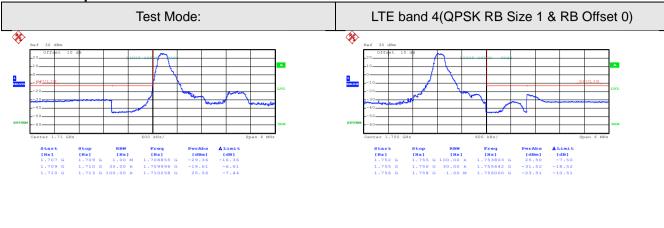




# LTE band 4 part:1.4MHz:

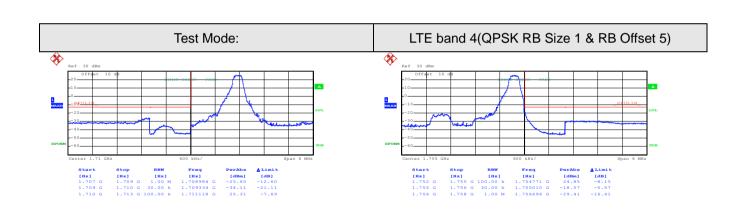


Date: 22.FEB.2017 20:38:53

Date: 22.FEB.2017 20:41:59

Lowest channel

Highest channel



Date: 22.FEB.2017 20:39:18

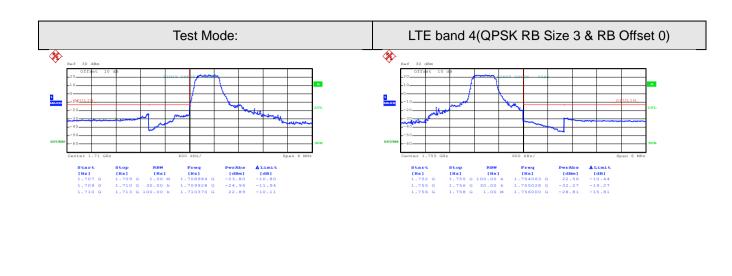
Date: 22.FEB.2017 20:42:27

Lowest channel

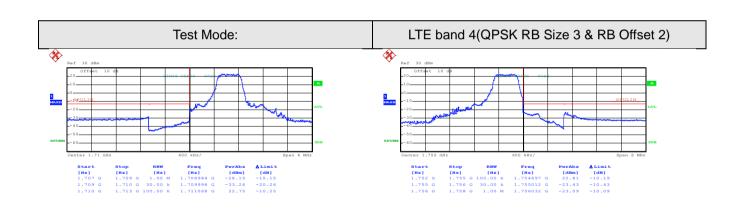
Highest channel







Highest channel



Date: 22.FEB.2017 20:40:37

Date: 22.FEB.2017 20:40:11

Date: 22.FEB.2017 20:43:26

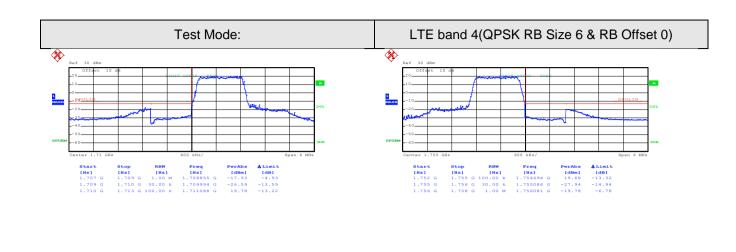
Date: 22.FEB.2017 20:43:00

Lowest channel

Highest channel





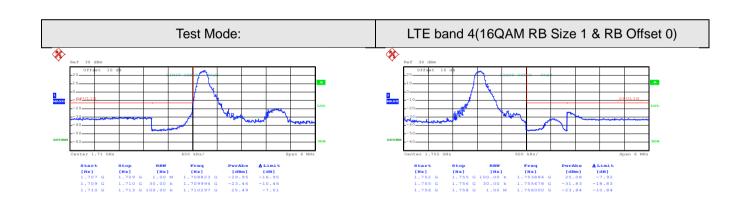


Date: 22.FEB.2017 20:41:06

Date: 22.FEB.2017 20:43:54

Lowest channel

Highest channel



Date: 22.FEB.2017 20:39:04

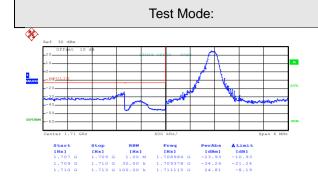
