

FCC REPORT

Applicant: Unimax Communications

Address of Applicant: 18201 McDermott St. West Suite E, Irvine, CA92614

Equipment Under Test (EUT)

Product Name: Mobile phone

Model No.: U673C

FCC ID: P46-U673C

Applicable standards: FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 90 Subpart S

Date of sample receipt: 10 Sep., 2016

Date of Test: 10 Sep., to 28 Sep., 2016

Date of report issued: 28 Sep., 2016

Test Result: PASS*

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

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2. Version

Version No.	Date	Description
00	28 Sep., 2016	Original

Tested by:

Carey Chen

Test Engineer

Date:

28 Sep., 2016

Reviewed by:

Ryan Lee

Project Engineer

Date:

28 Sep., 2016

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4. Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c) Part 90.635 (b)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238 Part 90.691 (a)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 90.691 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 90.691 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a) Part 90.691 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5. General Information

5.1 Client Information

Applicant:	Unimax Communcations
Address of Applicant:	18201 McDermott St. West Suite E, Irvine, CA92614
Manufacturer :	Unimax Communcations
Address of Manufacturer:	18201 McDermott St. West Suite E, Irvine, CA92614

5.2 General Description of E.U.T.

Product Name:	Mobile phone
Model No.:	U673C
Operation Frequency range:	BC 0: 824.70MHz-848.31MHz BC 1: 1851.25MHz-1908.75MHz BC 10 :817.90 MHz- 823.10MHz
Modulation type:	1×RTT: BPSK, QPSK, OQPSK, HPSK 1×EVDO: BPSK, QPSK, 8PSK, 16-QAM
Antenna type:	Internal Antenna
Antenna gain:	BC 0: 0.6dBi BC 1: 0.6dBi BC 10:0.6dBi
AC adapter:	Model: CYSK05-050070 Input: AC100-240V 50/60Hz 0.15A Output: DC 5.0V, 700mA
Power supply:	Rechargeable Li-ion Battery DC3.7V-1650mAh

Operation Frequency List:

BC 0		BC 1	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
1013	824.70	25	1851.25
1014	824.73	26	1851.28
....			
383	836.49	599	1879.97
384	836.52	600	1880
385	836.55	601	1880.03
...	...	...	...
776	848.28	1174	1908.72
777	848.31	1175	1908.75
BC 10			
Channel:	Frequency (MHz)		
476	817.90		
477	817.93		
....			
579	820.47		
580	820.50		
581	820.53		
...	...		
683	823.07		
684	823.10		

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:

BC 0			BC 1		
Channel No.		Frequency(MHz)	Channel No.		Frequency(MHz)
Lowest channel	1013	824.70	Lowest channel	25	1851.25
Middle channel	384	836.52	Middle channel	600	1880.00
Highest channel	777	848.31	Highest channel	1175	1908.75
BC 10					
Channel No.		Frequency(MHz)			
Lowest channel	476	817.90			
Middle channel	580	820.50			
Highest channel	684	823.10			

5.3 Test modes

Communicate mode (BC 0 1×RTT)	Keep the EUT in communicating mode on BC 0 (RC1~RC5).
Data mode (BC 0 1×EV-DO Rev.0)	Keep the EUT in data communicating mode on BC 0 Rev.0 mode.
Data mode (BC 01×EV-DO Rev. A)	Keep the EUT in data communicating mode on BC 0 Rev.A mode.
Communicate mode (BC 1 1×RTT)	Keep the EUT in communicating mode on BC 1(RC1~RC5).
Data mode (BC 1 1×EV-DO Rev. 0)	Keep the EUT in data communicating mode on BC 1 Rev.0 mode.
Data mode (BC 1 1×EV-DO Rev. A)	Keep the EUT in data communicating mode on BC 1 Rev.A mode.
Communicate mode (BC 10 1×RTT)	Keep the EUT in communicating mode on BC 10(RC1~RC5).
Remark:	Pre-scan all test modes, and found the RC3, SO55 for Cell band, RC3, SO2 for PCS band and RC3, SO32 for BC 10 were the worst case . Details refer to section 6.5.

5.4 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part 90 subpart S of the FCC CFR 47 Rules.

5.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.6 Laboratory Facility

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

- **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing 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. Registration 817957, February 27, 2012.

- **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.

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

5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-25-2016	03-25-2017
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-25-2016	03-25-2017
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2016	03-31-2017
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2016	03-31-2017
7	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2016	03-31-2017
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2016	03-31-2017
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	03-28-2016	03-28-2017
11	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	03-28-2016	03-28-2017
12	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2016	03-31-2017
13	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	03-28-2016	03-28-2017
14	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2016	04-08-2017

6. System test configuration

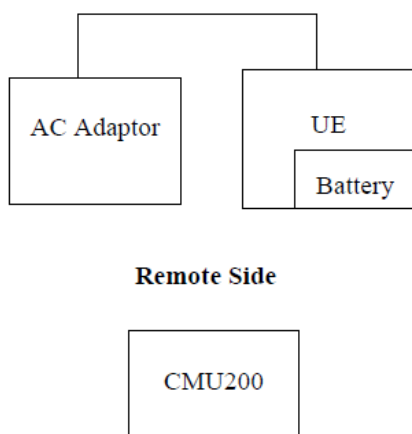
6.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

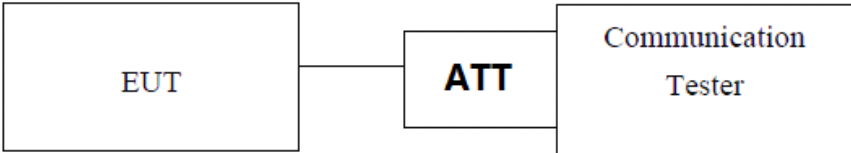
6.3 Configuration of Tested System



6.4 Description of Test Modes

The EUT has been tested under operating condition.
 EUT staying in 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 1×RTT with power adaptor, earphone and Data cable.

6.5 Conducted Output Power

Test Requirement:	FCC part 22.913(a) ,FCC part 24.232(b) and FCC part 90.635(b).
Test Method:	FCC part 2.1046
Limit:	BC 0: 7W BC 1: 2W BC 10:100W
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMU200. 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

RF OUTPUT POWER FOR 1×RTT

BC 0

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)			Limit (dBm)
		Ch.1013	Ch.384	Ch.777	
		824.70MHz	836.52MHz	848.31MHz	
RC1	2(Loopback)	23.20	23.41	23.07	38.45
	55(Loopback)	23.26	23.42	23.12	
RC2	9(Loopback)	23.45	23.39	23.16	
	55(Loopback)	23.47	23.41	23.11	
RC3	2(Loopback)	23.43	23.46	23.10	
	55(Loopback)	23.39	23.69(Head)	23.14	
	32(+F-SCH)	23.42	23.48(Body)	23.21	
	32(+SCH)	23.34	23.39	23.22	
RC4	2(Loopback)	23.42	23.40	23.08	
	55(Loopback)	23.05	23.50	23.07	
	32(+F-SCH)	23.32	23.51	23.15	
	32(+SCH)	23.34	23.44	23.18	
RC5	9(Loopback)	23.42	23.44	23.14	
	55(Loopback)	23.37	23.52	23.09	

BC 1

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)			Limit (dBm)
		Ch.25	Ch.600	Ch.1175	
		1851.25MHz	1880MHz	1908.75MHz	
RC1	2(Loopback)	23.43	23.39	23.55	33.00
	55(Loopback)	23.43	23.41	23.50	
RC2	9(Loopback)	23.38	23.45	23.55	
	55(Loopback)	23.43	23.60	23.63	
RC3	2(Loopback)	23.45	23.46	23.52	
	55(Loopback)	23.57	23.54	23.71(Head)	
	32(+F-SCH)	23.43	23.42	23.69(Body)	
	32(+SCH)	23.43	23.50	23.49	
RC4	2(Loopback)	23.43	23.58	23.61	
	55(Loopback)	23.46	23.49	23.61	
	32(+F-SCH)	23.32	23.51	23.54	
	32(+SCH)	23.42	23.46	23.52	
RC5	9(Loopback)	23.46	23.45	23.55	
	55(Loopback)	23.49	23.55	23.60	

BC 10

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)			Limit (dBm)
		Ch.476	Ch.580	Ch.684	
		817.90MHz	820.50MHz	823.10MHz	
RC1	2(Loopback)	23.51	23.15	23.28	50.00
	55(Loopback)	23.45	23.22	23.35	
RC2	9(Loopback)	23.41	23.02	23.32	
	55(Loopback)	23.42	23.14	23.37	
RC3	2(Loopback)	23.58	23.13	23.23	
	55(Loopback)	23.54(Head)	23.10	23.37	
	32(+F-SCH)	23.58(Body)	23.14	23.29	
	32(+SCH)	23.47	23.11	23.37	
RC4	2(Loopback)	23.45	23.13	23.24	
	55(Loopback)	23.54	23.10	23.27	
	32(+F-SCH)	23.52	23.15	23.25	
	32(+SCH)	23.53	23.16	23.28	
RC5	9(Loopback)	23.48	23.15	23.36	
	55(Loopback)	23.51	22.97	23.42	

