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Report No.: 170615001RFM-3

FCC TEST REPORT

Product

Mobile Phone

Trade mark

MI

Model/Type reference

MDG2

Report Number

170615001RFM-3

Date of Issue

July 12, 2017

FCC ID

2AFZZ-XMSG2

Test Standards

FCC 47 CFR Part 27

FCC 47 CFR Part 2 Subpart J

Test result

PASS

Prepared for:

Xiaomi Communications Co., Ltd. The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

Prepared by:

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Tested by:

Reviewed by:

Senior Supervisor

Approved by:

Date:

July 12, 2017

Billy Li

Engineer

Technical Director



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Report No.: 170615001RFM-3

Version

Version No.	Date	Description
V1.0	July 12, 2017	Original





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1 General Information

1.1 Client Information

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer:	The Rainbow City of China Resources, NO.68, Qinghe Middle Street, Haidian District, Beijing, China

1.2 General Description of EUT

.z General Descrip	tion of Eur			
Product Name:	Mobile Phone			
Model No.(EUT):	MDG2			
Add. Mode No.:	N/A			
Trade Mark:	MI			
	GSM850/1900			
	WCDMA Band II/Band			
	LTE FDD Band 4 /Bar	nd 5 /Band 7		
	LTE TDD Band 38	EMU - 902 11h/a/a/UT209 UT10)		
		.5MHz 802.11b/g/n(HT20&HT40) MHz, 5470MHz-5725MHz, 5725MHz-5850MHz		
4	support 802.11a/n/ac	WI 12, 347 OWN 12-37 23WI 12, 37 23WI 12-3030WI 12		
	Bluetooth V3.0+EDR8	Bluetooth V4.0 BLE		
	GPS, Glonass			
Power Supply:	Model: MDY-08-EZ			
		Input: 100-240V~50/60Hz 0.35A MAX		
	AC Adapter1	Output: 5.0 V == 2.0 A		
	Manufacturer: Dongguan Aohai Power Technolog., Ltd.			
		Model: MDY-08-EZ		
	AC Adapter2	Input: 100-240V~50/60Hz 0.35A MAX		
	AC Adapter2	Output: 5.0 V == 2.0 A		
		Manufacturer: Jangsu Chenyang Electron Co., Ltd.		
		Model: BN31		
	Battery			
	100 cm(Shielded without ferrite)			
USB Changing Cable:	100 cm(Shielded without ferrite)			
Sample Received Date:	June 10, 2017			
Sample tested Date:	June 10, 2017 ~ July 12, 2017			
USB Micro-C Plug Cable: USB Changing Cable: Sample Received Date:	100 cm(Shielded without ferrite) June 10, 2017			

1.3 Product Specification subjective to this standard

Support Networks:	LTE Band 4/ Band 7/Band 38	
Type of Modulation: QPSK, 16QAM, 64QAM(DL)		
IENAL.	SIM1: 865181030006425	
IEMI:	SIM2: 865181030006433	
Type of Antenna:	PIFA Antenna	
Antenna Gain:	Band 4: 1.63dBi	
	Band 7: 2.86dBi	



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	Band 38: 2.84dBi
Sample Type:	Portable device
Normal Test voltage:	3.85Vdc
Extreme Test voltage:	3.4 to 4.4Vdc
Software Version:	QL1515-tissot
Hardware Version:	P3A

Summary of Results:						
LTE Band	Bandwidth	Frequency Range (MHz)	Max RF Output Power (dBm)		Type of Emission	
LIE Ballu	(MHz)		Conducted (Average)	EIRP (Average)	QPSK	16QAM
	1.4	1710.7-1754.3	22.78	19.32	1M3G7D	1M1W7D
	3	1711.5-1753.5	22.79	18.88	2M7G7D	2M7W7D
Band 4	5	1712.5-1752.5	22.82	19.45	4M5G7D	4M5W7D
Danu 4	10	1715-1750	22.86	19.14	9M0G7D	9M0W7D
	15	1717.5-1747.5	22.92	18.57	13M5G7D	13M5W7D
	20	1720-1745	22.06	19.12	17M9G7D	17M9W7D
	5	2502.5-2567.5	22.76	19.02	4M5G7D	4M5W7D
Band 7	10	2505-2565	22.17	19.01	8M9G7D	8M9W7D
Dariu 7	15	2507.5-2562.5	22.23	19.32	13M5G7D	13M5W7D
	20	2510-2560	22.89	19.12	18M0G7D	18M0W7D
	5	2572.5-2617.5	22.65	19.22	4M5G7D	4M5W7D
Band 38	10	2575.0-2615.0	22.69	19.21	8M9G7D	9M0W7D
Dana 38	15	2577.5-2612.5	22.72	19.02	13M5G7D	13M5W7D
	20	2580.0-2610.0	22.79	19.15	18M0G7D	18M0W7D



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1.4 Description of Support Units

The EUT has been tested with associated equipment below.

1) Cable

Cable No.	Description	Connector Type Cable Type/Length		Supplied by
1	Antenna Cable	SMA	30cm	UnionTrust

1.5 Test Location

All tests were performed at:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1,

Longhua New District, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888 Fax: +86 (0) 755 2823 0886

1.6 Test Facility

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

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

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

1.7 Deviation from Standards

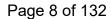
None.

1.8 Abnormalities from Standard Conditions

None

1.9 Other Information Requested by the Customer

None.





1.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	3.8 dB
2	Conducted emission 150KHz-30MHz	3.4 dB
3	Radiated emission 9KHz-30MHz	4.9
4	Radiated emission 30MHz-1GHz	4.7 dB
5	Radiated emission 1GHz-18GHz	5.1 dB
6	Radiated emission 18GHz-26GHz	5.2 dB
7	Radiated emission 26GHz-40GHz	5.2 dB



2 Test Summary

Applied Standard: FCC Part 27 & Part 2 (LTE Band 4)						
Test Item	Test Requirement	Test method	Result			
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5) KDB 971168 D01v0		PASS			
99%&26dB Occupied Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS			

A	oplied Standard: FCC Part 27 & Pa	rt 2 (LTE Band 7)	
Test Item	Test Requirement	Test method	Result
Equivalent Isotropic	FCC 47 CFR Part 2.1046(a) &	ANSI/TIA/EIA-603-D 2010 &	PASS
Radiated Power (EIRP)	FCC 47 CFR Part 27.50(h)(2)	KDB 971168 D01v02r02	17100
Conducted Output Power	FCC 47 CFR Part 2.1046(a) &	ANSI/TIA/EIA-603-D 2010 &	PASS
Conducted Output I ower	FCC 47 CFR Part 27.50(h)(2)	KDB 971168 D01v02r02	1 700
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v02r02	PASS
99%&26dB Occupied	FCC 47 CFR Part 2.1049(h)	ANSI/TIA/EIA-603-D 2010 &	PASS
Bandwidth	FCC 47 CFR Part 27.53(m)	KDB 971168 D01v02r02	FASS
Band Edge at antenna	FCC 47 CFR Part 27.53(m)(4)	ANSI/TIA/EIA-603-D 2010 &	PASS
terminals	FCC 47 CFR Part 27.55(III)(4)	KDB 971168 D01v02r02	PASS
Spurious emissions at	FCC 47 CFR Part 2.1051 &	ANSI/TIA/EIA-603-D 2010 &	PASS
antenna terminals	FCC 47 CFR Part 27.53(m)	KDB 971168 D01v02r02	PASS
Field strength of spurious	FCC 47 CFR Part 2.1053 &	ANSI/TIA/EIA-603-D 2010 &	PASS
radiation	FCC 47 CFR Part 27.53(m)	KDB 971168 D01v02r02	1 700
Frequency stability	FCC 47 CFR Part 2.1055 &	ANSI/TIA/EIA-603-D 2010 &	PASS
Frequency Stability	FCC 47 CFR Part 27.54	KDB 971168 D01v02r02	FASS

Ap	plied Standard: FCC Part 27 & Part	rt 2 (LTE Band 38)	
Test Item	Test Requirement	Test method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v02r02	PASS
99%&26dB Occupied Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(g)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(g)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(g)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(g)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS



3 Equipment List

		3M Semi/i	full-anechoic	Chamber		
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
	Receiver	R&S	ESR7	1316.3003K07- 101181-K3	Dec. 22, 2016	Dec. 22, 2017
\boxtimes	Receiver	R&S	ESIB26	100114	Dec. 22, 2016	Dec. 22, 2017
\boxtimes	Communication test set	R&S	CMW500	130805	08-10-2016	08-09-2017
	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017
\boxtimes	Loop Antenna	ETS-LINDGREN	6502	00202525	Jun. 24, 2015	Jun. 23, 2018
	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Jul. 24, 2015	Jul. 23, 2018
	Preamplifier	HP	8447F	2805A02960	Dec. 22, 2016	Dec. 22, 2017
\boxtimes	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	S-LINDGREN 3142E-PA		Dec. 30, 2016	Dec. 30, 2017
	Horn Antenna	ETS-LINDGREN	3117	00164202	Jul. 24, 2015	Jul. 23, 2018
	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Dec. 30, 2016	Dec. 30, 2017
	Horn Antenna	ETS-LINDGREN	3116C	00200180	Jul. 28, 2015	Jul. 27, 2018
	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Jul. 29, 2015	Jul. 28, 2018
\boxtimes	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
	Band rejection filter (5150MHz~5880MHz)	micro-tronics	BRM50716	G1868	Jun. 21, 2017	Jun. 20, 2018
	Band rejection filter (2400MHz~2500MHz)	micro-tronics	BRM50702	G248	Jun. 15, 2017	Jun. 14, 2018
	Highpass Filter (1.2GHz~18GHz)	Micro-Tronics	HPM50108	G552	Jan. 19, 2017	Jan. 19, 2018
	Highpass Filter (3GHz~18GHz)	Micro-Tronics	HPM50117	G005	Jan. 30, 2017	Jan. 30, 2018

	Conducted RF test Equipment List										
Used	Equipment	Manufacturer Model No.		Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)					
>	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Dec. 22, 2016	Dec. 22, 2017					
	Receiver	R&S	ESR7	1316.3003K07- 101181-K3	Dec. 22, 2016	Dec. 22, 2017					
>	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	Dec. 22, 2016	Dec. 22, 2017					



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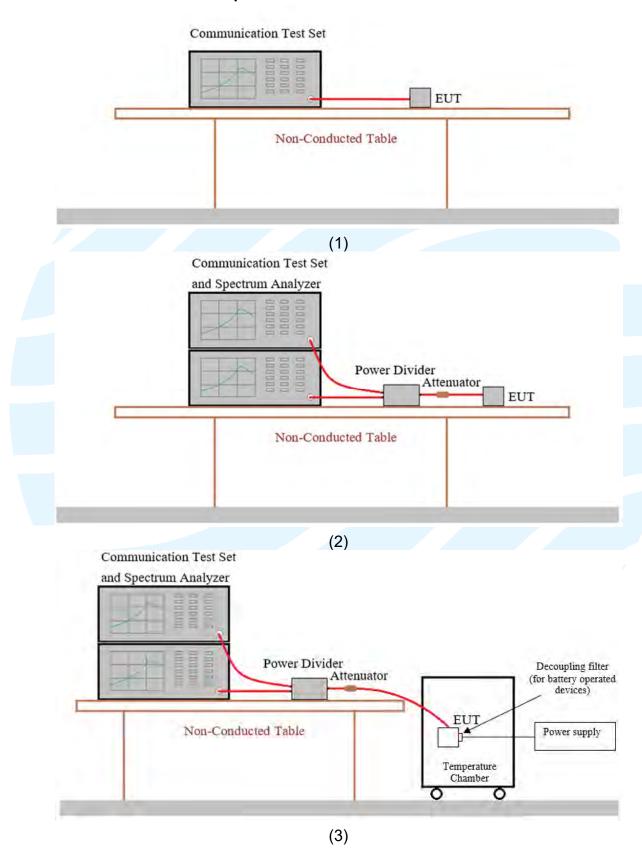
•	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	Dec. 22, 2016	Dec. 22, 2017
	DC Source	KIKUSUI	PWR400L	LK003024	09-21-2016	09-20-2017
	Temp & Humidity					
\boxtimes	chamber	Ispec	GL(U)04KA(W)	1692H201P3	09-21-2016	09-20-2017
	Communication test	500	01414/500	400005	00.40.0040	00 00 0047
	set	R&S	CMW500	130805	08-10-2016	08-09-2017