Date: 22.FEB.2017 20:42:14

Lowest channel

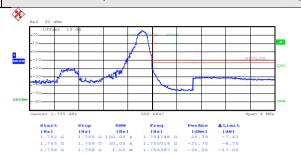
Highest channel







# LTE band 4(16QAM RB Size 1 & RB Offset 5)

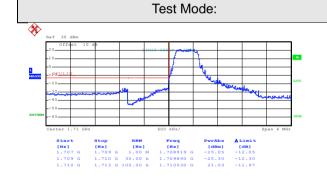


Date: 22.FEB.2017 20:39:30

Date: 22.FEB.2017 20:42:38

### Lowest channel

### Highest channel



# LTE band 4(16QAM RB Size 3 & RB Offset 0)



Date: 22.FEB.2017 20:40:20

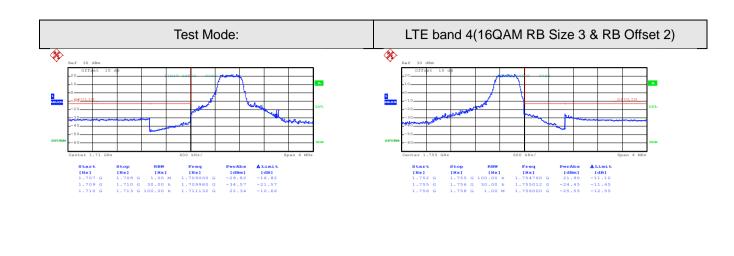
Date: 22.FEB.2017 20:43:11

Lowest channel

Highest channel





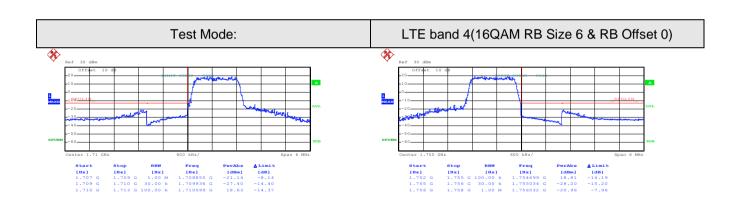


Date: 22.FEB.2017 20:40:48

Date: 22.FEB.2017 20:43:39

Lowest channel

Highest channel



Date: 22.FEB.2017 20:41:13

Date: 22.FEB.2017 20:44:02

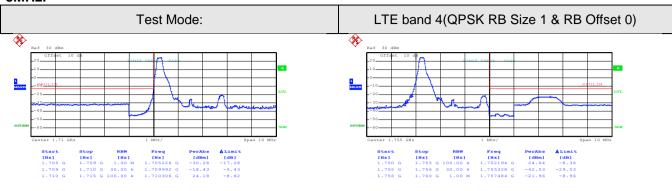
Lowest channel

Highest channel





### 3MHz:

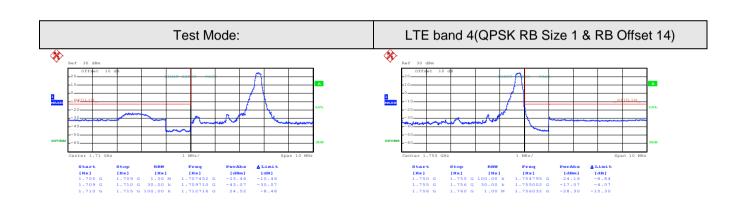