RF OUTPUT POWER FOR CDMA2000 1×EV-DO Rev.0

BC 0

FTAP Rate	RTAP Rate	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
307.2kbps (2slot,QPSK)	153.6kbps	1013	824.70	23.60	38.45
		384	836.52	23.69	
		777	848.31	23.39	

BC1

FTAP Rate	RTAP Rate	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
307.2kbps (2slot,QPSK)	153.6kbps	25	1851.25	23.20	33.00
		600	1880.00	23.37	
		1175	1908.75	23.62	

BC10

FTAP Rate	RTAP Rate	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
307.2kbps (2slot,QPSK)	153.6kbps	476	817.90	23.06	33.00
		580	820.50	23.15	
		684	823.10	23.24	

RF OUTPUT POWER FOR CDMA2000 1×EV-DO Rev.A

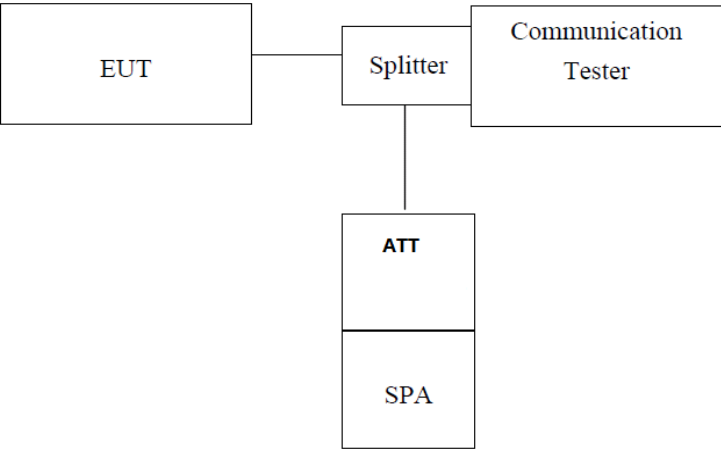
BC 0

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
307.2k,QPSK/ACK Channel is transmitted at all the slots	4096	1013	824.70	23.49	38.45
		384	836.52	23.54	
		777	848.31	23.28	

BC 1

FETAP-Traffic Format	RETAP-Data Payload Size	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Limit (dBm)
307.2k,QPSK/ACK Channel is transmitted at all the slots	4096	25	1851.25	23.02	33.00
		600	1880.00	23.25	
		1175	1908.75	23.58	

6.6 Peak-to-Average Ratio

Test Requirement:	FCC part 24.232(d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
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 $\geq$ 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

Band Class	Test config.	Channel No.	PAPR	Result
Middle channel				
BC 0	1xRTT	384	4.04	Pass
	EVDO	384	4.76	Pass
Middle channel				
BC 1	1xRTT	600	4.65	Pass
	EVDO	600	4.88	Pass
Middle channel				
BC 10	1xRTT	580	3.96	Pass
BC 10	EVDO	580	4.36	Pass

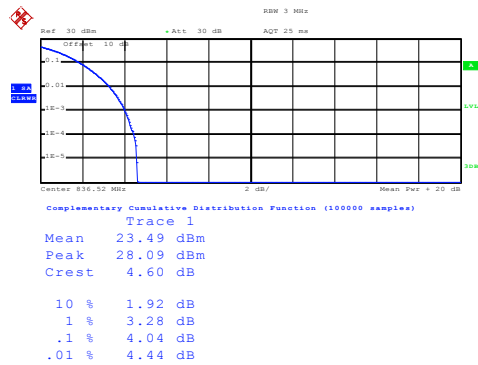
Note:

Only the worst case mode was shown in report.

Test plots as below:

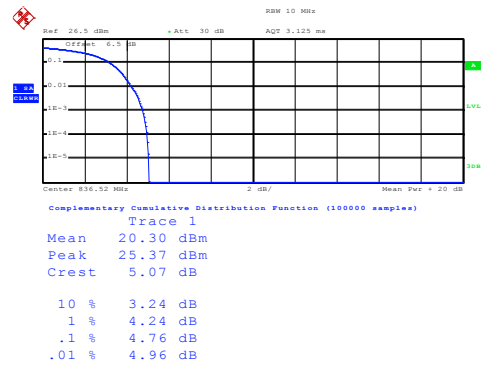
BC 0 Middle Channel

1xRTT



Date: 14.SEP.2016 03:26:20

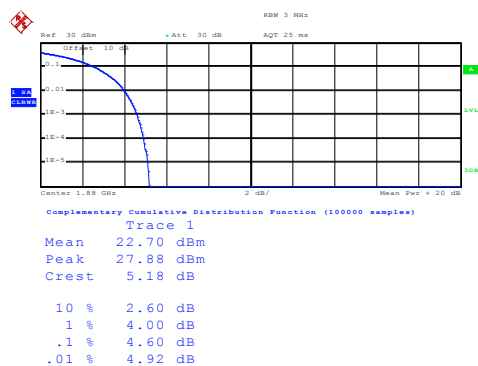
EVDO



Date: 19.SEP.2016 14:58:53

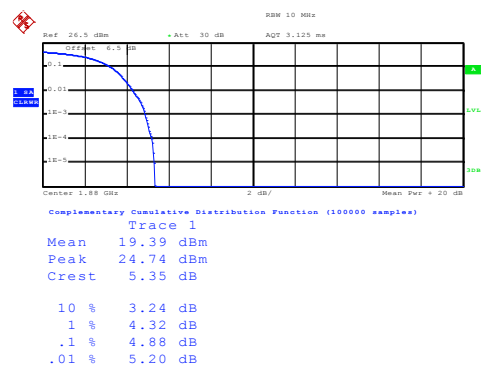
BC 1 Middle Channle

1xRTT



Date: 14.SEP.2016 03:31:58

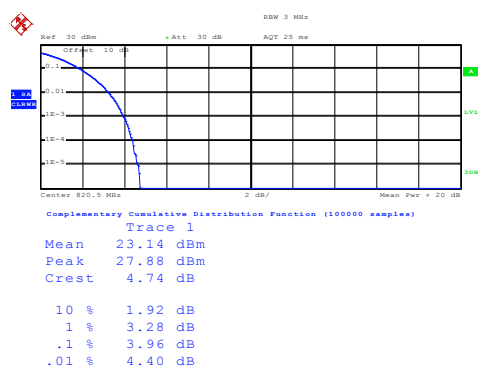
EVDO



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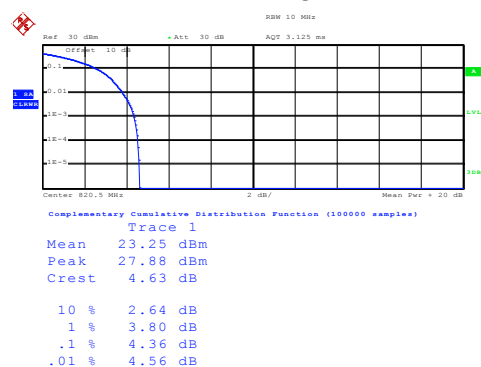
BC 10 Middle Channle

1xRTT



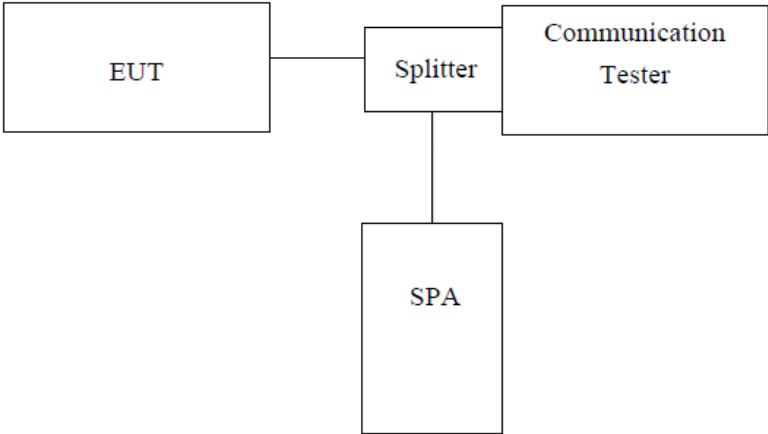
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EVDO



Date: 29.SEP.2016 17:23:39

6.7 Occupy Bandwidth

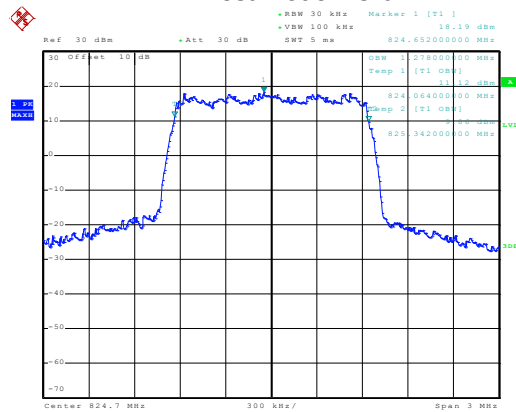
Test Requirement:	FCC part 22.913(a), FCC part 24.232(b) and FCC part 90.691(a).
Test Method:	FCC part 2.1049
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW 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)
BC 0	1013	824.70	1278	1434
	384	836.52	1278	1434
	777	848.31	1278	1434
BC 1	25	1851.25	1290	1428
	600	1880.00	1278	1434
	1175	1908.75	1290	1440
BC 10	476	817.90	1278	1422
	580	820.50	1284	1434
	684	823.10	1278	1428

