



REPORT No.: SZ16100034W02

FCC RF TEST REPORT

APPLICANT : Beijing Beast Technology Co.,Ltd

PRODUCT NAME : bluegogo lock

MODEL NAME : GS1

TRADE NAME : BEAST

BRAND NAME : N/A

FCC ID : 2AHU3-GS1

STANDARD(S) : 47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E

ISSUE DATE : 2016-11-23



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2016-11-23	First edition



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TEST REPORT DECLARATION

Applicant	Beijing Beast Technology Co.,Ltd
Applicant Address	Room 2508 Building B, Tower 2 Wangjing SOHO, Chaoyang District, Beijing, China
Manufacturer	Beijing Beast Technology Co.,Ltd
Manufacturer Address	Room 2508 Building B, Tower 2 Wangjing SOHO, Chaoyang District, Beijing, China
Product Name	bluegogo lock
Model Name	GS1
Brand Name	N/A
HW Version	G1_MB_V1.0_20161010
SW Version	MAUI.11C.W13.52.SP3.V2.F31.V0.0.2.beta
Test Standards	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
Test Date	2016-11-11 to 2016-11-23
Test Result	PASS

Tested by : Su Hang
Su Hang

Reviewed by : Qiu Xiaojun
Qiu Xiaojun

Approved by : Peng Huarui
Peng Huarui



1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: bluegogo lock
Serial No.: (n.a, marked #1 by test site)
Hardware Version: G1_MB_V1.0_20161010
Software Version.....: MAUI.11C.W13.52.SP3.V2.F31.V0.0.2.beta
Applicant: Beijing Beast Technology Co.,Ltd
Room 2508 Building B, Tower 2 Wangjing SOHO, Chaoyang
District, Beijing, China
Manufacturer.....: Beijing Beast Technology Co.,Ltd
Room 2508 Building B, Tower 2 Wangjing SOHO, Chaoyang
District, Beijing, China
Frequency Range: GSM 850MHz:
Tx: 824.20 - 848.80MHz (at intervals of 200kHz);
Rx: 869.20 - 893.80MHz (at intervals of 200kHz)
GSM 1900MHz:
Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);
Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)
Modulation Type.....: GPRS Mode with GMSK Modulation
Multislot Class.....: GPRS: Multislot Class12;
Antenna Type.....: PIFA Antenna
Antenna Gain: 0.12 dBi
Emission Designators: GPRS850:248KGXW, GPRS1900:248KGXW

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula $F(n)=824.2+0.2*(n-128)$, $128 \leq n \leq 251$; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula $F(n)=1850.2+0.2*(n-512)$, $512 \leq n \leq 810$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The GSM of the EUT does not support voice mode, and only GPRS.

Note 4: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22 and Part 24 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-15 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-15 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-15 Edition)	Personal Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.1046	Conducted RF Output Power	PASS
2.	24.232(d)	Peak to average radio	PASS
2	2.1049, 22.917, 24.238,	99% Occupied Bandwidth	PASS
3	2.1055, 22.355, 24.235	Frequency Stability	PASS
4	2.1051, 2.1057, 22.917, 24.238,	Conducted Out of Band Emissions	PASS
5	2.1051, 2.1057, 22.917, 24.238	Band Edge	PASS
6	22.913, 24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
7	2.1053, 2.1057, 22.917, 24.238	Radiated Out of Band Emissions	PASS

NOTE: Measurement method according to TIA/EIA 603.D-2010.



1.3 Facilities and Accreditations

1.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10 2013 and CISPR Publication 22; the FCC registration number is 695796.

1.3.2 Test Environment Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

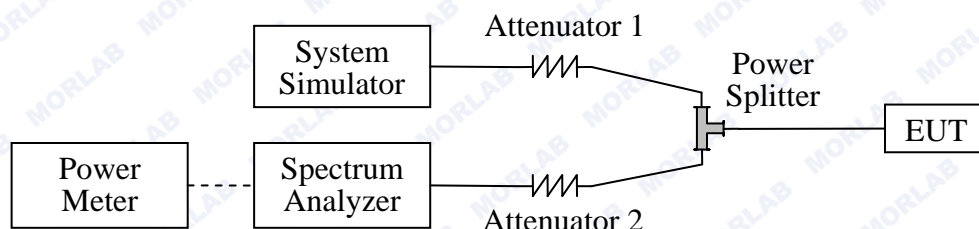
2.1 Conducted RF Output Power

2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2 Test Description

Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

The Power Meter was just used for the Conducted RF Output Power test of WCDMA Model.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2016.03.02	2017.03.01
Spectrum Analyzer	Agilent	E7405A	US44210471	2016.03.02	2017.03.01
Power Meter	Agilent	E4418B	GB43318055	2016.03.02	2017.03.01
Power Sensor	Agilent	8482A	MY41091706	2016.03.02	2017.03.01
Power Splitter	Weinschel	1506A	NW521	2016.03.02	2017.03.01
Attenuator 1	Resnet	20dB	(n.a.)	2016.03.02	2017.03.01
Attenuator 2	Resnet	3dB	(n.a.)	2016.03.02	2017.03.01



2.1.3 Test Results

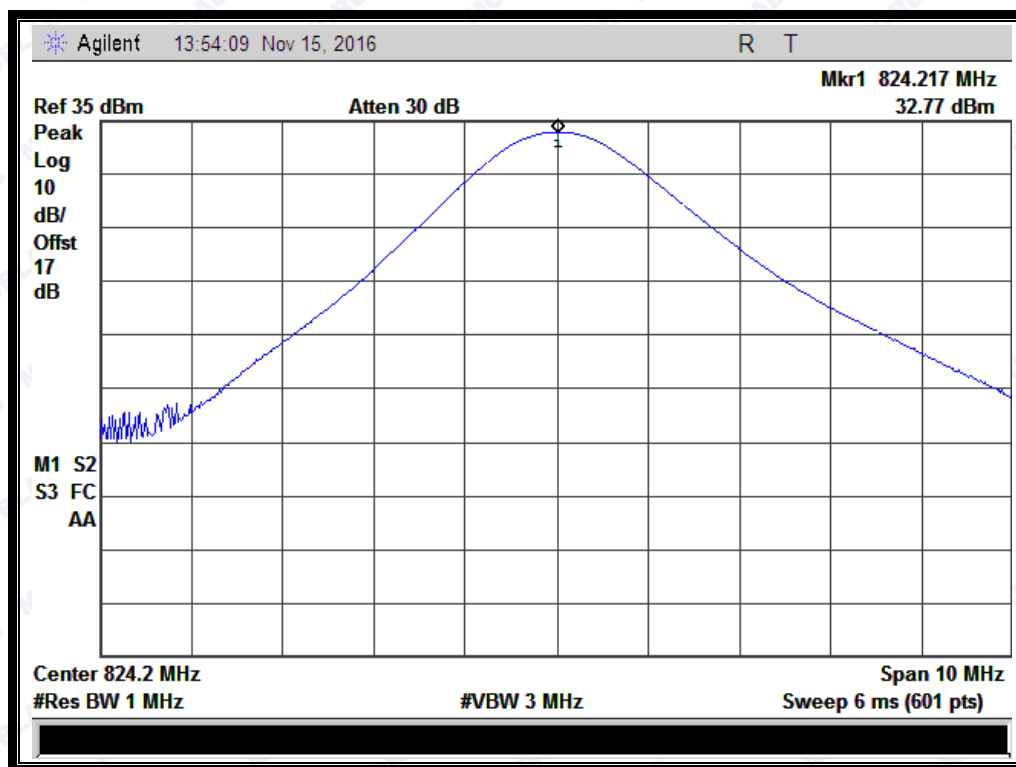
Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Limit dBm	Verdict
			dBm	Refer to Plot		
GPRS 850MHz	128	824.2	32.77	Plot C1 to C3 ^{Note 1}	35	PASS
	190	836.6	32.74			PASS
	251	848.8	32.72			PASS
GPRS 1900MHz	512	1850.2	29.58	Plot D1 to D3 ^{Note 1}	32	PASS
	661	1880.0	29.89			PASS
	810	1909.8	30.14			PASS

Note 1: For the GPRS model, all the slots were tested and just the worst data was record in this report.

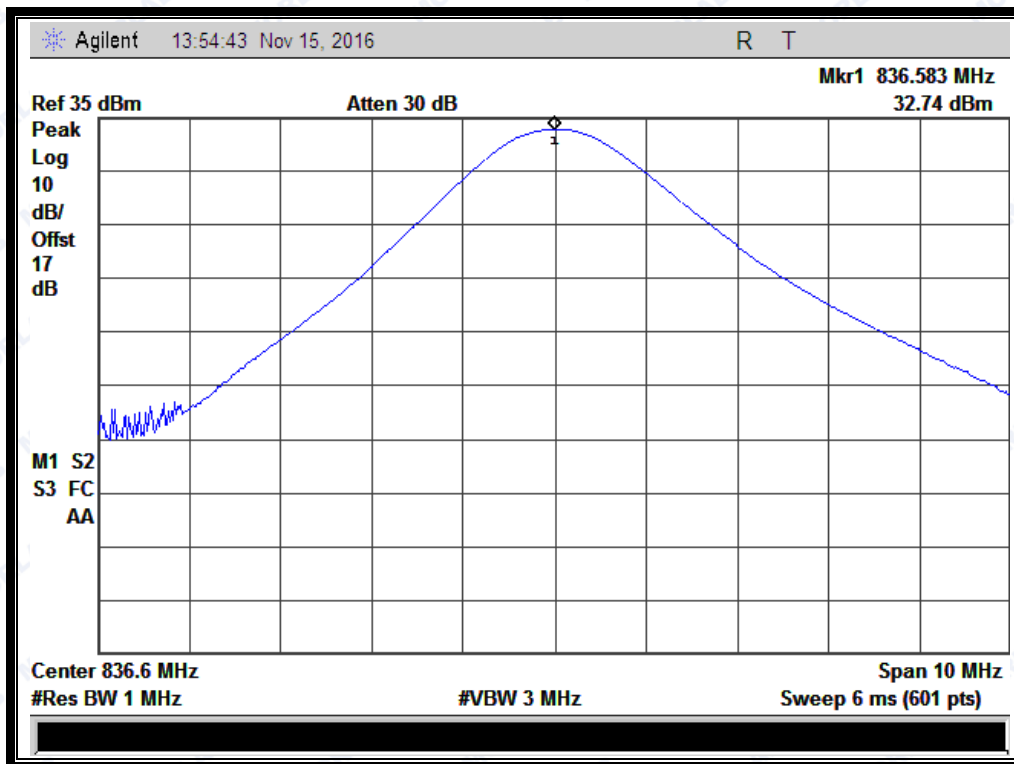
Test Plots:



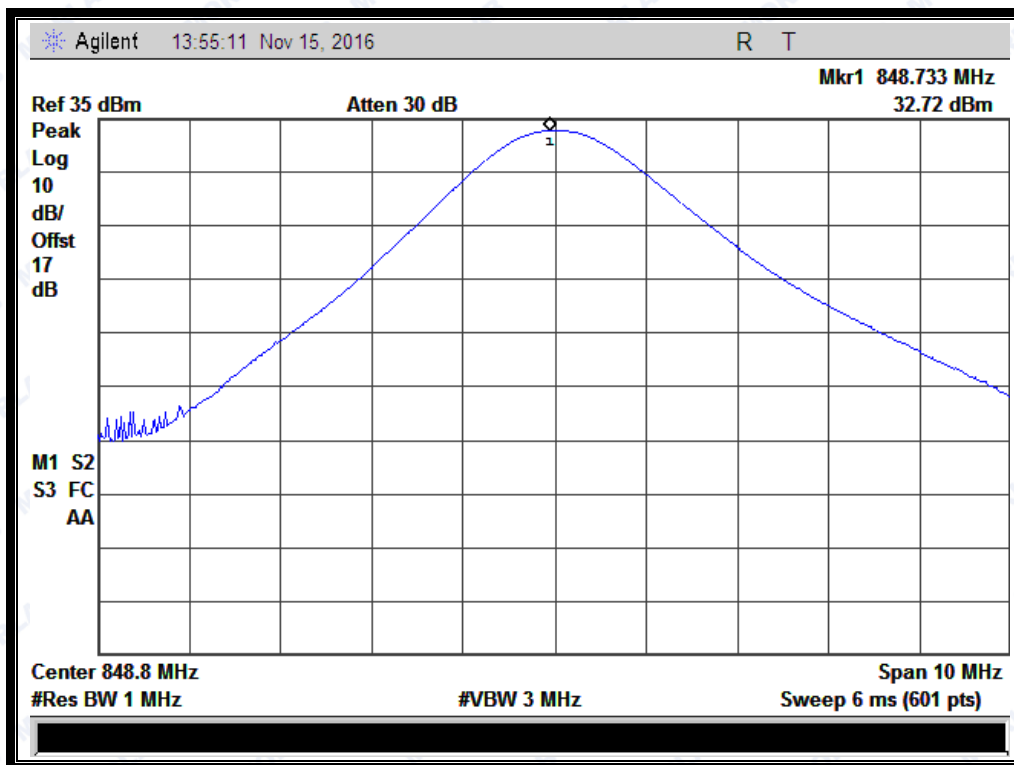
(Plot C1: GPRS 850MHz Channel = 128)



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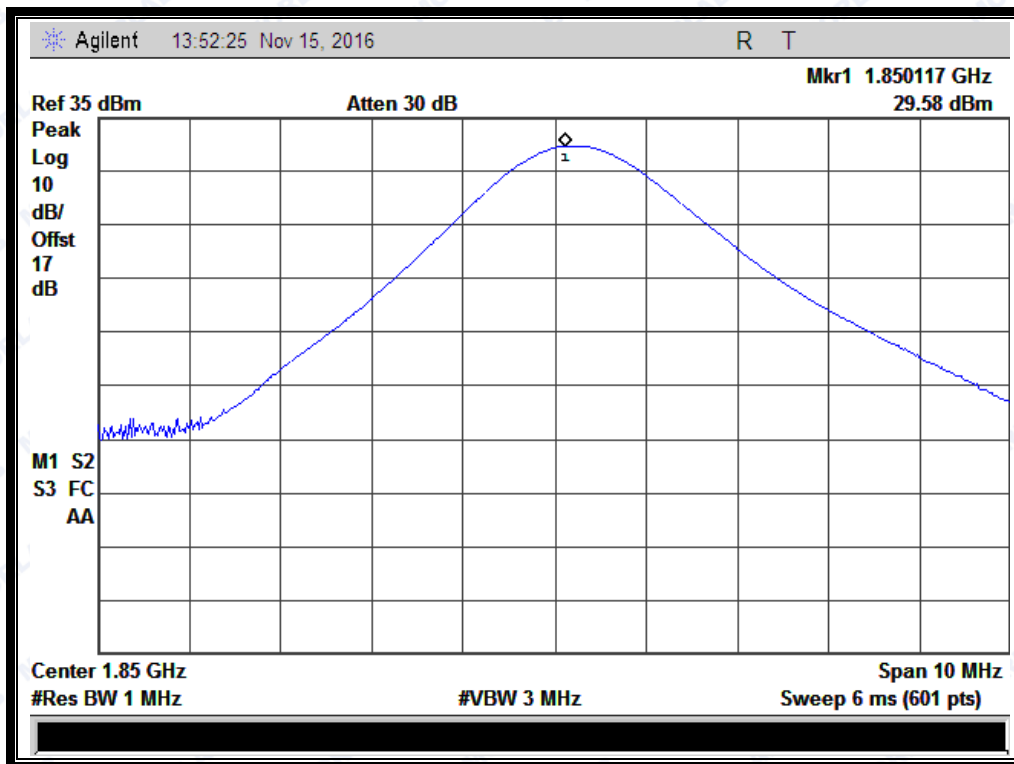
(Plot C2: GPRS 850MHz Channel = 190)



