FCC REPORT
(GPRS & WCDMA)

Applicant:	i-Mobile Technology Corporation
Address of Applicant:	3F #8 Alley 15 Lane 120 Sec. 1 Neihu Road, Neihu District, Taipei City 114, Taiwan

Equipment Under Test (EUT)

Product Name:	Tablet PC
Model No.:	IB-10
Trade mark:	@mobile
FCC ID:	XZO-IB10
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part 22 Subpart H FCC CFR Title 47 Part 24 Subpart E
Date of sample receipt:	24 Nov., 2016
Date of Test:	24 Nov., 2016 to 16 Jan., 2018
Date of report issued:	17 Jan., 2018
Test Result:	PASS*

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

Authorized Signature:

Bruce Zhang
Laboratory Manager

2. Version

Version No.	Date	Description
00	*17 Jan., 2018*	*Original*

Tested by: YT Yang ***Date:*** 17 Jan., 2018

Test Engineer

Reviewed by: Wimer Zhang ***Date:*** 17 Jan., 2018

Project Engineer

3. Contents

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Peak-to-Average Power Ratio	Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b)	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 vs. temperature	Part 22.355 Part 24.235 Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 22.355 Part 24.235 Part 2.1055(d)(2)	Pass
Pass: The EUT complies with the essential requirements in the standard.		

5. General Information

5.1 Client Information

Applicant:	i-Mobile Technology Corporation
Address:	3F #8 Alley 15 Lane 120 Sec. 1 Neihu Road, Neihu District, Taipei City 114, Taiwan
Manufacturer/Factory:	i-Mobile Technology Corporation
Address:	3F #8 Alley 15 Lane 120 Sec. 1 Neihu Road, Neihu District, Taipei City 114, Taiwan

5.2 General Description of E.U.T.

Product Name:	Tablet PC
Model No.:	IB-10
Operation Frequency range:	GPRS 850: 824.20MHz-848.80MHz GPRS1900: 1850.20MHz-1909.80MHz WCDMA Band V: 826.4MHz-846.6MHz WCDMA Band II: 1852.4 MHz -1907.6 MHz
Modulation type:	GPRS: GMSK, UMTS: QPSK, EGPRS: 8PSK
Antenna type:	Internal Antenna
Antenna gain:	GPRS 850: 0.85 dBi GPRS 1900: 1.6 dBi WCDMA Band V: 0.85 dBi WCDMA Band II: 1.6 dBi
Power supply:	Rechargeable Li-ion Battery DC10.8V/3400mAh x 2
AC adapter with two plugs :	Model: ATS065S-P160 Input: AC100-240V, 50/60Hz, 1.4A Output: DC 16V, 4.07A

Operation Frequency List:

GPRS 850		GPRS1900	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
….	….	….	….
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
…	…	…	…
250	848.60	809	1909.60
251	848.80	810	1909.80
WCDMA Band V		WCDMA Band II	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
4132	826.40	9262	1852.40
4133	826.60	9263	1852.60
….	….	….	….
4182	836.40	9399	1879.80
4183	836.60	9400	1880.00
4184	836.80	9401	1880.20
…	…	…	…
4232	846.40	9537	1907.40
4233	846.60	9538	1907.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GPRS850			GPRS1900		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest channel	128	824.20	Lowest channel	512	1850.20
Middle channel	190	836.60	Middle channel	661	1880.00
Highest channel	251	848.80	Highest channel	810	1909.80
WCDMA Band V			WCDMA Band II		
Channel		Frequency(MHz)	Channel		Frequency(MHz)
Lowest channel	4132	826.40	Lowest channel	9262	1852.40
Middle channel	4183	836.60	Middle channel	9400	1880.00
Highest channel	4233	846.60	Highest channel	9538	1907.60

5.3 Test modes

Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 10.8Vdc, Extreme: Low 9.18Vdc, High 12.42Vdc
Test mode:	
GPRS mode	Keep the EUT communication with simulated station in GPRS mode
EGPRS mode	Keep the EUT communication with simulated station in EGPRS mode
RMC mode	Keep the EUT communication with simulated station in RMC mode
HSDPA	Keep the EUT communication with simulated station in HSDPA mode
HSUPA	Keep the EUT communication with simulated station in HSUPA mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report.	

5.4 Description of Support Units

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545
Simulated Station	Rohde & Schwarz	CMU200	122477

5.5 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.6 Laboratory Facility

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

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.7 Laboratory Location

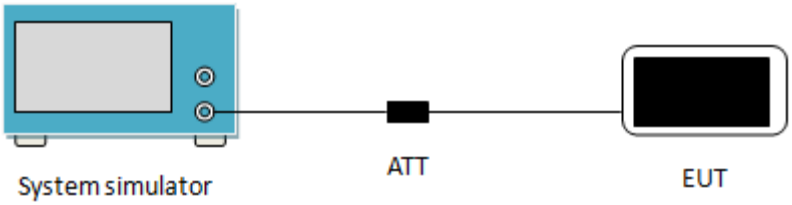
Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-25-2016	03-25-2017
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-25-2016	03-25-2017
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2016	03-31-2017
Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2016	03-31-2017
Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2016	03-31-2017
Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2016	03-31-2017
Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP 30	CCIS0023	03-28-2016	03-28-2017
EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	03-28-2016	03-28-2017
EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-24-2016	03-24-2017
Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2016	03-31-2017
Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	03-28-2016	03-28-2017
Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2016	04-08-2017
DC Power Supply	Shenzhen XinNuoEr Technologies Co., Ltd.	WYK-10020K	CCIS0201	10-31-2016	10-30-2017
Temperature Humidity Chamber	Fo Shan Heng Pu Electronics Co., Ltd.	HPGDS-500	CCIS0240	11-18-2016	11-27-2017
Coaxial Cable	N/A	N/A	CCIS0018	04-01-2016	03-31-2017
Coaxial Cable	N/A	N/A	CCIS0020	04-01-2016	03-31-2017

6. Test results

6.1 Conducted Output Power

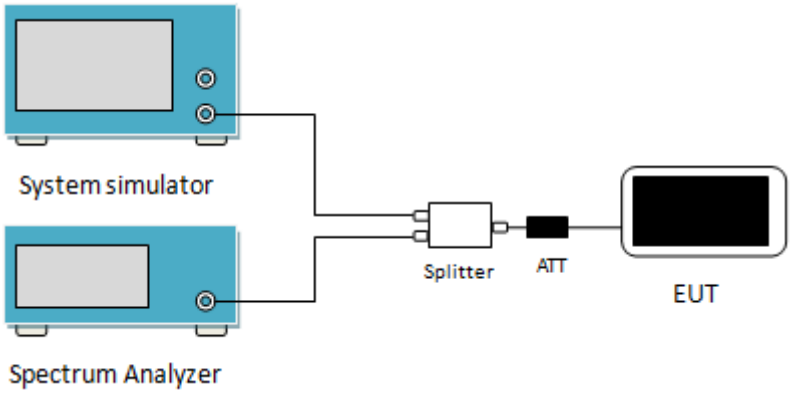
Test Requirement:	FCC part 22.913(a)(2), FCC part 24.232(c)
Test Method:	ANSI/TIA-603-D 2010
Limit:	GPRS 850: 7W, GPRS 1900: 2W WCDMA Band V: 7W, WCDMA Band II: 2W
Test setup:	
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated station. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

EUT Mode	Burst Average power (dBm)			Limit(dBm)
	128	190	251	
	824.20MHz	836.60MHz	848.80MHz	
GPRS 850 (1 Uplink slot)	31.55	31.64	31.64	38.45
GPRS 850 (2 Uplink slot)	30.11	30.05	30.52	
GPRS 850 (3 Uplink slot)	28.34	28.44	28.49	
GPRS 850 (4 Uplink slot)	26.97	27.04	27.43	
EGPRS 850 (1 Uplink slot)	25.23	25.25	25.41	
EGPRS 850 (2 Uplink slot)	24.99	25.07	25.21	
EGPRS 850 (3 Uplink slot)	23.78	23.45	23.69	
EGPRS 850 (4 Uplink slot)	22.05	22.15	22.16	
EUT Mode	Burst Average power (dBm)			Limit(dBm)
	512	661	810	
	1850.20MHz	1880.00MHz	1909.80MHz	
GPRS 1900 (1 Uplink slot)	28.62	28.43	28.14	33.00
GPRS 1900 (2 Uplink slot)	27.20	27.27	27.33	
GPRS 1900 (3 Uplink slot)	26.94	26.15	26.22	
GPRS 1900 (4 Uplink slot)	25.13	25.16	25.09	
EGPRS 1900 (1 Uplink slot)	25.06	25.33	25.12	
EGPRS 1900 (2 Uplink slot)	24.35	24.16	24.03	
EGPRS 1900 (3 Uplink slot)	22.98	22.86	22.87	
EGPRS 1900 (4 Uplink slot)	21.47	21.66	21.45	

EUT Mode		Burst Average power (dBm)			Limit(dBm)
		4132	4183	4233	
		826.40MHz	836.60MHz	846.60MHz	
UMTS 850 HSDPA	Subtest 1	23.17	22.78	22.65	38.45
	Subtest 2	23.03	22.82	22.53	
	Subtest 3	21.87	21.56	21.23	
	Subtest 4	20.99	20.78	20.53	
UMTS 850 HSUPA	Subtest 1	23.05	22.77	22.48	
	Subtest 2	23.13	22.89	22.57	
	Subtest 3	21.79	21.51	21.31	
	Subtest 4	23.12	22.76	22.58	
	Subtest 5	22.45	22.13	22.05	
UMTS 850 RMC	12.2kbps	23.16	22.88	22.60	
UMTS 850 AMR	12.2kbps	/			
EUT Mode		Burst Average power (dBm)			Limit(dBm)
		9262	9400	9538	
		1852.40MHz	1880.00MHz	1907.60MHz	
UMTS 1900 HSDPA	Subtest 1	21.14	20.83	20.92	33.00
	Subtest 2	20.43	20.40	20.34	
	Subtest 3	19.15	18.94	18.70	
	Subtest 4	18.33	18.21	18.36	
UMTS 1900 HSUPA	Subtest 1	20.41	20.24	20.35	
	Subtest 2	20.65	20.54	20.45	
	Subtest 3	19.15	18.99	18.66	
	Subtest 4	20.49	20.51	20.40	
	Subtest 5	19.88	18.75	19.46	
UMTS 1900 RMC	12.2kbps	21.81	21.82	21.69	
UMTS 1900 AMR	12.2kbps	/			

6.2 Occupy Bandwidth

Test Requirement:	FCC part 22.917(b), FCC part 24.238(b)
Test Method:	ANSI/TIA-603-D 2010
Test setup:	
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 Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