Date: 22.FEB.2017 20:49:36

Date: 22.FEB.2017 20:52:47

Lowest channel

Highest channel



Date: 22.FEB.2017 20:50:10

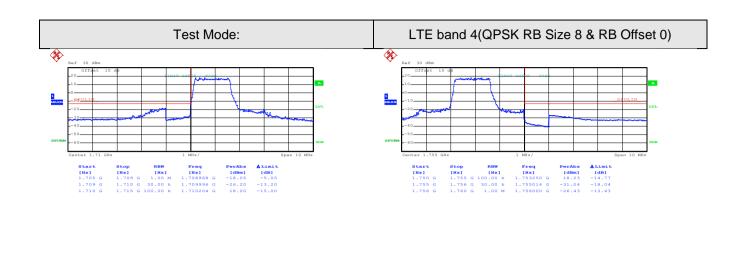
Date: 22.FEB.2017 20:53:10

Lowest channel

Highest channel



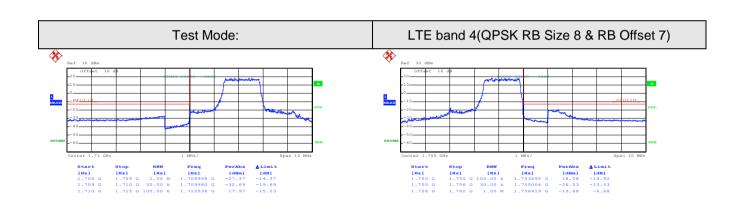




Date: 22.FEB.2017 20:50:48

Highest channel

Date: 22.FEB.2017 20:53:44



Date: 22.FEB.2017 20:51:17

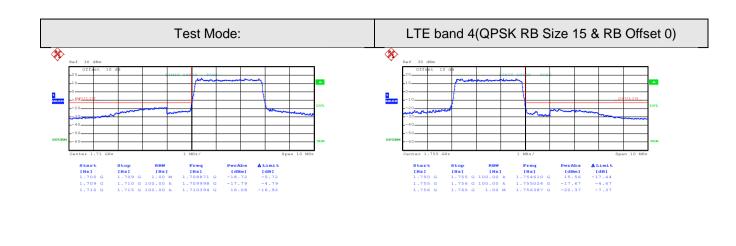
Date: 22.FEB.2017 20:54:08

Lowest channel

Highest channel





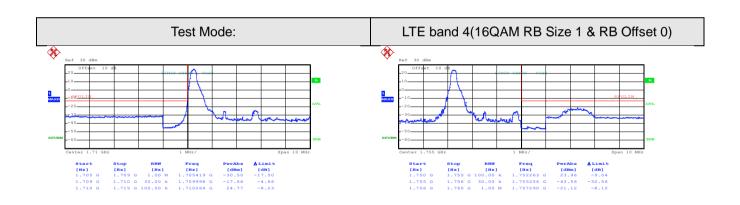


Date: 22.FEB.2017 20:51:56

Date: 22.FEB.2017 20:55:08

Lowest channel

Highest channel



Date: 22.FEB.2017 20:49:52

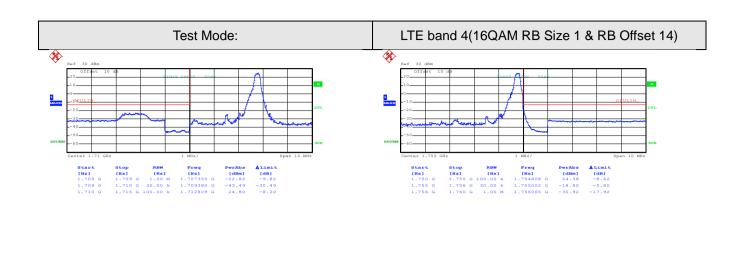
Date: 22.FEB.2017 20:52:55

Lowest channel

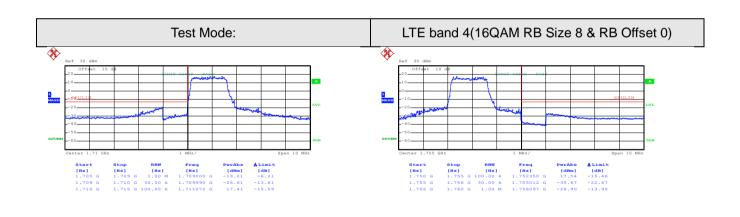
Highest channel







Highest channel