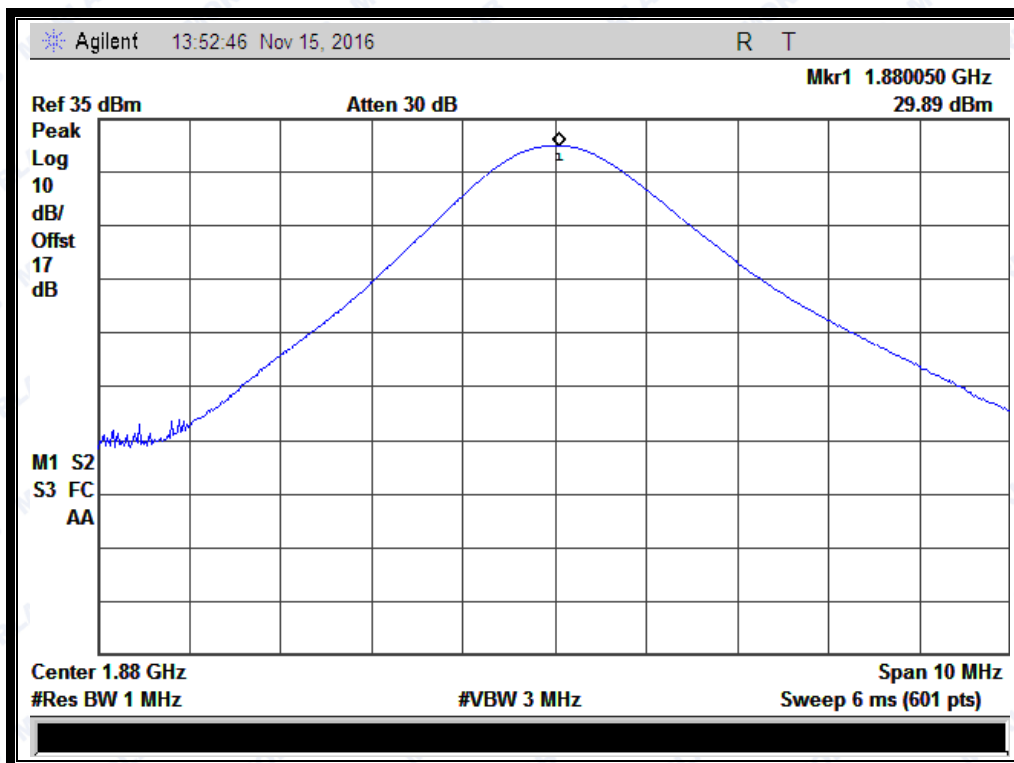
(Plot C3: GPRS 850MHz Channel = 251)



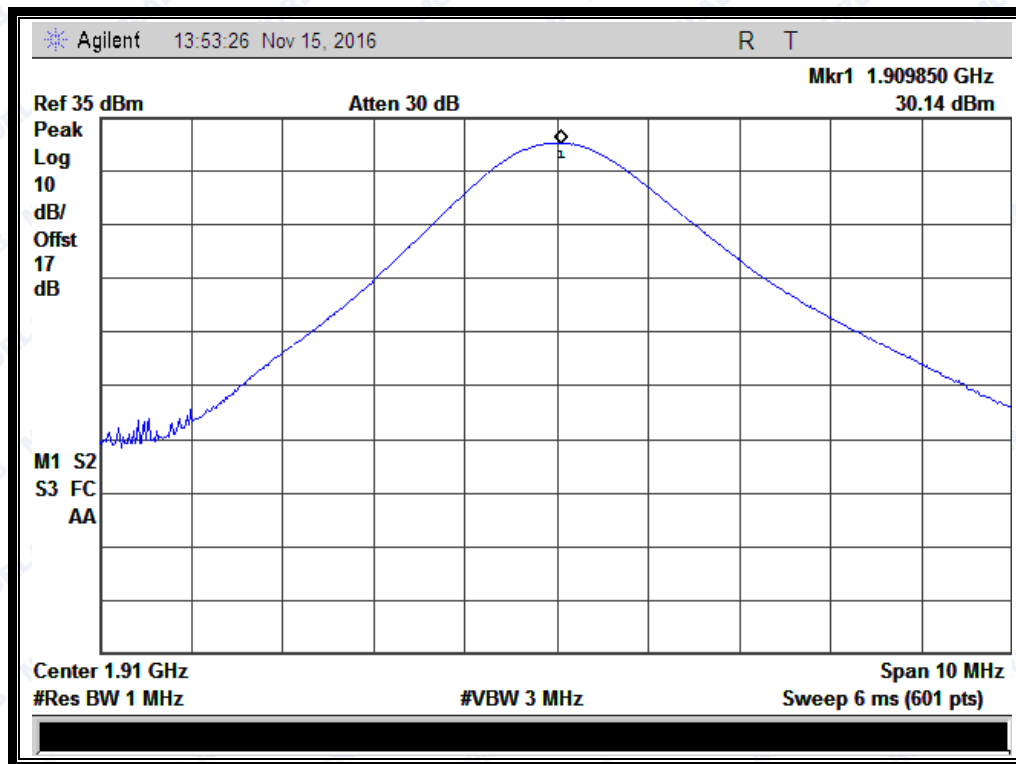
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(Plot D1: GPRS 1900MHz Channel = 512)



(Plot D2: GPRS 1900MHz Channel = 661)



(Plot D3: GPRS 1900Hz Channel = 810)

2.2 Peak to Average Ratio

2.2.1 Definition

According to FCC section 2.1049 and FCC 24.232(d) the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2 Test Description

See section 2.1.2 of this report.

2.2.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

A .For GSM/EGPRS operating mode:

- Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
- Set EUT in maximum output power, and triggered the bust signal.
- Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average radio.



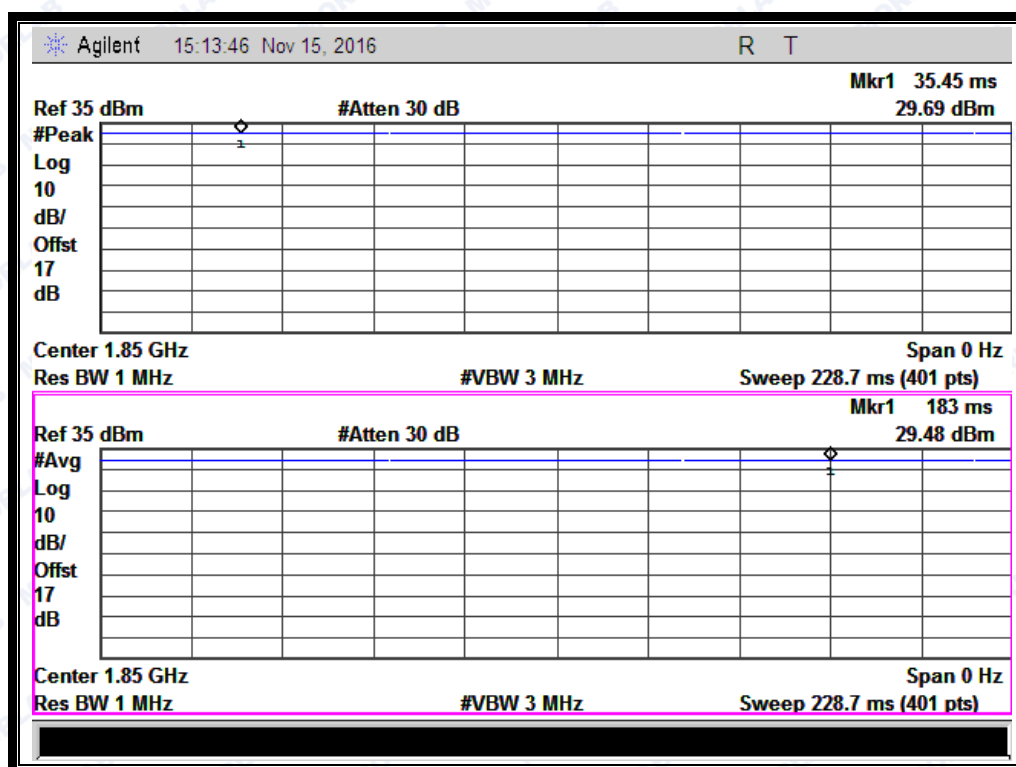
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B. For UMTS operating mode:

- Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

Test Verdict:

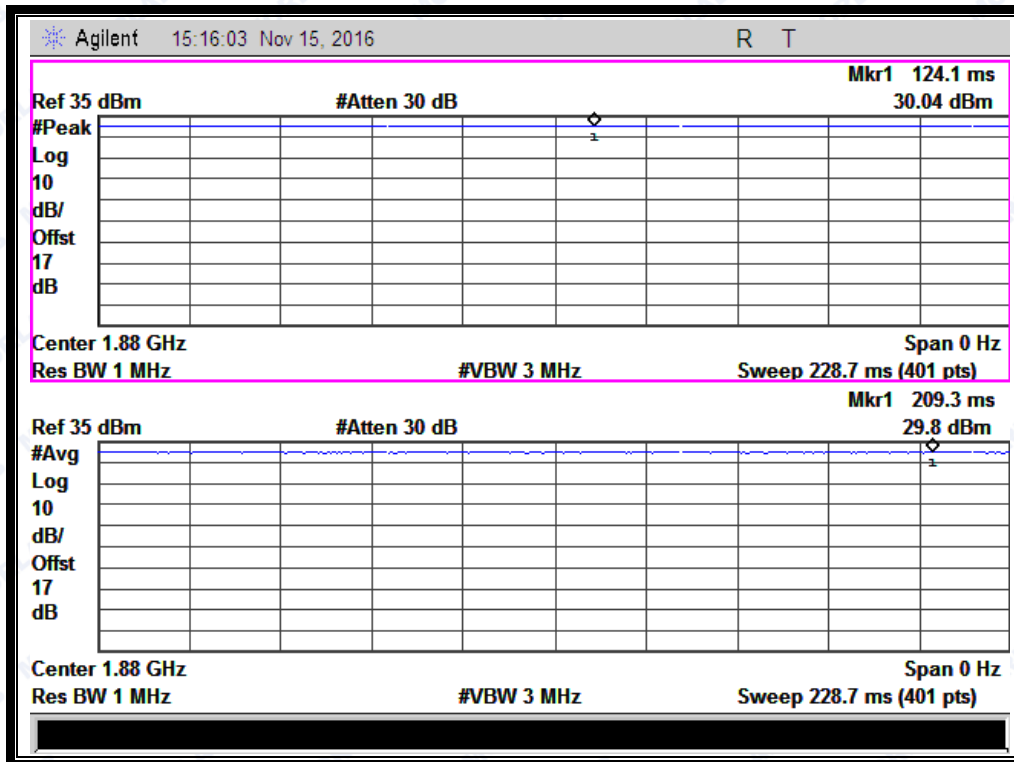
Band	Channel	Frequency (MHz)	Peak to Average ratio		Limit dB	Verdict
			dB	Refer to Plot		
GPRS 1900MHz	512	1850.2	0.21	Plot B1 to B3	13	PASS
	661	1880.0	0.24			PASS
	810	1909.8	0.26			PASS



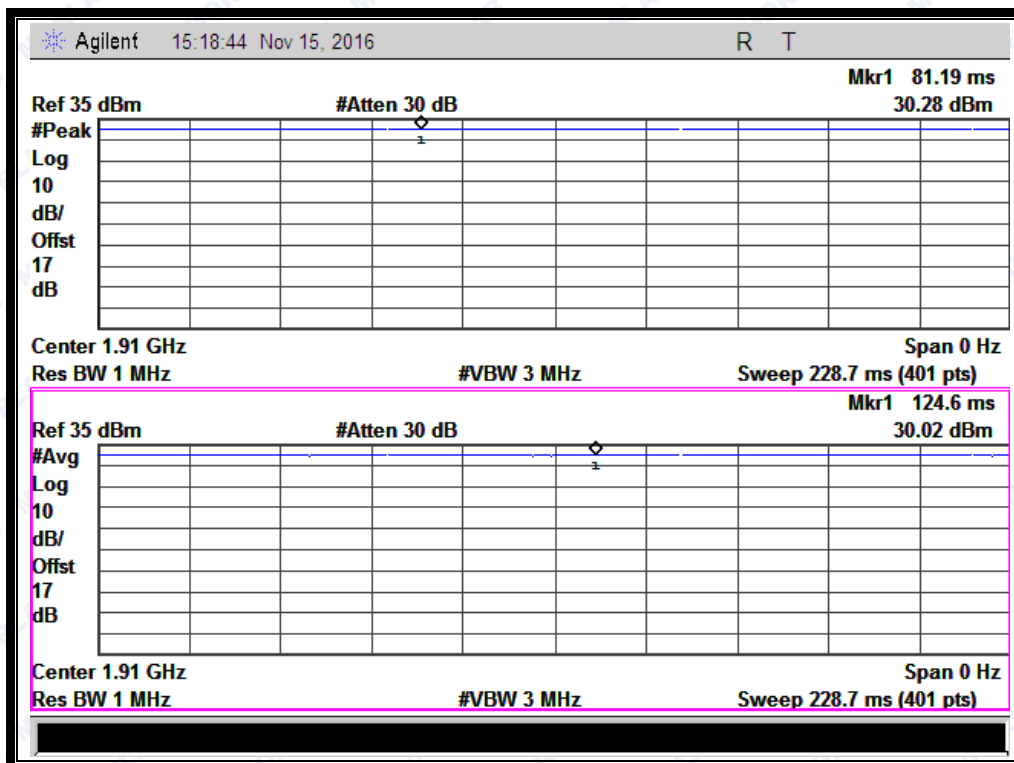
(Plot B1: GPRS 1900 MHz Channel = 512)



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(Plot B2: GPRS 1900 MHz Channel = 661)



(Plot B3: GPRS 1900MHz Channel = 810)



2.3 99% Occupied Bandwidth

2.3.1 Definition

According to FCC section 2.1049 and FCC § 22.917 & 24.238, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

2.3.2 Test Description

See section 2.1.2 of this report.