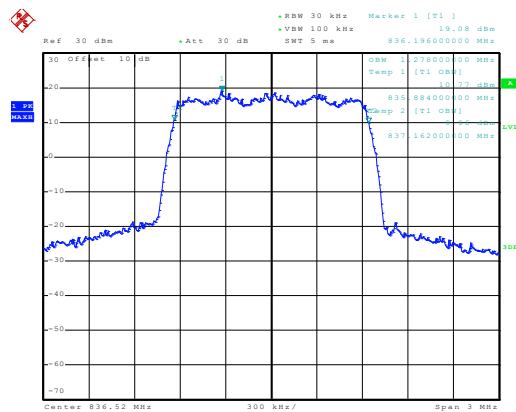
Test plot as follows:

Test Item:99% Occupy bandwidth Test Mode:BC 0



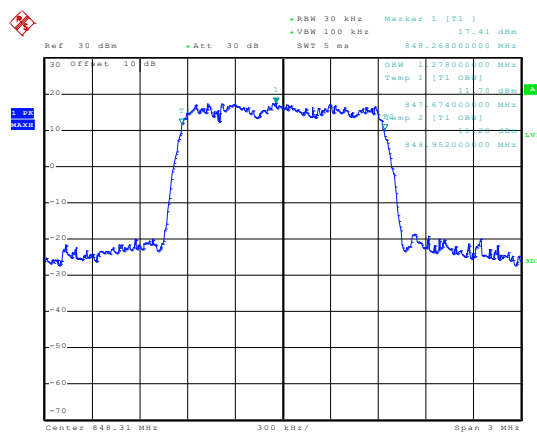
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Lowest channel



Date: 14.SEP.2016 03:38:04

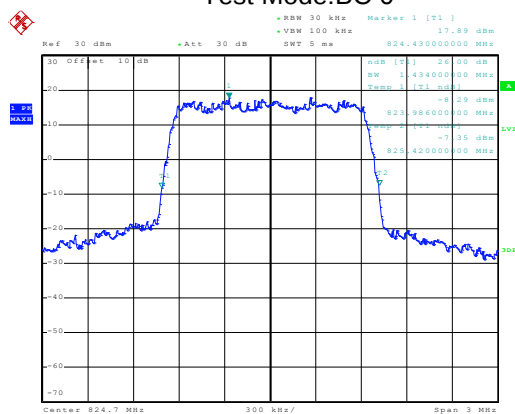
Middle channel



Date: 14.SEP.2016 03:38:56

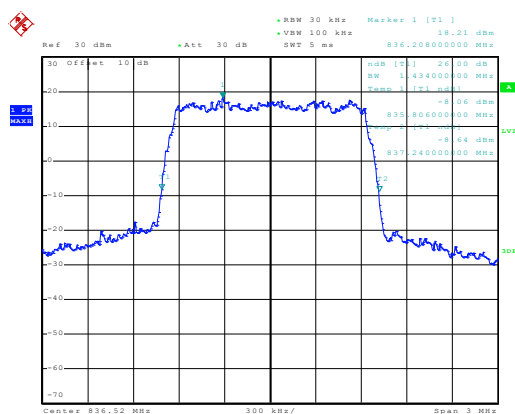
Highest channel

Test Item:-26dB bandwidth Test Mode:BC 0



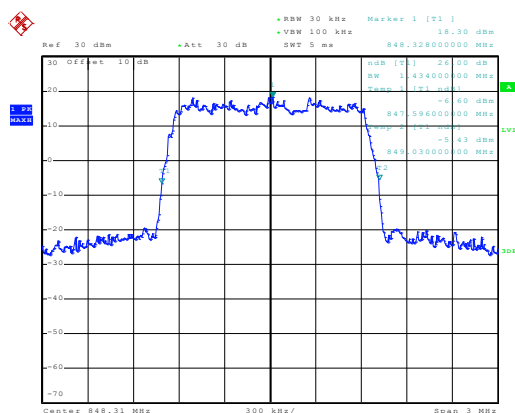
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Lowest channel



