9400 MultiView B Spectrum D1[1]





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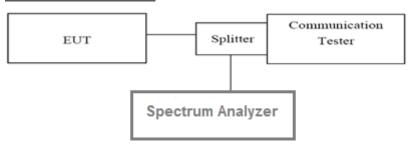
# 5.3. Conducted Spurious Emissions

### **LIMIT**

Part 24.238 and Part 22.917 specify that 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 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

### **TEST CONFIGURATION**



### **TEST PROCEDURE**

- 1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
- The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficientscans were taken to show the out of band Emissions if any up to 10th harmonic.
- 3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.

#### **TEST MODE:**

Please refer to the clause 3.3

## **TEST RESULTS**

Note: Worst case at GSM850/PCS1900/WCDMA B2/B4/B5

Report No.: TRE1708019401 Page: 24 of 62 Issued: 2017-09-14 GSM850 | MultiView | Spectrum | Ref Level 35.00 dBm Offset 8.00 dB & RBW 1 MHz | Att 28 dB SWT 100 ms \* VBW 3 MHz | Mode Auto Sweep | Irroquency Sweep | Att 28 dB SWT 100 ms \* VBW 3 MHz | Mode Auto Sweep | Irroquency Sweep | Att 28 dB SWT 100 ms \* VBW 3 MHz | Mode Auto Sweep | Irroquency Sweep | Irroquen ▽ Date: 4.SEP.2017 14:59:26 Channel 128 30.0 MHz Date: 4.SEP.2017 15:01:21 Channel 190 MultiView Spectrum
Ref Level 36.00 dBm Offse
Att 28 dB SWT
1 Frequency Sweep

Channel 251

Date: 4.SEP.2017 15:01:47

Report No.: TRE1708019401 Page: 25 of 62 Issued: 2017-09-14 PCS1900 | MultiView | Spectrum | Ref Level 32.00 dBm Offset 8.00 dB & RBW 1 MHz | At 8 SWT 100 ms \* VBW 3 MHz | Mode Auto Sweep | Ifrequency Sweep | At 9 SWT | Mode Auto Sweep | At 9 SWT | Mode Auto Sweep | Mode Auto S ▽ Date: 4.SEP.2017 14:55:39 Channel 512 Date: 4.SEP.2017 14:56:23 Channel 661 MultiView B Spectrum

Ref Level 32.00 dBm Offset 8.00 e
Att 24 dB SWI 100 n

1 Frequency Sweep

Channel 810

Date: 4.SEP.2017 14:57:05

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Ref Level 26.00 dBm Offset 8.00 dB & RBW 1 MHz

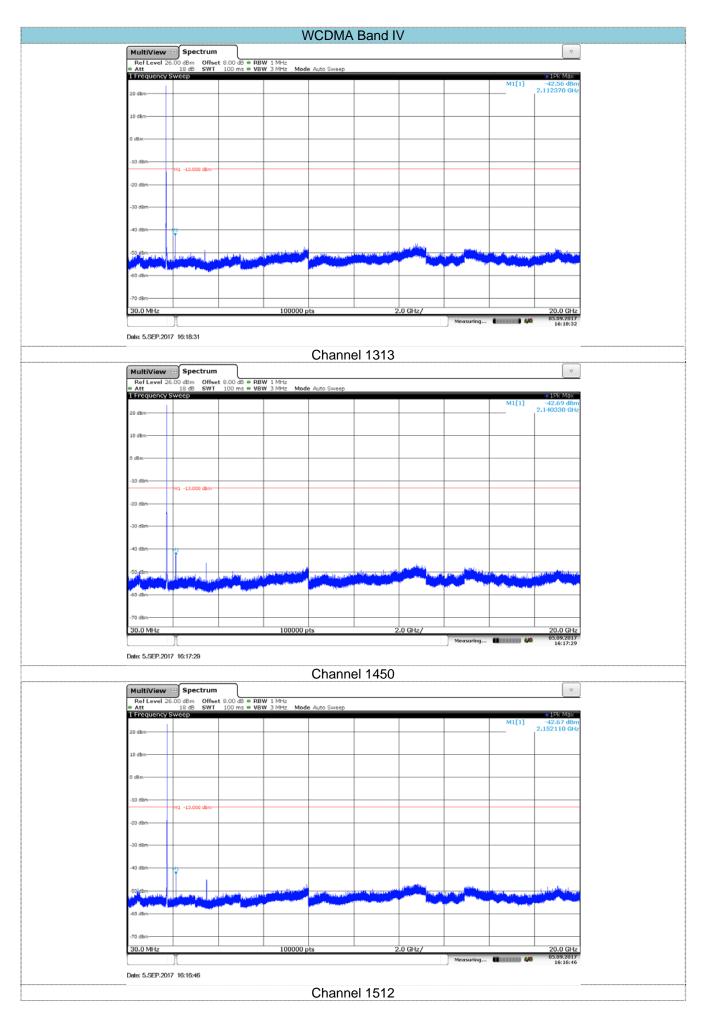
Att 18 dB SWT 100 ms \* VBW 3 MHz Mode Auto Sweep