2.3.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

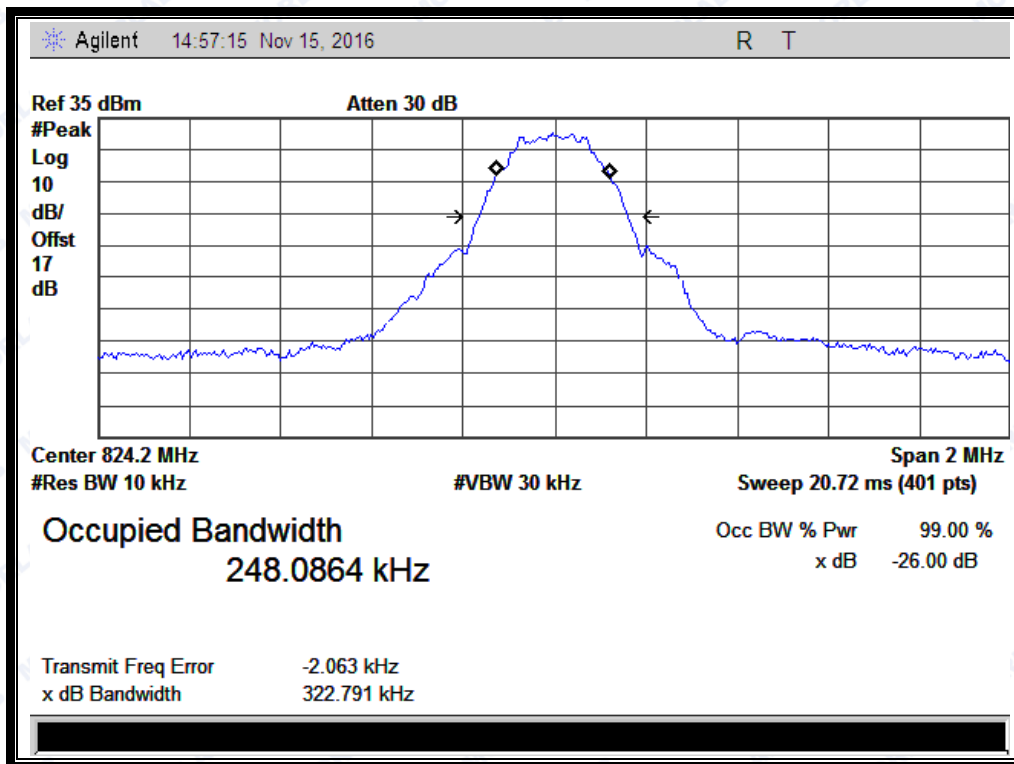
Test Verdict:

Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
GPRS 850MHz	128	824.2	322.791 KHz	248.0864 KHz	Plot C1 to C3
	190	836.6	323.808 KHz	247.2845 KHz	
	251	848.8	317.448 KHz	247.5576 KHz	
GPRS 1900MHz	512	1850.2	317.052 KHz	248.4832 KHz	Plot D1 to D3
	661	1880.0	323.910 KHz	247.4736 KHz	
	810	1909.8	317.492 KHz	244.9629 KHz	

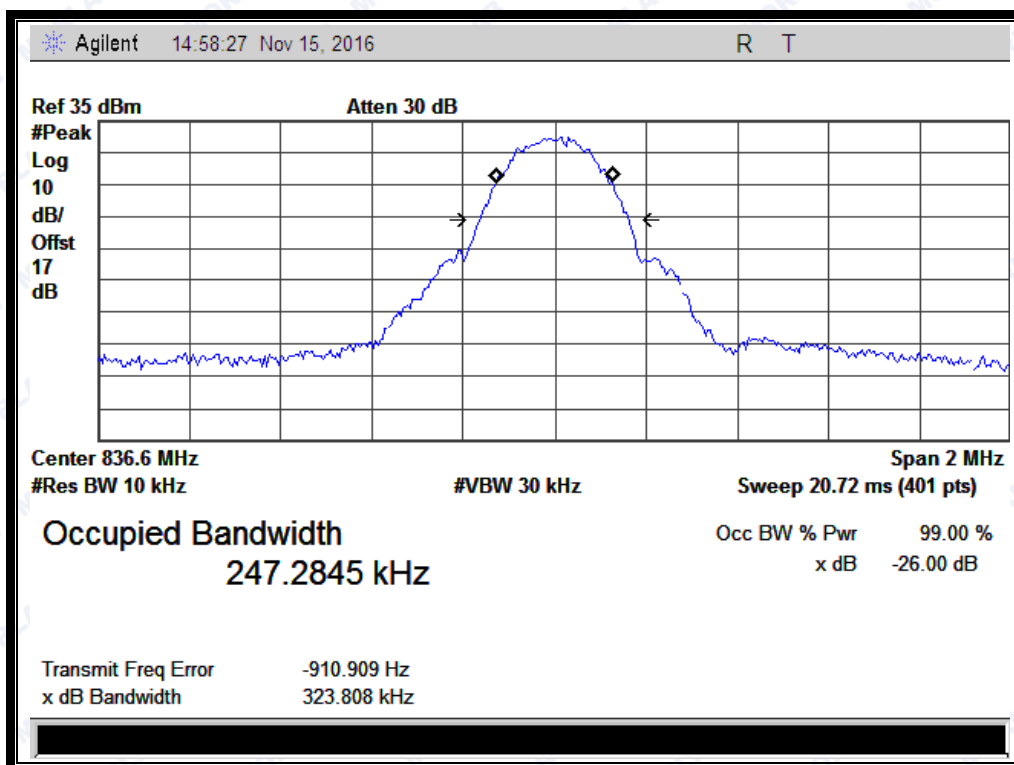
Test Plots:



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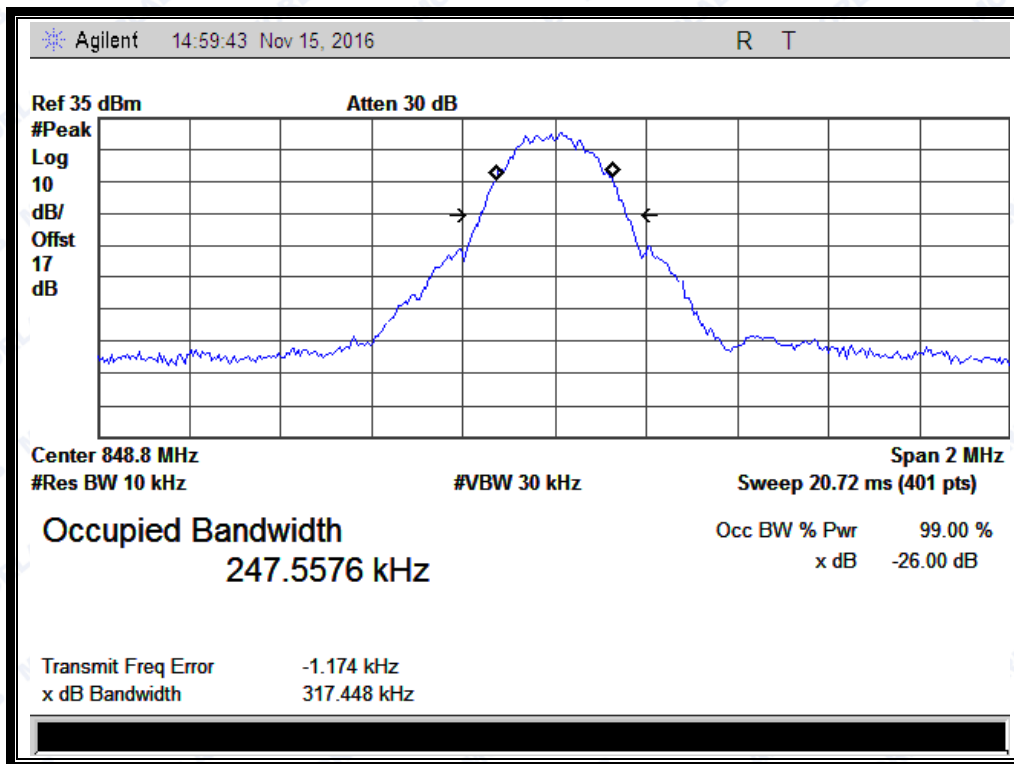
(Plot C1: GPRS 850MHz Channel = 128)



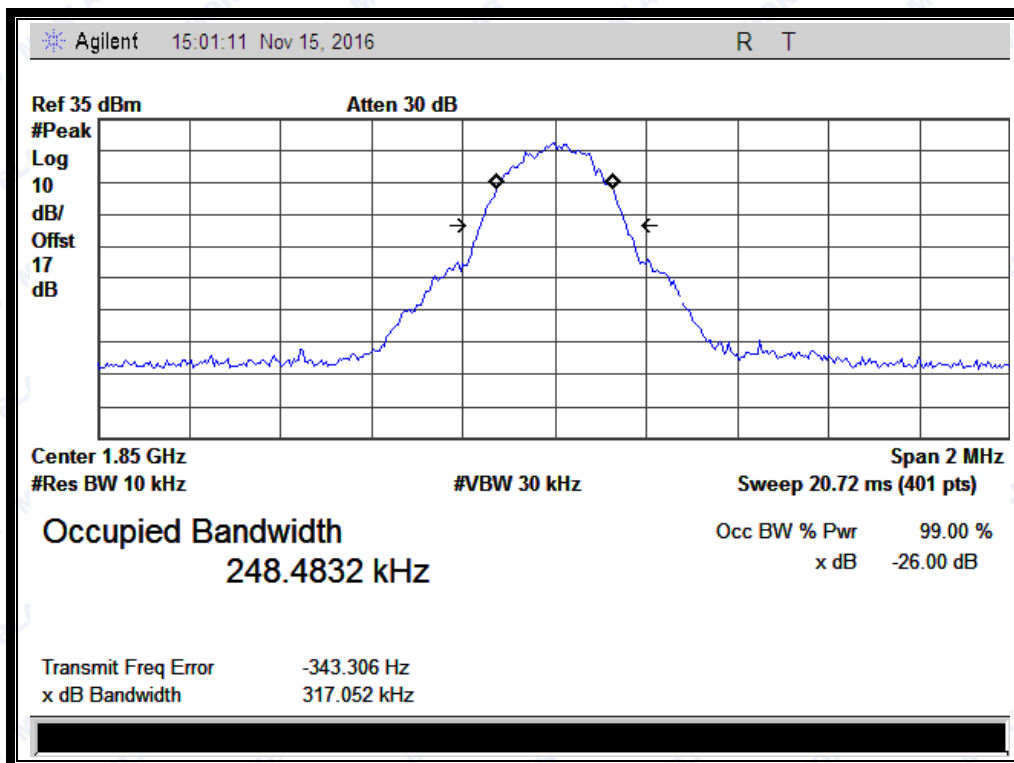
(Plot C2: GPRS 850MHz Channel = 190)



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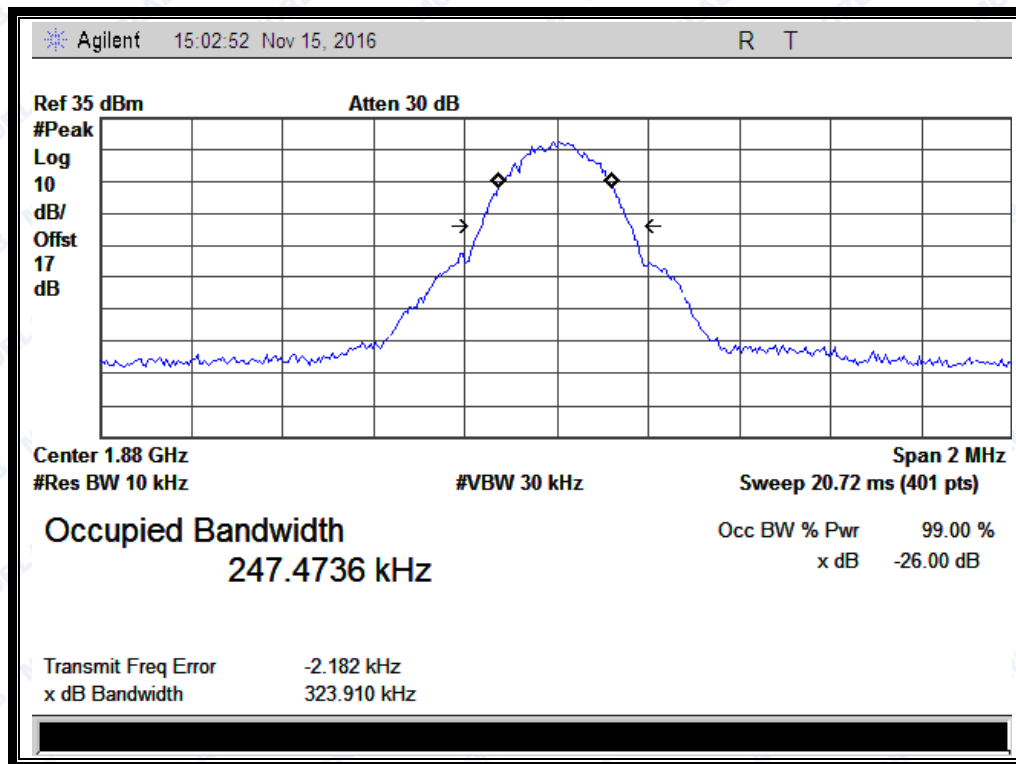
(Plot C3: GPRS 850MHz Channel = 251)