Date: 14.SEP.2016 03:37:44

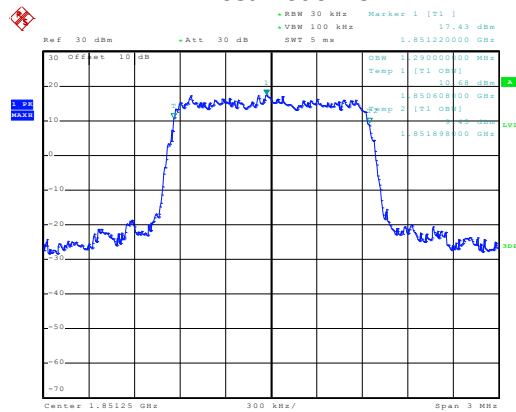
Middle channel



Date: 14.SEP.2016 03:38:48

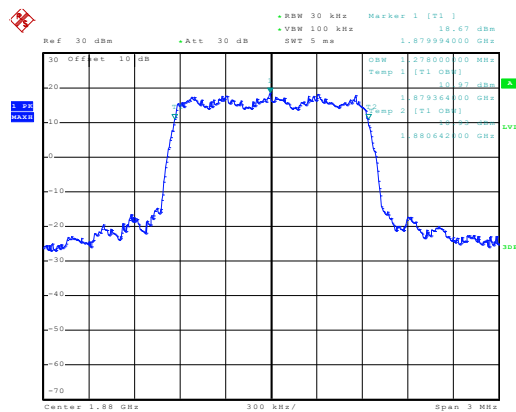
Highest channel

Test Item:99% Occupy bandwidth Test Mode:BC 1



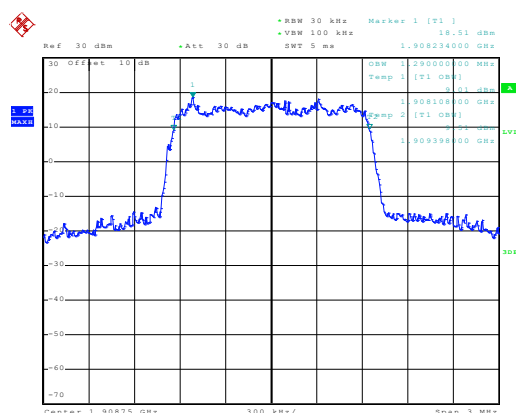
Date: 14.SEP.2016 03:34:12

Lowest channel



Date: 14.SEP.2016 03:33:23

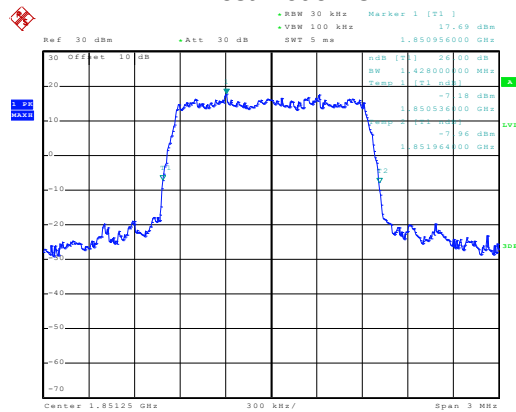
Middle channel



Date: 14.SEP.2016 03:33:55

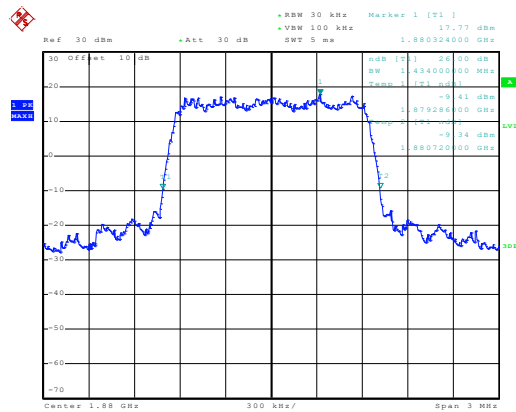
Highest channel

Test Item:-26dB bandwidth Test Mode:BC 1



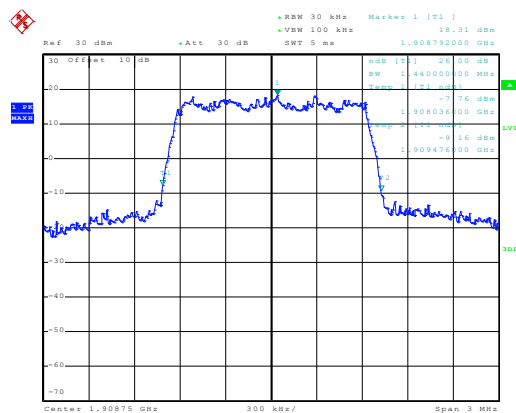
Date: 14.SEP.2016 03:34:20

Lowest channel



Date: 14.SEP.2016 03:33:32

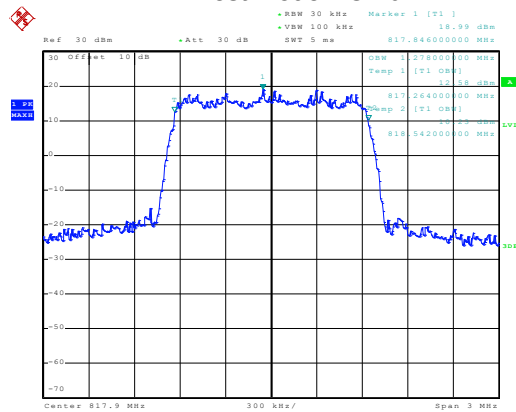
Middle channel



Date: 14.SEP.2016 03:33:49

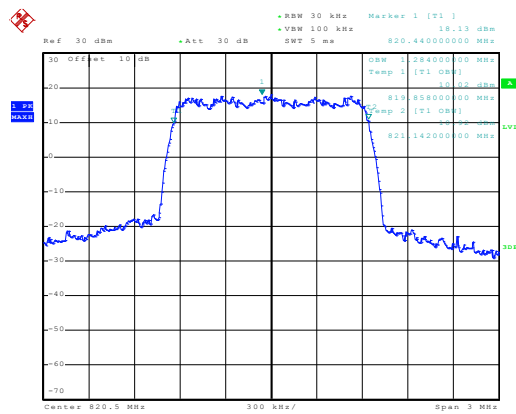
Highest channel

Test Item:99% Occupy bandwidth Test Mode:BC 10



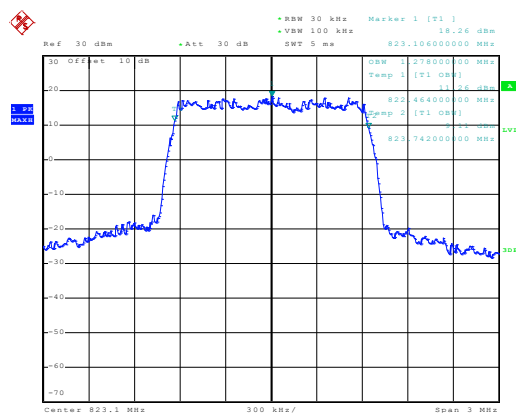
Date: 14.SEP.2016 03:37:05

Lowest channel



Date: 14.SEP.2016 03:36:37

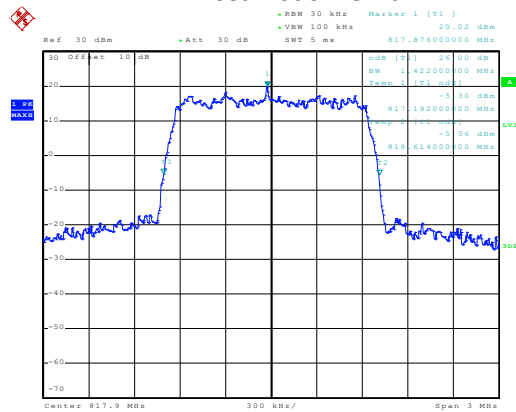
Middle channel



Date: 14.SEP.2016 03:37:17

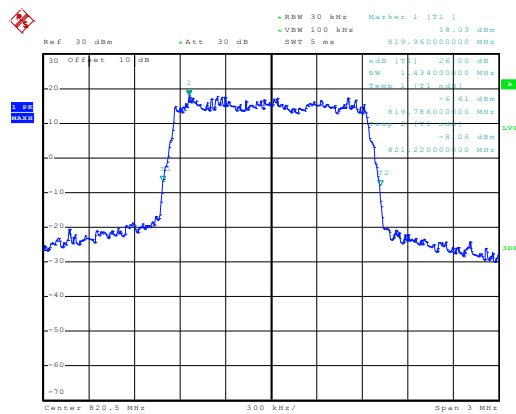
Highest channel

Test Item:-26dB bandwidth
Test Mode:BC 10



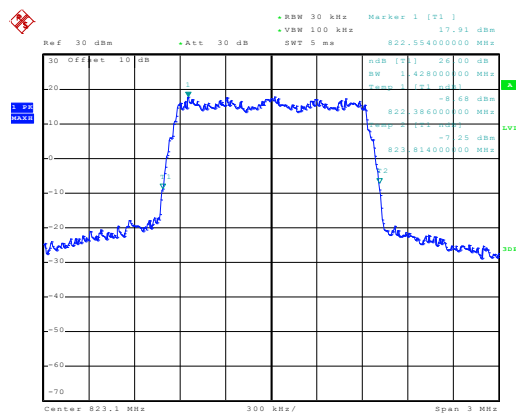
Date: 14.SEP.2016 03:36:59

Lowest channel



Date: 14.SEP.2016 03:36:46

Middle channel



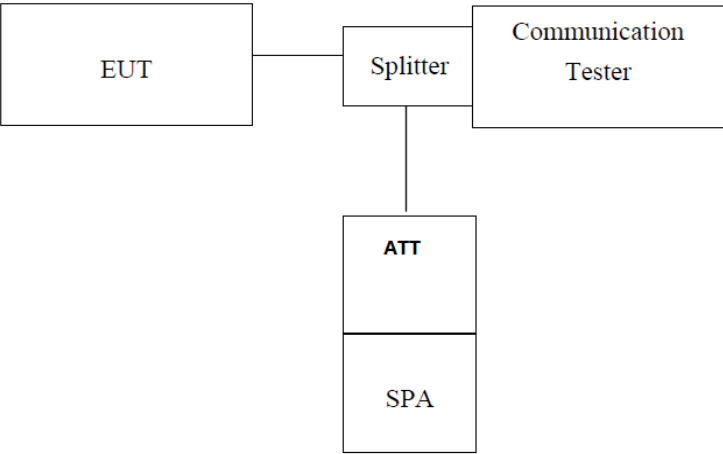
Date: 14.SEP.2016 03:37:24

Highest channel

6.8 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.

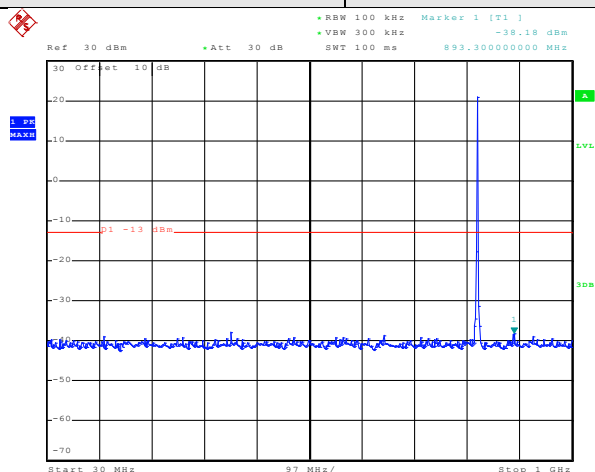
6.9 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a) and FCC part 90.691(a).
Test Method:	FCC part 2.1051
Limit:	Band 0 and Band 1: -13dBm Band 10: refer to FCC part 90.691(a).
Test setup:	 <i>Note: Measurement setup for testing on Antenna connector</i>
Test Procedure:	5 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 6 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. 7 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. 8 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:

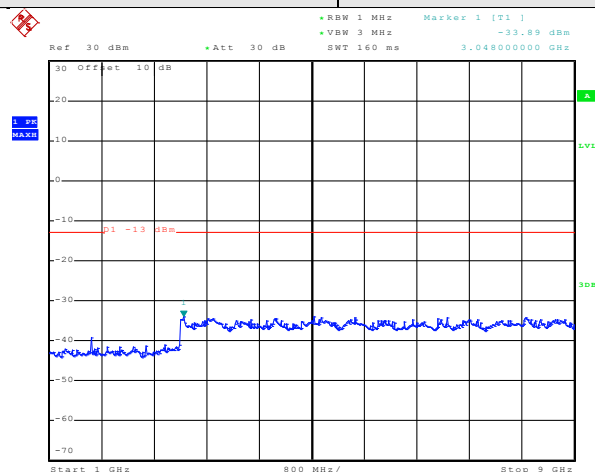
Spurious emission

Test Mode:	BC 0	Test Channel:	Lowest channel
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Date: 14.SEP.2016 03:40:20