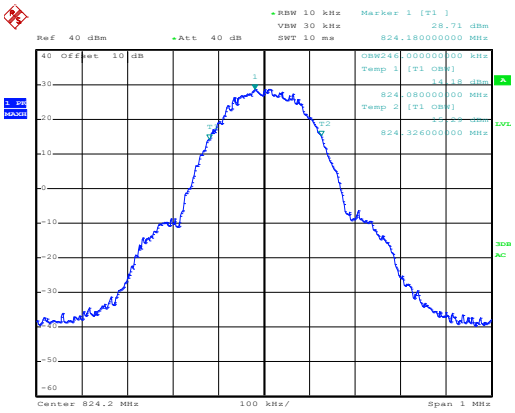
Measurement Data:

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GPRS 850	128	824.2	246	320
	190	836.6	248	310
	251	848.8	244	318
EGPRS850	128	824.2	256	330
	190	836.6	254	312
	251	848.8	250	312
GPRS 1900	512	1850.2	244	318
	661	1880.0	246	318
	810	1909.8	246	316
EGPRS1900	512	1850.2	252	318
	661	1880.0	250	326
	810	1909.8	254	322
UMTS 850 12.2k RMC	4132	826.4	4160	4680
	4183	836.6	4160	4680
	4233	846.6	4120	4660
UMTS 1900 12.2k RMC	9262	1852.4	4160	4680
	9400	1880.0	4160	4760
	9538	1907.6	4160	4680

Test plot as follows:

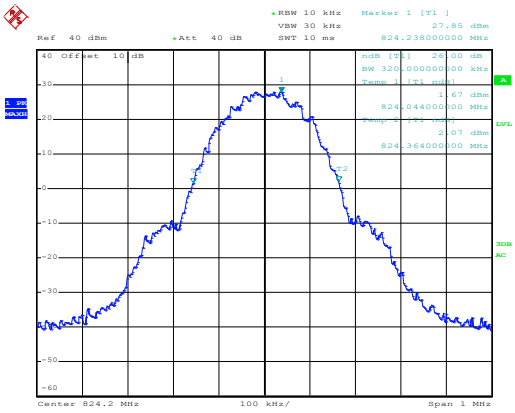
GPRS 850

99% Occupy bandwidth

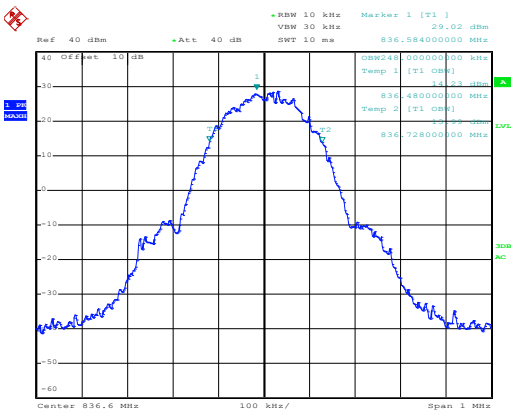


Lowest channel

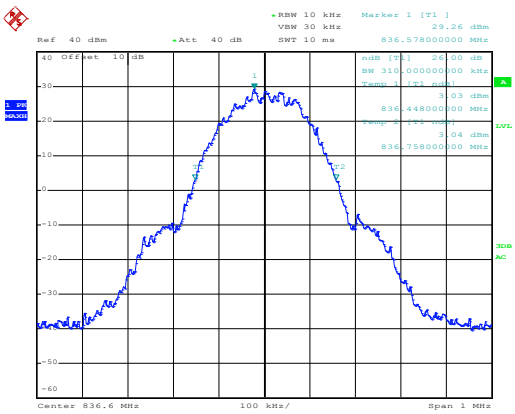
26dB Emission Bandwidth



Lowest channel



Middle channel



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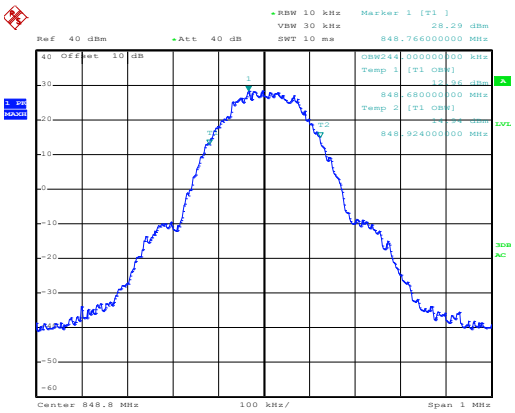
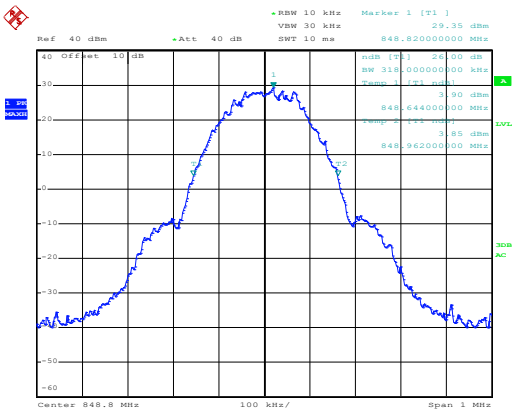


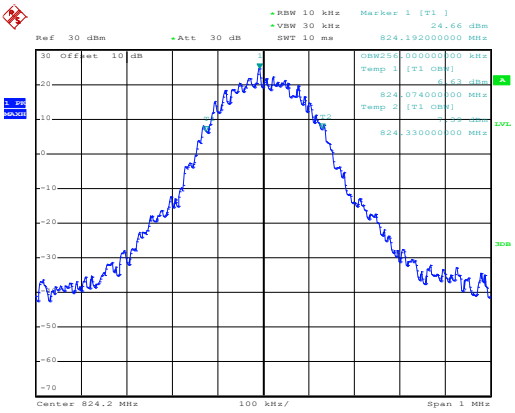
Highest channel



Highest channel

EGPRS 850

99% Occupy bandwidth



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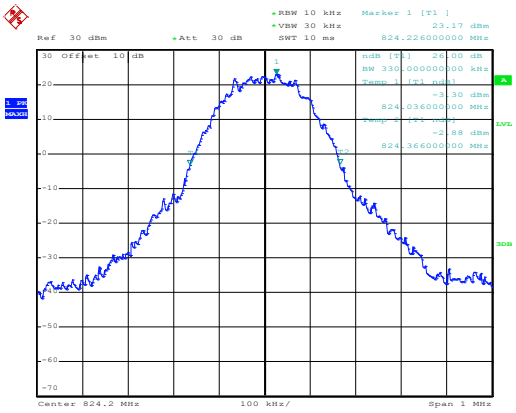
Lowest channel

26dB Emission Bandwidth



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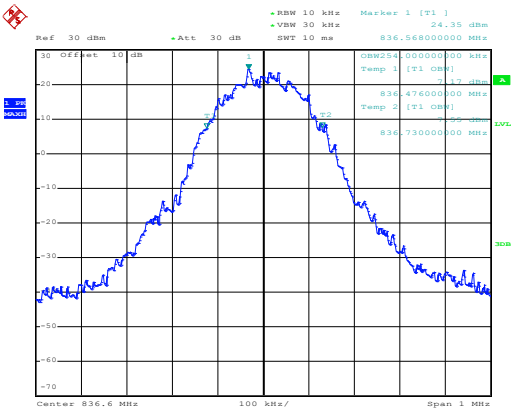
Lowest channel



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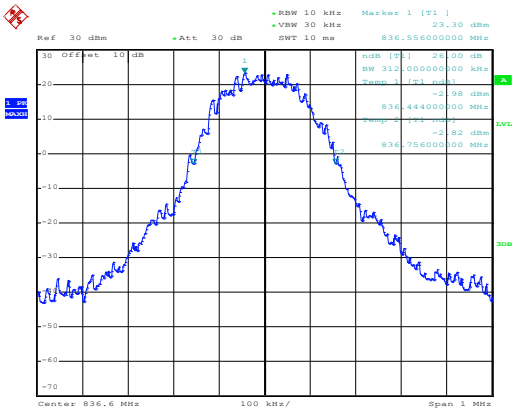
Middle channel



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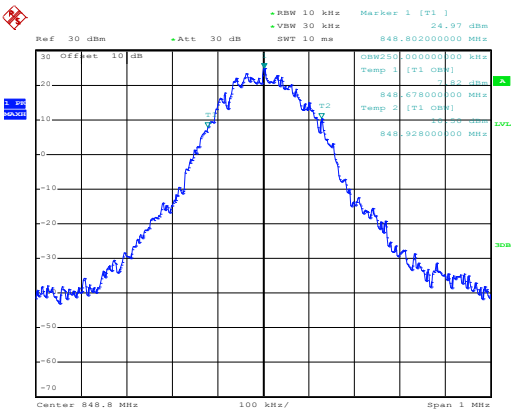
Middle channel



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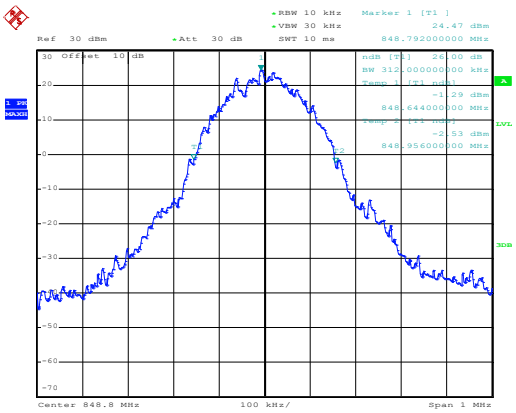
Highest channel



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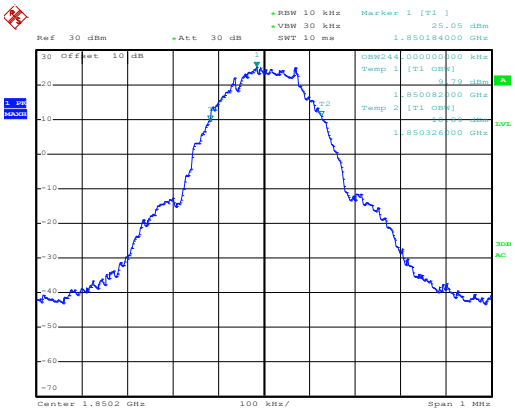
Highest channel

GPRS 1900

99% Occupy bandwidth



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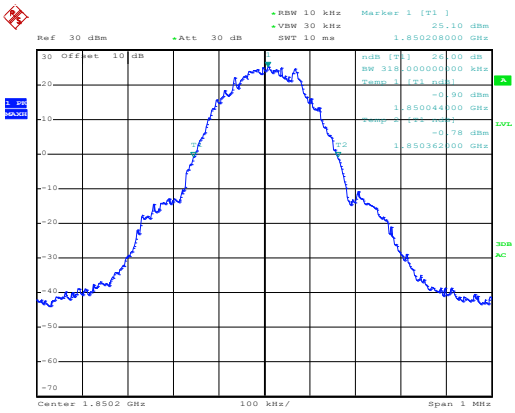
Lowest channel