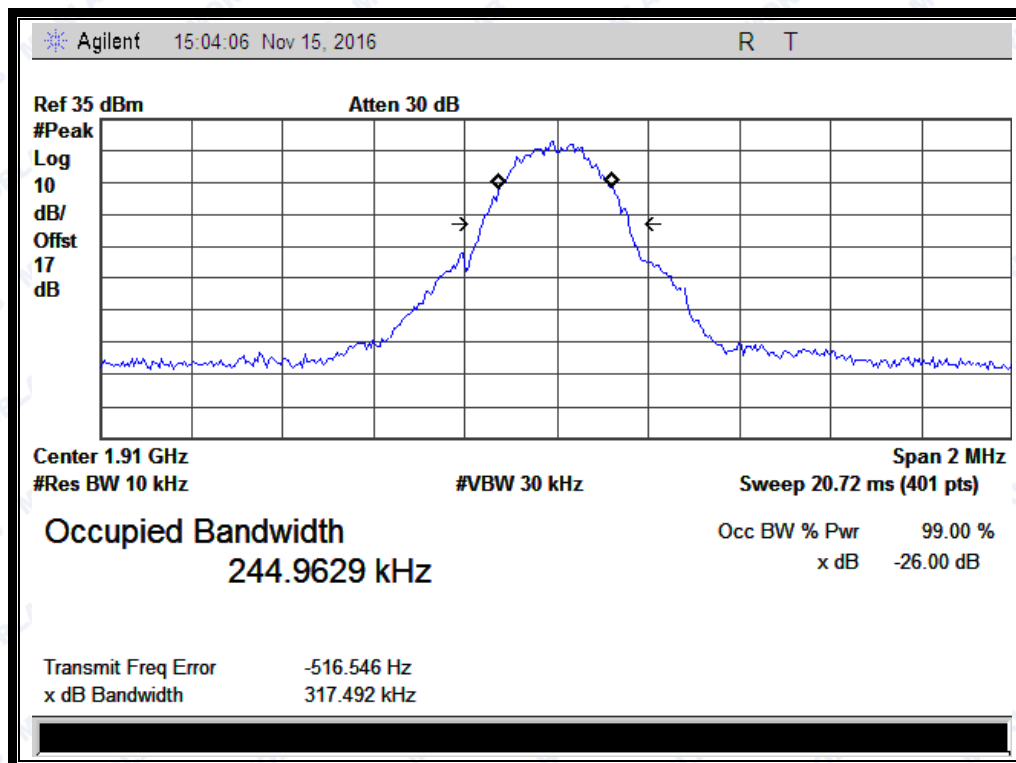
(Plot D1: GPRS1900MHz Channel = 512)



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(Plot D2: GPRS1900MHz Channel = 661)



(Plot D3: GPRS 1900MHz Channel = 810)

2.4 Frequency Stability

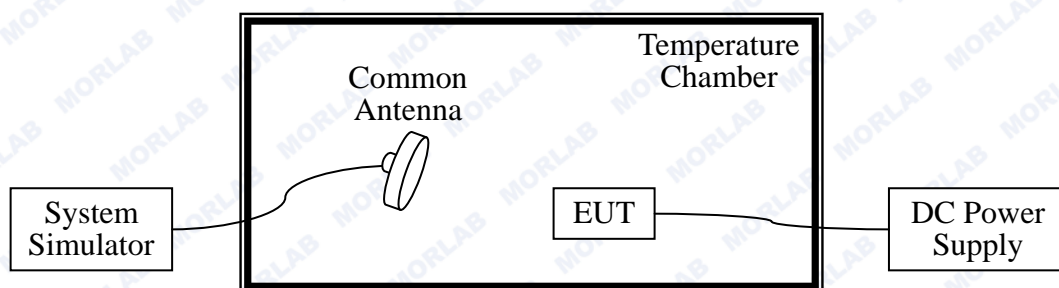
2.4.1 Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
- For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2 Test Description

Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2016.03.02	2017.03.01
DC Power Supply	Good Will	GPS -3030DD	EF920938	2016.03.02	2017.03.01
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2016.03.02	2017.03.01



2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.45VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency deviation limit of 850MHz band is ± 2.5 ppm, and 1900MHz is ± 1 ppm.

1. GPRS 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.80	-20	5.8	±2060.5	8.53	±2091.5	-12.19	±2122	PASS
	-10	-16.83		7.41		9.65		
	0	-12.32		7.49		-19.49		
	+10	1.83		11.61		21.24		
	+20	-7.66		4.63		22.65		
	+30	5.76		10.95		-13.48		
	+40	23.73		-1.37		21.24		
	+50	-16.33		0.76		15.85		
	+60	-6.64		10.83		-12.12		
4.35	+25	-16.83		12.4		9.65		
3.40	+25	-12.32		14.63		-13.56		

2. GPRS 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.80	-20	-16.55	±1850.2	12.46	±1880.0	-9.36	±1909.8	PASS
	-10	16.97		22.25		4.31		
	0	-12.54		-14.09		29.03		
	+10	-18.18		-12.72		27.44		
	+20	-28.54		36.45		-7.77		
	+30	8.62		-7.07		30.03		
	+40	-18.98		-12.68		23.64		
	+50	19.14		15.65		-3.95		
	+60	12.79		22.79		17.65		
4.35	+25	31		-23.13		4.31		
3.40	+25	-22.3		12.26		29.05		



2.5 Conducted Out of Band Emissions

2.5.1 Requirement

According to FCC section 22.917(a) and FCC section 24.238(a) 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. This calculated to be -13dBm.

2.5.2 Test Description

See section 2.1.2 of this report.

2.5.3 Test Result

The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit. And according to KDB 971168D01 Section 8, the amplitudes of unwanted emissions that are attenuated more than 20 dB below the applicable limit are not required to be reported. So the measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency and was reported. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2016.03.02	2017.03.01
Spectrum Analyzer	Agilent	E7405A	US44210471	2016.03.02	2017.03.01
Power Meter	Agilent	E4418B	GB43318055	2016.03.02	2017.03.01
Power Sensor	Agilent	8482A	MY41091706	2016.03.02	2017.03.01
Power Splitter	Weinschel	1506A	NW521	2016.03.02	2017.03.01
Attenuator 1	Resnet	20dB	(n.a.)	2016.03.02	2017.03.01
Attenuator 2	Resnet	3dB	(n.a.)	2016.03.02	2017.03.01

2. Test Verdict:

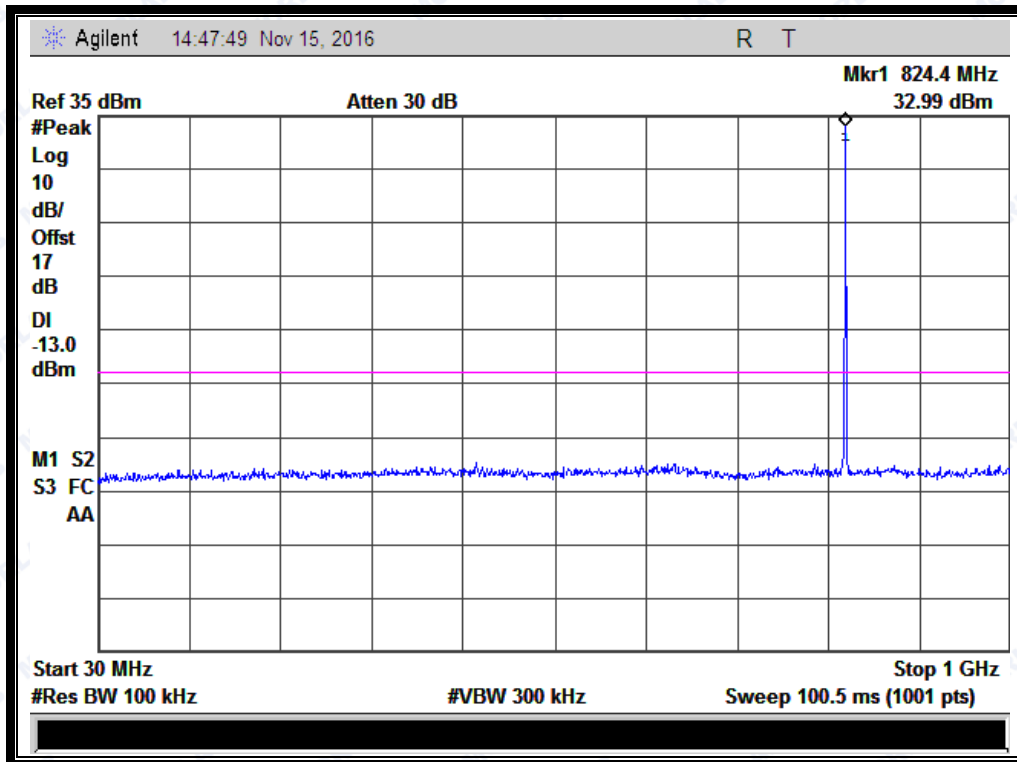
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GPRS 850MHz	128	824.2	-18.94	Plot E1 to E1.1	-13	PASS
	190	836.6	-19.02	Plot E2 to E2.1		PASS
	251	848.8	-18.97	Plot E3 to E3.1		PASS
GPRS 1900MHz	512	1850.2	-18.74	Plot F1 to F1.1	-13	PASS
	661	1880.0	-18.56	Plot F2 to F2.1		PASS
	810	1909.8	-18.00	Plot F3 to F3.1		PASS

Test Plots for the Whole Measurement Frequency Range:

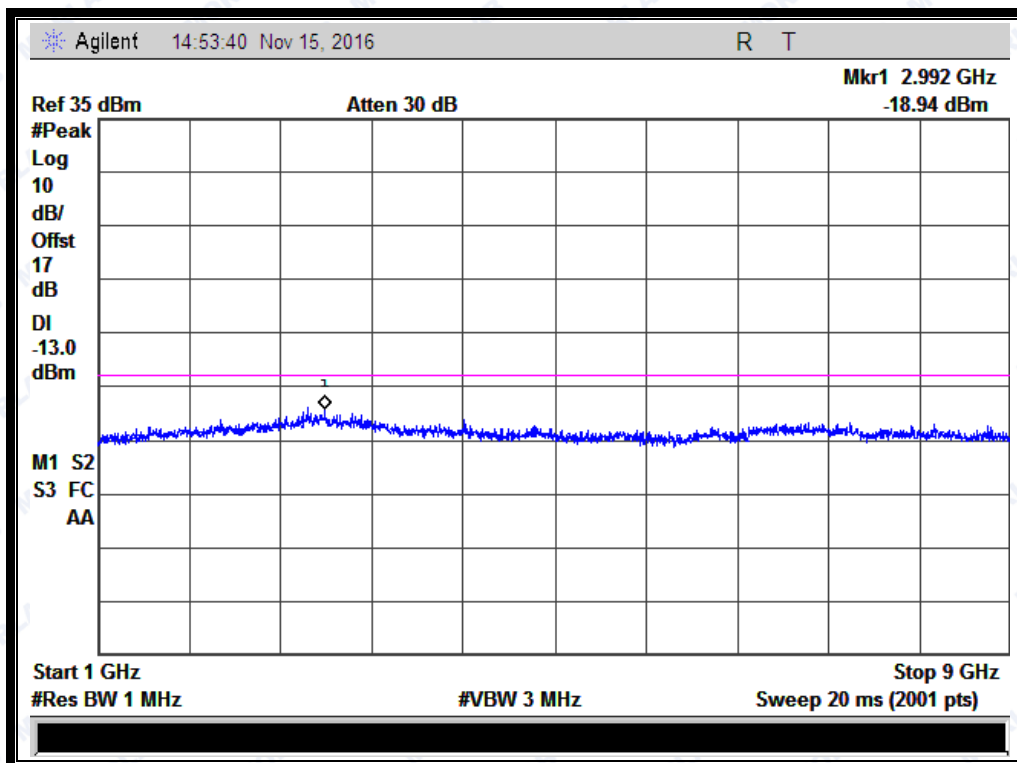
Note: the power of the EUT transmitting frequency should be ignored.



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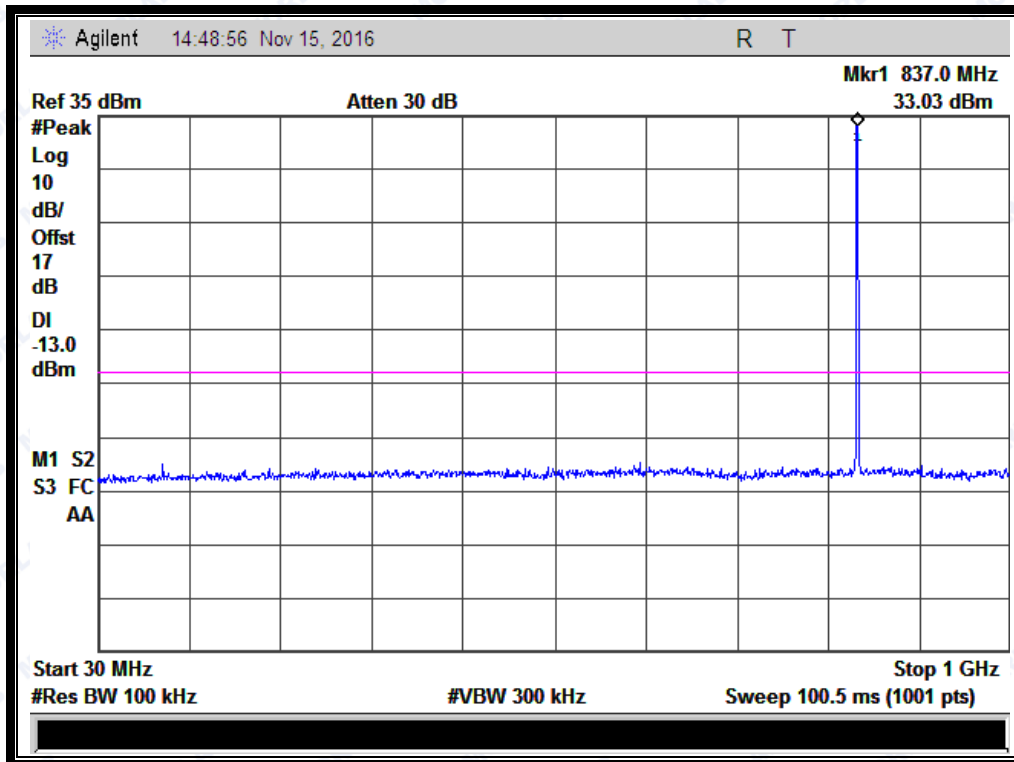
(Plot E1: GPRS 850MHz Channel = 128, 30MHz to 1GHz)