Date: 22.FEB.2017 20:51:00

Date: 22.FEB.2017 20:50:23

Date: 22.FEB.2017 20:53:54

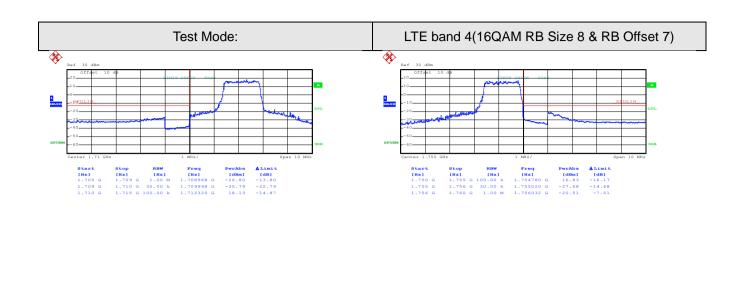
Date: 22.FEB.2017 20:53:21

Lowest channel

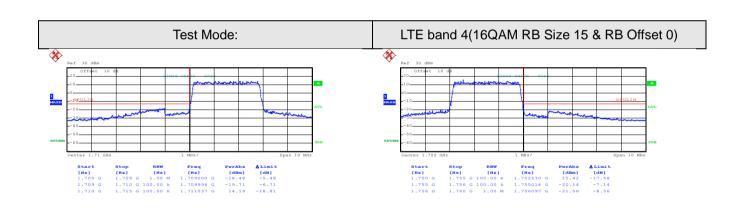
Highest channel







Highest channel



Date: 22.FEB.2017 20:52:05

Date: 22.FEB.2017 20:51:30

Date: 22.FEB.2017 20:55:21

Date: 22.FEB.2017 20:54:19

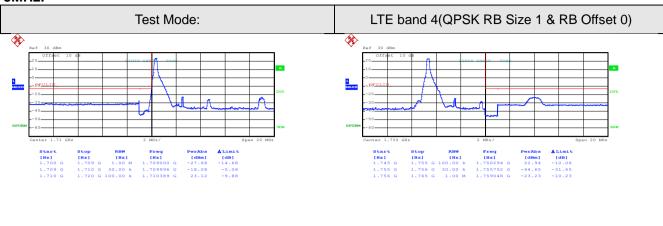
Lowest channel

Highest channel





### 5MHz:

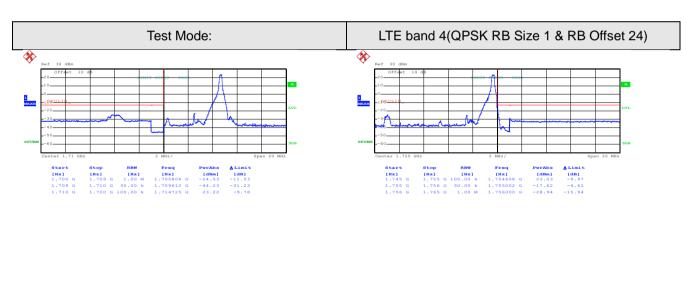


Date: 22.FEB.2017 20:57:04

Date: 22.FEB.2017 21:03:21

Lowest channel

Highest channel



Date: 22.FEB.2017 20:57:40

Date: 22.FEB.2017 21:03:43

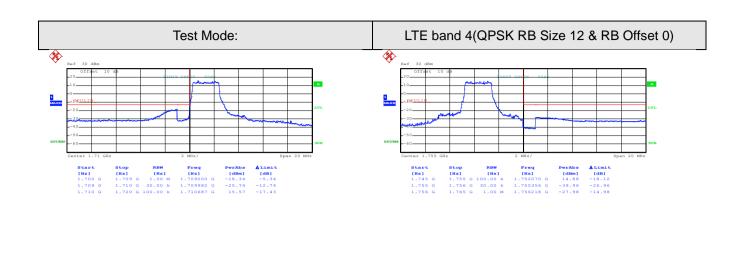
Lowest channel

Highest channel

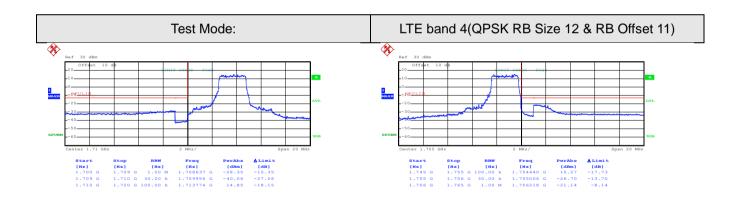




Date: 22.FEB.2017 20:58:22



Lowest channel Highest channel