26dB Emission Bandwidth



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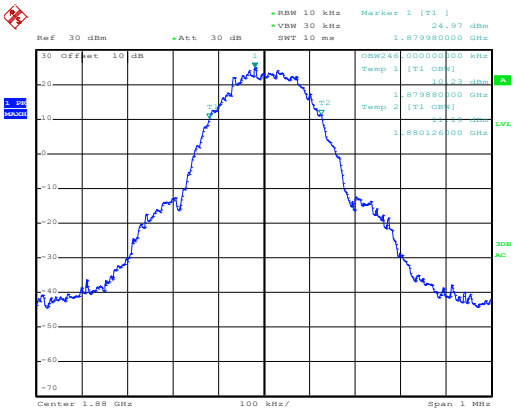
Lowest channel



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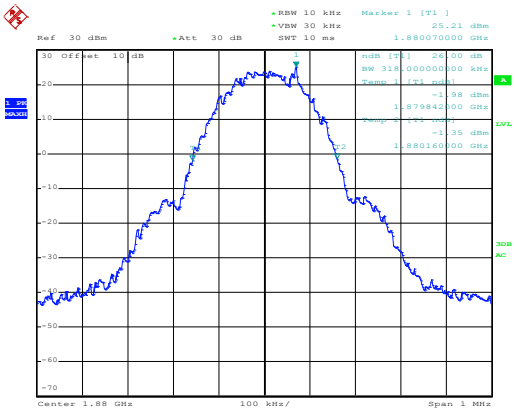
Middle channel



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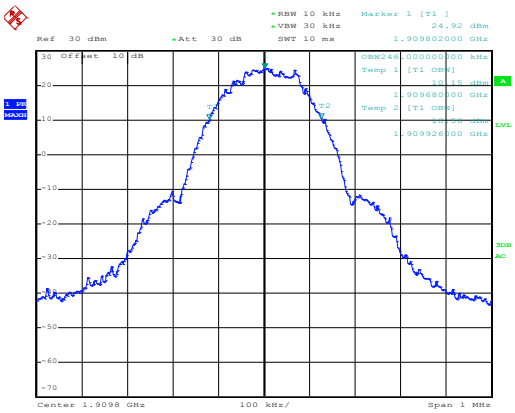
Middle channel



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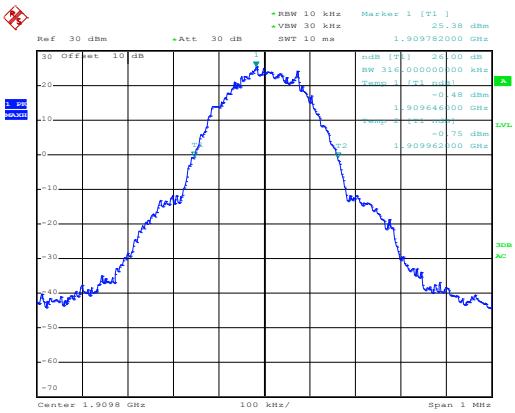
Highest channel



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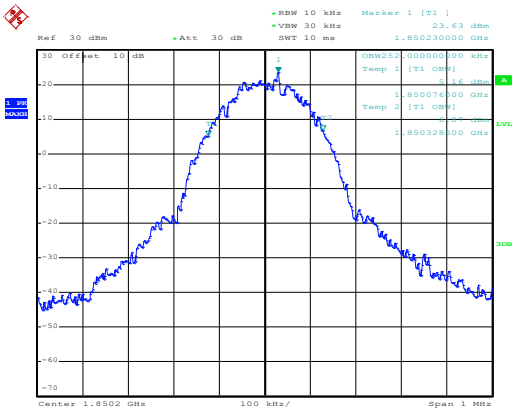
Highest channel

EGPRS 1900

99% Occupy bandwidth



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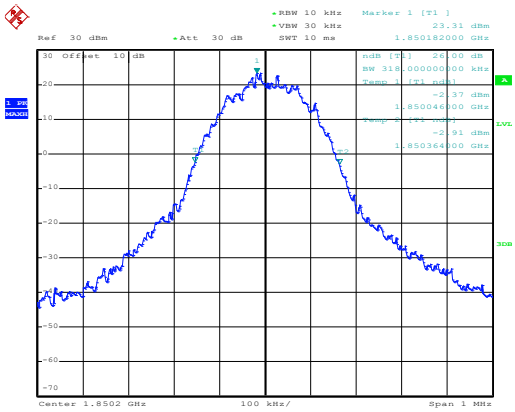
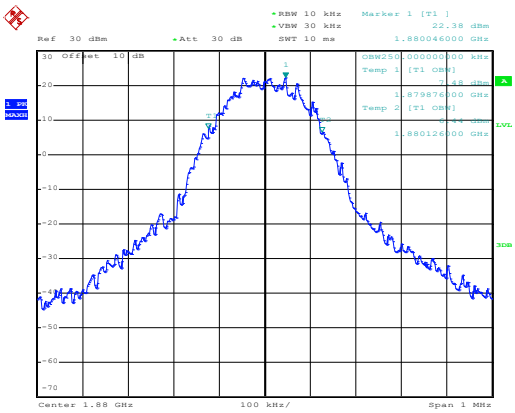
Lowest channel