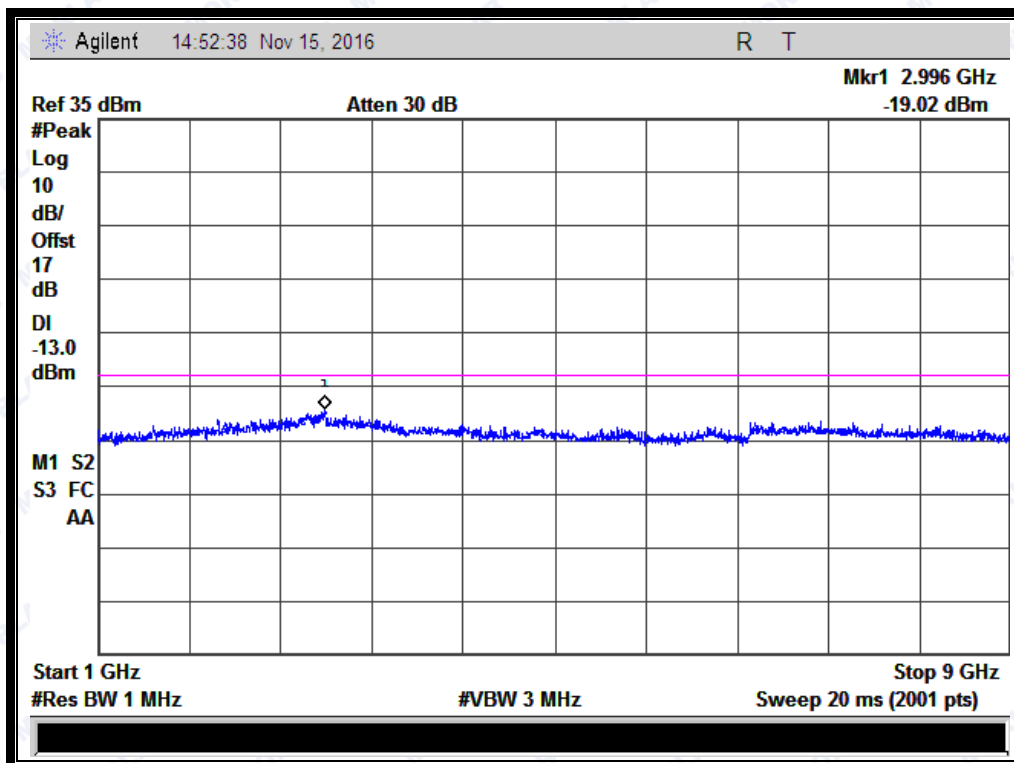
(Plot E1.1: GPRS 850MHz Channel = 128, 1GHz to 9GHz)



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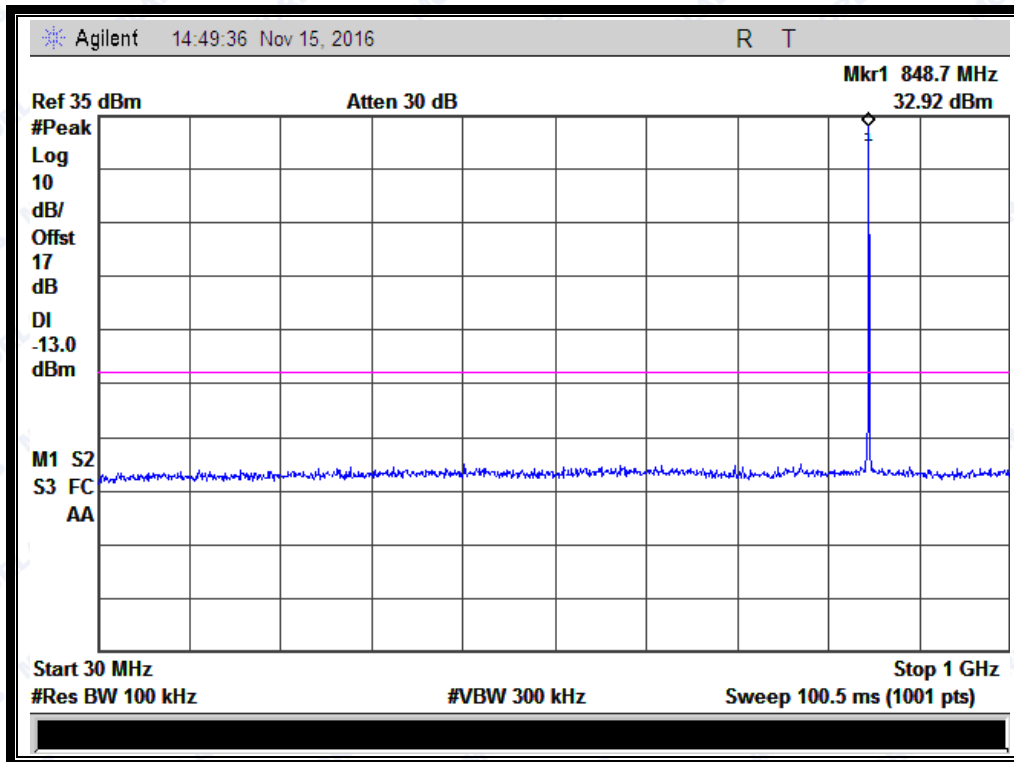
(Plot E2: GPRS 850MHz Channel = 190, 30MHz to 1GHz)



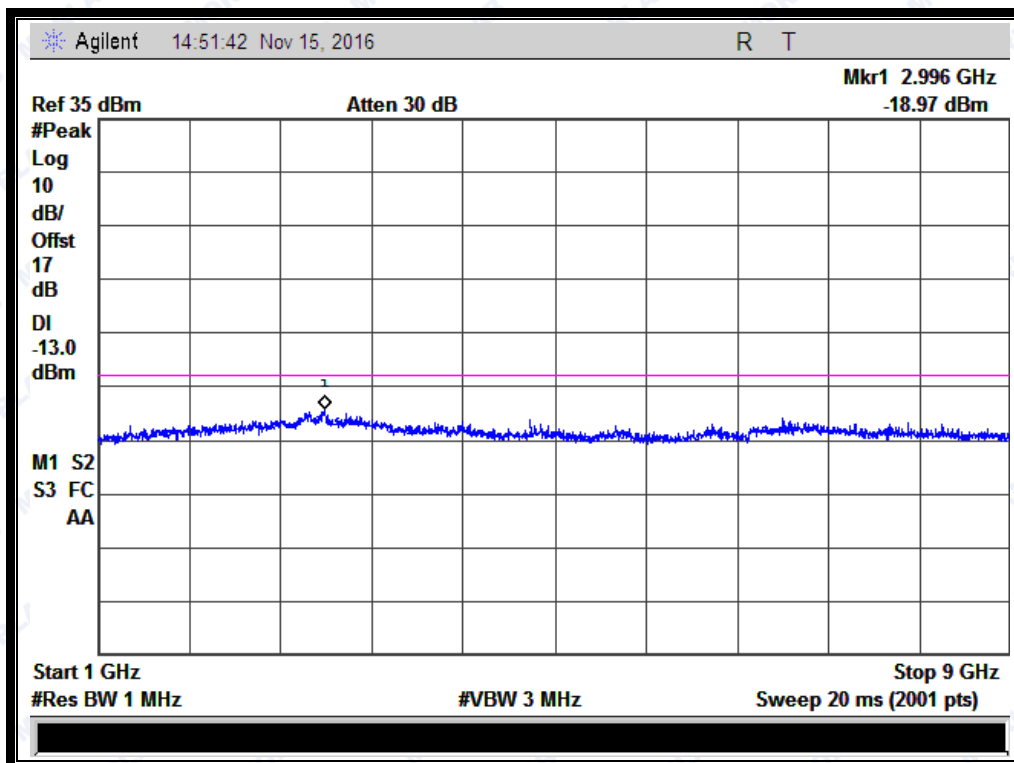
(Plot E2.1: GPRS 850MHz Channel = 190, 1GHz to 9GHz)



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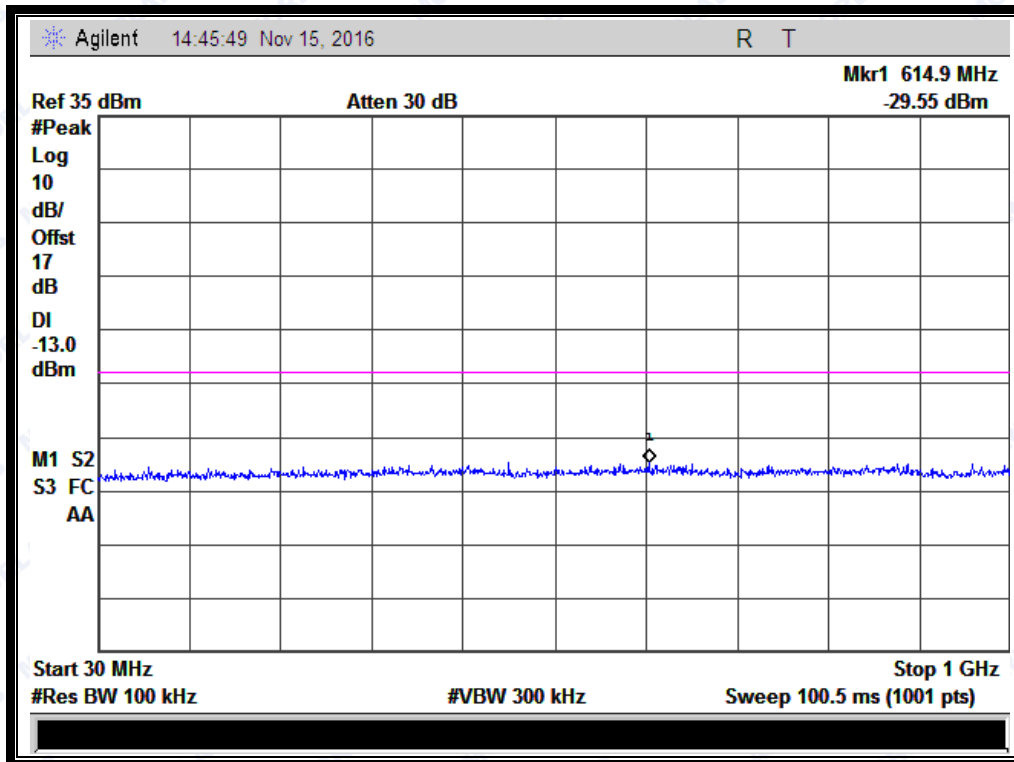
(Plot E3: GPRS 850MHz Channel = 251, 30MHz to 1GHz)



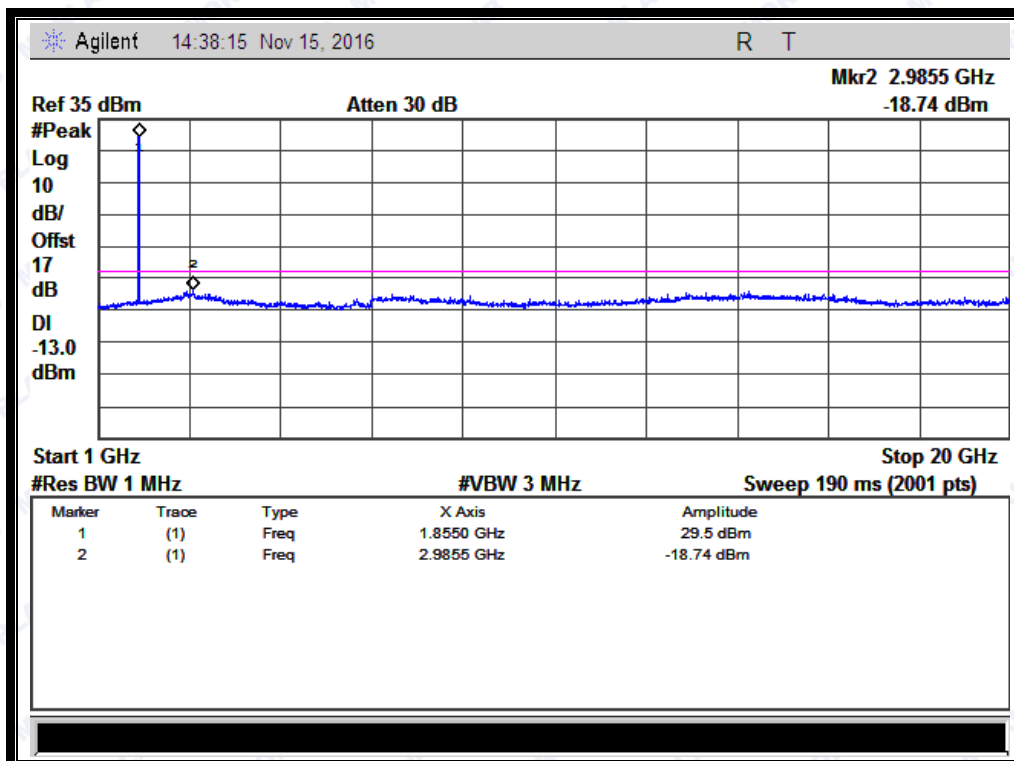
(Plot E3.1: GPRS 850MHz Channel = 251, 1GHz to 9GHz)



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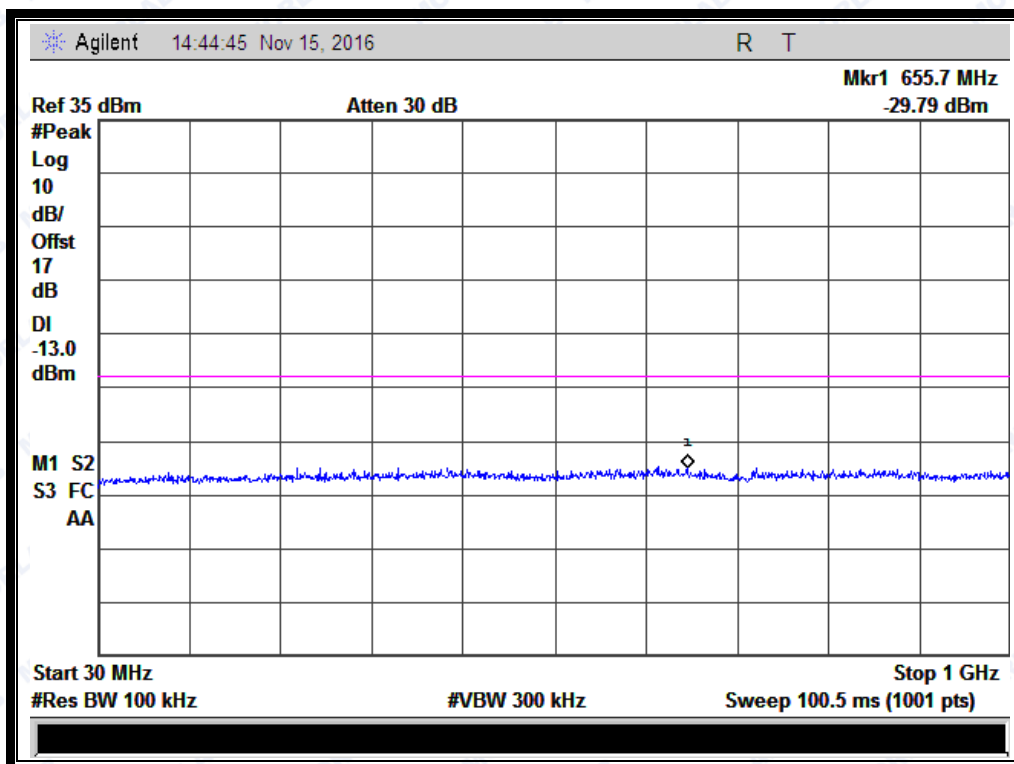
(Plot F1: GPRS 1900MHz Channel = 512, 30MHz to 1GHz)