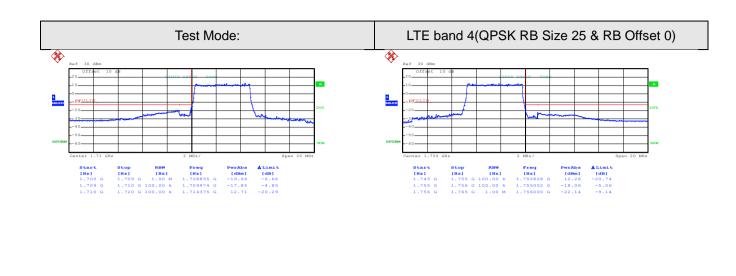
Date: 22.FEB.2017 21:04:33

Date: 22.FEB.2017 20:58:46 Date: 22.FEB.2017 21:04:55

Lowest channel Highest channel

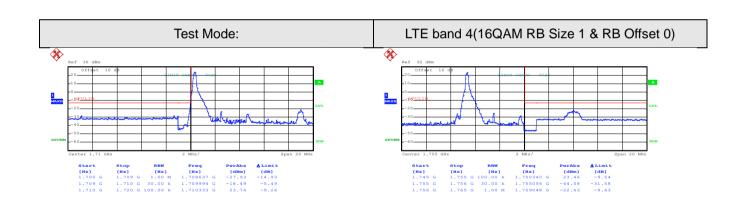






Date: 22.FEB.2017 20:59:28

Highest channel



Date: 22.FEB.2017 20:57:20

Date: 22.FEB.2017 21:03:29

Date: 22.FEB.2017 21:06:03

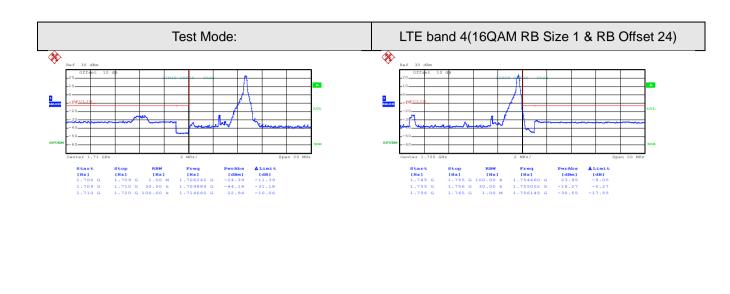
Lowest channel

Highest channel



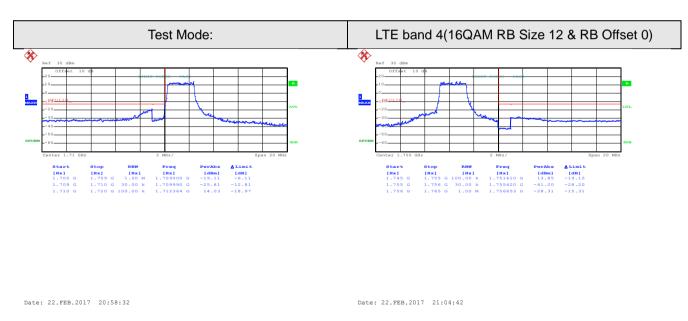


Date: 22.FEB.2017 20:57:50



Lowest channel Highest channel

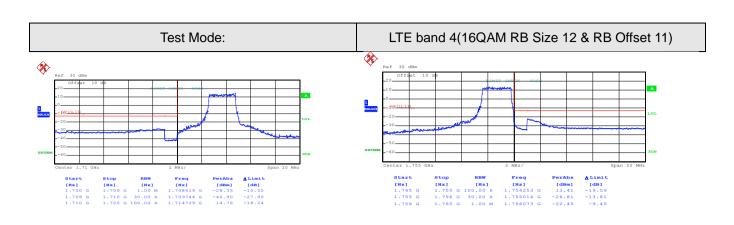
Date: 22.FEB.2017 21:04:08



Lowest channel Highest channel





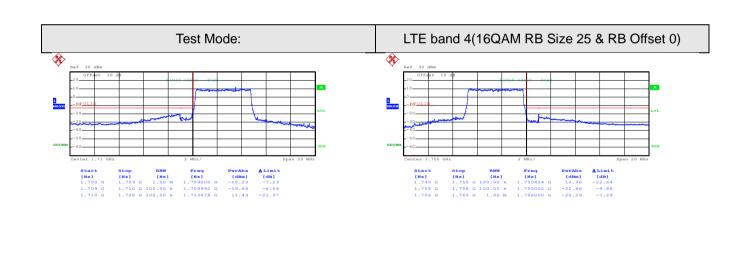


Date: 22.FEB.2017 20:59:00

Date: 22.FEB.2017 21:05:17

Lowest channel

Highest channel



Date: 22.FEB.2017 20:59:36