Frequency Sweep ▽ Date: 4.SEP.2017 10:27:23 Channel 9262 Date: 4.SEP.2017 10:24:22 Channel 9400 

Channel 9538

Date: 4.SEP.2017 10:23:05

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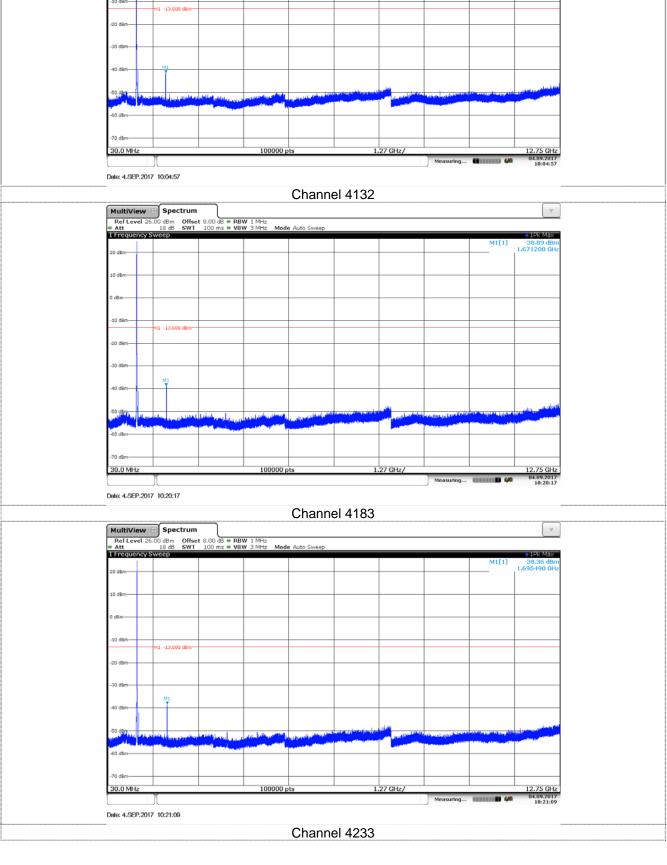


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Ref Level 26.00 dBm Offset 8.00 dB & RBW 1 MHz

Att 18 dB SWT 100 ms \* VBW 3 MHz Mode Auto Sweep

Frequency Sweep ▽ Date: 4.SEP.2017 10:04:57 Channel 4132 Date: 4.SEP.2017 10:20:17 Channel 4183 



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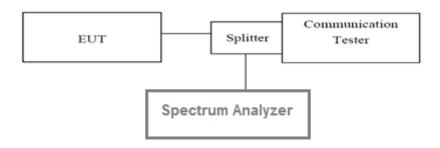
# 5.4. Band Edge

### **LIMIT**

Part 24.238 and Part 22.917 specify that 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 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

### **TEST CONFIGURATION**



### **TEST PROCEDURE**

- 1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
- 2. For the bandedge: 2G:Set the RBW=3KHz, VBW = 10KHz, Sweep time= Auto