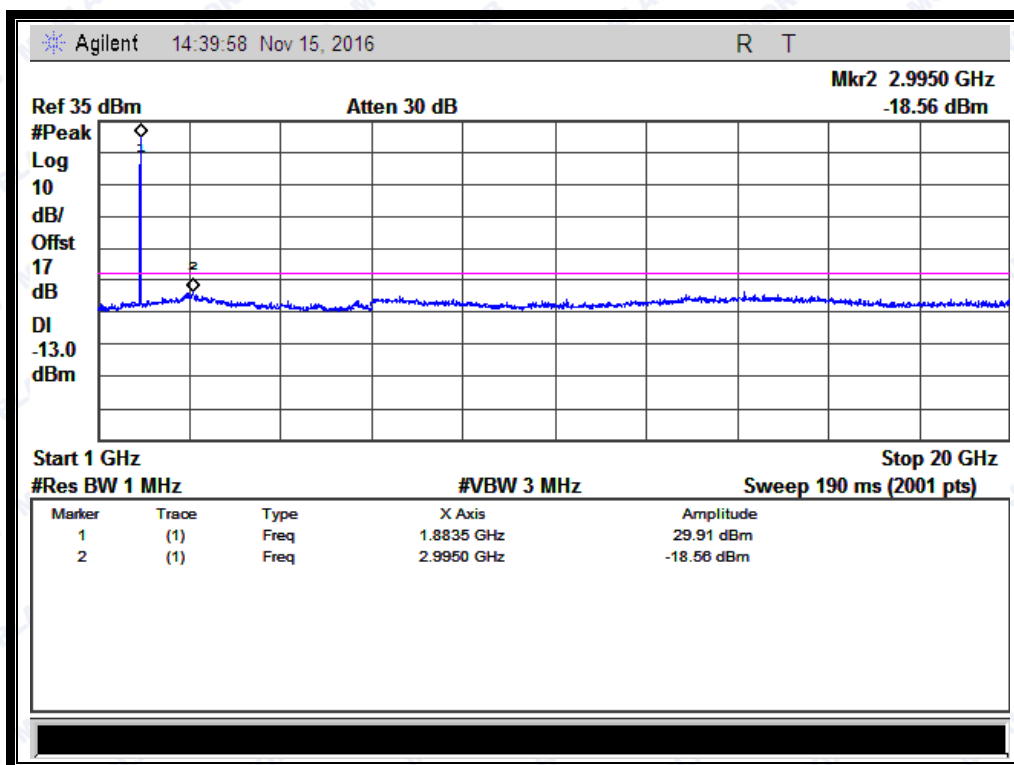
(Plot F1.1: GPRS 1900MHz Channel = 512, 1GHz to 20GHz)



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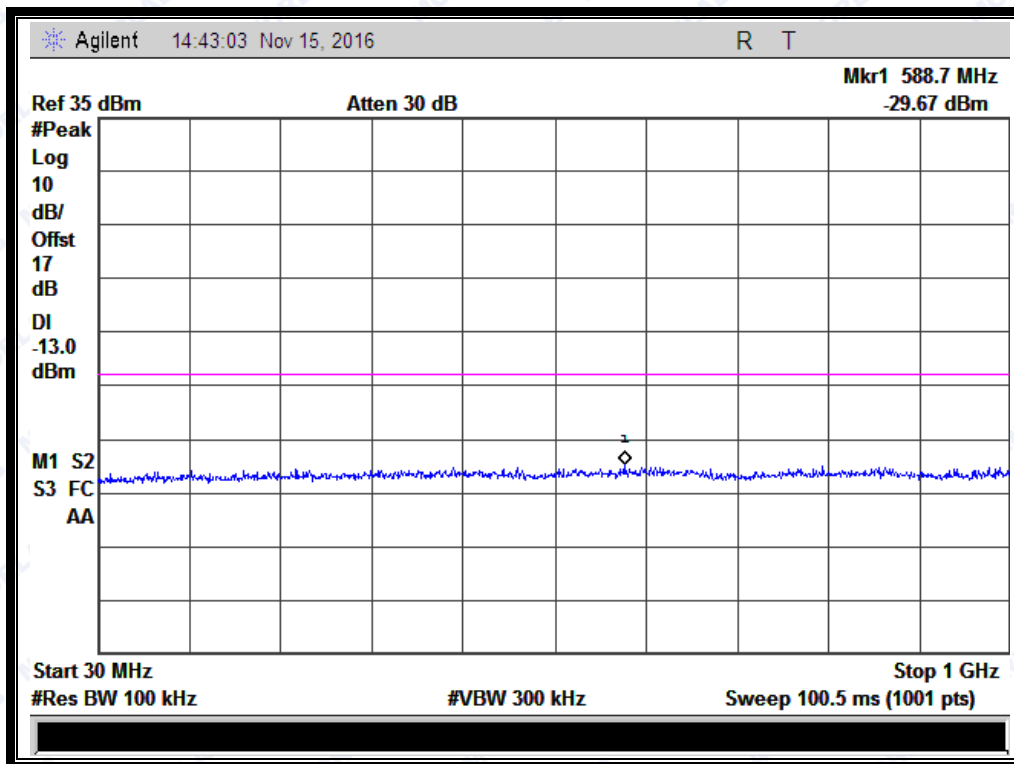
(Plot F2: GPRS 1900MHz Channel = 661, 30MHz to 1GHz)



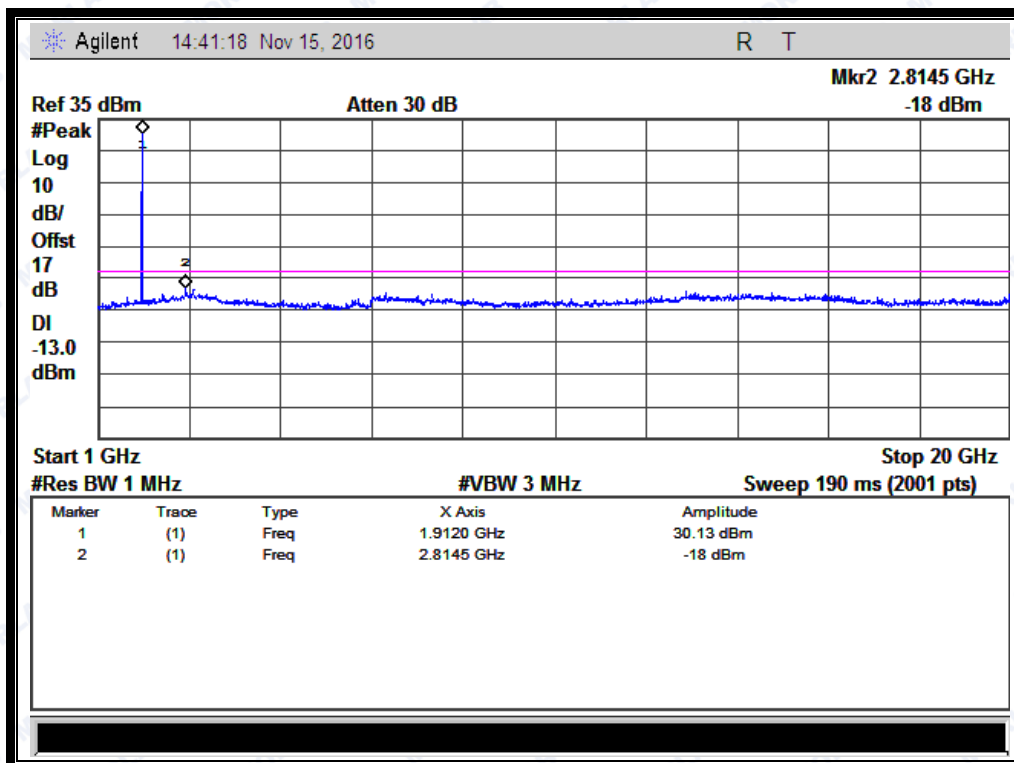
(Plot F2.1: GPRS 1900MHz Channel = 661, 1GHz to 20GHz)



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(Plot F3: GPRS 1900MHz Channel = 810, 30MHz to 1GHz)



(Plot F3.1: GPRS 1900MHz Channel = 810, 1GHz to 20GHz)



2.6 Band Edge

2.6.1 Requirement

According to FCC section 22.917(b) and FCC section 24.238(b) in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

2.6.2 Test Description

See section 2.1.2 of this report.

2.6.3 Test Result

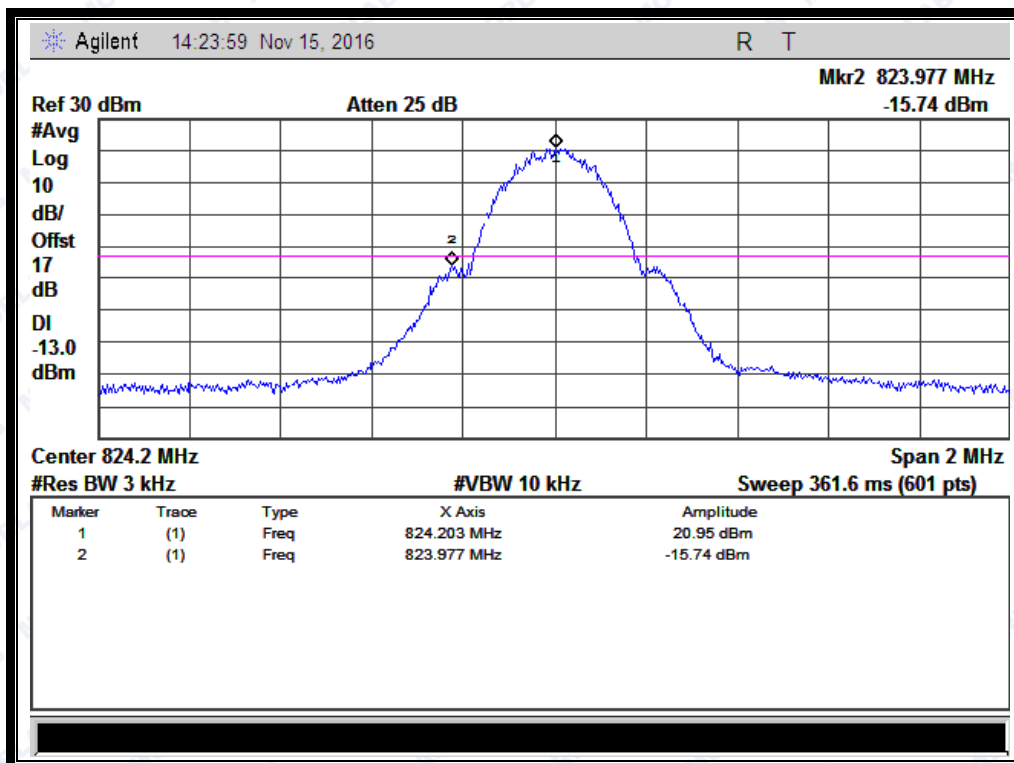
The lowest and highest channels are tested to verify the band edge emissions.

Test Verdict:

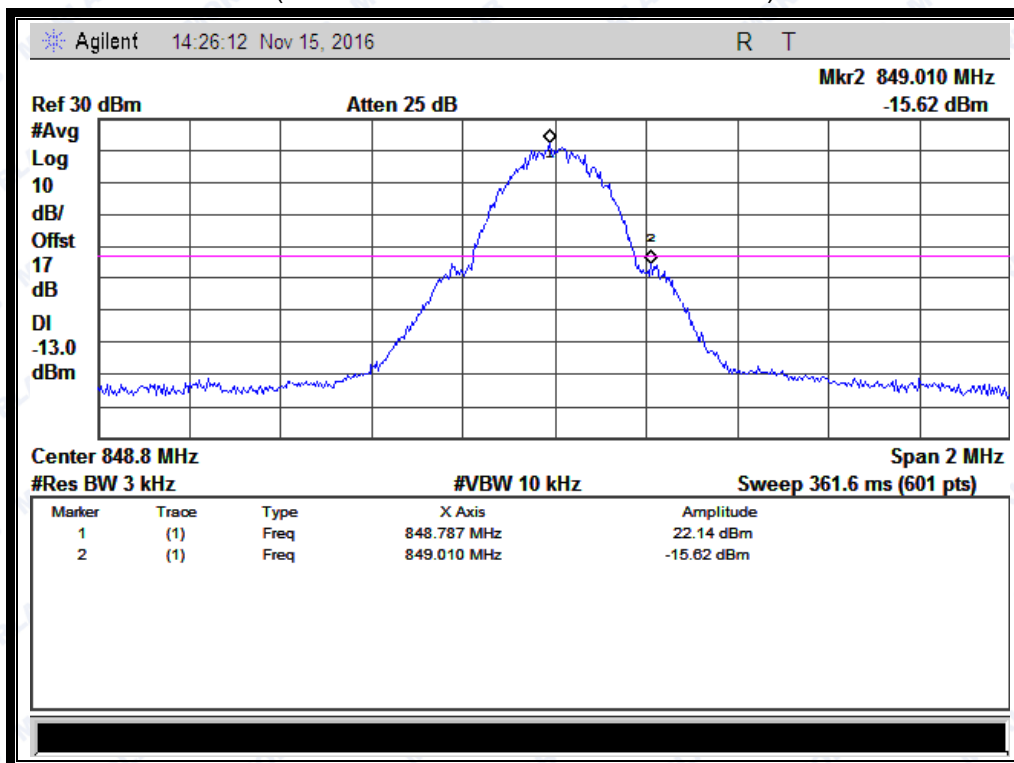
Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GPRS 850MHz	128	824.2	-15.74	Plat C1	-13	PASS
	251	848.8	-15.62	Plot C2		PASS
GPRS 1900MHz	512	1850.2	-20.40	Plat D1	-13	PASS
	810	1909.8	-20.16	Plot D2		PASS



Test Plots:



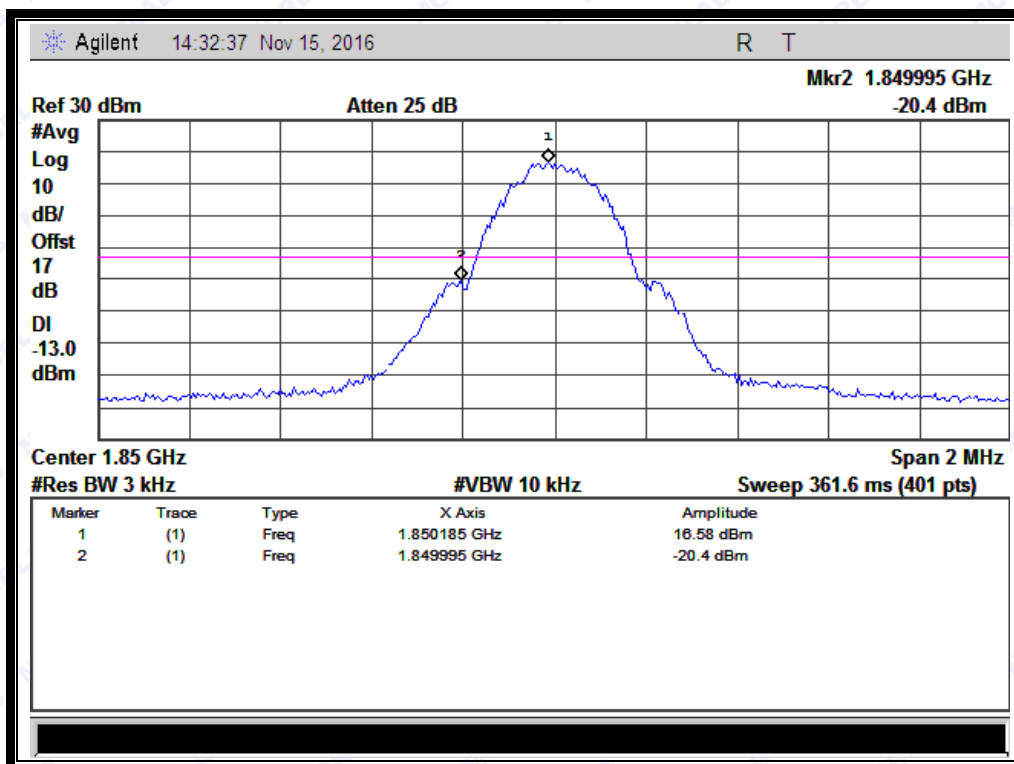
(Plot C1: GPRS 850 Channel = 128)



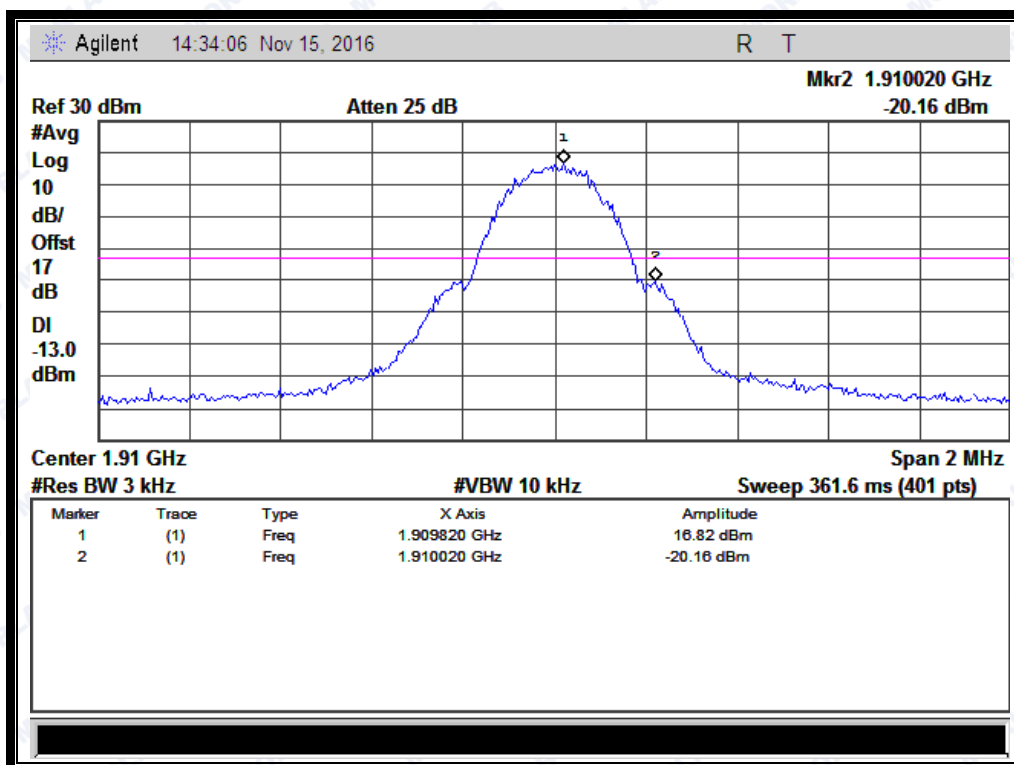
(Plot C2: GPRS 850 Channel = 251)



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(Plot D1: GPRS 1900 Channel = 512)



(Plot D2: GPRS 1900 Channel = 810)

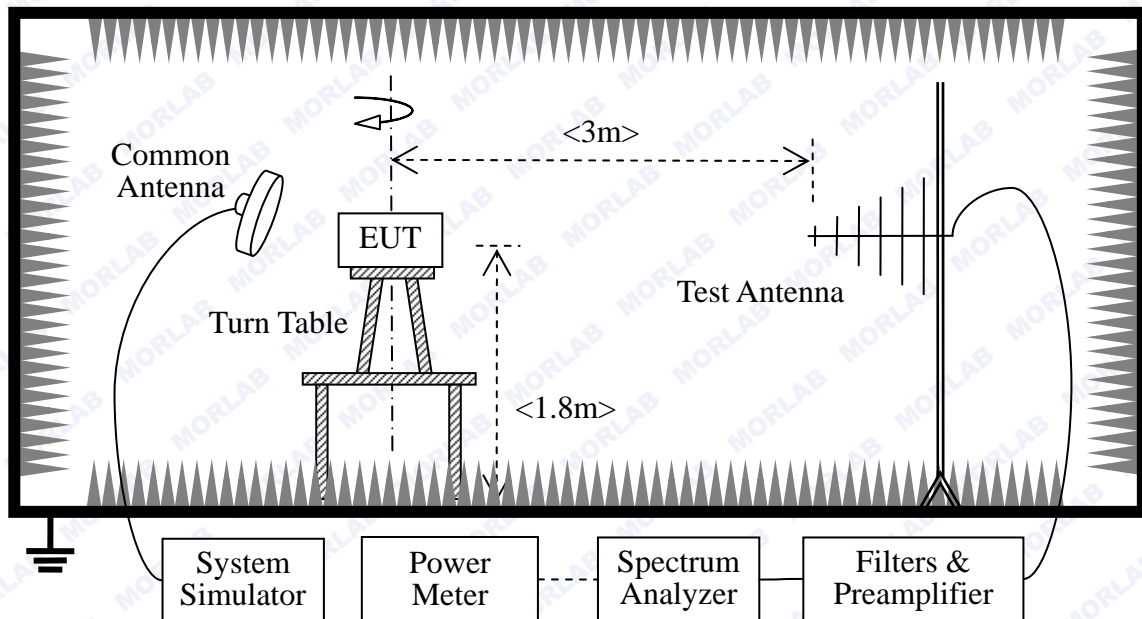
2.7 Transmitter Radiated Power (EIRP/ERP)

2.7.1 Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.

2.7.2 Test Description

Test Setup:



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.

- GSM Maximum RF output power: GSM 850 33.03dBm, GSM 1900 29.35dBm. WCDMA 850 24.77 dBm, WCDMA 1900 24.44 dBm .Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB

- Minimum RF power: GSM 850 2.6dBm, GSM 1900 1.1dBm, WCDMA 850 0.50dBm, WCDMA 1900 0.61dBm.



The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2016.03.02	2017.03.01
Spectrum Analyzer	Agilent	E7405A	US44210471	2016.03.02	2017.03.01
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2016.03.02	2017.03.01
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2016.03.02	2017.03.01
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2016.03.02	2017.03.01
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2016.03.02	2017.03.01
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C836.5-2 5-X	NA	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C1747.5- 75-X2	NA	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C1880-60 -X2	NA	2016.03.02	2017.03.01

2.7.3 Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$$A_{\text{SUBST}} = P_{\text{SUBST_TX}} - P_{\text{SUBST_RX}} - L_{\text{SUBST_CABLES}} + G_{\text{SUBST_TX_ANT}}$$

$$A_{\text{TOT}} = L_{\text{CABLES}} + A_{\text{SUBST}}$$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

$P_{\text{SUBST_TX}}$ is signal generator level,

$P_{\text{SUBST_RX}}$ is receiver level,

$L_{\text{SUBST_CABLES}}$ is cable losses including TX cable,

$G_{\text{SUBST_TX_ANT}}$ is substitution antenna gain.



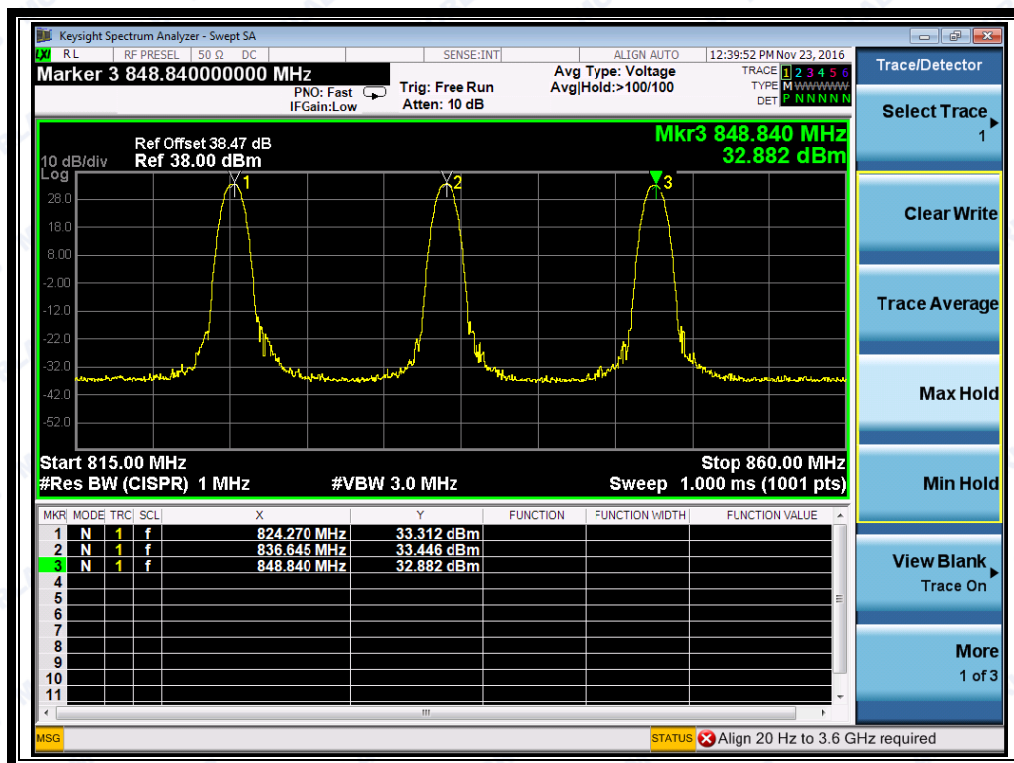
A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of A_{TOT} .

GSM Model Test Verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GPRS 850MHz	128	824.20	5	33.31	2.14	Plot B ^{Note 1}	38.5	7	PASS
	190	836.60	5	33.45	2.21				PASS
	251	848.80	5	32.88	1.94				PASS
Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GPRS 1900MHz	512	1850.2	0	29.97	0.99	Plot E ^{Note 1}	33	2	PASS
	661	1880.0	0	31.38	1.37				PASS
	810	1909.8	0	31.50	1.41				PASS
Note 1: For the GPRS model, all the slots were tested and just the worst data was record in this report.									

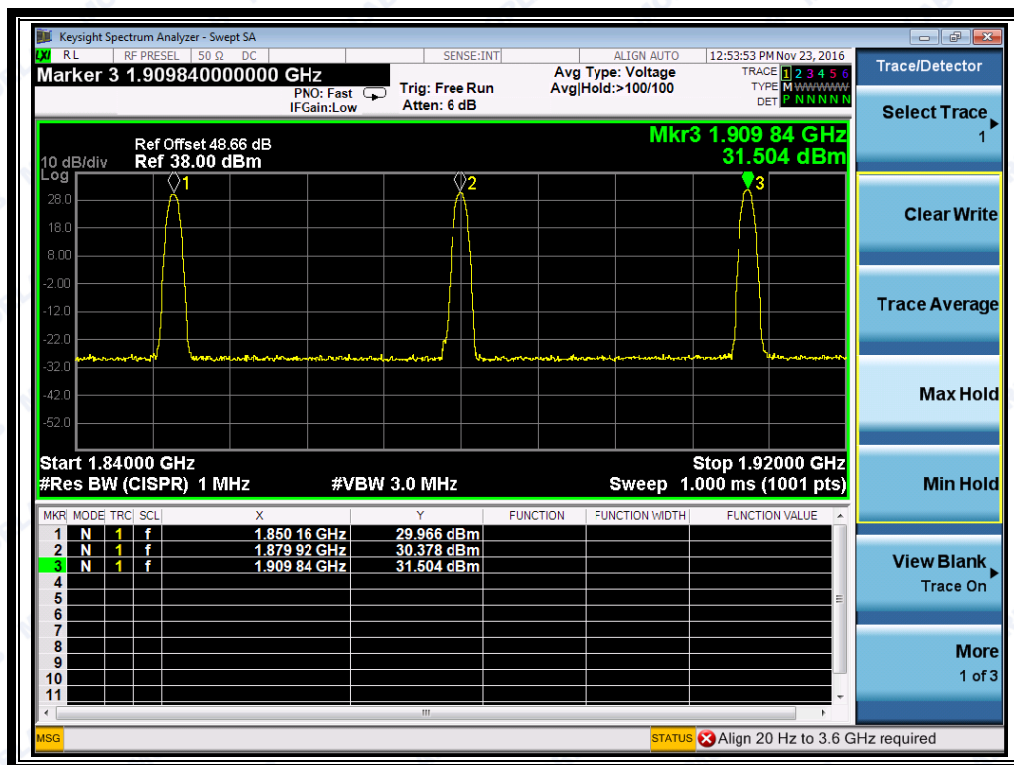
Test Plots:



(Plot B:GPRS 850MHz Channel = 128, 190, 251)



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(Plot E: GPRS 1900MHz Channel = 512, 661, 810)



2.8 Radiated Out of Band Emissions

2.8.1 Requirement

According to FCC section 22.917(a) and section 24.238(a) 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. This calculated to be -13dBm.