4 Test Requirement

4.1 Test setup

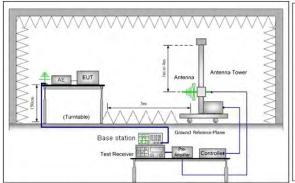
4.1.1 For Conducted test setup



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4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:



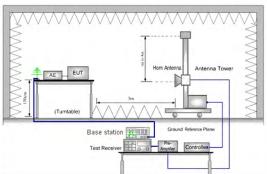
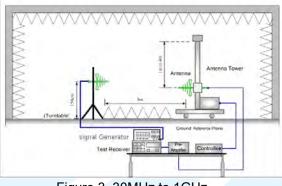


Figure 1. 30MHz to 1GHz

Figure 2. Above 1GHz



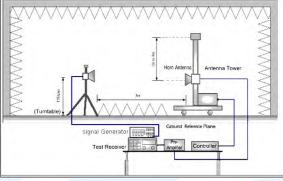


Figure 3. 30MHz to 1GHz

Figure 4. Above 1GHz

4.2 **Test Environment**

Operating Environment:	
Temperature:	24.3 °C
Humidity:	58 % RH
Atmospheric Pressure:	100.29kpa

4.3 **System Test Configuration**

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.85Vdc rechargeable Li-on battery. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

The worst case was found when positioned as the table below

	Worst-case Orientation					
Band	ERP or EIRP	Radiated Emission				
LTE Band 4	X axis	X axis				
LTE Band 7	X axis	X axis				
LTE Band 38	X axis	X axis				
LTE Band 40	X axis	X axis				



All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

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Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.4 Test Condition

4.4.1 Test channel

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)	Number [DL]	Frequency of Downlink (MHz)
		1.4	19957	1710.7	1957	2110.7
		3	19965	1711.5	1965	2111.5
	Low Bongs	5	19975	1712.5	1975	2112.5
	Low Range	10	20000	1715	2000	2115
		15	20025	1717.5	2025	2117.5
LTE band 4		20	20050	1720	2050	2120
TX:1710- 1755MHz RX:2110-	Middle Range	1.4/3/5/10/ 15/20	20175	1732.5	2175	2132.5
255MHz		1.4	20393	1754.3	2393	2154.3
		3	20385	1753.5	2385	2153.5
	High Dongs	5	20375	1752.5	2375	2152.5
	High Range	10	20350	1750	2350	2150
		15	20325	1747.5	2325	2147.5
		20	20300	1745	2300	2145
		5	20775	2502.5	2775	2622.5
	Low Range	10	20800	2505	2800	2625
		15	20825	2507.5	2825	2627.5
LTE band 7		20	20850	2510	2850	2630
TX:2500- 2570MHz RX:2620-	Middle Range	5/10/15/20	21100	2535	3100	2655
2690MHz		5	21425	2567.5	3425	2652.5
	High Range	10	21400	2565	3400	2685
(riigii Kange	15	21375	2562.5	3375	2647.5
		20	21350	2560	3350	2645
		5	3775	2572.5	3775	2572.5
	Low Bongo	10	37800	2575.0	37800	2575.0
LTE band	Low Range	15	37825	2577.5	37825	2577.5
38		20	37850	2580.0	37850	2580.0
TX:2570- 2620MHz	Middle Range	1.4/3/5/10	38000	2595	38000	2595
RX:2570-		5	38225	2617.5	38225	2617.5
2620MHz	Ligh Panga	10	38200	2615	38200	2615
	High Range	15	38175	1612.5	38175	1612.5
		20	38150	1610	38150	1610



4.4.2 Pre-scan

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below: Conducted transmitter power measurement result.

Channel		B uration	[ďl	e Power 3m]	Channel		RB juration	Average Power [dBm]	
	Size	Offset	QPSK	16QAM		Size	Offset	QPSK	16QAM
С	hannel E	Bandwidtl	h: 1.4 MH	Z	Channel Bandwidth: 3 MHz				
	1	0	22.66	22.24		1	0	22.67	22.25
	1	2	22.75	22.28		1	7	22.76	22.29
	1	5	22.76	22.27		1	14	22.77	22.28
LCH	3	0	22.64	22.23	LCH	8	0	21.79	20.81
	3	1	22.73	22.27		8	3	21.75	20.75
	3	3	22.74	22.26		8	7	21.80	20.74
	6	0	21.87	20.84		15	0	21.88	20.85
	1	0	22.61	22.27		1	0	22.62	22.28
	1	2	22.69	22.30		1	7	22.70	22.31
	1	5	22.78	22.29		1	14	22.79	22.30
MCH	3	0	22.59	22.26	MCH	8	0	21.81	20.82
	3	1	22.67	22.29		8	3	21.79	20.85
	3	3	22.76	22.28		8	7	21.83	20.84
	6	0	21.89	20.86		15	0	21.90	20.87
	1	0	22.67	22.15		1	0	22.68	22.16
	1	2	22.71	22.20		1	7	22.72	22.21
	1	5	22.77	22.27	НСН	1	14	22.78	22.28
HCH	3	0	22.65	22.14		8	0	21.80	20.81
	3	1	22.69	22.19		8	3	21.78	20.75
	3	3	22.75	22.26		8	7	21.82	20.77
	6	0	21.73	20.77		15	0	21.74	20.78
(Channel	Bandwid			Channel Bandwidth: 10 MHz				
	1	0	22.70	22.28		1	0	22.74	22.32
	1	12	22.79	22.32		1	24	22.83	22.36
	1	24	22.80	22.31		1	49	22.84	22.35
LCH	12	0	21.82	20.84	LCH	25	0	21.86	20.88
	12	6	21.78	20.78		25	12	21.82	20.82
	12	13	21.83	20.77		25	25	21.87	20.81
	25	0	21.91	20.88		50	0	21.95	20.92
	1	0	22.65	22.31		1	0	22.69	22.35
	1	12	22.73	22.34		1	24	22.77	22.38
	1	24	22.82	22.33		1	49	22.86	22.37
MCH	12	0	21.84	20.85	MCH	25	0	21.88	20.89
	12	6	21.82	20.88		25	12	21.86	20.92
	12	13	21.86	20.87		25	25	21.90	20.91
	25	0	21.93	20.90		50	0	21.97	20.94
	1	0	22.71	22.19		1	0	22.75	22.23
HCH	1	12	22.75	22.24	HCH	1	24	22.79	22.28
	1	24	22.81	22.31		1	49	22.85	22.35



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	12	0	21.83	20.84		25	0	21.87	20.88
	12	6	21.81	20.78		25	12	21.85	20.82
	12	13	21.85	20.80		25	25	21.89	20.84
	25	0	21.77	20.81		50	0	21.81	20.85
С	hannel E	Bandwidt	h: 15 MH:	Z	С	hannel l	Bandwidt	th: 20 MH	z
	1	0	22.80	22.38		1	0	22.83	22.41
	1	37	22.89	22.42		1	50	22.92	22.45
	1	74	22.90	22.41		1	99	22.93	22.44
LCH	37	0	21.92	20.94	LCH	50	0	21.95	20.97
	37	19	21.88	20.88		50	25	21.91	20.91
	37	39	21.93	20.87		50	50	21.96	20.90
	75	0	22.01	20.98		100	0	22.04	21.01
	1	0	22.75	75 22.41		1	0	22.78	22.44
	1	37	22.83	22.44		1	50	22.86	22.47
	1	74	22.92	22.43		1	99	22.95	22.46
MCH	37	0	21.94	20.95	MCH	50	0	21.97	20.98
	37	19	21.92	20.98		50	25	21.95	21.01
	37	39	21.96	20.97		50	50	21.99	21.00
	75	0	22.03	21.00		100	0	22.06	21.03
	1	0	22.81	22.29	_	1	0	22.84	22.32
	1	37	22.85	22.34		1	50	22.88	22.37
	1	74	22.91	22.41		1	99	22.94	22.44
HCH	37	0	21.93	20.94	HCH	50	0	21.96	20.97
	37	19	21.91	20.88		50	25	21.94	20.91
	37	39	21.95	20.90		50	50	21.98	20.93
	75	0	21.87	20.91		100	0	21.90	20.94

Channel		RB juration	Averag	e Power Bm]	Channel		RB juration	Average Power [dBm]		
Channel	Size	Offset	QPSK	16QAM	Channel	Size	Offset	QPSK	16QAM	
(Bandwid			Channel Bandwidth: 10 MHz					
	1	0	22.64	22.08		1	0	22.68	22.12	
	1	12	22.76	22.09		1	24	22.80	22.13	
	1	24	22.56	21.94		1	49	22.60	21.98	
LCH	12	0	21.76	20.72	LCH	25	0	21.80	20.76	
	12	6	21.77	20.80		25	12	21.81	20.84	
	12	13	21.78	20.80		25	25	21.82	20.84	
	25	0	21.88	20.88		50	0	21.92	20.92	
	1	0	22.53	22.04		1	0	22.57	22.08	
	1	12	22.54	22.13		1	24	22.58	22.17	
	1	24	22.42	21.94		1	49	22.46	21.98	
MCH	12	0	21.57	20.64	MCH	25	0	21.61	20.68	
	12	6	21.59	20.62		25	12	21.63	20.66	
	12	13	21.67	20.63		25	25	21.71	20.67	
	25	0	21.54	20.57		50	0	21.58	20.61	
	1	0	22.57	21.81		1	0	22.61	21.85	
	1	12	22.75	21.82		1	24	22.79	21.86	
	1	24	22.39	22.00		1	49	22.43	22.04	
HCH	12	0	21.59	20.58	HCH	25	0	21.63	20.62	
	12	6	21.61	20.67		25	12	21.65	20.71	
	12	13	21.62	20.57		25	25	21.66	20.61	
	25	0	21.57	20.54		50	0	21.61	20.58	
C		Bandwidt	h: 15 MH	Z	С		1	th: 20 MH	Z	
	1	0	22.74	22.18		1	0	22.77	22.21	
	1	37	22.86	22.19		1	50	22.89	22.22	
	1	74	22.66	22.04		1	99	22.69	22.07	
LCH	37	0	21.86	20.82	LCH	50	0	21.89	20.85	
	37	19	21.87	20.90		50	25	21.90	20.93	
	37	39	21.88	20.90		50	50	21.91	20.93	
	75	0	21.98	20.98		100	0	22.01	21.01	
	1	0	22.63	22.14		1	0	22.66	22.17	
	1	37	22.64	22.23		1	50	22.67	22.26	
MOLL	1	74	22.52	22.04	MCH	1	99	22.55	22.07	
MCH	37	0	21.67	20.74	MCH	50	0	21.70	20.77	
	37	19	21.69	20.72		50	25	21.72	20.75	
	37	39	21.77	20.73		50	50	21.80	20.76	
	75 1	0	21.64	20.67		100	0	21.67	20.70	
	1	37	22.67	21.91		1	0 50	22.70	21.94	
	1	74	22.85	21.92		1	99	22.88	21.95	
HCH	37	0	22.49	22.10	НСН	50	0	22.52	22.13	
11011	37	19	21.69	20.68	HCH	50	25	21.72	20.71	
	37	39	21.71	20.77	}	50	50	21.74	20.80	
	75	0	21.72	20.67	}	100	0	21.75	20.70	
	73	U	21.67	20.64		100	l	21.70	20.67	