26dB Emission Bandwidth



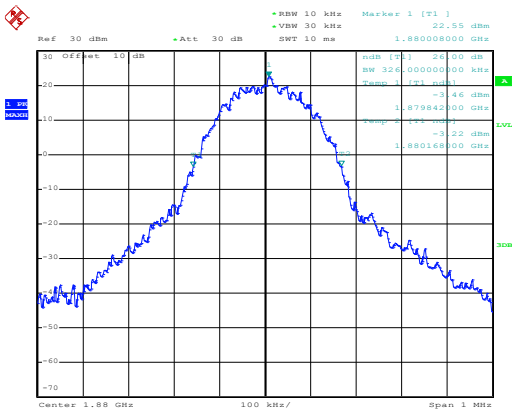
Date: 25.DEC.2016 11:50:39

Lowest channel



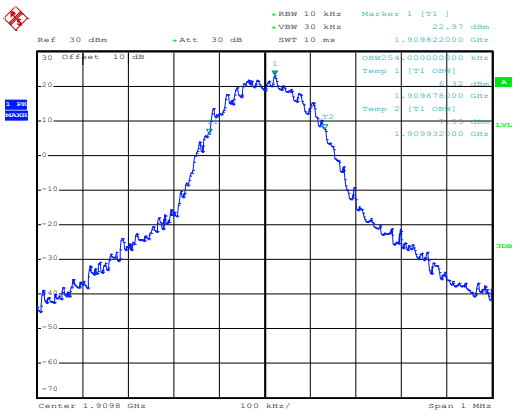
Date: 25.DEC.2016 11:51:01

Middle channel



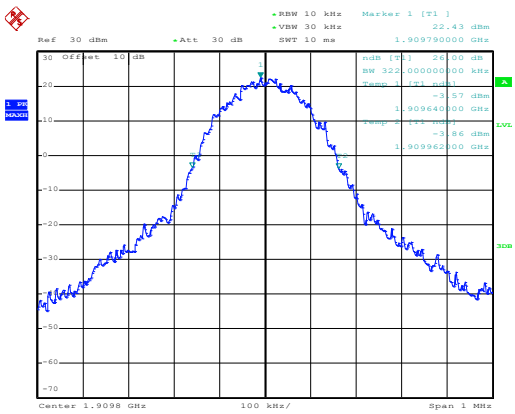
Date: 25.DEC.2016 11:51:09

Middle channel



Date: 25.DEC.2016 11:52:05

Highest channel

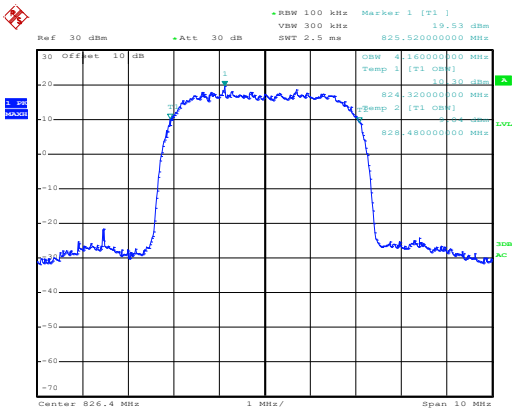


Date: 25.DEC.2016 11:51:55

Highest channel

UMTS 850 12.2k RMC

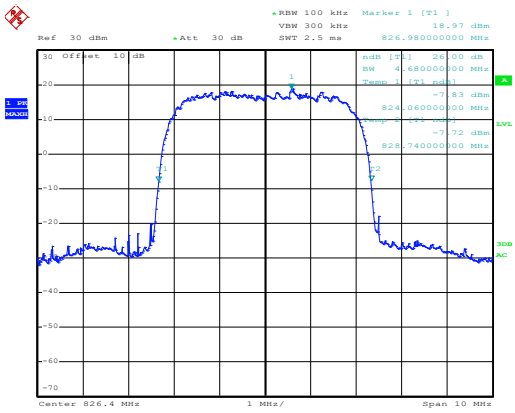
99% Occupy bandwidth



Date: 19.DEC.2016 11:07:25

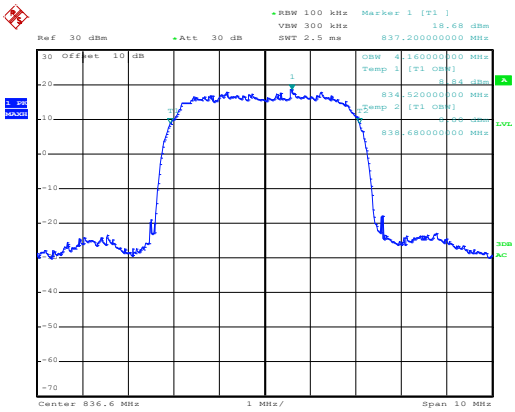
Lowest channel

26dB Emission Bandwidth



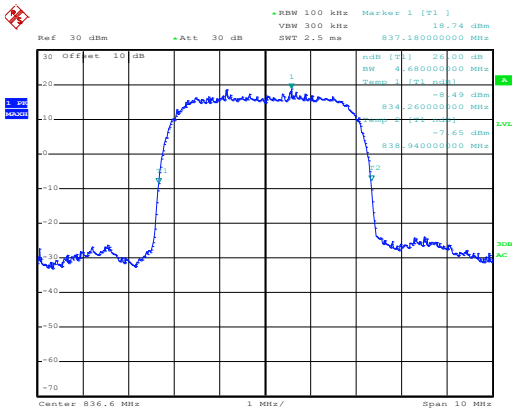
Date: 19.DEC.2016 13:03:23

Lowest channel



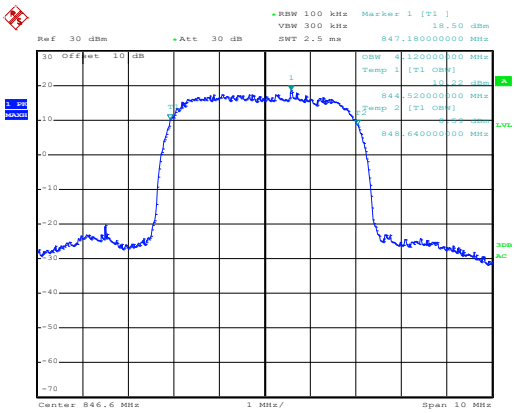
Date: 19.DEC.2016 12:46:15

Middle channel



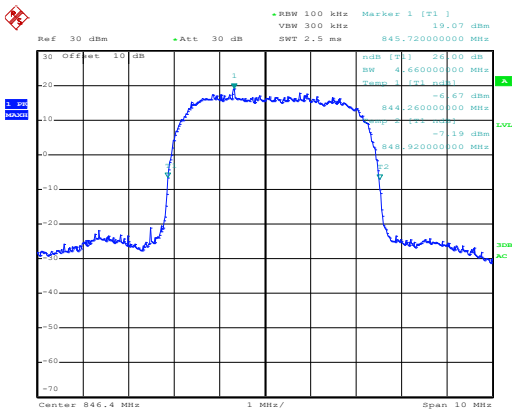
Date: 19.DEC.2016 13:04:03

Middle channel



Date: 19.DEC.2016 12:49:59

Highest channel

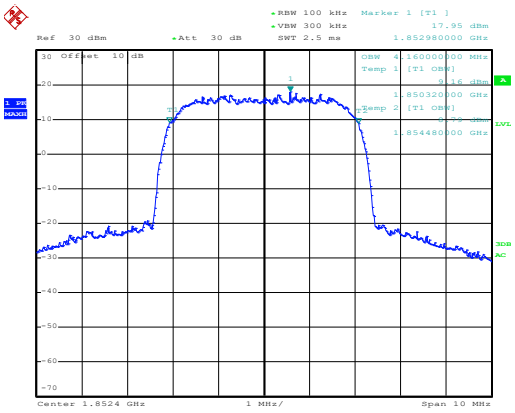


Date: 19.DEC.2016 13:04:48

Highest channel

UMTS 1900 12.2k RMC

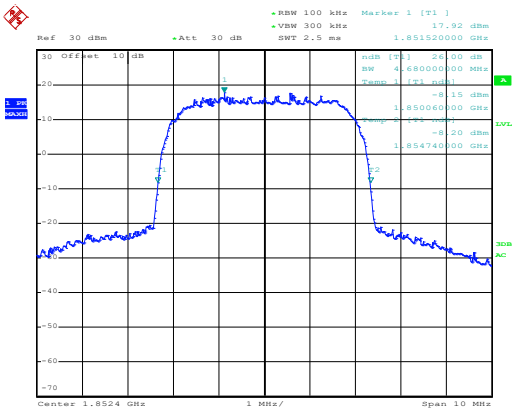
99% Occupy bandwidth



Date: 19.DEC.2016 13:43:06

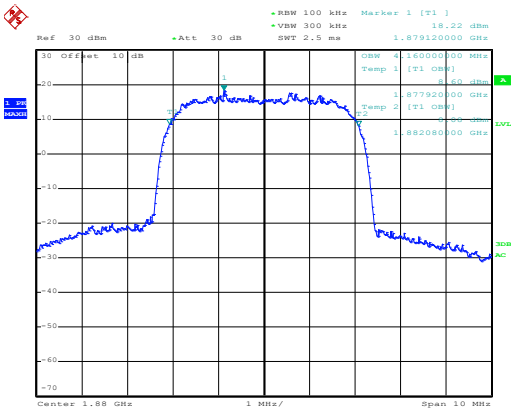
Lowest channel

26dB Emission Bandwidth



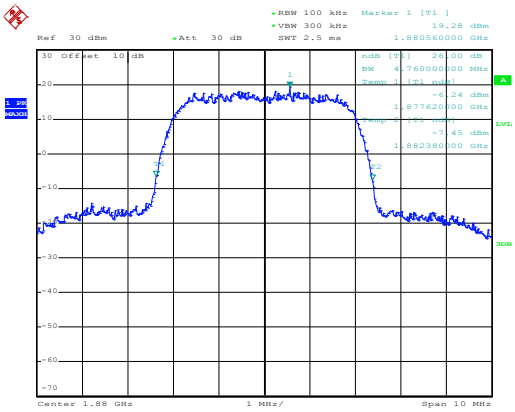
Date: 19.DEC.2016 13:48:56

Lowest channel



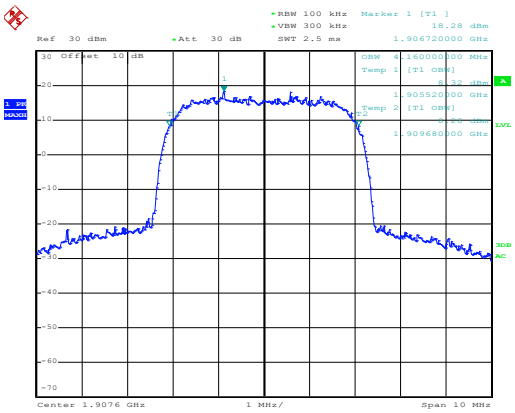
Date: 19.DEC.2016 13:44:00

Middle channel



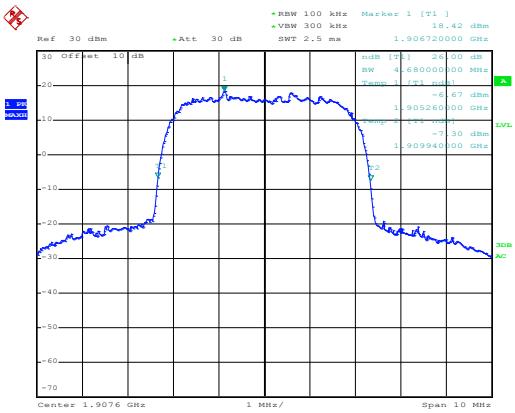
Date: 19.DEC.2016 12:44:43

Middle channel



Date: 19.DEC.2016 13:44:41

Highest channel



Date: 19.DEC.2016 13:47:17

Highest channel

6.3 Peak-to-Average Power Ratio

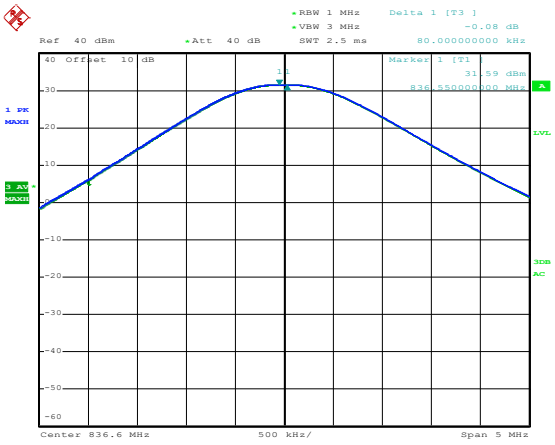
Test Requirement:	FCC part 24.232(d)
Test Method	ANSI/TIA-603-D 2010
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, RBW ≥ OBW, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Modulation	Test channel	PAPR
GPRS 850	190	0.08
EGPRS 850	190	0.19
GPRS 1900	661	0.07
EGPRS 1900	661	0.12
UMTS 850 RMC	4183	3.12
UMTS 1900 RMC	9400	2.68

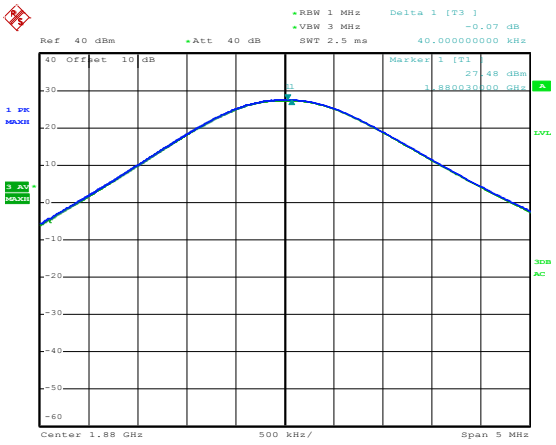
Test plots as below:

Middle channel
GPRS 850



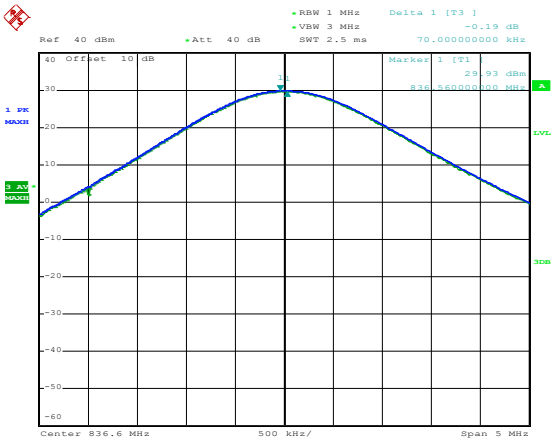
Date: 21.DEC.2016 10:36:17

Middle channel
GPRS 1900



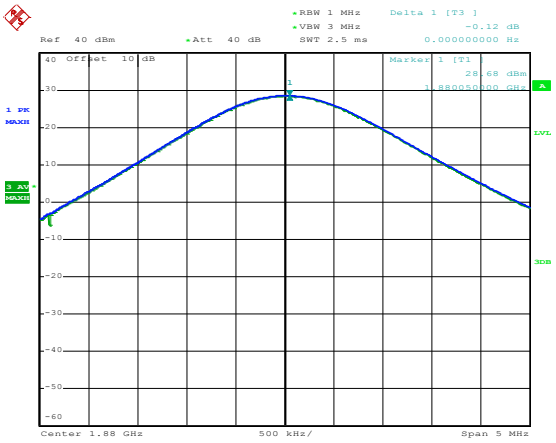
Date: 21.DEC.2016 10:43:55

Middle channel
EGPRS 850



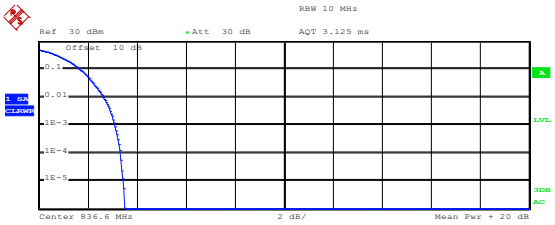
Date: 25.DEC.2016 11:43:09

Middle channel
EGPRS 1900



Date: 25.DEC.2016 11:49:04

Middle channel
UMTS 850 RMC

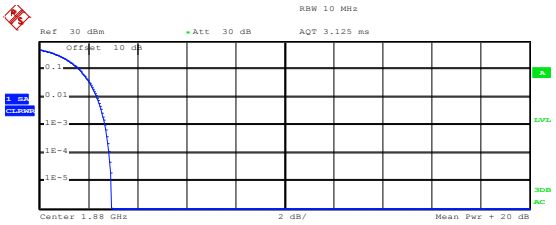


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	22.76 dBm
Peak	26.27 dBm
Crest	3.51 dB
10 %	1.68 dB
1 %	2.64 dB
.1 %	3.12 dB
.01 %	3.32 dB