The spurious emission with frequency band 1900 according to FCC section 2.1057.

2.8.2 Test Description

See section 2.7.2 of this report.

Equipment List:

Description	Manufacturer	Model	Serial No.	Cal.Date	Cal.Due
System Simulator	Agilent	E5515C	GB43130131	2016.03.02	2017.03.01
Spectrum Analyzer	Agilent	E7405A	US44210471	2016.03.02	2017.03.01
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2016.03.02	2017.03.01
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2016.03.02	2017.03.01
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2016.03.02	2017.03.01
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2016.03.02	2017.03.01
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2016.03.02	2017.03.01
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2016.03.02	2017.03.01

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.8.3 Test Result

The low frequency, which started from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit. And according to KDB 971168D01 Section 8, the amplitudes of unwanted emissions that are attenuated more than 20 dB below the applicable limit are not required to be reported. So the measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency and was reported. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.



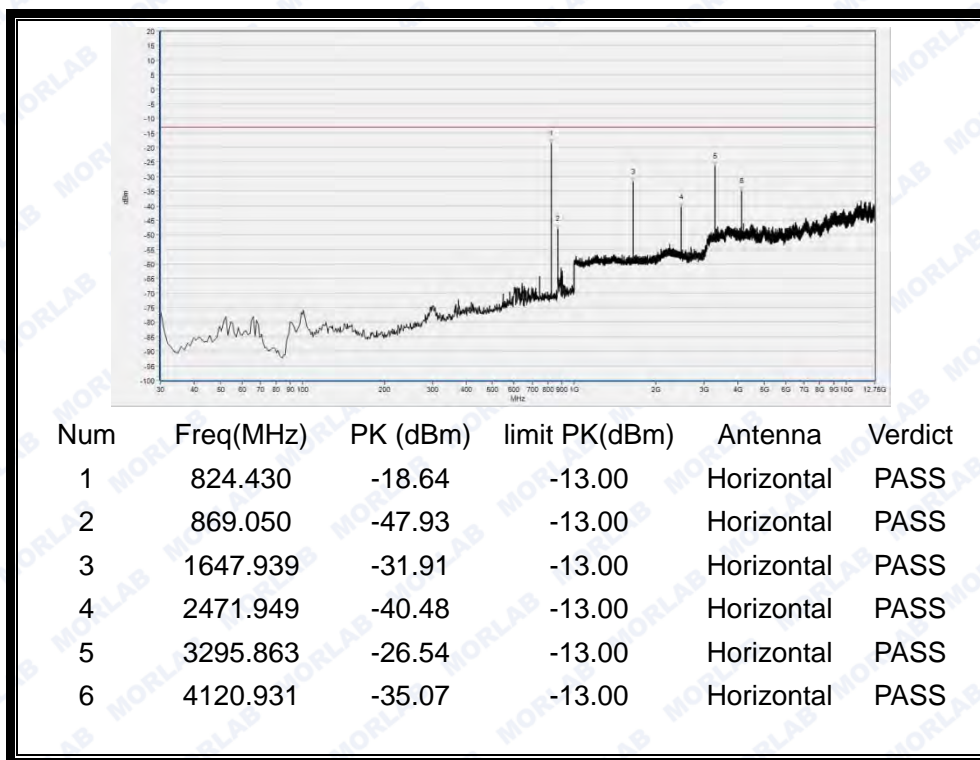
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GPRS 850MHz	128	824.2	< -25	< -25	Plot C1/C2	-13	PASS
	190	836.6	< -25	< -25	Plot C3/C4		PASS
	251	848.8	< -25	< -25	Plot C5/C6		PASS
GPRS 1900MHz	512	1850.2	< -25	< -25	Plot D1/D2	-13	PASS
	661	1880.0	< -25	< -25	Plot D3/D4		PASS
	810	1909.8	< -25	< -25	Plot D5/D6		PASS

2. Test Plots for the Whole Measurement Frequency Range:

Note1: the power of the EUT transmitting frequency should be ignored.

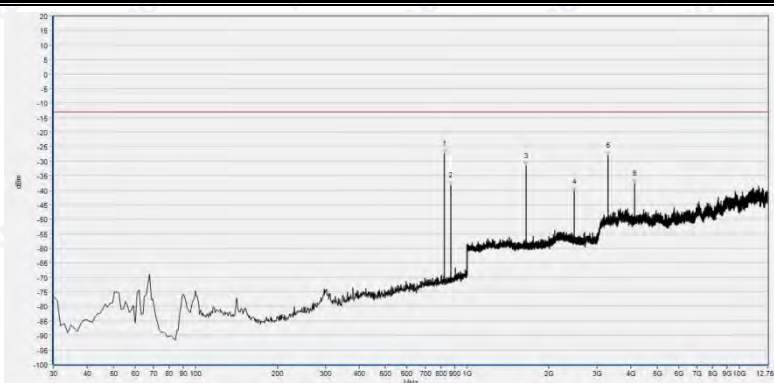
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



(Plot C1: GPRS 850MHz Channel = 128, Test Antenna Horizontal)

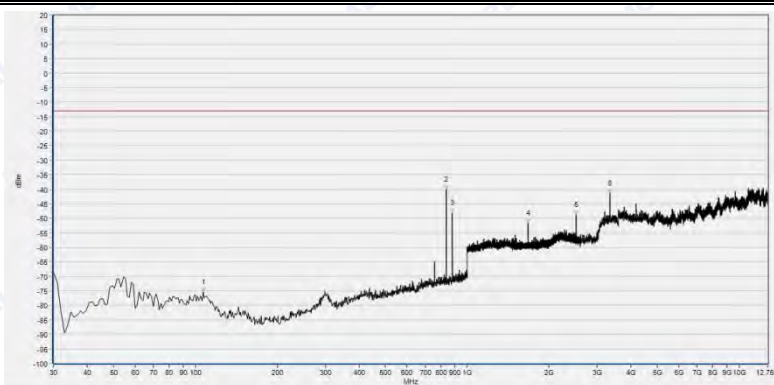


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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	824.430	-27.44	-13.00	Vertical	PASS
2	869.050	-38.26	-13.00	Vertical	PASS
3	1647.939	-31.72	-13.00	Vertical	PASS
4	2471.949	-40.48	-13.00	Vertical	PASS
5	3295.863	-28.00	-13.00	Vertical	PASS
6	4120.931	-37.57	-13.00	Vertical	PASS

(Plot C2: GPRS 850MHz Channel = 128, Test Antenna Vertical)

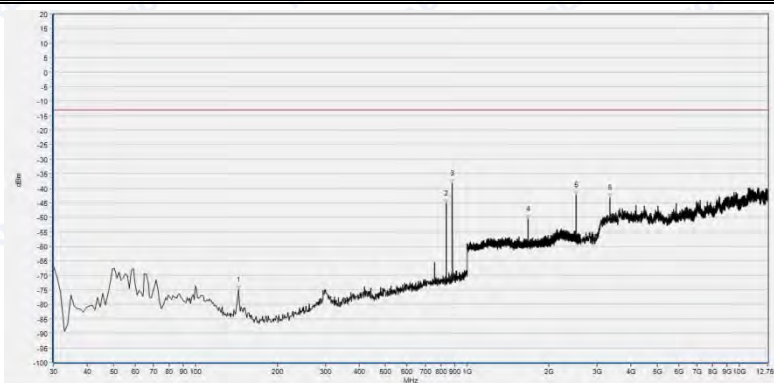


Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	106.707	-75.48	-13.00	Horizontal	PASS
2	836.877	-40.21	-13.00	Horizontal	PASS
3	881.542	-48.16	-13.00	Horizontal	PASS
4	1673.825	-51.79	-13.00	Horizontal	PASS
5	2510.370	-48.87	-13.00	Horizontal	PASS
6	3347.966	-41.51	-13.00	Horizontal	PASS

(Plot C3: GPRS 850MHz Channel = 190, Test Antenna Horizontal)

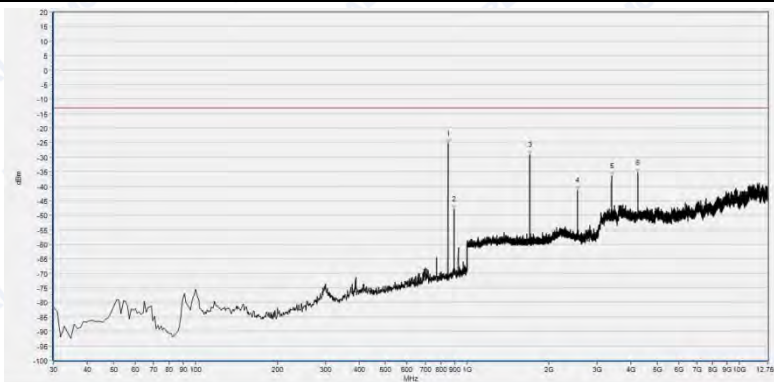


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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	143.604	-74.97	-13.00	Vertical	PASS
2	836.877	-45.25	-13.00	Vertical	PASS
3	881.542	-38.26	-13.00	Vertical	PASS
4	1673.825	-50.58	-13.00	Vertical	PASS
5	2510.370	-42.35	-13.00	Vertical	PASS
6	3347.966	-43.35	-13.00	Vertical	PASS

(Plot C4: GPRS 850MHz Channel = 190, Test Antenna Vertical)

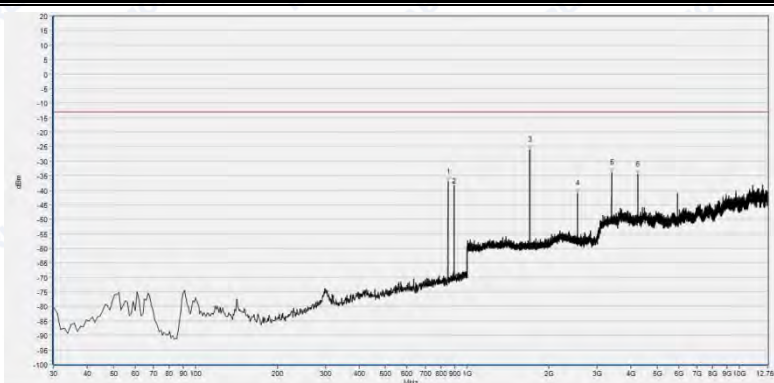


Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	848.680	-25.33	-13.00	Horizontal	PASS
2	893.300	-47.87	-13.00	Horizontal	PASS
3	1697.879	-29.12	-13.00	Horizontal	PASS
4	2546.218	-41.51	-13.00	Horizontal	PASS
5	3395.536	-36.47	-13.00	Horizontal	PASS
6	4244.599	-35.53	-13.00	Horizontal	PASS

(Plot C5: GPRS 850MHz Channel = 251, Test Antenna Horizontal)



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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	848.680	-36.90	-13.00	Vertical	PASS
2	893.300	-38.26	-13.00	Vertical	PASS
3	1697.879	-26.14	-13.00	Vertical	PASS
4	2546.218	-40.95	-13.00	Vertical	PASS
5	3395.536	-33.96	-13.00	Vertical	PASS
6	4242.753	-34.62	-13.00	Vertical	PASS

(Plot C6: GPRS 850MHz Channel = 251, Test Antenna Vertical)



Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	104.690	-81.74	-13.00	Horizontal	PASS
2	228.850	-81.39	-13.00	Horizontal	PASS
3	400.540	-75.61	-13.00	Horizontal	PASS
4	1850.260	-54.59	-13.00	Horizontal	PASS
5	2231.212	-53.46	-13.00	Horizontal	PASS
6	3701.146	-42.77	-13.00	Horizontal	PASS

(Plot D1: GPRS 1900MHz Channel = 512, Test Antenna Horizontal)



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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	67.830	-75.48	-13.00	Vertical	PASS
2	142.520	-76.27	-13.00	Vertical	PASS
3	305.480	-75.38	-13.00	Vertical	PASS
4	1850.260	-53.34	-13.00	Vertical	PASS
5	1930.292	-55.20	-13.00	Vertical	PASS
6	5007.965	-46.33	-13.00	Vertical	PASS

(Plot D2: GPRS 1900MHz Channel = 512, Test Antenna Vertical)



Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	120.210	-80.84	-13.00	Horizontal	PASS
2	294.810	-75.42	-13.00	Horizontal	PASS
3	1377.751	-56.63	-13.00	Horizontal	PASS
4	1879.712	-52.26	-13.00	Horizontal	PASS
5	1959.744	-55.35	-13.00	Horizontal	PASS
6	3761.266	-39.98	-13.00	Horizontal	PASS

(Plot D3: GPRS 1900MHz Channel = 661, Test Antenna Horizontal)



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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	61.040	-76.64	-13.00	Vertical	PASS
2	141.550	-78.39	-13.00	Vertical	PASS
3	419.940	-74.69	-13.00	Vertical	PASS
4	1879.712	-52.43	-13.00	Vertical	PASS
5	1959.744	-51.87	-13.00	Vertical	PASS
6	3761.266	-42.51	-13.00	Vertical	PASS

(Plot D4: GPRS 1900MHz Channel = 661, Test Antenna Vertical)



Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	118.270	-80.69	-13.00	Horizontal	PASS
2	301.600	-75.06	-13.00	Horizontal	PASS
3	1277.231	-56.94	-13.00	Horizontal	PASS
4	1909.804	-51.72	-13.00	Horizontal	PASS
5	1989.836	-54.76	-13.00	Horizontal	PASS
6	3818.221	-42.49	-13.00	Horizontal	PASS

(Plot D5: GPRS 1900MHz Channel = 810, Test Antenna Horizontal)



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Num	Freq(MHz)	PK (dBm)	limit PK(dBm)	Antenna	Verdict
1	50.370	-74.92	-13.00	Vertical	PASS
2	292.870	-76.00	-13.00	Vertical	PASS
3	486.870	-74.85	-13.00	Vertical	PASS
4	1909.804	-48.26	-13.00	Vertical	PASS
5	1989.836	-52.29	-13.00	Vertical	PASS
6	3818.221	-44.12	-13.00	Vertical	PASS

(Plot D6: GPRS 1900MHz Channel = 810, Test Antenna Vertical)

***** END OF REPORT *****