3G: Set the RBW=100KHz, VBW = 300KHz, Sweep time= Auto

### **TEST MODE:**

Please refer to the clause 3.3

## **TEST RESULTS**

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GSM850						
Channel	Frequency	Measureme	nt Results	Limit	Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	verdict	
128	824.2	824	-13.12	-13.00	Pass	
251	848.8	849	-14.02	-13.00	Pass	

GPRS850						
Channel Frequency Measurement Results Limit					Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	Verdict	
128	824.2	824	-13.79	-13.00	Pass	
251	848.8	849	-14.02	-13.00	Pass	

EGPRS850						
Channel	Frequency	Measureme	nt Results	Limit	Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	Verdict	
128	824.2	824	-17.15	-13.00	Pass	
251	848.8	849	-18.30	-13.00	Pass	

PCS1900						
Channel	Frequency	Measurement Results		Limit Verdict		
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	verdict	
512	1850.2	1850	-14.39	-13.00	Pass	
810	1909.8	1910	-15.73	-13.00	Pass	

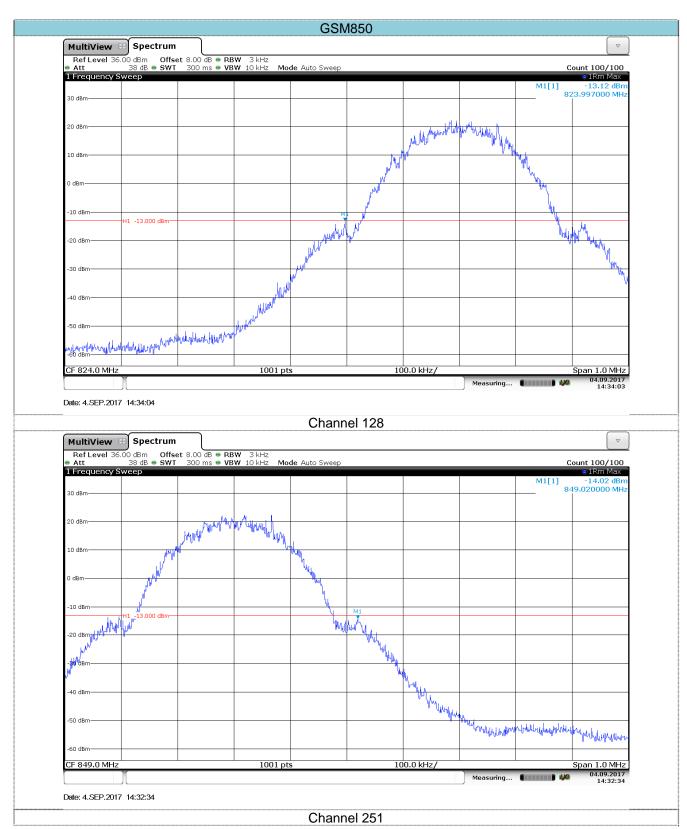
GPRS1900						
Channel	Frequency	Measurement Results Limit				
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	Verdict	
512	1850.2	1850	-15.81	-13.00	Pass	
810	1909.8	1910	-15.52	-13.00	Pass	

EGPRS1900						
Channel	Frequency	Measurement Results Limit ,			Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	verdict	
512	1850.2	1850	-17.09	-13.00	Pass	
810	1909.8	1910	-18.33	-13.00	Pass	

WCDMA Band II						
Channel	Channel Frequency Measurement Results				Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	Verdict	
9262	1852.4	1850	-22.07	-13.00	Pass	
9538	1907.6	1910	-21.64	-13.00	Pass	

WCDMA Band IV						
Channel	Frequency	Measureme	nt Results	Limit	Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	verdict	
1313	1712.6	1710	-26.55	-13.00	Pass	
1512	1752.4	1755	-29.26	-13.00	Pass	

WCDMA Band V						
Channel	Frequency	Measureme	nt Results	Limit	Verdict	
Number	(MHz)	Frequency(MHz)	Values(dBm)	(dBm)	verdict	
4132	826.4	824	-20.07	-13.00	Pass	
4233	846.6	849	-20.35	-13.00	Pass	



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