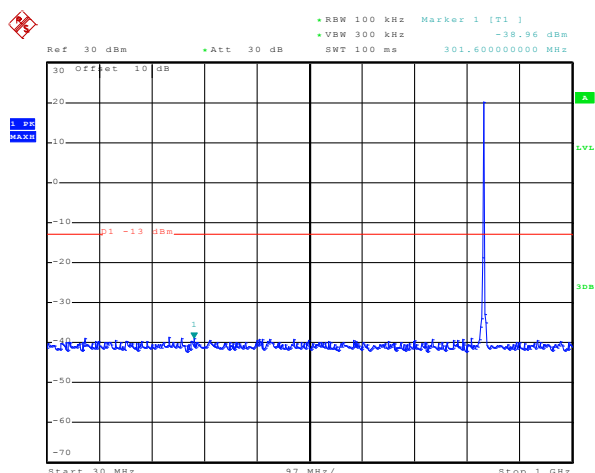
30MHz~1GHz



Date: 14.SEP.2016 03:40:35

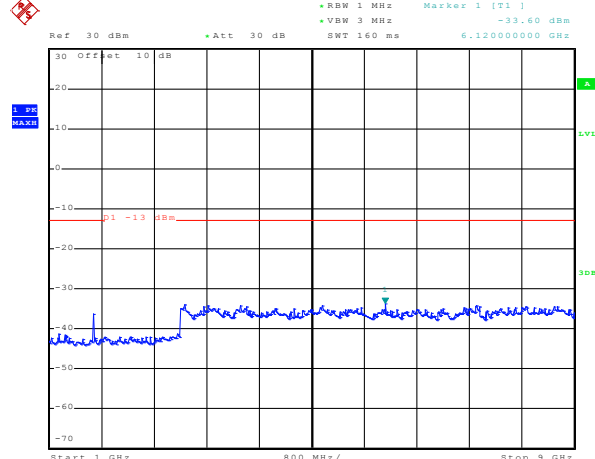
1GHz~9GHz

Test Mode:	BC 0	Test Channel:	Middle channel
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Date: 14.SEP.2016 03:40:04

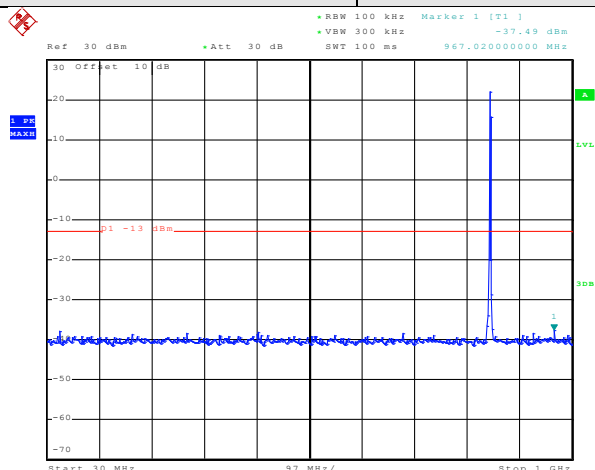
30MHz~1GHz



Date: 14.SEP.2016 03:40:49

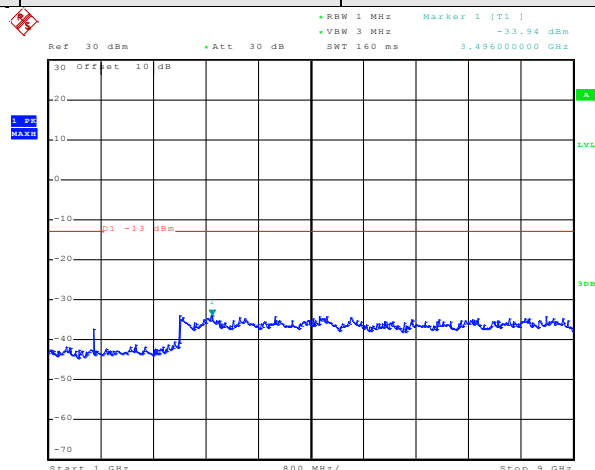
1GHz~9GHz

Test Mode:	BC 0	Test Channel:	Highest channel
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Date: 14.SEP.2016 03:39:47

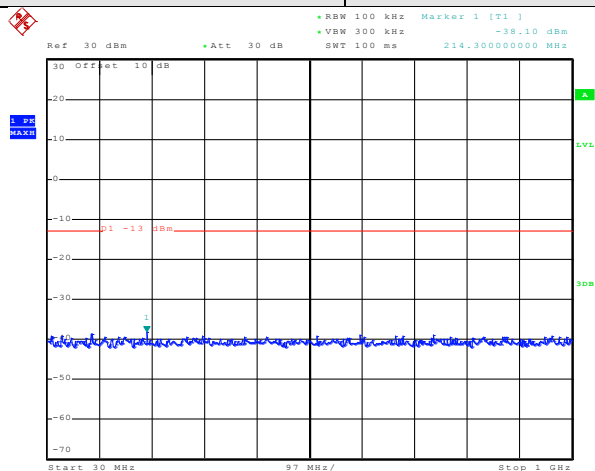
30MHz~1GHz



Date: 14.SEP.2016 03:41:04

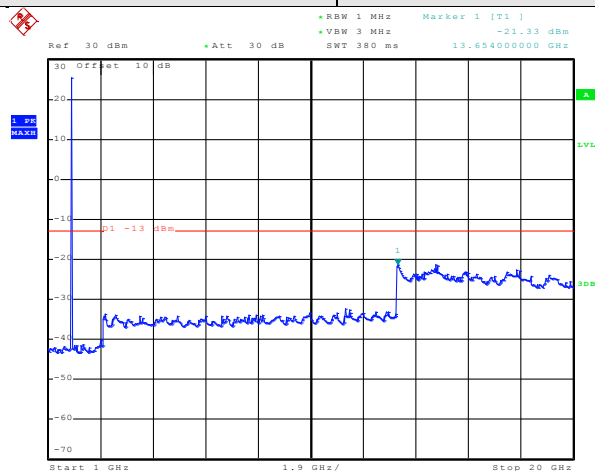
1GHz~9GHz

Test Mode:	BC 1	Test Channel:	Lowest channel
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Date: 14.SEP.2016 03:45:03

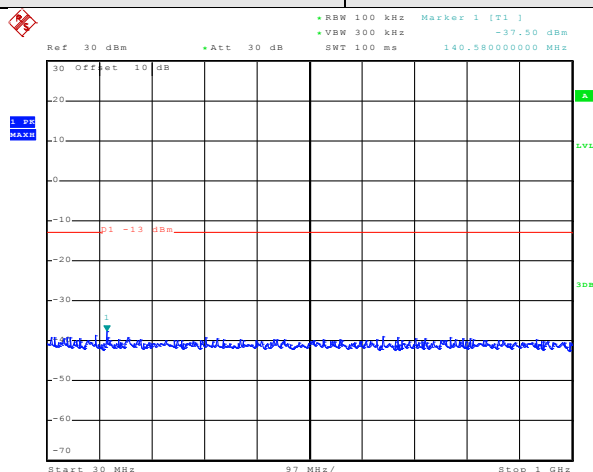
30MHz~1GHz



Date: 14.SEP.2016 03:48:17

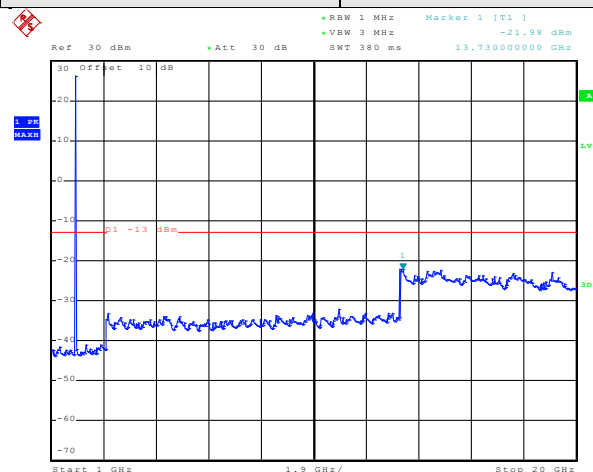
1GHz~20GHz

Test Mode:	BC 1	Test Channel:	Middle channel
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Date: 14.SEP.2016 03:45:20

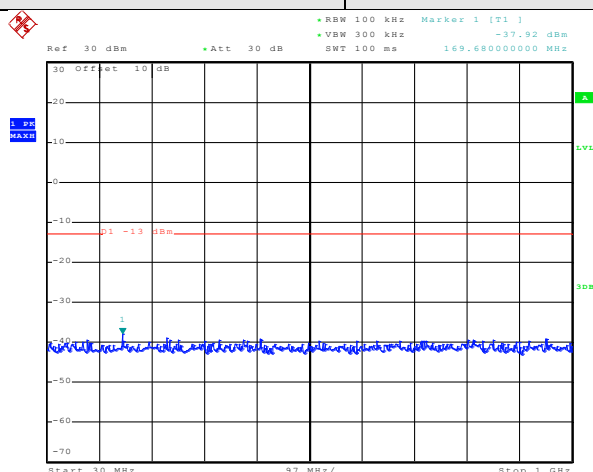
30MHz~1GHz



Date: 14.SEP.2016 03:47:54

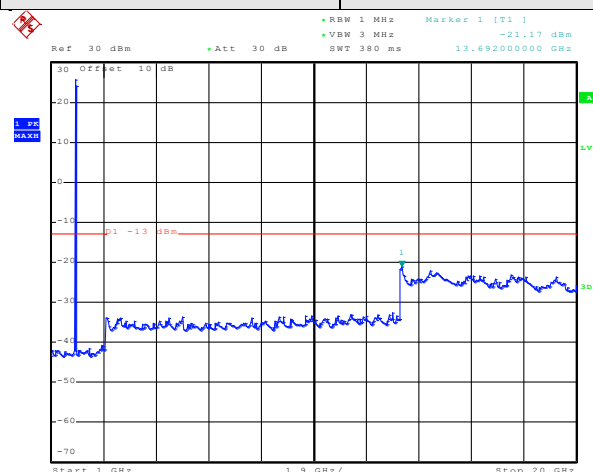
1GHz~20GHz

Test Mode:	BC 1	Test Channel:	Highest channel
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Date: 14.SEP.2016 03:45:33