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Unionities	Channel		RB juration		e Power Bm]	Channel		RB juration	Averag [dl	e Power Bm]	
The color of the	5			QPSK	16QAM		_		QPSK	16QAM	
Table	(Channel	Bandwid	th: 5 MHz	2	Channel Bandwidth: 10 MHz					
Table Tabl		1	0	22.50	21.21		1	0	22.54	21.25	
CH		1	12	22.57	21.40		1	24	22.61	21.44	
12		1	24	22.65	21.53		1	49	22.69	21.57	
12	LCH	12		21.59	20.65	LCH	25	0	21.63	20.69	
MCH		12	6	21.67	20.69		25	12	21.71	20.73	
The first color of the first c				21.70	20.71			25	21.74	20.75	
MCH		25		21.73	20.69		50		21.77	20.73	
MCH				22.16	21.20				22.20	21.24	
MCH				22.29	21.42				22.33	21.46	
12 6 21.59 20.34 25 12 21.63 20.38 25 25 21.73 20.53 25 0 21.72 20.67 50 0 21.76 20.71 20.67 1 0 22.66 21.60 1 1 22 22.59 21.74 1 24 22.63 21.78 1 24 22.63 21.78 1 24 22.63 21.78 1 24 22.63 21.78 1 24 22.63 21.78 1 24 22.63 21.55 1 2 21.31 20.53 25 0 21.55 20.55 1 2 21.31 20.53 25 0 21.55 20.55 25 0 21.54 20.51 25 0 0 21.55 20.55 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 25 21.59 20.54 25 12 21.31 20.53 25 25 21.59 20.54 25 12 21.31 20.53 25 25 21.59 20.54 25 12 21.31 20.53 25 25 21.59 20.54 25 12 21.31 20.53 25 25 21.59 20.54 25 12 21.31 20.53 25 25 21.59 20.54 25 21.59 20.54				22.48	21.41				22.52	21.45	
12	MCH			21.46	20.38	MCH			21.50	20.42	
Part				21.59	20.34				21.63	20.38	
HCH 1				21.69	20.49				21.73	20.53	
HCH					20.67				21.76	20.71	
HCH 1				22.56		11011			22.60		
HCH 12											
12 6 21.27 20.49 25 12 21.31 20.53 12 13 21.55 20.50 25 25 21.59 20.54 25 0 21.54 20.51 20 0 21.58 20.55	11011										
12	HCH					HCH				20.55	
Channel Bandwidth: 15 MHz											
Channel Bandwidth: 15 MHz Channel Bandwidth: 20 MHz 1 0 22.57 21.28 1 0 22.64 21.35 1 37 22.64 21.47 1 50 22.71 21.54 1 74 22.72 21.60 LCH 1 99 22.79 21.67 37 19 21.74 20.76 50 25 21.81 20.83 37 39 21.77 20.78 100 0 21.87 20.83 75 0 21.80 20.76 1 0 22.30 21.34 1 37 22.36 21.49 1 50 22.43 21.56 MCH 37 0 21.53 20.45 MCH 1 99 22.62 21.55 MCH 37 0 21.53 20.45 MCH 50 0 21.60 20.52 37 19 21.66 20.41 5	-			7							
HCH 1						21.00 20.00					
LCH 1 37 22.64 21.47 1 74 22.72 21.60 37 0 21.66 20.72 37 19 21.74 20.76 75 0 21.80 20.76 1 37 22.36 21.49 1 37 22.36 21.48 1 74 22.55 21.48 37 19 21.66 20.41 37 39 21.76 20.56 37 39 21.76 20.56 75 0 21.83 20.45 37 39 21.76 20.56 75 0 21.79 20.74 1 37 22.66 21.81 1 37 22.66 21.81 1 37 22.66 21.81 1 37 22.66 21.81 1 37 22.66 21.81 1 37 22.66 21.81 1 37 22.66 21.81 1 74 22.68 21.59 HCH 37 0 21.58 20.58 37 39 21.62 20.57 HCH 37 39 21.62 20.57	U										
LCH 1 74 22.72 21.60 37 0 21.66 20.72 37 19 21.74 20.76 75 0 21.80 20.76 1 0 22.23 21.27 1 0 22.30 21.34 1 0 22.30 21.49 1 74 22.55 21.48 MCH 37 0 21.66 20.41 37 39 21.76 20.56 37 19 21.66 20.41 37 39 21.76 20.56 75 0 21.89 20.74 HCH HCH 37 0 22.63 21.67 1 0 22.63 21.67 1 0 22.70 21.74 1 37 22.66 21.81 1 0 22.70 21.74 1 37 22.66 21.81 1 0 22.63 21.67 1 74 22.68 21.59 HCH HCH 37 0 21.58 20.58 37 19 21.34 20.56 37 39 21.62 20.57 HCH 1 0 22.70 21.66 20.64											
LCH 37 0 21.66 20.72 LCH 50 0 21.73 20.79 37 19 21.74 20.76 50 25 21.81 20.83 37 39 21.77 20.78 50 50 21.84 20.85 75 0 21.80 20.76 100 0 21.87 20.83 1 0 22.23 21.27 1 0 22.30 21.34 1 74 22.55 21.48 1 50 22.43 21.56 1 74 22.55 21.48 1 99 22.62 21.55 37 19 21.66 20.41 50 0 21.60 20.52 37 39 21.76 20.56 50 25 21.73 20.48 50 50 21.83 20.63 100 0 21.86 20.81 HCH 1 37 22.68											
37 19 21.74 20.76 37 39 21.77 20.78 50 50 21.84 20.83 75 0 21.80 20.76 100 0 21.87 20.83 1 0 22.23 21.27 1 0 22.30 21.34 1 74 22.36 21.49 1 50 22.43 21.56 1 74 22.55 21.48 1 99 22.62 21.55 37 19 21.66 20.41 50 0 21.60 20.52 37 39 21.76 20.56 50 25 21.73 20.48 50 50 50 21.83 20.63 75 0 21.79 20.74 100 0 21.86 20.81 1 0 22.63 21.67 1 0 22.73 21.88 1 74 22.68 21.59	LCH					1 CH					
MCH 37 39 21.77 20.78 50 50 21.84 20.85 100 0 21.87 20.83 1 0 22.23 21.27 1 0 22.30 21.34 1 50 22.43 21.56 1 0 0 22.30 21.34 1 50 22.43 21.56 1 0 0 22.63 21.66 20.41 37 39 21.76 20.56 75 0 21.79 20.74 1 0 22.70 21.74 1 37 22.66 21.81 1 74 22.68 21.59 1 1 99 22.75 21.66 1 1 74 22.68 21.59 1 1 99 22.75 21.66 1 1 99 22.75 21.66 20.41 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	LOTT					2011					
75 0 21.80 20.76 100 0 21.87 20.83 1 0 22.23 21.27 1 0 22.30 21.34 1 37 22.36 21.49 1 50 22.43 21.56 1 74 22.55 21.48 1 99 22.62 21.55 37 19 21.66 20.41 50 0 21.60 20.52 37 39 21.76 20.56 50 25 21.73 20.48 50 50 25 21.73 20.48 50 50 21.83 20.63 75 0 21.79 20.74 100 0 21.86 20.81 1 0 22.63 21.67 1 0 22.70 21.74 1 37 22.66 21.81 1 50 22.73 21.88 1 74 22.68 21.59 1											
MCH 1 0 22.23 21.27 1 37 22.36 21.49 1 74 22.55 21.48 MCH 37 0 21.53 20.45 37 19 21.66 20.41 37 39 21.76 20.56 75 0 21.79 20.74 1 0 22.63 21.67 1 37 22.66 21.81 1 74 22.68 21.59 HCH 37 0 21.58 20.58 37 19 21.34 20.56 37 19 21.34 20.56 37 19 21.58 20.58 1 50 22.73 21.88 1 74 22.68 21.59 HCH 50 0 21.65 20.65 37 19 21.34 20.56 37 39 21.62											
MCH 1 37 22.36 21.49 1 74 22.55 21.48 37 0 21.53 20.45 37 19 21.66 20.41 37 39 21.76 20.56 75 0 21.79 20.74 1 0 22.63 21.67 1 37 22.66 21.81 1 74 22.68 21.59 HCH 37 0 21.58 20.58 37 19 21.34 20.56 37 19 21.34 20.56 37 39 21.62 20.57		-									
MCH											
MCH 37 0 21.53 20.45 MCH 50 0 21.60 20.52 37 19 21.66 20.41 50 25 21.73 20.48 37 39 21.76 20.56 50 50 21.83 20.63 75 0 21.79 20.74 100 0 21.86 20.81 1 0 22.63 21.67 1 0 22.70 21.74 1 37 22.66 21.81 1 50 22.73 21.88 1 74 22.68 21.59 HCH 50 0 21.65 20.65 37 19 21.34 20.56 50 25 21.41 20.63 37 39 21.62 20.57 50 50 21.69 20.64		1	74				1	99			
37	MCH	37	0			MCH	50	0			
37 39 21.76 20.56 50 50 21.83 20.63 100 0 21.86 20.81 1 0 22.63 21.67 1 50 22.70 21.74 1 37 22.66 21.81 1 50 22.73 21.88 1 74 22.68 21.59 1 99 22.75 21.66 1 99 22.75 21.66 37 19 21.34 20.56 50 25 21.41 20.63 37 39 21.62 20.57 100		37	19				50	25			
75 0 21.79 20.74 100 0 21.86 20.81 1 0 22.63 21.67 1 0 22.70 21.74 1 37 22.66 21.81 1 50 22.73 21.88 1 74 22.68 21.59 1 99 22.75 21.66 37 19 21.34 20.56 50 0 21.65 20.65 37 39 21.62 20.57 50 50 21.69 20.64		37	39				50	50			
HCH 1 0 22.63 21.67 1 0 22.70 21.74 1 37 22.66 21.81 1 50 22.73 21.88 1 74 22.68 21.59 1 99 22.75 21.66 37 0 21.34 20.56 37 19 21.34 20.56 50 25 21.41 20.63 37 39 21.62 20.57		75	0				100	0			
HCH 37 22.66 21.81 1 74 22.68 21.59 37 0 21.58 20.58 37 19 21.34 20.56 37 39 21.62 20.57		1	0				1	0			
HCH		1	37				1	50			
HCH 37 0 21.58 20.58 HCH 50 0 21.65 20.65 37 19 21.34 20.56 50 25 21.41 20.63 37 39 21.62 20.57 50 50 21.69 20.64		1	74				1	99			
37 19 21.34 20.56 37 39 21.62 20.57 50 25 21.41 20.63 50 50 50 21.69 20.64	HCH	37	0			HCH	50	0			
75 2 20.01	-	37	19				50	25			
75 0 21.61 20.58 100 0 21.68 20.65		37	39	21.62	20.57		50	50	21.69	20.64	
		75	0	21.61	20.58		100	0	21.68	20.65	

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4.4.3 Test mode

Pre-scan all mode and data rates and positions, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

EIRP 4 A		t Cha	Innel H In I
EIRP 4 Image: Second conducted output power A Image: Second conducted condu			
EIRP 7 - - \omega \omeg			
38			
Conducted output power 4 □			
Conducted output power 7 - - □			\boxtimes
output power 7 - - \Box			
38		\boxtimes	\boxtimes
99%&26dB Occupied 7 🖂 🖂 🖂 🖂 🖂 🖂 🖂	\boxtimes		
Occupied 7 - - □			\boxtimes
	\boxtimes		\boxtimes
peak-to- 4 ⊠ ⊠ ⊠ ⊠ ⊠ ⊠ ⊠ □ □			
	\boxtimes		\boxtimes
Band Edge 4 🛛 🖂 🖂 🖂 🖂 🖂 🖂 🖂			
	\boxtimes		
	\boxtimes		
	\boxtimes		
emissions at antenna 7 \boxtimes \boxtimes \boxtimes \boxtimes \boxtimes \boxtimes \square	\boxtimes		
terminals 38	\boxtimes		
Field 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		\boxtimes	
spurious		\boxtimes	
radiation 38 □ □ □ □ □ □ □ □		\boxtimes	
		\boxtimes	
Frequency stability 7 \boxtimes \boxtimes \boxtimes \boxtimes \square \square \square		\boxtimes	
Remark: The mark "♥" means is chosen for testing: The mark "□" means is not chosen		\boxtimes	

Remark: The mark " \boxtimes " means is chosen for testing; The mark " \square " means is not chosen for testing; The mark "-" means is not supported bandwidth



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5 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC 47 CFR Part 27	Miscellaneous Wireless Communications Services
2	FCC 47 CFR Part 2 Subpart J	Frequency allocations and radio treaty matters; general rules and regulations
3	ANSI/TIA/EIA-603-D 2010	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
4	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v02r02

5.1 Radiated Power (ERP & EIRP)

Test Requirement: FCC 47 CFR Part 2.1046(a)

LTE Band 4: FCC 47 CFR Part 27.50(d)(4)

LTE Band 7 & Band 41: FCC 47 CFR Part 27.50(h)(2)

Test Method:

KDB 971168 D01v02r02 & ANSI/TIA/EIA-603-D 2010

Limit:

FCC 47 CFR Part 27.50(a)(3): For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

FCC 47 CFR Part 27.50(d)(4): Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(h)(2): Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Test Procedure:

Test procedure as below:

- The EUT was powered ON and placed on a 1.5m high table at a 3
 meter fully Anechoic Chamber. The antenna of the transmitter was
 extended to its maximum length. Modulation mode and the measuring
 receiver shall be tuned to the frequency of the transmitter under test.
- 2) The EUT was set 3 meters (above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.
- 6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the



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receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.