Date: 19.DEC.2016 13:35:18

Middle channel
UMTS 1900 RMC



Complementary Cumulative Distribution Function (100000 samples)

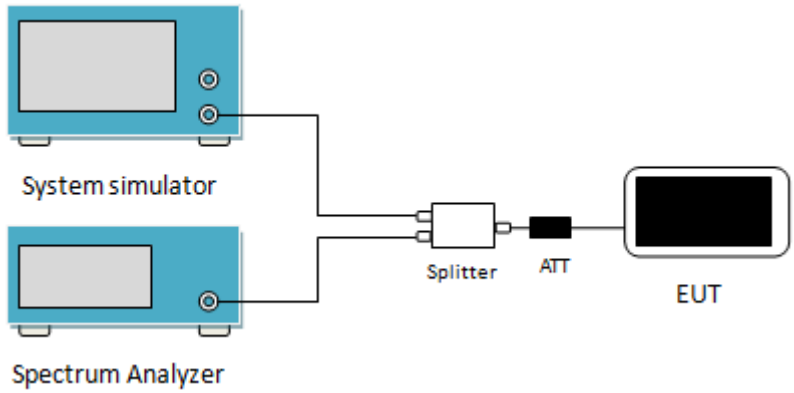
	Trace 1
Mean	22.26 dBm
Peak	25.21 dBm
Crest	2.95 dB
10 %	1.64 dB
1 %	2.36 dB
.1 %	2.68 dB
.01 %	2.84 dB

Date: 19.DEC.2016 13:39:25

6.4 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

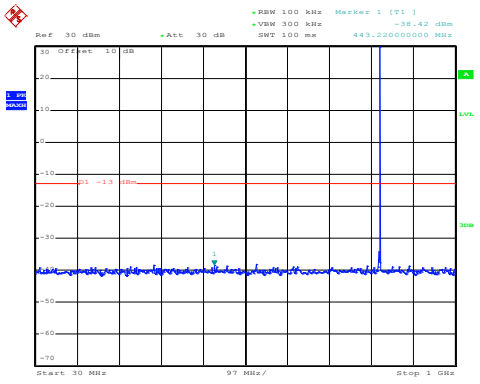
6.5 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	-13dBm
Test setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plots as follows:
Spurious emission:

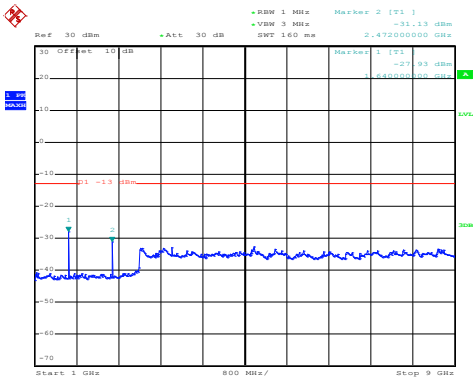
GPRS 850

Lowest Channel



Date: 13.DEC.2016 22:05:15

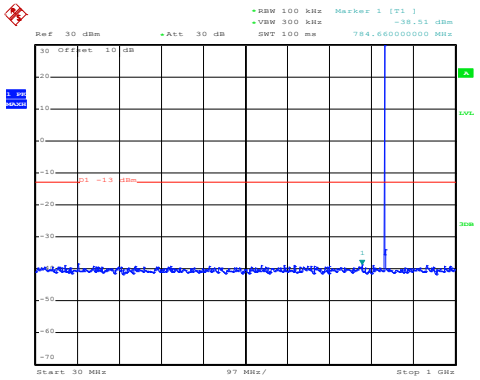
30MHz~1GHz



Date: 13.DEC.2016 22:06:58

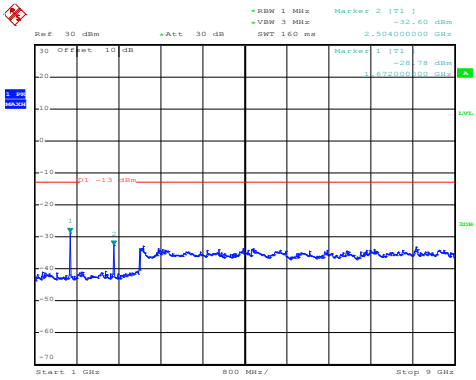
1GHz~9GHz

Middle channel



Date: 13.DEC.2016 22:04:44

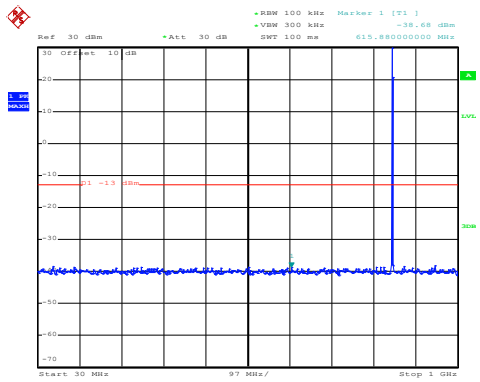
30MHz~1GHz



Date: 13.DEC.2016 22:07:34

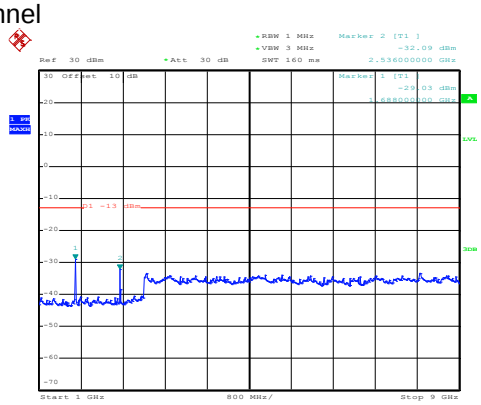
1GHz~9GHz

Highest Channel



Date: 13.DEC.2016 22:04:10

30MHz~1GHz

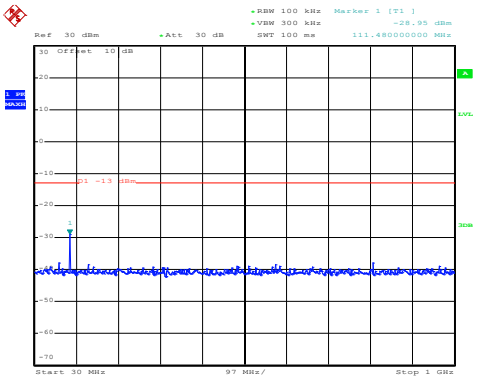


Date: 13.DEC.2016 22:08:06

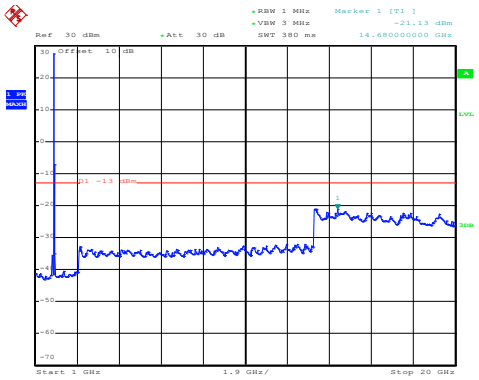
1GHz~9GHz

GPRS 1900

Lowest Channel

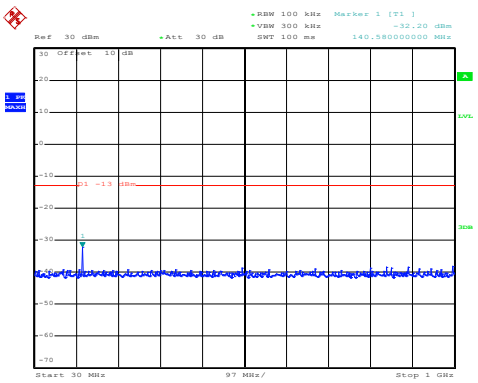


30MHz~1GHz

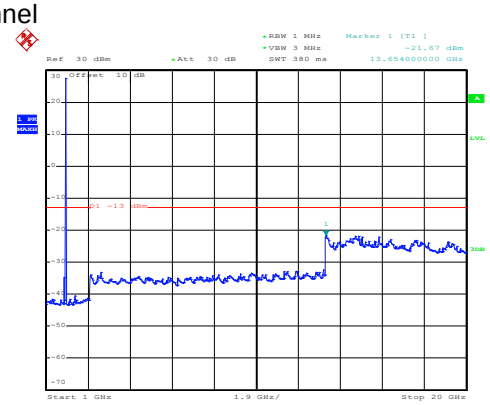


1GHz~20GHz

Middle Channel

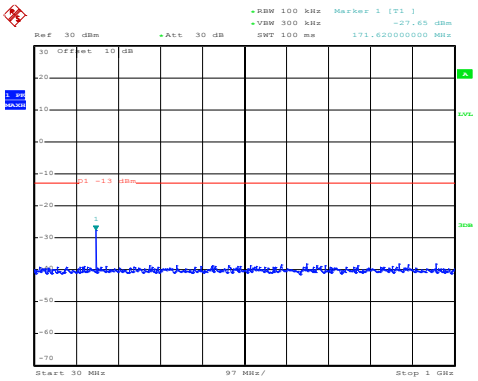


30MHz~1GHz

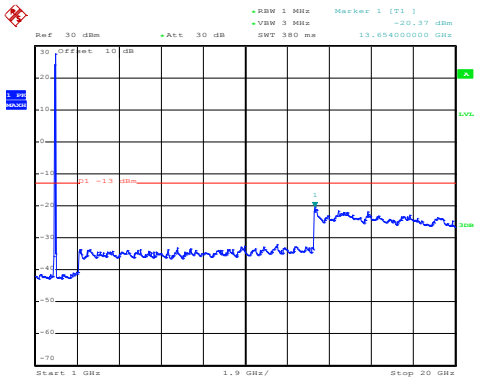


1GHz~20GHz

Highest Channel



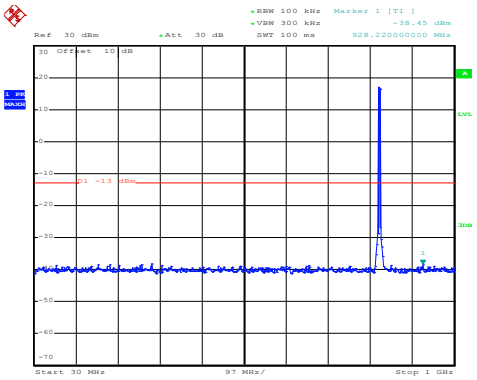
30MHz~1GHz



1GHz~20GHz

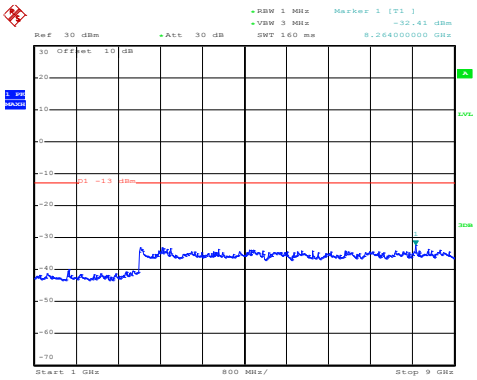
UMTS 850 12.2k RMC

Lowest Channel



Date: 13.DEC.2016 22:49:25

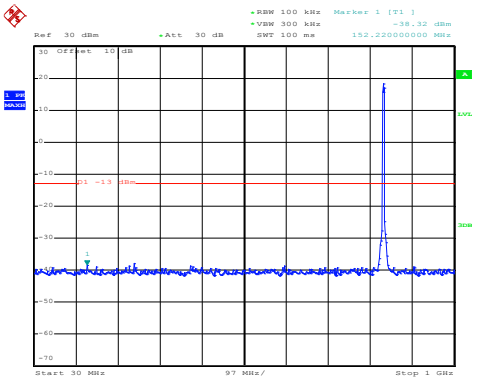
30MHz~1GHz



Date: 13.DEC.2016 22:46:02

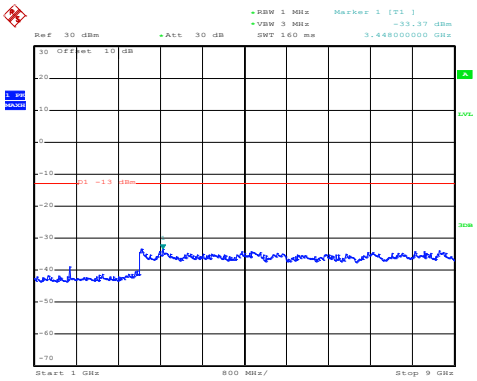
1GHz~9GHz

Middle Channel



Date: 13.DEC.2016 22:48:21

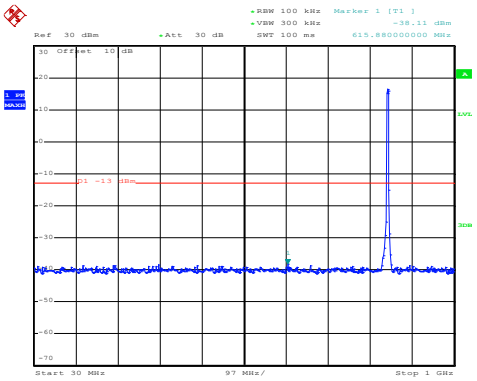
30MHz~1GHz



Date: 13.DEC.2016 22:46:28

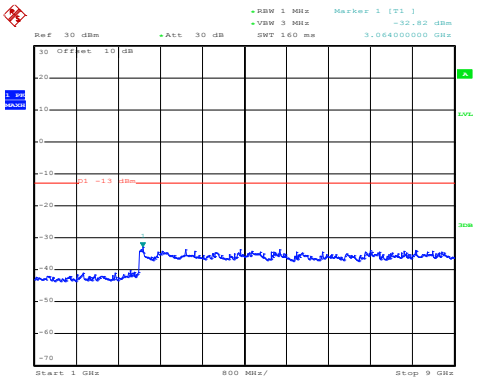
1GHz~9GHz

Highest Channel



Date: 13.DEC.2016 22:47:54

30MHz~1GHz

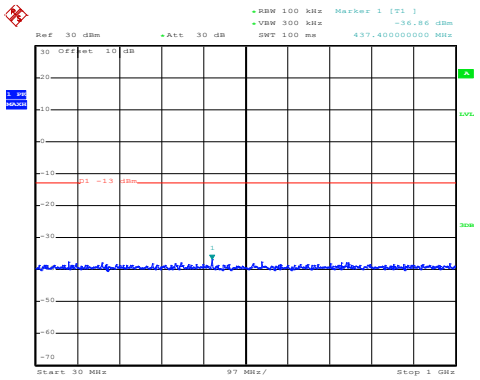


Date: 13.DEC.2016 22:46:56

1GHz~9GHz

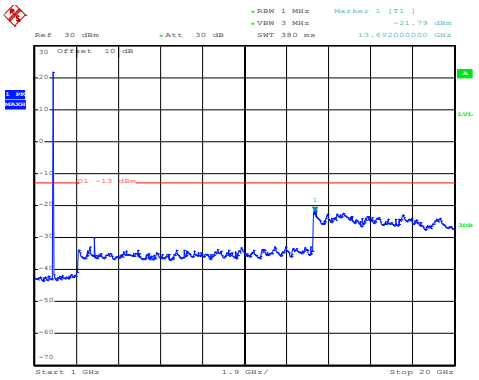
UMTS 1900 12.2k RMC

Lowest Channel



Date: 13.DEC.2016 22:39:35

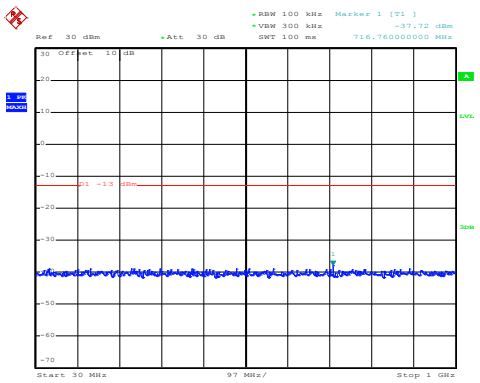
30MHz~1GHz



Date: 13.DEC.2016 22:43:03

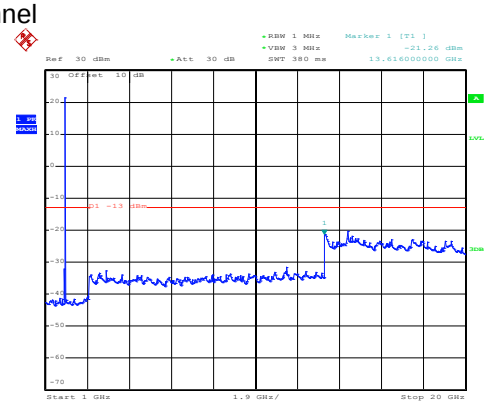
1GHz~20GHz

Middle Channel



Date: 13.DEC.2016 22:40:06

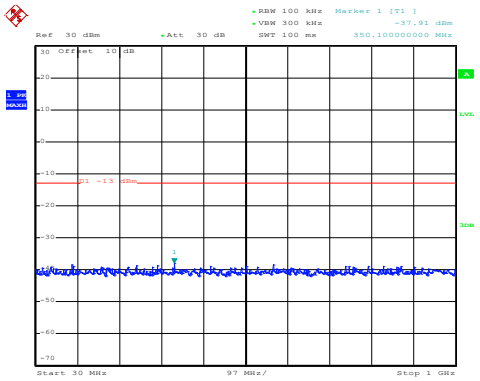
30MHz~1GHz



Date: 13.DEC.2016 22:42:38

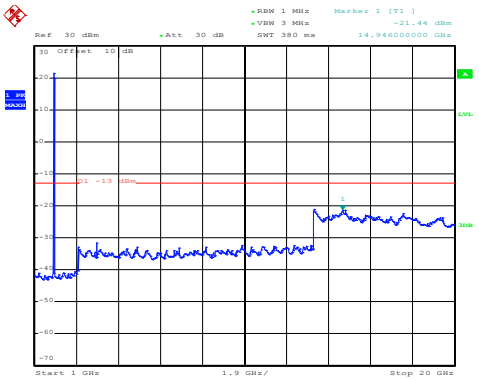
1GHz~20GHz

Highest Channel



Date: 13.DEC.2016 22:40:49

30MHz~1GHz

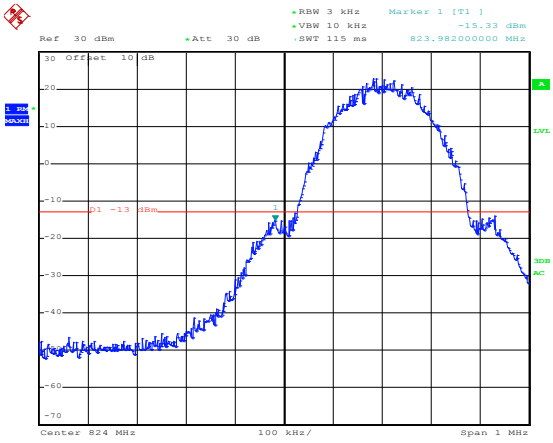


Date: 13.DEC.2016 22:42:08

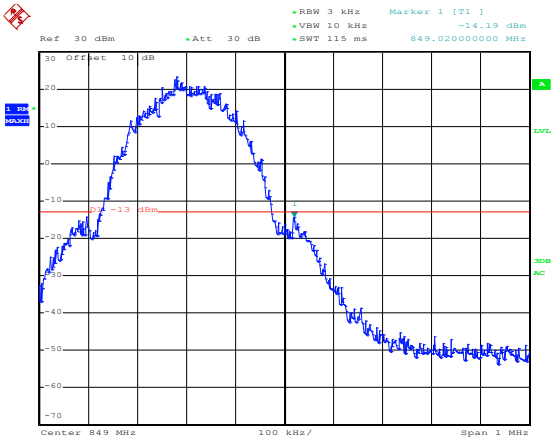
1GHz~20GHz

Band edge emission:

GPRS850

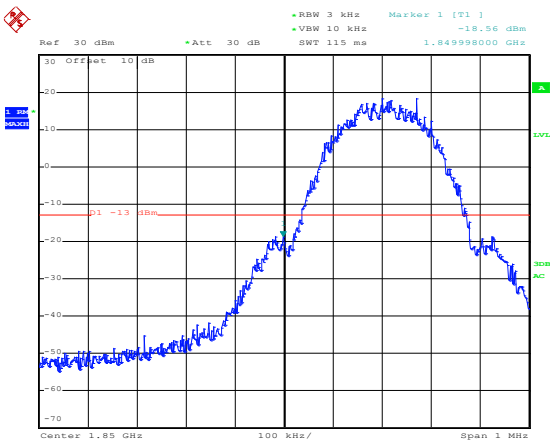


Lowest channel

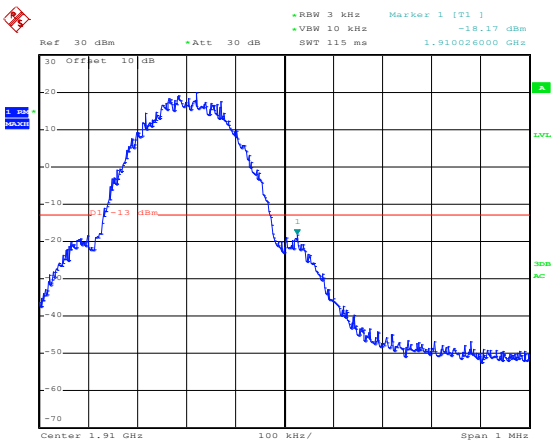


Highest channel

GPRS1900

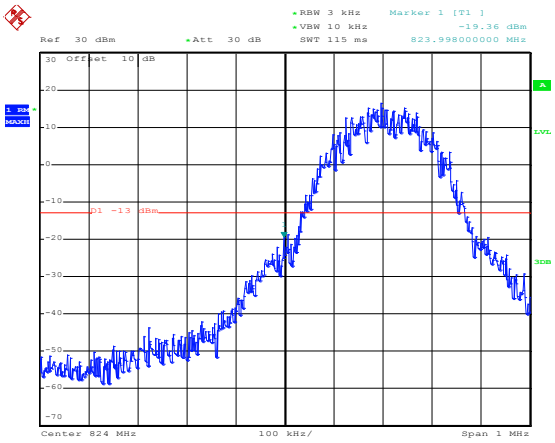


Lowest channel



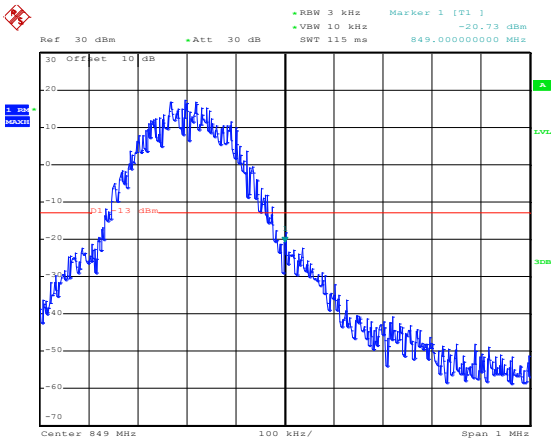
Highest channel

EGPRS850



Date: 25.DEC.2016 11:41:28

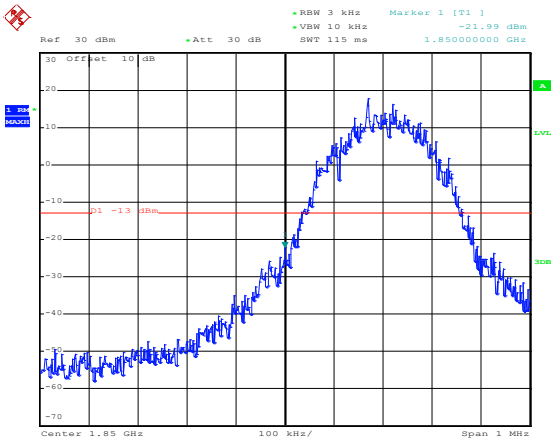
Lowest channel



Date: 25.DEC.2016 11:41:48

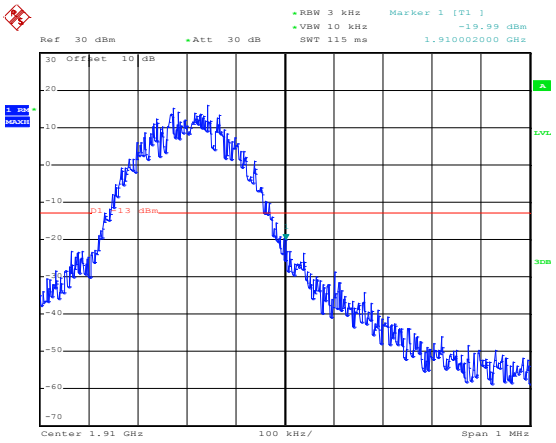
Highest channel

EGPRS1900



Date: 25.DEC.2016 11:49:50

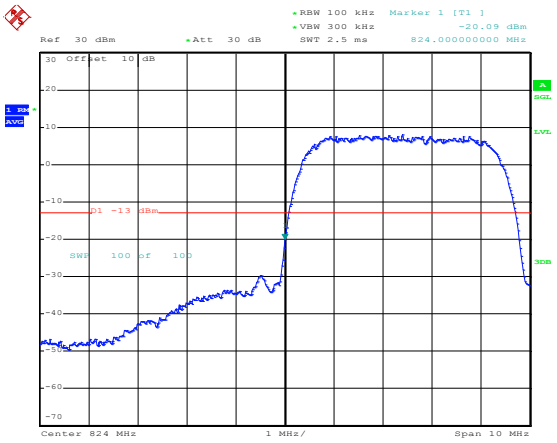
Lowest channel



Date: 25.DEC.2016 11:50:11

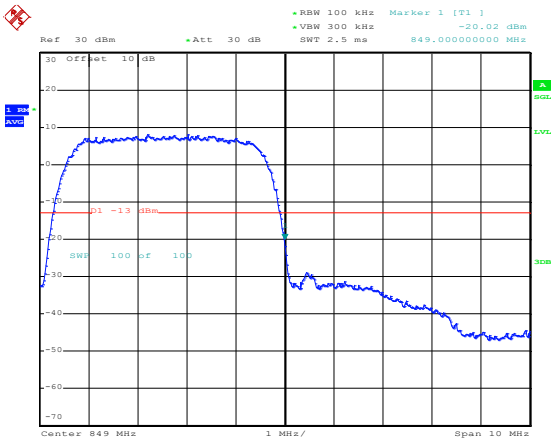
Highest channel

UMTS 850 RMC 12.2kbps



Date: 19.DEC.2016 12:37:17

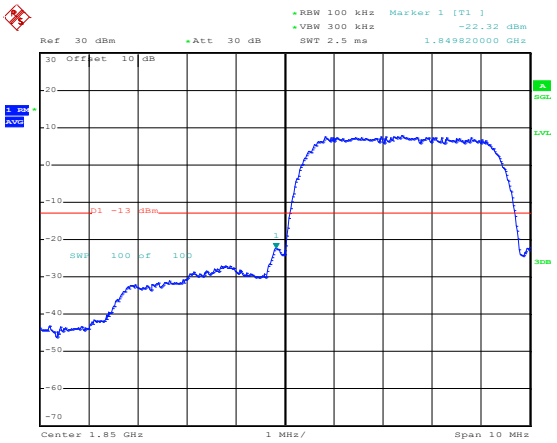
Lowest channel



Date: 19.DEC.2016 12:36:24

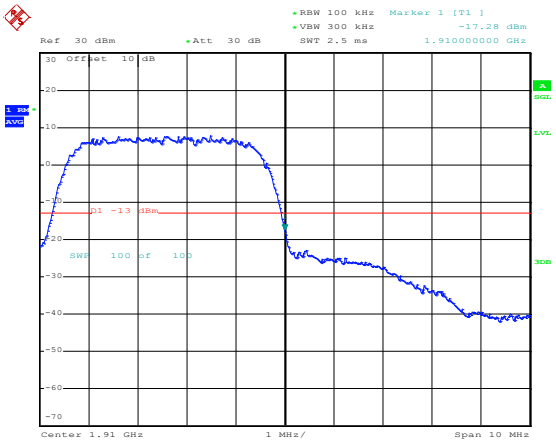
Highest channel

UMTS 1900 RMC 12.2kbps



Date: 19.DEC.2016 12:40:33

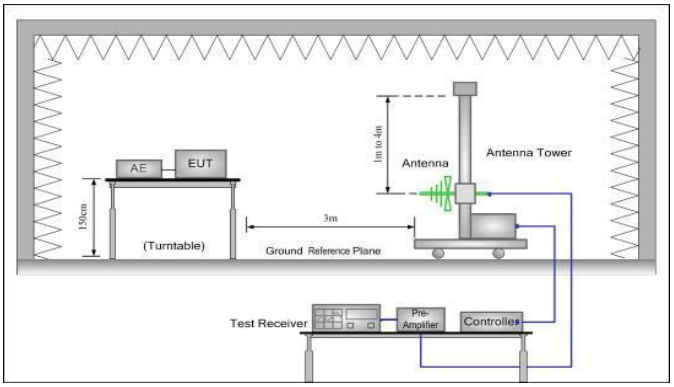
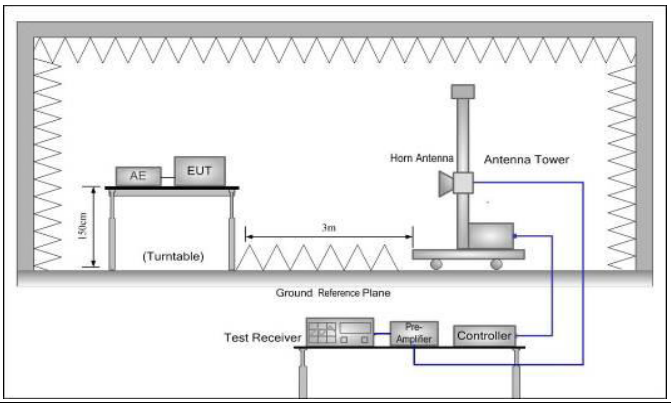
Lowest channel