Date: 22.FEB.2017 21:06:12

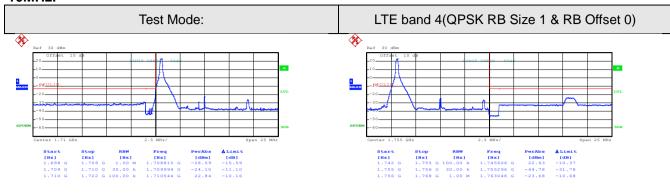
Lowest channel

Highest channel





### 10MHz:

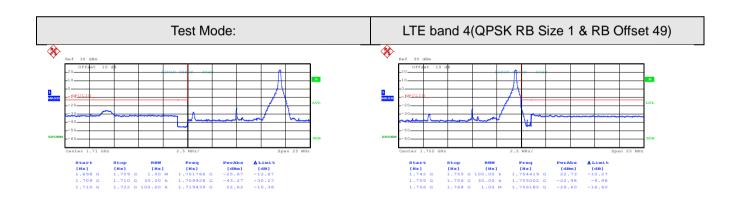


Date: 22.FEB.2017 21:08:00

Date: 22.FEB.2017 21:13:02

Lowest channel

Highest channel



Date: 22.FEB.2017 21:08:33

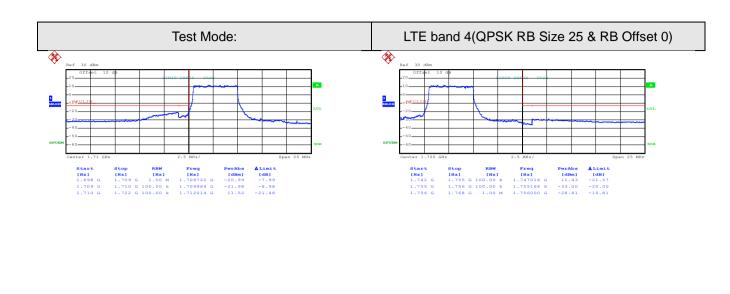
Date: 22.FEB.2017 21:13:27

Lowest channel

Highest channel

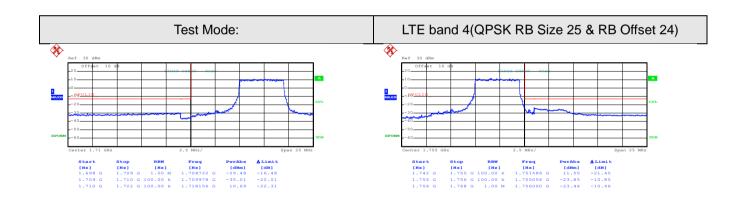






Lowest channel Highest channel

Date: 22.FEB.2017 21:14:14



Date: 22.FEB.2017 21:10:49

Date: 22.FEB.2017 21:10:22

Date: 22.FEB.2017 21:14:40

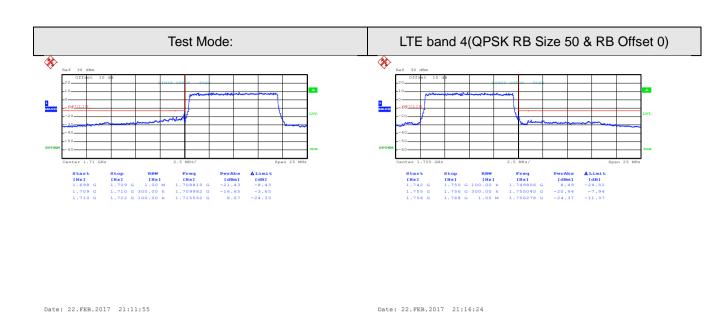
Lowest channel

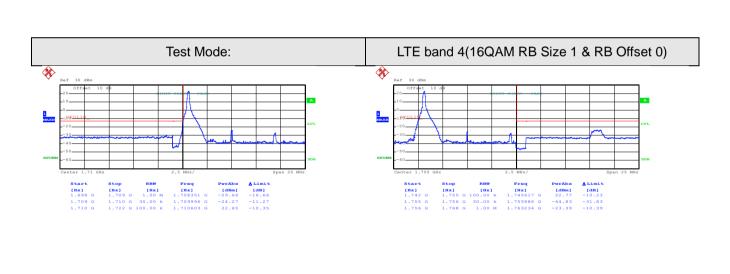
Highest channel



Highest channel







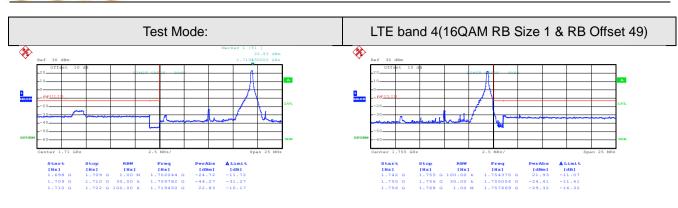
Date: 22.FEB.2017 21:08:11 Date: 22.FEB.2017 21:13:12