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- 7) The output power into the substitution antenna was then measured.
- 8) Steps 6) and 7) were repeated with both antennas polarized.
- 9) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd) EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

- 10) Test the EUT in the lowest channel, the middle channel the Highest channel
- 11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, and found the X axis positioning which it is worse case.
- 12) Repeat above procedures until all frequencies measured was complete.

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup: Refer to section 4.1.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode
Test Results: Pass

Test Data:

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_	Frequency		(dBm)	Limit		Antenna
Channel	(MHz)	QPSK; RB:1	16QAM; RB:1	(dBm)	Result	Polaxis.
		LTE Ba	nd 4; Bandwidt	h 1.4MHz		
19957	1710.7	19.32	18.56	30.00	Pass	Н
19901	17 10.7	13.21	11.29	30.00	Pass	V
20175	1732.5	18.89	16.88	30.00	Pass	Н
20175	1732.5	12.79	11.43	30.00	Pass	V
20202	4754.0	19.22	18.36	30.00	Pass	Н
20393	1754.3	12.54	10.87	30.00	Pass	V
		LTE Ba	and 4; Bandwid	lth 3MHz		1
10005	4744 5	18.43	17.66	30.00	Pass	Н
19965	1711.5	12.29	11.07	30.00	Pass	V
00475	4700.5	17.92	17.32	30.00	Pass	Н
20175	1732.5	12.67	11.18	30.00	Pass	V
00005	4750.5	18.88	17.92	30.00	Pass	Н
20385	1753.5	13.06	12.15	30.00	Pass	V
		LTE Ba	and 4; Bandwid	Ith 5MHz		
		20.13	19.08	30.00	Pass	Н
19975	1712.5	13.32	12.18	30.00	Pass	V
	1732.5	19.45	18.05	30.00	Pass	Н
20175		12.22	11.3	30.00	Pass	V
		20.11	19.22	30.00	Pass	Н
20375	1752.5	13.44	12.32	30.00	Pass	V
			nd 4; Bandwid			
		18.87	17.92	30.00	Pass	Н
20000	1715	11.43	10.67	30.00	Pass	V
		19.03	18.17	30.00	Pass	Н
20175	1732.5	12.34	11.31	30.00	Pass	V
		19.14	18.33	30.00	Pass	Н
20350	1750	13.22	12.54	30.00	Pass	V
			nd 4; Bandwid		1 400	<u> </u>
		18.45	17.91	30.00	Pass	Н
20025	1717.5	12.80	11.77	30.00	Pass	V
		18.54	17.68	30.00	Pass	Н
20175	1732.5	12.55	11.92	30.00	Pass	V
		18.57	17.44	30.00	Pass	H
20325	1747.5	13.02	11.83	30.00	Pass	V
			nd 4; Bandwid		1 433	V
		19.12	17.98	30.00	Pass	Н
20050	1720	13.76	12.55	30.00	Pass	V
		18.88	17.34	30.00	Pass	H
20175	1732.5					V
		12.97	11.48	30.00	Pass	V
		18.87	17.39	30.00	Pass	Н

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	Frequency	EIRP	(dBm)	Limit		Antenna
Channel	(MHz)	QPSK; RB:1	16QAM; RB:1	(dBm)	Result	Polaxis.
		LTE Ba	and 7; Bandwic	ith 5MHz		
20775	2502.5	18.45	17.32	33.01	Pass	Н
20775	2502.5	12.89	10.32	33.01	Pass	V
21100	2535	18.65	17.73	33.01	Pass	Н
21100	2555	11.77	11.04	33.01	Pass	V
21425	2567.5	19.02	17.97	33.01	Pass	Н
21425	2507.5	13.44	12.24	33.01	Pass	V
		LTE Ba	nd 7; Bandwid	th 10MHz		
20800	2505	18.65	17.32	33.01	Pass	Н
20000	2505	12.56	11.45	33.01	Pass	V
21100	2535	19.01	18.55	33.01	Pass	Н
21100	2555	13.73	12.47	33.01	Pass	V
21400	2565	18.88	17.95	33.01	Pass	Н
21400	2303	12.72	11.05	33.01	Pass	V
		LTE Ba	nd 7; Bandwid	th 15MHz		
20825	2507.5	19.32	18.32	33.01	Pass	Н
20023	2507.5	14.30	12.68	33.01	Pass	V
21100	2535	18.89	17.79	33.01	Pass	Н
21100	2555	13.19	11.77	33.01	Pass	V
21375	2562.5	18.92	18.06	33.01	Pass	Н
21373	2302.3	13.78	12.04	33.01	Pass	V
		LTE Ba	nd 7; Bandwid	th 20MHz		
20850	2510	19.12	18.76	33.01	Pass	Н
20000	2010	13.56	12.28	33.01	Pass	V
21100	2535	19.01	18.57	33.01	Pass	Н
21100	2000	13.55	12.23	33.01	Pass	V
21350	2560	18.90	17.43	33.01	Pass	Н
21330	2500	13.26	11.87	33.01	Pass	V

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	Frequency	EIRP	(dBm)	Limit		Antenna
Channel	(MHz)	QPSK; RB:1	16QAM; RB:1	(dBm)	Result	Polaxis.
		LTE Ba	nd 38; Bandwi	dth 5MHz		
37775	2572.5	18.89	18.02	33.01	Pass	Н
37773	2572.5	13.54	12.28	33.01	Pass	V
38000	2595	19.22	18.43	33.01	Pass	Н
36000	2595	13.37	12.09	33.01	Pass	V
38225	2617.5	18.99	17.87	33.01	Pass	Н
30223	2017.5	12.79	11.42	33.01	Pass	V
		LTE Bai	nd 38; Bandwid	lth 10MHz		
37800	2575	19.21	18.69	33.01	Pass	Н
37600	2373	13.55	12.61	33.01	Pass	V
38000	2595	18.94	17.93	33.01	Pass	Н
38000	2595	12.66	11.74	33.01	Pass	V
38200	2615	18.77	17.85	33.01	Pass	Н
36200	2013	13.34	12.46	33.01	Pass	V
		LTE Bai	nd 38; Bandwid	lth 15MHz		
37825	2577.5	19.02	18.33	33.01	Pass	Н
37623	2377.3	13.43	12.79	33.01	Pass	V
38000	2595	18.87	17.39	33.01	Pass	Н
36000	2595	13.17	12.89	33.01	Pass	V
38175	2612.5	18.88	17.69	33.01	Pass	Н
36173	2012.5	13.65	12.19	33.01	Pass	V
		<u> </u>	nd 38; Bandwid	Ith 20MHz		
37850	2580	19.15	18.79	33.01	Pass	Н
37030	2300	14.02	12.43	33.01	Pass	V
38000	2595	19.04	18.16	33.01	Pass	Н
30000	2090	13.44	11.97	33.01	Pass	V
38150	2610	18.92	17.86	33.01	Pass	Н
30130	2010	13.27	11.48	33.01	Pass	V



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5.2 Conducted Output Power

Test Requirement: FCC 47 CFR Part 2.1046(a)

LTE Band 4: FCC 47 CFR Part 27.50(d)(4)

LTE Band 7 & Band 38: FCC 47 CFR Part 27.50(h)(2)

Test Method: KDB 971168 D01v02r02 & ANSI/TIA/EIA-603-D 2010

Limit: FCC 47 CFR Part 27.50(a)(3): For mobile and portable stations transmitting

in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

FCC 47 CFR Part 27.50(d)(4): Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are

limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(h)(2): Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts

transmitter output power.

Test Procedure: The EUT was set up for the maximum power with WCDMA, CDMA, and

LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on

simulator.

Note: The cable loss and attenuator loss were offset into measure device as

an amplitude offset.

Test Setup: Refer to section 4.1.1(1) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode
Test Results: Pass

Test Data: The full result can be also refer to section 4.4.2 for details.



LTE Band 4

Channel		B uration		e Power Bm]	Channel		B uration		e Power 3m]
	Size	Offset	QPSK	16QAM		Size	Offset	QPSK	16QAM
Channel Bandwidth: 1.4 MHz					С	hannel B	andwidth	: 3 MHz	
LCH	1	2	22.75	22.28	LCH	1	7	22.76	22.29
MCH	1	5	22.78	22.29	MCH	1	14	22.79	22.30
HCH	1	2	22.77	22.27	HCH	1	7	22.78	22.28
Cł	nannel Ba	ndwidth:	5 MHz		Channel Bandwidth: 10 MHz				
LCH	1	24	22.80	22.31	LCH	1	49	22.84	22.35
MCH	1	24	22.82	22.34	MCH	1	49	22.86	22.38
HCH	1	24	22.81	22.31	HCH	1	49	22.85	22.35
Ch	Channel Bandwidth: 15 MHz					nannel Ba	andwidth:	20 MHz	
LCH	1	74	22.90	22.41	LCH	1	99	22.93	22.44
MCH	1	74	22.92	22.43	MCH	1	99	22.95	22.46
HCH	1	74	22.91	22.41	HCH	1	99	22.94	22.44

LTE Band 7

Channel		B uration		e Power 3m]	Channel		B uration		e Power Bm]
	Size	Offset	QPSK	16QAM		Size	Offset	QPSK	16QAM
Channel Bandwidth: 5 MHz					CI	nannel Ba	andwidth	10 MHz	
LCH	1	12	22.76	22.09	LCH	1	24	22.80	22.13
MCH	1	12	22.54	22.13	MCH	1	24	22.58	22.17
HCH	1	12	22.75	21.82	HCH	1	24	22.79	22.04
Ch	annel Ba	ndwidth:	15 MHz		CI	nannel Ba	andwidth	20 MHz	
LCH	1	37	22.86	22.19	LCH	1	50	22.89	22.22
MCH	1	37	22.64	22.23	MCH	1	50	22.67	22.26
HCH	1	37	22.85	21.92	HCH	1	50	22.88	21.95

Channel		B uration	Averag [dl	e Power 3m]	Channel		B uration		e Power 3m]
	Size	Offset	QPSK	16QAM		Size	Offset	QPSK	16QAM
Channel Bandwidth: 5 MHz					CI	nannel Ba	andwidth:	10 MHz	
LCH	1	24	22.65	21.53	LCH	1	49	22.69	21.57
MCH	1	24	22.48	21.41	MCH	1	49	22.52	21.45
HCH	1	24	22.61	21.52	HCH	1	49	22.65	21.56
Ch	annel Ba	ndwidth:	15 MHz		CI	nannel Ba	andwidth:	20 MHz	
LCH	1	74	22.72	21.60	LCH	1	99	22.79	21.67
MCH	1	74	22.55	21.48	MCH	1	99	22.62	21.55
HCH	1	74	22.68	21.59	HCH	1	99	22.75	21.66



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5.3 Peak-to-average ratio

Test Requirement: FCC 47 CFR Part 27.50(d)(5) **Test Method:** KDB 971168 D01v02r02

Limit: In measuring transmissions in this band using an average power technique,

the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

Test Procedure: The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

(i) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth

b) Set the number of counts to a value that stabilizes the measured CCDF

curve

c) Record the maximum PAPR level associated with a probability of 0.1 %

Note: The cable loss and attenuator loss were offset into measure device as

an amplitude offset.