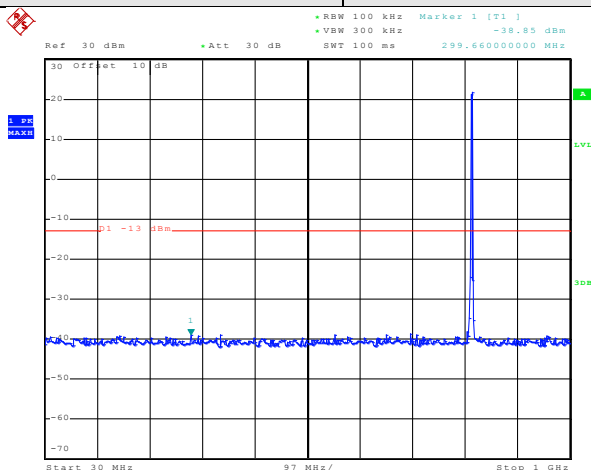
30MHz~1GHz



Date: 14.SEP.2016 03:47:32

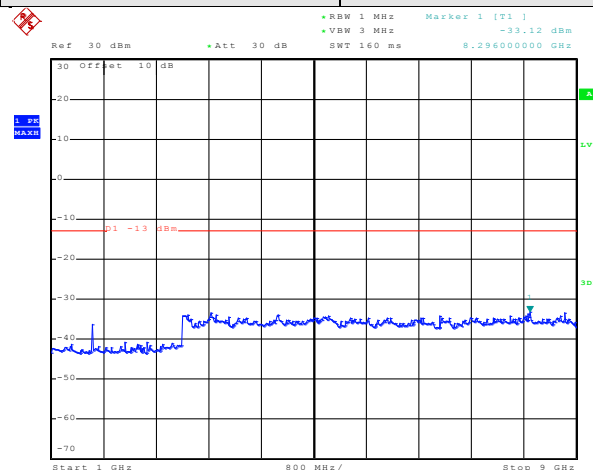
1GHz~20GHz

Test Mode:	BC 10	Test Channel:	Lowest channel
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Date: 14.SEP.2016 03:43:13

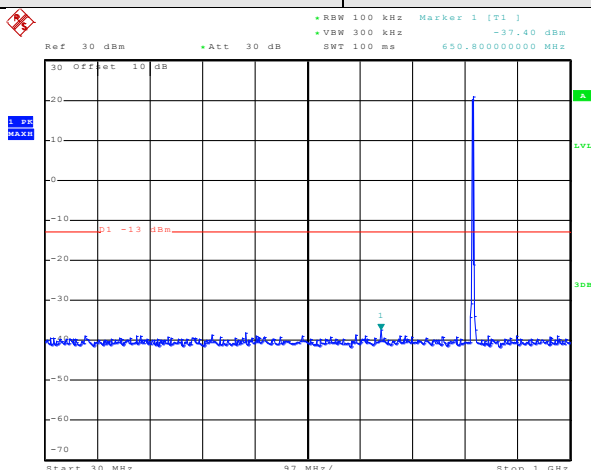
30MHz~1GHz



Date: 14.SEP.2016 03:42:02

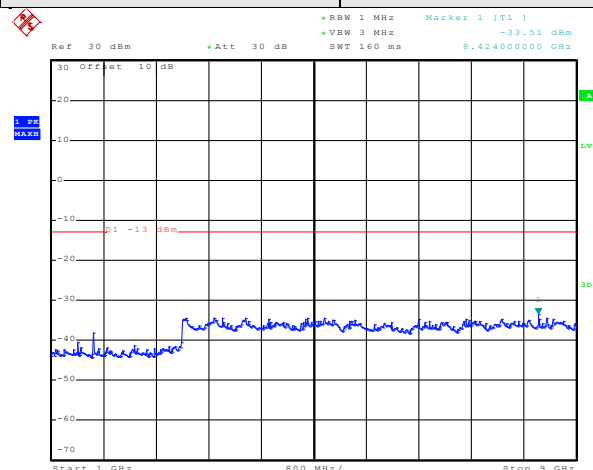
1GHz~9GHz

Test Mode:	BC 10	Test Channel:	Middle channel
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Date: 14.SEP.2016 03:43:40

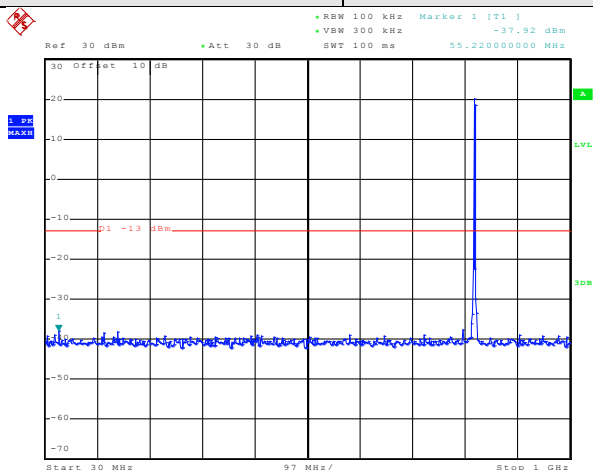
30MHz~1GHz



Date: 14.SEP.2016 03:41:41

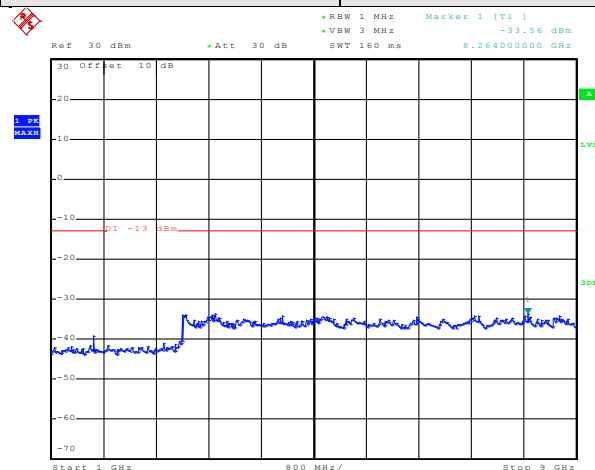
1GHz~9GHz

Test Mode:	BC 10	Test Channel:	Highest channel
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Date: 14.SEP.2016 03:44:01

30MHz~1GHz

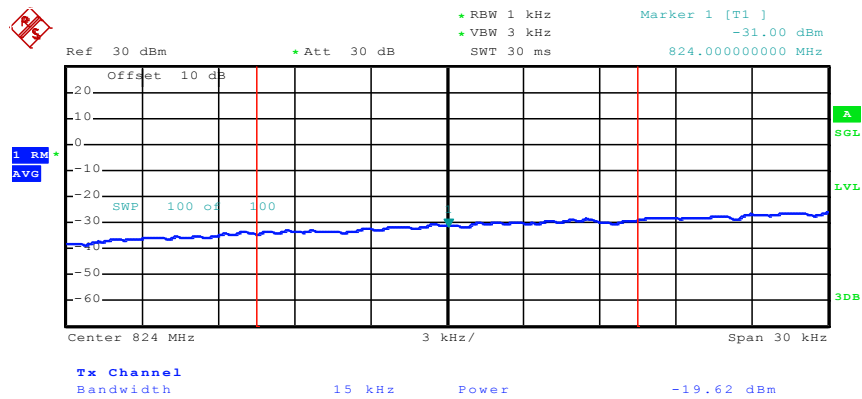


Date: 14.SEP.2016 03:41:29

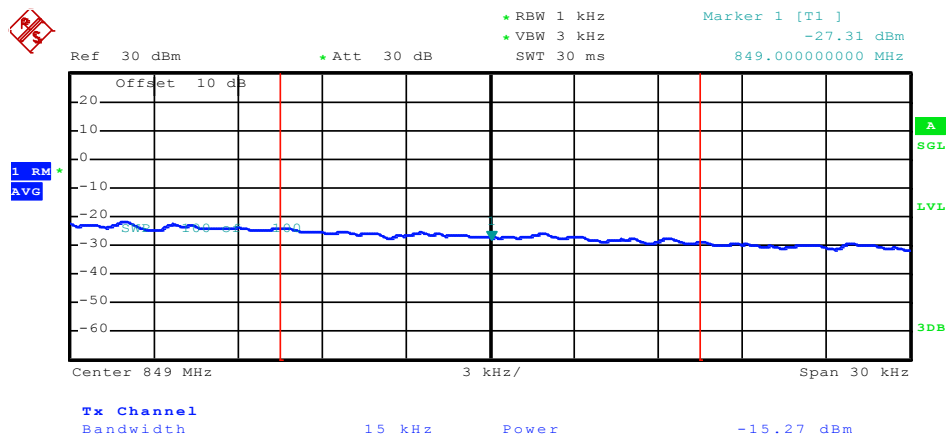
1GHz~9GHz

Band edge emission:

Test Mode:BC 0

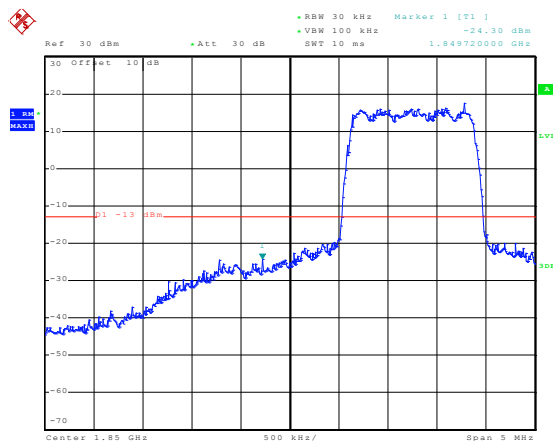


Lowest channel



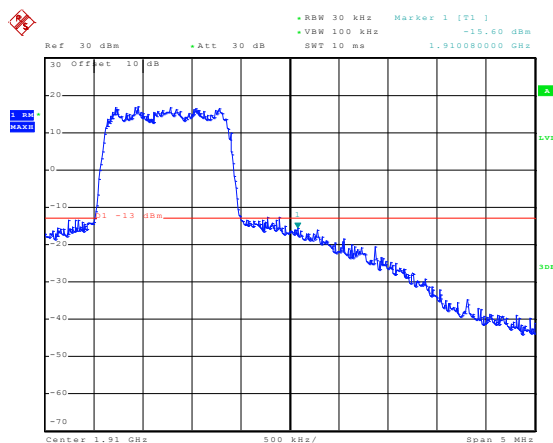
Highest channel

Test Mode:BC 1



Date: 14.SEP.2016 03:51:14

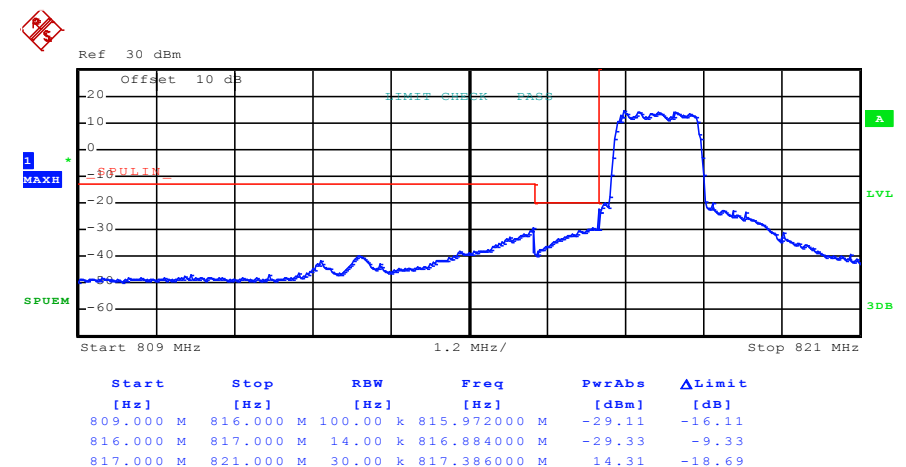
Lowest channel



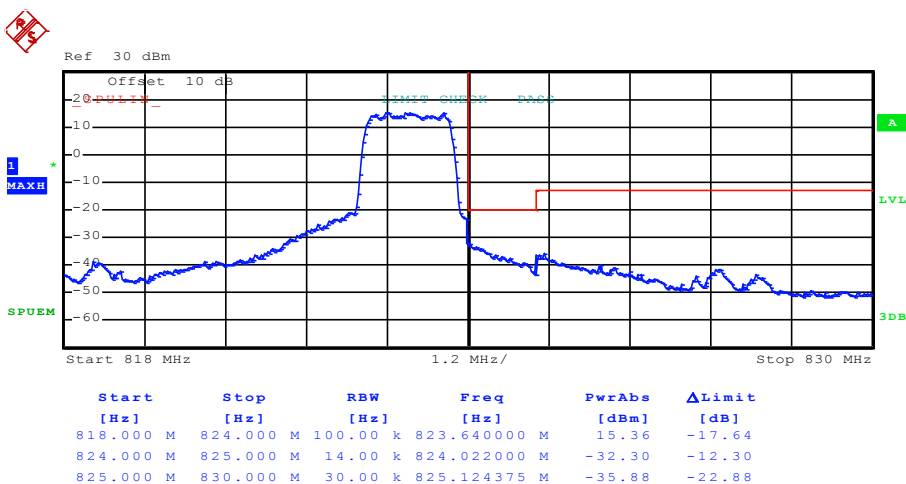
Date: 14.SEP.2016 03:50:51

Highest channel

Test Mode:BC 10

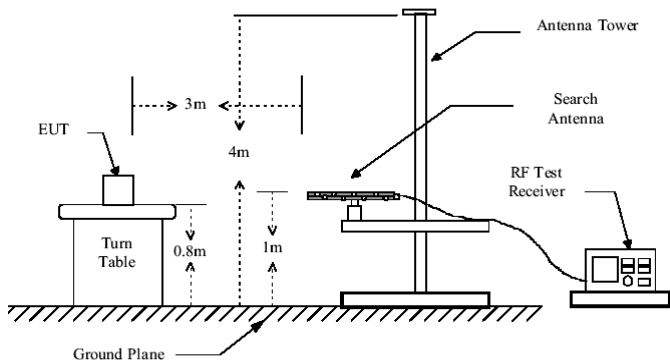
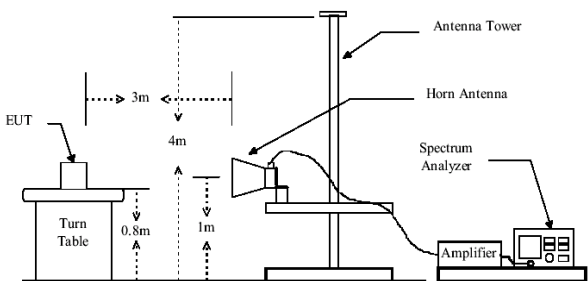
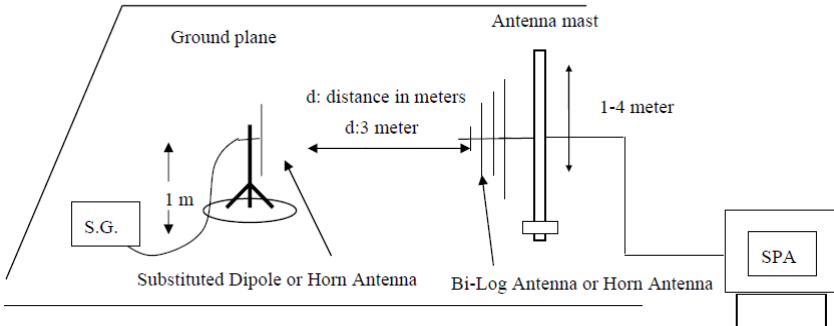


Lowest channel



Highest channel

6.10 ERP, EIRP Measurement

Test Requirement:	FCC part 22.913(a), FCC part 24.232(b) and FCC part 90.635(b).
Test Method:	FCC part 2.1046
Limit:	BC 0: 7W ERP BC 1: 2W EIRP BC 10: 100W ERP
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

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 824.7 –848.31MHz 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: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1851.25 –1908.75MHz 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: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$ 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

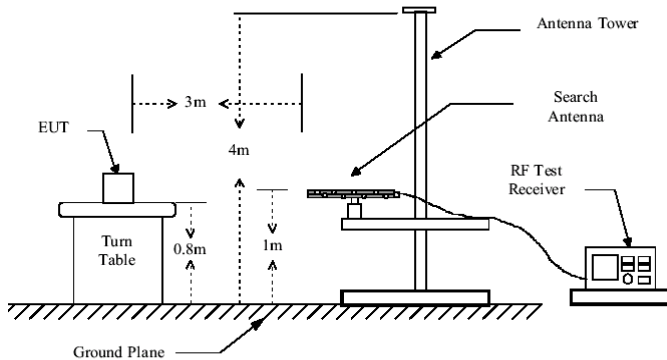
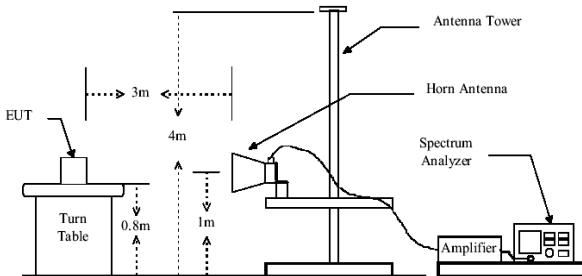
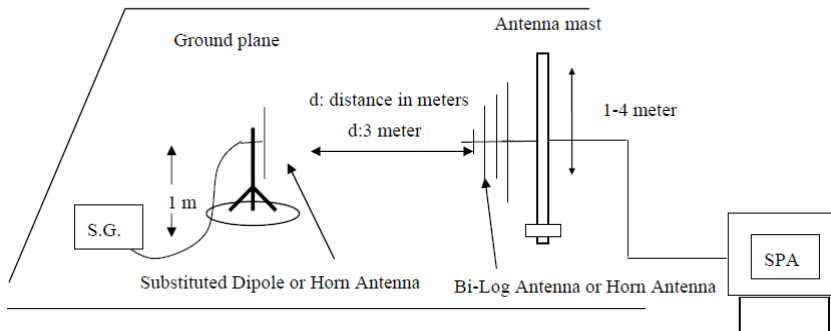
Measurement Data (worst case)