Lowest channel

Lowest channel Highest channel





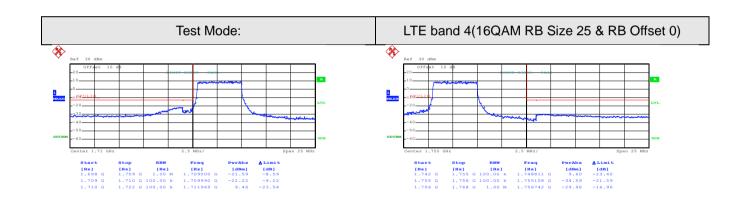


Date: 22.FEB.2017 21:09:00

Date: 22.FEB.2017 21:13:39

### Lowest channel

Highest channel



Date: 22.FEB.2017 21:10:34

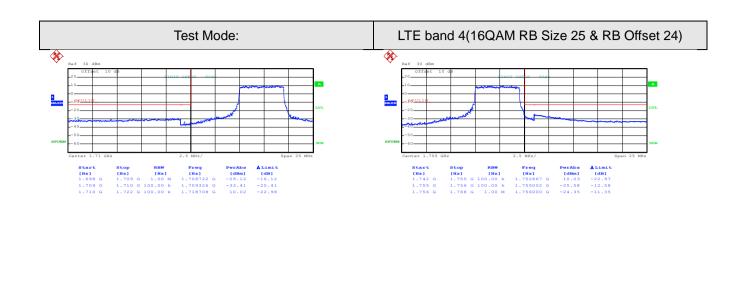
Date: 22.FEB.2017 21:14:24

Lowest channel

Highest channel

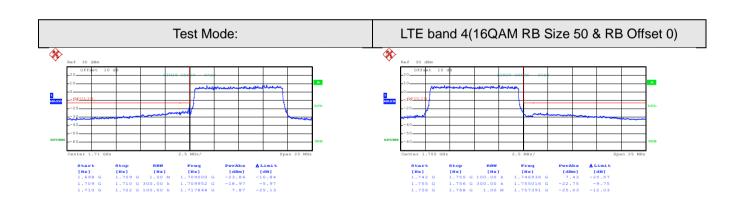






Lowest channel Highest channel

Date: 22.FEB.2017 21:14:52



Date: 22.FEB.2017 21:12:05

Date: 22.FEB.2017 21:11:04

Date: 22.FEB.2017 21:16:34

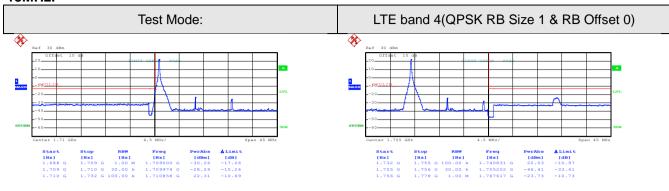
Lowest channel

Highest channel





### 15MHz:

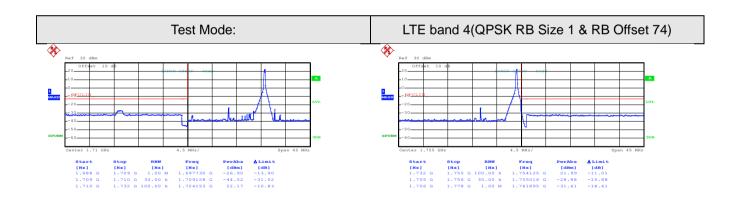