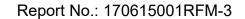
Test Setup: Refer to section 4.1.1(1) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode
Test Results: Pass

Test Data: The full result can be also refer to section 4.4.2 for details.

Channel	RB Confi	iguration	Modulation					
Chamilei	Size	Size Offset		16QAM				
LTE Band 4_ Channel Bandwidth: 20 MHz								
LCH	1	0	4.32	4.96				
LON	100	0	4.64	5.62				
MCH	1	0	4.35	5.28				
WICH	100	0	4.90	5.80				
HCH	1	0	4.52	5.33				
ПОП	100	0	4.81	5.77				

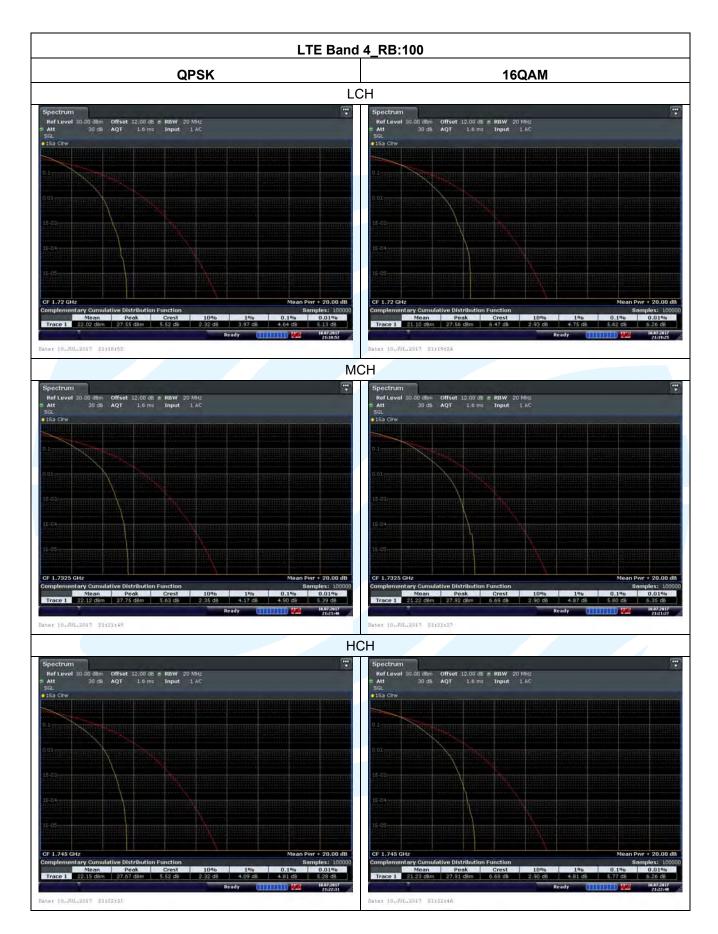




The test plot as follows:



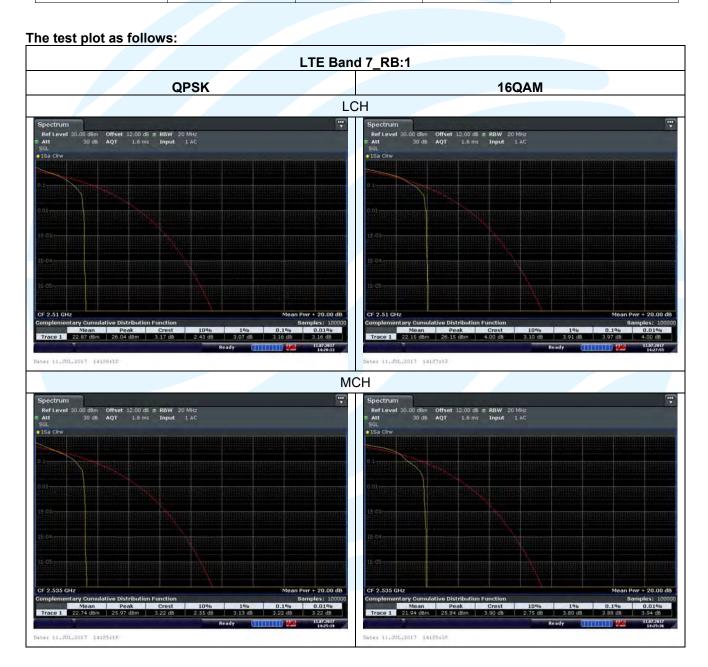




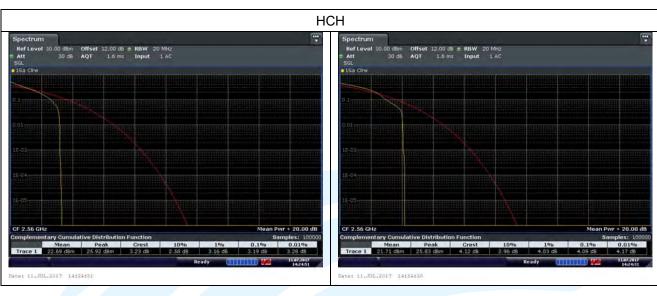
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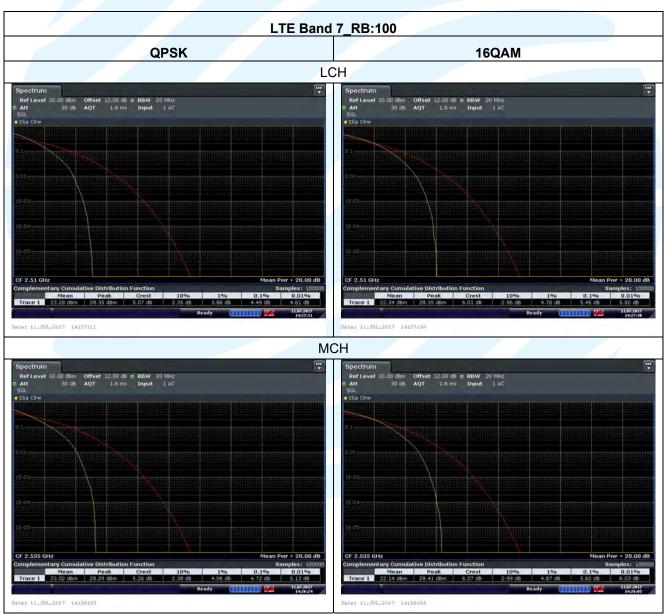
LTE Band 7

Channal	RB Conf	iguration	Modulation		
Channel	Size	Size Offset		16QAM	
	LTE Band	7_ Channel Bandwid	th: 20 MHz		
LCH	1	0	3.16	3.97	
	100	0	4.49	5.45	
МСП	1	0	3.22	3.88	
MCH	100	0	4.72	5.62	
ПСП	1	0	3.19	4.09	
HCH	100	0	4.52	5.36	

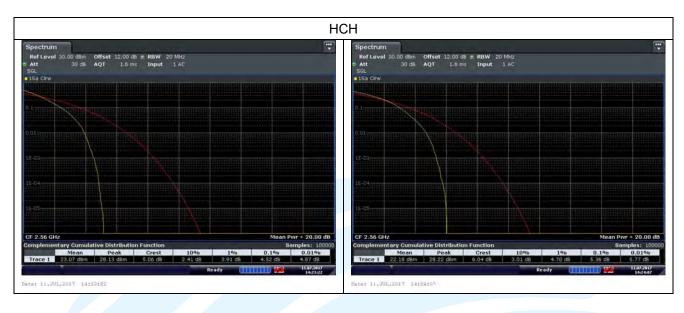


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Channel	RB Conf	iguration	Modulation					
Chamilei	Size	Size Offset		16QAM				
LTE Band 38_ Channel Bandwidth: 20 MHz								
LCH	1	0	4.46	5.13				
	100	0	4.61	5.57				
MCH	1	0	4.20	5.28				
IVICH	100	0	4.67	6.57				
ПСП	1	0	4.78	5.10				
HCH	100	0	4.93	5.88				



The test plot as follows:





LTE Band 38_RB:100 **QPSK** 16QAM LCH **MCH** Date: 11.JUL.2017 14:40:23 **HCH**



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5.4 99%&26dB Occupied Bandwidth

Test Requirement: FCC 47 CFR Part 2.1049(h)

Test Method: ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

Test Procedure: The transmitter output was connected to a calibrated coaxial cable and

coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The 99% and -26dB bandwidths was

also measured and recorded.

Note: The cable loss and attenuator loss were offset into measure device as

an amplitude offset.

Test Setup: Refer to section 4.1.1(2) for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode
Test Results: Pass

Test Data:

For LTE Band 4						
Channel	RB Configuration		26 dB BW (MHz)		99% BW (MHz)	
	Size	Offset	QPSK	16QAM	QPSK	16QAM
Channel Bandwidth: 1.4 MHz						
LCH	6	0	1.301	1.323	1.094	1.100
MCH	6	0	1.314	1.110	1.307	1.097
HCH	6	0	1.330	1.104	1.324	1.108
Channel Bandwidth: 3 MHz						
LCH	15	0	3.067	3.064	2.748	2.738
MCH	15	0	3.070	3.062	2.746	2.737
HCH	15	0	3.066	3.079	2.739	2.731
Channel Bandwidth: 5 MHz						
LCH	25	0	4.987	5.023	4.514	4.516
MCH	25	0	5.012	4.986	4.524	4.508
HCH	25	0	5.056	4.996	4.520	4.525
Channel Bandwidth: 10 MHz						
LCH	50	0	9.937	9.881	8.986	8.969
MCH	50	0	9.944	9.007	9.007	9.018
HCH	50	0	9.960	9.881	9.003	9.016
Channel Bandwidth: 15 MHz						
LCH	75	0	14.650	14.700	13.440	13.430
MCH	75	0	14.690	14.710	13.458	13.479
HCH	75	0	14.800	14.740	13.504	13.476
Channel Bandwidth: 20 MHz						
LCH	100	0	19.500	19.560	17.964	17.925
MCH	100	0	19.520	19.590	17.988	17.996
HCH	100	0	19.550	19.610	17.973	17.987



The test plot as follows: LTE Band 4 _Channel Bandwidth: 1.4 MHz_6RB#0 **QPSK 16QAM LCH** Center Freq 1.J 10700000 GHz Trig: Free Run Avg|Hold>10/10 Center Freq. 1.7107 Trig. Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Center Freq 1.710700000 GHz Center Free 1.710700000 GH #VBW 100 kHz #VBW 100 kHz 1.0943 MHz 1.1000 MHz 3.263 kHz OBW Pow 99,00 % 1.562 kHz OBW Powe 99.00 % 1.301 MHz x dB -26 00 dB x dB Randwidth 1.323 MHz x dR -26 00 dB **MCH** Center Freq: 1.73 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBm Center Freq 1.732500000 GHz Center Free 1.732500000 GH #VBW 100 kHz #VBW 100 kHz 31.7 dBm 30.8 dBm 1.1103 MHz 1.0974 MHz Transmit Freq Error -1.734 kHz OBW Power 99.00 % Transmit Freq Error -601 Hz OBW Power 99.00 % 1.314 MHz -26.00 dB 1.307 MHz -26.00 dB **HCH** Center Freq: 1.7543 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fred Center Free #VBW 100 kHz #VBW 100 kHz 30.8 dBm 31.4 dBm 1.1082 MHz 1.1042 MHz -1.660 kHz **OBW Power** 99.00 % -1.464 kHz OBW Powe 99.00 % 1.330 MHz x dB -26.00 dB 1.324 MHz x dB -26.00 dB