Date: 19.DEC.2016 12:40:58

Highest channel

6.6 ERP, EIRP Measurement

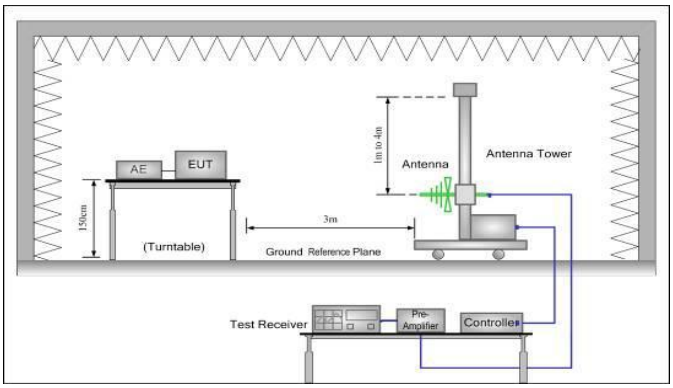
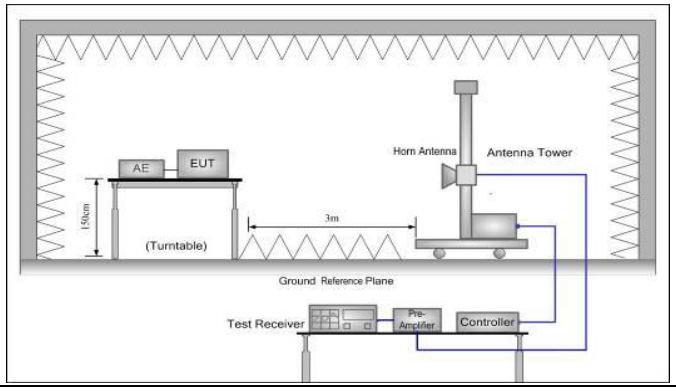
Test Requirement:	FCC part 22.913(a)(2), FCC part 24.232(c)
Test Method:	ANSI/TIA-603-D 2010
Limit:	GPRS850 7W: ERP, GPRS1900 2W: EIRP UMTS 850: 7W ERP, UMTS1900: 2W EIRP
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB) 5. The worse case was relating to the conducted output power.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (worst case):

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GPRS850	190	H	V	25.40	38.45	Pass
			H	30.52		
EGPRS 850	251	H	V	18.62		
			H	21.02		
UMTS 850 12.2k RMC	4132	H	V	14.51		
			H	19.04		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
GPRS1900	512	H	V	25.33	33	Pass
			H	19.35		
EGPRS 1900	661	H	V	21.62		
			H	18.46		
UMTS 1900 12.2k RMC	9400	H	V	20.56		
			H	16.50		

6.7 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

Measurement Data (worst case):

Test mode:	GPRS850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-34.56	-13.00	Pass
2472.60	V	-36.25		
3296.80	V	-41.90		
1648.40	Horizontal	-33.41	-13.00	Pass
2472.60	H	-36.72		
3296.80	H	-40.92		
Test mode:	**GPRS850**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-28.57	-13.00	Pass
2509.80	V	-37.99		
3346.40	V	-45.00		
4183.00	V	-46.70		
1673.20	Horizontal	-32.51	-13.00	Pass
2509.80	H	-36.50		
3346.40	H	-45.37		
Test mode:	**GPRS850**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-31.85	-13.00	Pass
2546.40	V	-39.60		
3395.20	V	-53.33		
1697.60	Horizontal	-32.15	-13.00	Pass
2546.40	H	-34.61		
3395.20	H	-36.25		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	GPRS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-46.00	-13.00	Pass
5550.60	V	-46.36		
3700.40	Horizontal	-49.16	-13.00	Pass
5550.60	H	-46.05		
Test mode:	**GPRS1900**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-46.16	-13.00	Pass
5640.00	V	-45.81		
3760.00	Horizontal	-49.43	-13.00	Pass
5640.00	H	-45.87		
Test mode:	**GPRS1900**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-48.44	-13.00	Pass
5729.40	V	-46.80		
3819.60	Horizontal	-48.98	-13.00	Pass
5729.40	H	-46.61		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

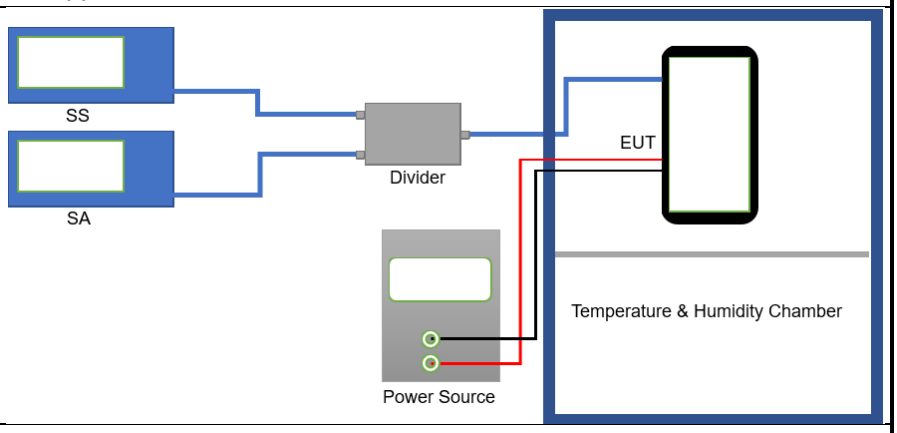
Test mode:	WCDMA BAND V 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1652.80	Vertical	-45.74	-13.00	Pass
2479.20	V	-49.77		
3305.60	V	-50.66		
1652.80	Horizontal	-49.12	-13.00	Pass
2479.20	H	-53.02		
3305.60	H	-47.25		
Test mode:	**WCDMA BAND V 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-63.06	-13.00	Pass
2509.80	V	-51.44		
3346.40	V	-54.56		
1673.20	Horizontal	-52.41	-13.00	Pass
2509.80	H	-54.49		
3346.40	H	-48.50		
Test mode:	**WCDMA BAND V 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1693.20	Vertical	-50.79	-13.00	Pass
2539.80	V	-53.59		
3386.40	V	-47.74		
1693.20	Horizontal	-53.25	-13.00	Pass
2539.80	H	-54.85		
3386.40	H	-52.97		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band II 12.2k RMC		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.80	Vertical	-37.83	-13.00	Pass
5557.20	V	-47.08		
3704.80	Horizontal	-36.14		
5557.20	H	-46.80		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-41.05	-13.00	Pass
5640.00	V	-45.71		
3760.00	Horizontal	-38.68		
5640.00	H	-44.11		
Test mode:	**WCDMA Band II 12.2k RMC**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.20	Vertical	-42.75	-13.00	Pass
5722.80	V	-45.03		
3815.20	Horizontal	-41.54		
5722.80	H	-45.42		

Remark:
1. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.8 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(a)(1)(b)
Test Method:	ANSI/TIA-6-3-D 2010
Limit:	±2.5 ppm
Test setup:	
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: GPRS850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	188	0.224719	±2.5	Pass
	-20	167	0.199617		
	-10	174	0.207985		
	0	159	0.190055		
	10	145	0.173321		
	20	136	0.162563		
	30	130	0.155391		
	40	149	0.178102		
	50	158	0.188860		
Reference Frequency: GPRS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	174	0.092553	±2.5	Pass
	-20	165	0.087766		
	-10	155	0.082447		
	0	134	0.071277		
	10	128	0.068085		
	20	105	0.055851		
	30	127	0.067553		
	40	133	0.070745		
	50	142	0.075532		

Note: Only the worst case shown in the report.

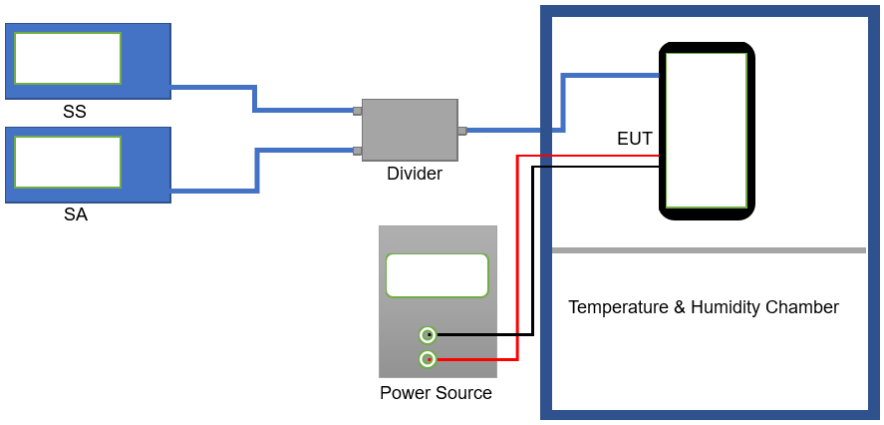
Reference Frequency: EGPRS850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	170	0.203203	±2.5	Pass
	-20	166	0.198422		
	-10	152	0.181688		
	0	138	0.164953		
	10	148	0.176907		
	20	142	0.169735		
	30	140	0.167344		
	40	157	0.187664		
	50	169	0.202008		
Reference Frequency: EGPRS 1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	185	0.098404	±2.5	Pass
	-20	162	0.086170		
	-10	174	0.092553		
	0	171	0.090957		
	10	136	0.072340		
	20	165	0.087766		
	30	169	0.089894		
	40	158	0.084043		
	50	149	0.079255		

Note: Only the worst case shown in the report.

Reference Frequency: WCDMA BAND V 12.2k RMC Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	155	0.185274	±2.5	Pass
	-20	147	0.175711		
	-10	142	0.169735		
	0	136	0.162563		
	10	122	0.145828		
	20	117	0.139852		
	30	102	0.121922		
	40	136	0.162563		
	50	129	0.154196		
Reference Frequency: WCDMA BAND II 12.2k RMC Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
10.80	-30	183	0.097340	±2.5	Pass
	-20	145	0.077128		
	-10	157	0.083511		
	0	160	0.085106		
	10	138	0.073404		
	20	169	0.089894		
	30	177	0.094149		
	40	128	0.068085		
	50	139	0.073936		

Note: Only the worst case shown in the report.

6.9 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(d)(2)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	
Test procedure:	1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: GPRS850 Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	12.42	69	0.082477	±2.5	Pass
	10.80	90	0.107578		
	9.18	78	0.093235		
Reference Frequency: GPRS1900 Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.35	74	0.039362	±2.5	Pass
	3.80	80	0.042553		
	3.55	46	0.024468		
Reference Frequency: EGPRS 850 Middle channel= 190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.35	69	0.082477	±2.5	Pass
	3.80	80	0.095625		
	3.55	49	0.058570		
Reference Frequency: EGPRS 1900 Middle channel= 661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.35	88	0.046809	±2.5	Pass
	3.80	74	0.039362		
	3.55	90	0.047872		
Reference Frequency: UMTS 850 12.2k RMC Middle channel=4183 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.35	85	0.101602	±2.5	Pass
	3.80	76	0.090844		
	3.55	90	0.107578		
Reference Frequency: UMTS 1900 12.2k RMC Middle channel=9400 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.35	82	0.043617	±2.5	Pass
	3.80	71	0.037766		
	3.55	66	0.035106		

Note: Only the worst case shown in the report.