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
BC 0	384	H	V	29.55	38.45	Pass
			H	24.97		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
BC 1	600	H	V	21.12	33.00	Pass
			H	20.24		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
BC 10	476	H	V	27.94	50.00	Pass
			H	24.89		

6.11 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a) and FCC part 90.691(a).
Test Method:	FCC part 2.1053
Limit:	Band 0 and Band 1: -13dBm Band 10: refer to FCC part 90.691(a).
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
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. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details. Based on the ERP/EIRP results, we selected BC 0 1×RTT, BC 1 1×RTT, BC 10 1×RTT for Radiated spurious emission test, other modes were not test.
Test results:	Passed

Measurement Data (worst case)

Test mode:	BC 0		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1649.4	Vertical	-47.90	-13.00	Pass
2474.1	V	-40.05		
3298.8	V	-48.02		
4123.5	V	-46.43		
4948.20	V	---		
5772.90	V	---		
1649.4	Horizontal	-52.45	-13.00	Pass
2474.1	H	-42.92		
3298.8	H	-47.32		
4123.5	H	-46.22		
4948.20	H	---		
5772.90	H	---		
Test mode:	BC 0		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.04	Vertical	-48.49	-13.00	Pass
2509.56	V	-46.07		
3346.08	V	-46.61		
4182.6	V	-46.17		
5019.12	V	---		
5855.64	V	---		
1673.04	Horizontal	-48.49	-13.00	Pass
2509.56	H	-45.71		
3346.08	H	-46.66		
4182.6	H	-46.24		
5019.12	H	---		
5855.64	H	---		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	BC 0		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1696.62	Vertical	-47.70	-13.00	Pass
2544.93	V	-48.01		
3393.24	V	-47.40		
4241.55	V	-47.02		
5089.86	V	---		
5938.17	V	---		
1696.62	Horizontal	-51.60	-13.00	Pass
2544.93	H	-48.90		
3393.24	H	-47.52		
4241.55	H	-46.63		
5089.86	H	---		
5938.17	H	---		
Test mode:	BC 1		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3702.5	Vertical	-30.93	-13.00	Pass
5553.75	V	-25.17		
7405	V	-35.61		
9256.25	V	-33.72		
11107.50	V	---		
12958.75	V	---		
3702.5	Horizontal	-36.67	-13.00	Pass
5553.75	H	-23.22		
7405	H	-36.07		
9256.25	H	-34.23		
11107.50	H	---		
12958.75	H	---		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	BC 1		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-35.15	-13.00	Pass
5640.00	V	-25.53		
7520.00	V	-36.02		
9400.00	V	-34.38		
11280.00	V	---		
13160.00	V	---		
3760.00	Horizontal	-39.58	-13.00	Pass
5640.00	H	-30.50		
7520.00	H	-35.35		
9400.00	H	-33.43		
11280.00	H	---		
13160.00	H	---		
Test mode:	BC 1		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3817.5	Vertical	-36.78	-13.00	Pass
5726.25	V	-22.72		
7635	V	-36.42		
9543.75	V	-33.45		
11452.50	V	---		
13361.25	V	---		
3817.5	Horizontal	-41.88	-13.00	Pass
5726.25	H	-30.87		
7635	H	-35.90		
9543.75	H	-33.97		
11452.50	H	---		
13361.25	H	---		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	BC 10		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1635.80	Vertical	-51.37	-13.00	Pass
2453.70	V	-44.69		
3271.60	V	-48.10		
4089.50	V	-47.05		
4907.40	V	---		
5725.30	V	---		
1635.80	Horizontal	-54.36	-13.00	Pass
2453.70	H	-43.75		
3271.60	H	-48.28		
4089.50	H	-47.24		
4907.40	H	---		
5725.30	H	---		
Test mode:	BC 10		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1641.00	Vertical	-52.26	-13.00	Pass
2461.50	V	-49.67		
3282.00	V	-47.48		
4102.50	V	-46.60		
4923.00	V	---		
5743.50	V	---		
1641.00	Horizontal	-54.84	-13.00	Pass
2461.50	H	-45.67		
3282.00	H	-48.03		
4102.50	H	-45.93		
4923.00	H	---		
5743.50	H	---		

Remark:

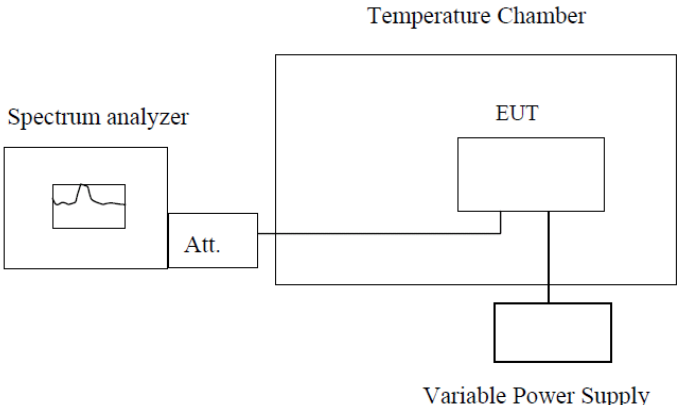
1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	BC 10		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1646.20	Vertical	-48.26	-13.00	Pass
2469.30	V	-43.87		
3292.40	V	-48.23		
4115.50	V	-45.86		
4938.60	V	---		
5761.70	V	---		
1646.20	Horizontal	-48.27	-13.00	Pass
2469.30	H	-43.75		
3292.40	H	-48.87		
4115.50	H	-45.88		
4938.60	H	---		
5761.70	H	---		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.12 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 2.1055(a)(1)(b)
Test Method:	FCC Part 2.1055(a)(1)(b)
Limit:	2.5 ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
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°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.

Measurement Data:

Reference Frequency: BC 0 Middle channel=384 channel=836.52MHz

Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	168	0.200832	2.5	Pass
	-20	151	0.180510		
	-10	122	0.145842		
	0	134	0.160187		
	10	142	0.169751		
	20	117	0.139865		
	30	102	0.121934		
	40	123	0.147038		
	50	124	0.148233		

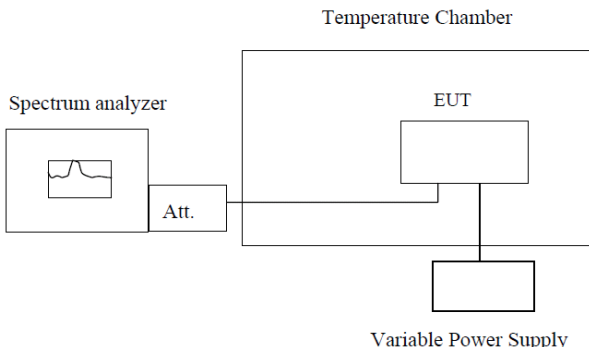
Reference Frequency: BC 1 Middle channel=600 channel=1880MHz

Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	159	0.084574	2.5	Pass
	-20	131	0.069681		
	-10	142	0.075532		
	0	123	0.065426		
	10	105	0.055851		
	20	124	0.065957		
	30	102	0.054255		
	40	111	0.059043		
	50	127	0.067553		

Reference Frequency: BC 10 Middle channel=580 channel=820.50MHz

Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	136	0.165753	2.5	Pass
	-20	104	0.126752		
	-10	113	0.137721		
	0	134	0.163315		
	10	126	0.153565		
	20	111	0.135283		
	30	105	0.127971		
	40	93	0.113346		
	50	107	0.130408		

6.13 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 2.1055(d)(1)(2)
Test Method:	FCC Part 2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25°C. 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, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed

Measurement Data (the worst channel):

Reference Frequency: BC 0 Middle channel=384 channel=836.52MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	101	0.120738	2.5	Pass
	3.70	93	0.111175		
	3.40	105	0.125520		
Reference Frequency: BC 1 Middle channel=600 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	129	0.068617	2.5	Pass
	3.70	104	0.055319		
	3.40	112	0.059574		
Reference Frequency: BC 10 Middle channel=580 channel=820.50MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	96	0.117002	2.5	Pass
	3.70	91	0.110908		
	3.40	84	0.102377		