LTE Band 4 _ Channel Bandwidth: 3 MHz_15RB#0 **QPSK 16QAM** LCH Center Freq. 1,711500000 GHz Trig. Free Run AvgiHold>10/10 Center Freq: 1.711500000 GHz
Trig: Free Run Avg|Hold>10/10
#Atten: 30 dB Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Free 1.711500000 GH Center 1.712 GHz Res BW 100 kHz enter 1.712 GHz Res BW 100 kHz CF Step 600,000 kH #VBW 300 kHz CF Ste 600,000 ki #VBW 300 kHz 31.8 dBm 30.6 dBm 2.7477 MHz 2.7383 MHz 2.835 kHz 6.128 kHz **OBW Power** 99.00 % **OBW Power** 99.00 % Transmit Freg Error Transmit Freg Error 3.067 MHz 3.064 MHz -26.00 dB -26.00 dB **MCH** Radio Device: BTS Radio Device: BTS Ref Offset 12 dB Ref 30.00 dBr Center Fre 1.732500000 GH Center Fre Center 1.733 GHz #Res BW 100 kHz #VBW 300 kHz #VBW 300 kHz Occupied Bandwidth Occupied Bandwidth 30.8 dBm 2.7460 MHz 2.7371 MHz -345 Hz -5.783 kHz 99.00 % Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 3.070 MHz 3.062 MHz -26.00 dB x dB x dB -26.00 dB **HCH** Center Freq: 1.753500000 GHz
Trig: Free Run Avg|Hold>10/10
#Atten: 30 dB Center Freq: 1.753500000 GHz Trig: Free Run AvgiHold > 10/10 #Atten: 30 dB Ref Offset 12 dB Ref 30.00 dBn Center Fre 1.753500000 GH enter 1.754 GHz CF Ste 600,000 ki 31.6 dBm 30.7 dBm Occupied Bandwidth 2.7391 MHz 2.7307 MHz -389 Hz **OBW Power** 845 Hz Transmit Freg Error 99.00 % Transmit Freg Error **OBW Power** 99.00 % 3.066 MHz 3.079 MHz -26.00 dB x dB -26.00 dB x dB







LTE Band 4 _ Channel Bandwidth: 10 MHz _50RB#0 **QPSK 16QAM LCH** Center Freq. 1.715 Trig: Free Run Center Freq: 1.715 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fre 1.715000000 GH Center Free Span 20 MHz Sweep 1 ms #VBW 620 kHz #VBW 620 kHz 8,9860 MHz 8.9690 MHz 17.642 kHz OBW Pow 99.00 % 10.849 kHz OBW Powe 99.00 % 9 937 MHz x dB -26.00 dB x dB Randwidth 9 881 MHz x dR -26 00 dB **MCH** Center Freq: 1.73 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Freq 1.732500000 GHz Center Free 1.732500000 GH #VBW 620 kHz #VBW 620 kHz 31.9 dBm 31.3 dBm 9.0178 MHz 9.0070 MHz Transmit Freq Error 99.00 % Transmit Freq Error 10.209 kHz OBW Power 99.00 % -26.00 dB 9.946 MHz -26.00 dB **HCH** Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fred Center Free #VBW 620 kHz #VBW 620 kHz 9.0034 MHz 9.0162 MHz 12.046 kHz **OBW Power** 99.00 % 6.800 kHz OBW Powe 99.00 % x dB 9.960 MHz -26.00 dB 9.881 MHz x dB -26.00 dB



LTE Band 4 _ Channel Bandwidth: 15 MHz_75RB#0 **QPSK 16QAM** LCH Center Freq. 1.717500000 GHz
Trig: Free Run AvgiHold>10/10
#Atten: 30 dB Center Freq. 1.717500000 GHz Trig. Free Run AvgiHold>10/10 Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBm Center Fre 1.717500000 GH Center 1.718 GHz Res BW 300 kHz enter 1.718 GHz Res BW 300 kHz #VBW 1 MHz 3.000000 M #VBW 1 MHz CF Step 31.8 dBm 30.7 dBm 13.440 MHz 13.430 MHz 27.779 kHz 35.514 kHz **OBW Power** 99.00 % **OBW Power** 99.00 % Transmit Freg Error Transmit Freg Error 14.65 MHz 14.70 MHz -26.00 dB -26.00 dB **MCH** Radio Std. None Radio Device: BTS Radio Device: BTS Ref Offset 12 dB Ref 30.00 dBn Center Fre 1.732500000 GH Center Fre enter 1.733 GHz Res BW 300 kHz Center 1.733 GHz #Res BW 300 kHz Span 30 MHz Sweep 1 ms #VBW 1 MHz #VBW 1 MHz Occupied Bandwidth Occupied Bandwidth 30.8 dBm 13.458 MHz 13.479 MHz 6.814 kHz -3.916 kHz 99.00 % Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 14.69 MHz 14.71 MHz -26.00 dB x dB -26.00 dB x dB **HCH** Center Freq: 1,747500000 GHz
Trig: Free Run AvgiHold>10/10
#Atten: 30 dB Center Freq: 1.747500000 GHz
Trig: Free Run Avg|Hold>10/10 Ref Offset 12 dB Ref 30.00 dBn Ref Offset 12 dB Ref 30.00 dBn Center Fre 1.747500000 GH enter 1.748 GHz Res BW 300 kHz enter 1.748 GHz CFSI CF Ste #VBW 1 MHz #VBW 1 MHz 31.9 dBm 30.7 dBm Occupied Bandwidth 13.504 MHz 13.476 MHz 40.566 kHz 29,495 kHz Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 99.00 % 14.80 MHz 14.74 MHz -26.00 dB x dB -26.00 dB x dB



LTE Band 4 _ Channel Bandwidth: 20 MHz _100RB#0 **QPSK 16QAM LCH** Center Freq. 1.720 Trig: Free Run Center Freq: 1.72 Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fre 1.720000000 GH Center Free #VBW 1.5 MHz #VBW 1.5 MHz 17.964 MHz 17.925 MHz 41.966 kHz OBW Powe 99.00 % 21.459 kHz OBW Powe 99.00 % 19 50 MHz x dB -26.00 dB x dB Randwidth 19.56 MHz x dR -26.00 dB **MCH** Center Freq. 1.7: Trig: Free Run #Atten: 30 48 Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Video BW 1,5000 MHz Center Freq 1.732500000 GHz #VBW 1.5 MHz Fitter Type #VBW 1.5 MHz 32.0 dBm 31.2 dBm 17.988 MHz 17.996 MHz 7.600 kHz OBW Power 99.00 % Transmit Freq Error 6.537 kHz OBW Power 99.00 % 19.52 MHz -26.00 dB 19.59 MHz -26.00 dB **HCH** Center Freq. 1.745 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Free Center Free #VBW 1.5 MHz #VBW 1.5 MHz 17.973 MHz 17.987 MHz 44.355 kHz **OBW Power** 99.00 % 34.973 kHz OBW Power 99.00 % 19.55 MHz x dB -26.00 dB 19.61 MHz x dB -26.00 dB

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LTE Band 7

		F	or LTE Band 7	,						
Channel	RB Configuration		26 dB BW (MHz)		99% BW (MHz)					
	Size	Offset	QPSK	16QAM	QPSK	16QAM				
Channel Bandwidth: 5 MHz										
LCH	25	0	5.007	4.987	4.531	4.511				
MCH	25	0	5.002	5.061	4.512	4.533				
HCH	25	0	5.045	5.022	4.509	4.518				
Channel Bandwidth: 10 MHz										
LCH	50	0	9.848	9.967	8.975	8.988				
MCH	50	0	10.060	9.877	8.989	8.998				
HCH	50	0	9.955	9.910	8.999	8.984				
		Channe	el Bandwidth:	15 MHz						
LCH	75	0	14.830	14.770	13.463	13.488				
MCH	75	0	14.840	14.740	13.498	13.494				
HCH	75	0	14.740	14.740	13.462	13.505				
Channel Bandwidth: 20 MHz										
LCH	100	0	19.490	19.490	17.929	17.952				
MCH	100	0	19.590	19.700	18.002	18.041				
HCH	100	0	19.630	19.620	18.019	17.986				



The test plot as follows:





LTE Band 7 _ Channel Bandwidth: 10 MHz_50RB#0 **QPSK 16QAM LCH** Center Freq: 2. Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fre Center Free Span 20 MHz Sweep 1 ms #VBW 620 kHz #VBW 620 kHz 8.9747 MHz 8,9875 MHz 12.078 kHz OBW Powe 99.00 % 13.546 kHz OBW Powe 99.00 % 9 848 MHz x dB -26.00 dB x dB Randwidth 9 967 MHz x dR -26 00 dB **MCH** Center Freq: 2.5 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBm Center Freq Center Fre #VBW 620 kHz #VBW 620 kHz 31.6 dBm 30.7 dBm 8.9887 MHz 8.9984 MHz 14.307 kHz 99.00 % Transmit Freq Error 26.038 kHz OBW Power 99.00 % 10.06 MHz -26.00 dB 9.877 MHz -26.00 dB **HCH** Center Freq: 2.1 Trig: Free Run Center Freq: 2. Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Free Center Free #VBW 620 kHz #VBW 620 kHz 31.8 dBm 30.7 dBm 8.9989 MHz 8.9838 MHz -6.496 kHz **OBW Power** 99.00 % -9.901 kHz OBW Powe 99.00 % 9.955 MHz x dB -26.00 dB 9.910 MHz x dB -26.00 dB



LTE Band 7 _ Channel Bandwidth: 15 MHz_75RB#0 **QPSK 16QAM** LCH Center Freq: 2.507500000 GHz
Trig: Free Run Avg|Hold>10/10
#Atten: 30 dB Center Freq: 2.507500000 GHz Trig: Free Run AvgiHold>10H0 #Atten: 30 dB Ref Offset 12 dB Ref 30.00 dBm Center Fre 2.507500000 GH Center 2,508 GHz Res BW 300 kHz #VBW 1 MHz 3.000000 M #VBW 1 MHz CF Step 32.3 dBm 31.0 dBm 13.463 MHz 13.488 MHz 13.332 kHz 11.857 kHz **OBW Power** 99.00 % **OBW Power** 99.00 % Transmit Freg Error Transmit Freq Error 14.83 MHz 14.77 MHz -26.00 dB -26.00 dB **MCH** Radio Std. None Radio Device: BTS Radio Device: BTS Ref Offset 12 dB Ref 30.00 dBn Center Fre Center Fre Center 2.535 GHz #Res BW 300 kHz enter 2.535 GHz Res BW 300 kHz Span 30 MHz Sweep 1 ms #VBW 1 MHz #VBW 1 MHz Occupied Bandwidth Occupied Bandwidth 30.5 dBm 13.498 MHz 13.494 MHz 27.477 kHz 13.958 kHz 99.00 % Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 14.84 MHz 14.74 MHz -26.00 dB x dB x dB -26.00 dB **HCH** Center Freq: 2.562500000 GHz
Trig: Free Run AvgiHold>10/10
#Atten: 30 dB Center Freq: 2.562500000 GHz Trig: Free Run AvgiHold>10/10 Radio Device: BTS Ref Offset 12 dB Ref 30.00 dBm Center Fre Center 2,563 GHz Res BW 300 kHz enter 2.563 GHz Res BW 300 kHz CFSI CF Ste #VBW 1 MHz #VBW 1 MHz 31.7 dBm 31.2 dBm Occupied Bandwidth 13.462 MHz 13.505 MHz -6.196 kHz 432 Hz Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 99.00 % 14.74 MHz 14.74 MHz -26.00 dB x dB -26.00 dB x dB



LTE Band 7 _ Channel Bandwidth: 20 MHz_100RB#0 **QPSK 16QAM LCH** Center Freq: 2.510 Trig: Free Run Center Freq: 2.51 Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Fre 2.510000000 GH Center Free #VBW 1.5 MHz #VBW 1.5 MHz 17.929 MHz 17.952 MHz 31.850 kHz OBW Pow 99.00 % -7.586 kHz OBW Powe 99.00 % 19 49 MHz x dB -26.00 dB x dB Randwidth 19.49 MHz x dR -26 00 dB **MCH** Center Freq: 2.5: Trig: Free Run Ref Offset 12 dB Ref 30.00 dBm Ref Offset 12 dB Ref 30.00 dBn Center Freq Center Fre #VBW 1.5 MHz #VBW 1.5 MHz 32.3 dBm 31.9 dBm 18.002 MHz 18.041 MHz Transmit Freq Error 12.512 kHz OBW Power 99.00 % Transmit Freq Error 53.364 kHz OBW Power 99.00 % 19.59 MHz -26.00 dB 19.70 MHz -26.00 dB **HCH** Center Freq: 2 Trig: Free Run Center Freq: 2. Trig: Free Run Ref Offset 12 dB Ref 30.00 dBn Ref Offset 12 dB Ref 30.00 dBn Center Free Center Free #VBW 1.5 MHz #VBW 1.5 MHz 18.019 MHz 17.986 MHz 40.086 kHz OBW Power 99.00 % -24.710 kHz OBW Power 99.00 % 19.63 MHz x dB -26.00 dB 19.62 MHz x dB -26.00 dB





LTE Band 38

		F	or LTE Band 3	8						
Channel	RB Configuration		26 dB BW (MHz)		99% BW (MHz)					
	Size	Offset	QPSK	16QAM	QPSK	16QAM				
Channel Bandwidth: 5 MHz										
LCH	25	0	5.091	4.970	4.513	4.499				
MCH	25	0	5.004	5.001	4.507	4.508				
HCH	25	0	5.082	5.009	4.505	4.513				
Channel Bandwidth: 10 MHz										
LCH	50	0	9.883	9.804	8.974	8.957				
MCH	50	0	9.775	9.762	8.992	8.971				
HCH	50	0	9.948	9.845	8.995	9.005				
Channel Bandwidth: 15 MHz										
LCH	75	0	14.680	15.400	13.461	13.521				
MCH	75	0	15.800	15.420	13.504	13.493				
HCH	75	0	15.480	14.970	13.458	13.503				
Channel Bandwidth: 20 MHz										
LCH	100	0	20.62	20.29	18.003	17.946				
MCH	100	0	20.260	21.390	17.964	18.004				
HCH	100	0	19.920	19.720	18.008	17.966				



LTE Band 38_ Channel Bandwidth: 5 MHz_25RB#0 **QPSK 16QAM** LCH Center Freq 2.572500000 GHz Center Fre 2.572500000 GH #VBW 300 kHz #VBW 300 kHz 31.0 dBm 4.5133 MHz 4.4995 MHz -1.533 kHz 99.00 % 2.489 kHz **OBW Power** 99.00 % 5.091 MHz -26.00 dB 4.970 MHz -26.00 dB **MCH** Center Freq: 2.56 Trig: Free Run Center Free 2.595000000 GHz Center Free #VBW 300 kHz #VBW 300 kHz 4.5068 MHz 4.5076 MHz 1.227 kHz 99.00 % 1.832 kHz OBW Power 99.00 % 5.004 MHz x dB -26.00 dB 5.001 MHz x dB -26.00 dB **HCH** enter Freg 2,617500000 GHz enter Freg 2,617500000 GHz Center Freq: 2.6175 Trig: Free Run Center Freq: 2.61750 Trig: Free Run #Atten: 30 dB Center Free 2.617500000 GH Center Freq 2.617500000 GHz 31.5 dBm 30.4 dBm 4.5049 MHz 4.5126 MHz 8.078 kHz 99.00 % 2.753 kHz **OBW Power** 99.00 % 5.082 MHz -26.00 dB 5.009 MHz -26.00 dB



LTE Band 38_ Channel Bandwidth: 10 MHz_50RB#0 **QPSK 16QAM LCH** Center Fre 2.575000000 GH Center Free #VBW 620 kHz #VBW 620 kHz 8.9743 MHz 8.9566 MHz mit Freq Error 3.496 kHz 99.00 % 5.722 kHz OBW Power 99,00 % 9.883 MHz x dB -26.00 dB 9.804 MHz x dB -26.00 dB **MCH** Ref 30.00 dBn Ref 30.00 dBr Center Fre 2.595000000 GH Center Free #VBW 620 kHz 31.2 dBm 30.2 dBn Total Powe 8.9918 MHz 8.9712 MHz -14.598 kHz **OBW Power** 99.00 % -2.982 kHz OBW Power 99.00 % 9.775 MHz -26.00 dB 9.762 MHz x dB -26.00 dB **HCH** Center Free 2,615000000 GHz Center Free #VBW 620 kHz #VBW 620 kHz 31.4 dBm 30.1 dBm 8.9947 MHz 9.0049 MHz 13.309 kHz 6.202 kHz 9 948 MHz x dB -26.00 dB 9 845 MHz x dB -26.00 dB



LTE Band 38 _ Channel Bandwidth: 15 MHz_75RB#0 **QPSK 16QAM** LCH Center Freq: 2.577500000 GHz
Trig: Free Run Avg|Hold>10/10
#Atten: 30 dB Center Freq: 2.577500000 GHz Trig: Free Run AvgiHold>10H0 #Atten: 30 dB Ref 30.00 dBr Ref 30.00 dB Center Fre 2.577500000 GH enter 2.578 GHz Res BW 300 kHz enter 2.578 GHz Res BW 300 kHz #VBW 1 MHz 3.000000 M #VBW 1 MHz CF Step 31.6 dBm Occupied Bandwidth 30.5 dBm 13.461 MHz 13.521 MHz 12.057 kHz 17.396 kHz **OBW Power** 99.00 % **OBW Power** 99.00 % Transmit Freg Error Transmit Freq Error 15.40 MHz -26.00 dB -26.00 dB **MCH** Radio Device: BTS Ref 30.00 dB Ref 30.00 dB Video BV Video BV ALLER LALLE Center 2.595 GHz #Res BW 300 kHz Span 30 MHz Sweep 1 ms #VBW 1 MHz Fitter Type #VBW 1 MHz Fitter Type Occupied Bandwidth Occupied Bandwidth 30.6 dBm 13.504 MHz 13.493 MHz 15.816 kHz -16.118 kHz 99.00 % Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 15.80 MHz 15.42 MHz -26.00 dB x dB -26.00 dB x dB **HCH** Center Freq: 2.612500000 GHz
Trig: Free Run AvgiHold>10/10
#Atten: 30 dB Center Freq: 2.512500000 GHz
Trig: Free Run Avg|Hold>10/10 Ref 30.00 dBr Ref 30.00 dBr Center Fre Newholishkala al handeling MARMANAMANA Walle July and the state of Center 2.613 GHz Res BW 300 kHz enter 2.613 GHz Res BW 300 kHz CFSI CF Ste #VBW 1 MHz #VBW 1 MHz 30.6 dBm Occupied Bandwidth 13.458 MHz 13.503 MHz -3.372 kHz -10.631 kHz Transmit Freg Error **OBW Power** 99.00 % Transmit Freg Error **OBW Power** 99.00 % 15.48 MHz 14.97 MHz -26.00 dB x dB -26.00 dB x dB



LTE Band 38 _ Channel Bandwidth: 20 MHz_100RB#0 **QPSK 16QAM LCH** Center Fre Center Free assessed by #VBW 1.5 MHz #VBW 1.5 MHz 18.003 MHz 17.946 MHz -1.267 kHz OBW Pow 99.00 % 5.922 kHz OBW Pow 99.00 % 20 62 MHz x dB -26.00 dB 20 29 MHz x dR -26 00 dB **MCH** Center Free 2.595000000 GH Center Free A CONTRACTOR CONTRACTOR JIM MILLIANDER #VBW 1.5 MHz #VBW 1.5 MHz 31.8 dBm 31.0 dBm 18.004 MHz 17.964 MHz Transmit Freq Error -11.941 kHz OBW Power 99.00 % mit Freq Error -33.546 kHz OBW Power 99.00 % 20.26 MHz -26.00 dB 21.39 MHz -26.00 dB **HCH** er Freg 2.610000000 GH Center Free 2.610000000 GHz Center Free WILLIAM AND LOCAL PHONE THE #VBW 1.5 MHz #VBW 1.5 MHz 30.6 dBm 18.008 MHz 17.966 MHz -28.082 kHz OBW Power 99.00 % -24.965 kHz OBW Power 99.00 % 19.92 MHz x dB -26.00 dB 19.72 MHz x dB -26.00 dB



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5.5 Band Edge at antenna terminals

Test Requirement: LTE Band 4: FCC 47 CFR Part 27.53(h)(1)

LTE Band 7 & Band 41: FCC 47 CFR Part 27.53(m)(4)

Test Method:

Limit:

ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02

FCC 47 CFR Part 27.53(a)(4): For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

FCC 47 CFR Part 27.53(h)(1): Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log 10$ (P) dB. The emission limit equal to -13 dBm.

FCC 47 CFR Part 27.53(h)(3): Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

- (ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- (iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

FCC 47 CFR Part 27.53(m)(4): For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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FCC 47 CFR Part 27.53(m)(6): Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. For each band edge measurement:

- 1) Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- 3) Set display line at -13 dBm
- 4) Set resolution bandwidth to at least 1% of emission bandwidth.

Such as:

- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 3 kHz and VB of the spectrum is 10 kHz (GSM/GPRS/EDGE).
- b) The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is100 kHz and VB of the spectrum is 300 kHz (WCDMA).
- c) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 20 kHz and VB of the spectrum is 20 kHz (LTE Bandwidth 1.4 MHz).
- d) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 30 kHz (LTE Bandwidth 3 MHz).
- e) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 5 MHz)
- f) The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 10 MHz)
- 5) Record the max trace plot into the test report

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.1.1(2) for details.

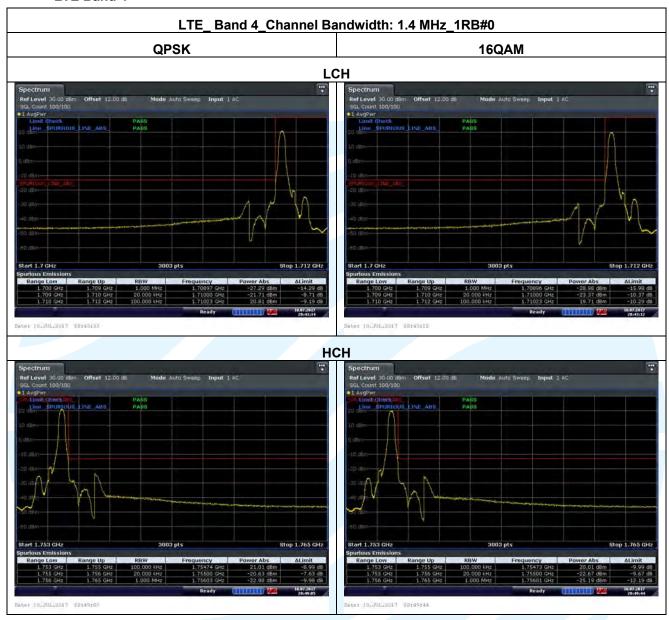
Instruments Used: Refer to section 3 for details

Test Mode: Link mode
Test Results: Pass



The test plot as follows:

LTE Band 4

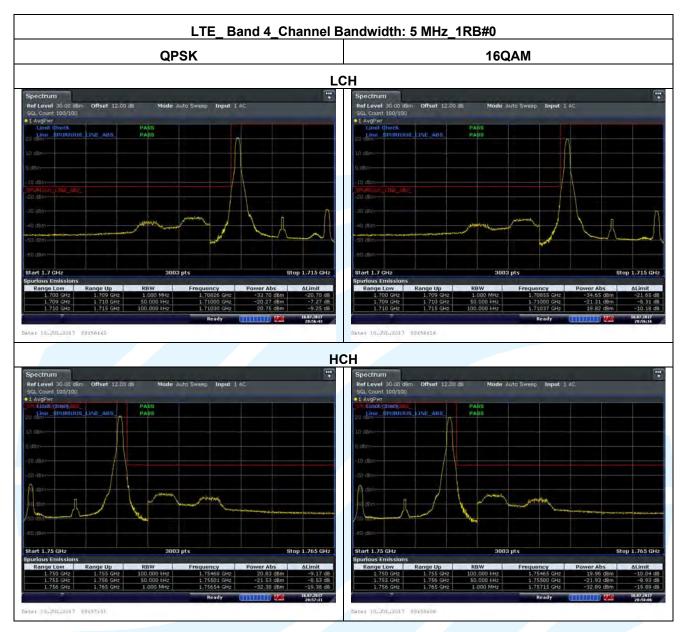




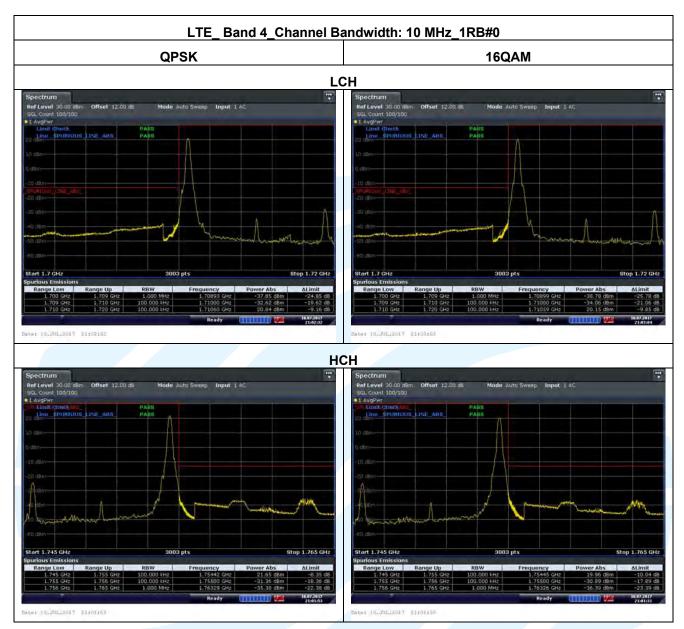
LTE_ Band 4_Channel Bandwidth: 3 MHz_1RB#0 **QPSK** 16QAM **LCH** Date: 10.JUL.2017 20:52:33 Date: 10.JUL.2017 20:53:20 **HCH**

m: 10.JUL.2017 20:48:24

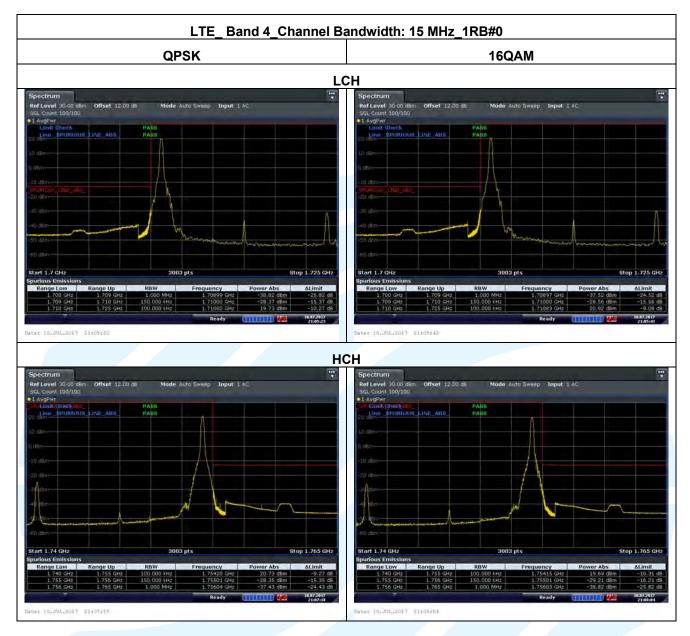




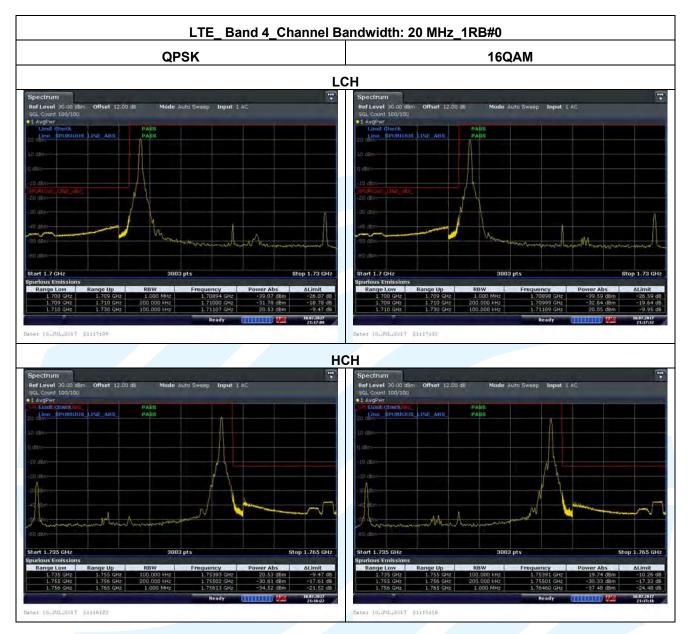




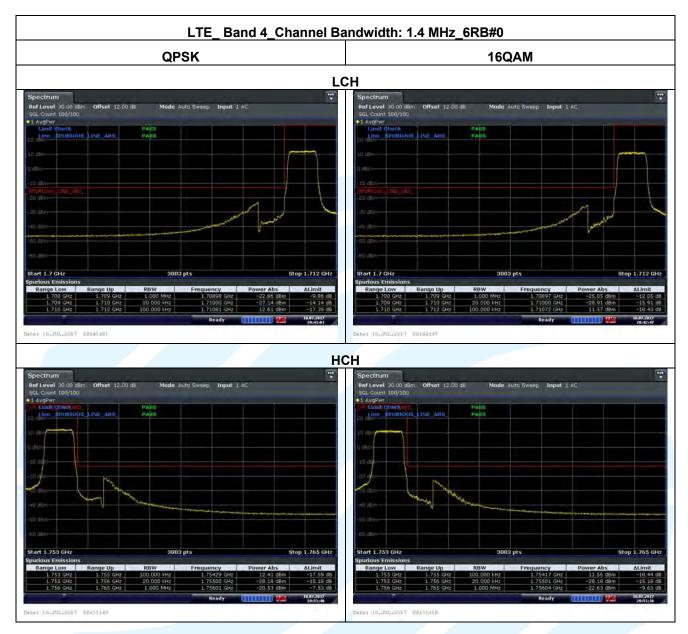




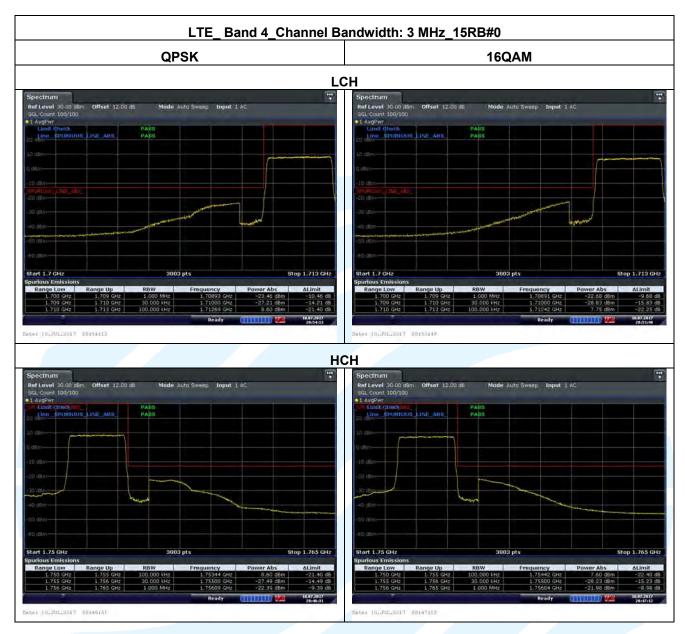




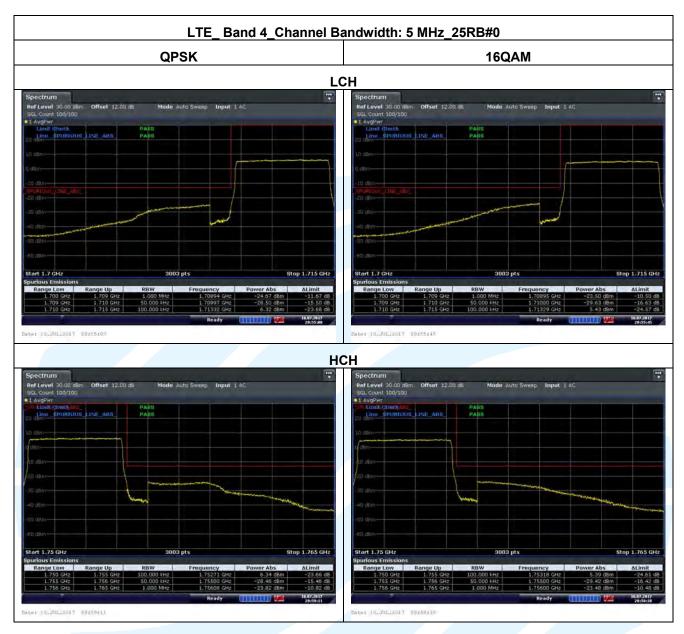




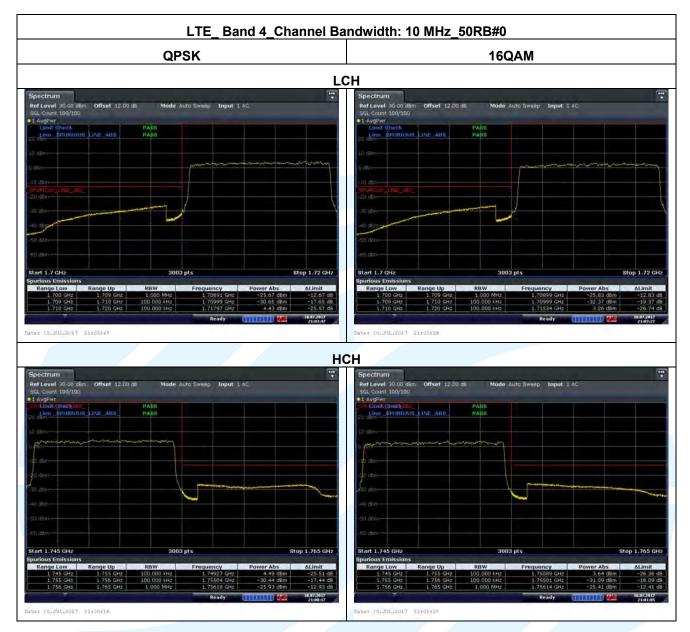




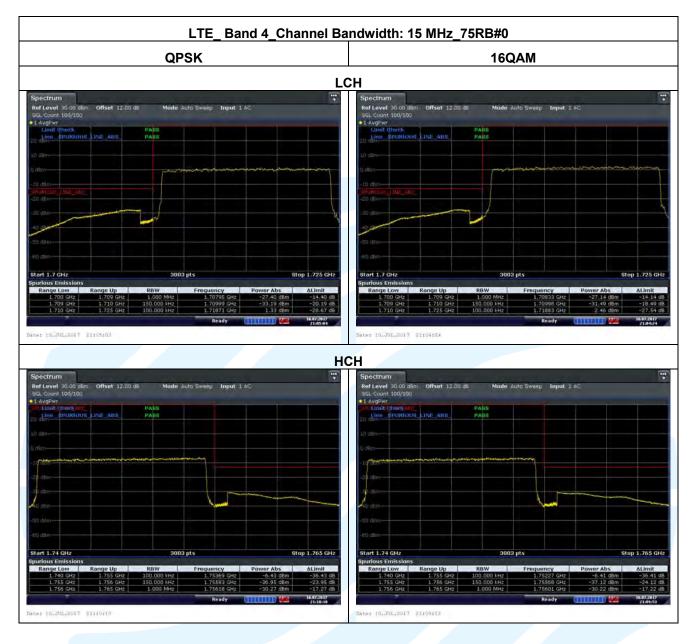














LTE_ Band 4_Channel Bandwidth: 20 MHz_100RB#0 **QPSK** 16QAM **LCH** Date: 10.JUL.2017 23:18:13 Date: 10.JUL.2017 23:18:01 **HCH** Start 1.735 GHz

Date: 10.JUL.2017 21:12:63

te: 10.JUL.2017 21:10:65



LTE Band 7