Date: 22.FEB.2017 21:24:14

Date: 22.FEB.2017 21:28:03

Lowest channel

Highest channel



Date: 22.FEB.2017 21:24:47

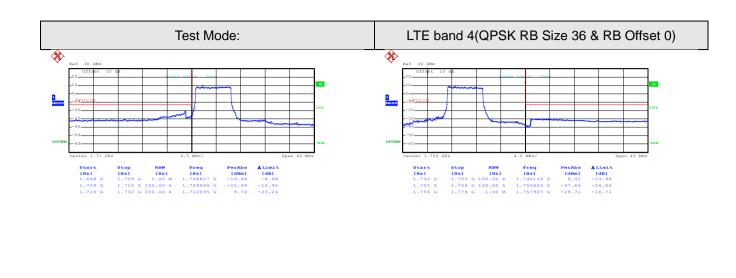
Date: 22.FEB.2017 21:28:31

Lowest channel

Highest channel

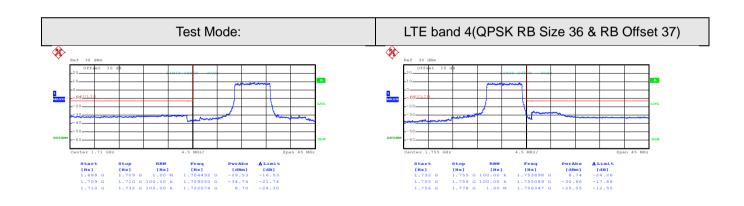






Date: 22.FEB.2017 21:25:34

Highest channel



Date: 22.FEB.2017 21:26:01

Date: 22.FEB.2017 21:29:32

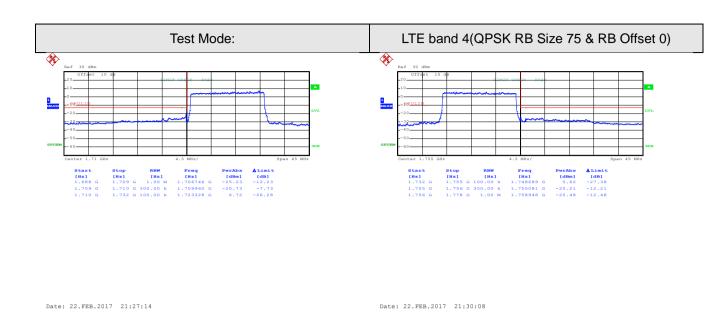
Date: 22.FEB.2017 21:29:10

Lowest channel

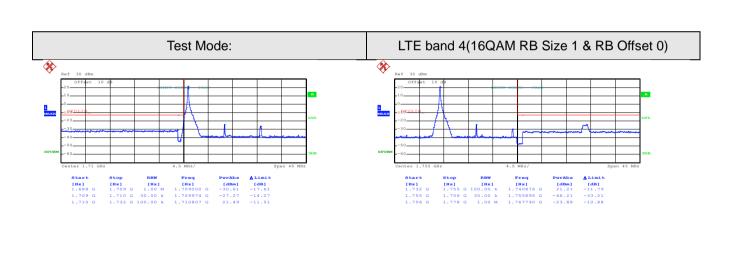
Highest channel







Highest channel



Date: 22.FEB.2017 21:24:28

Date: 22.FEB.2017 21:28:15

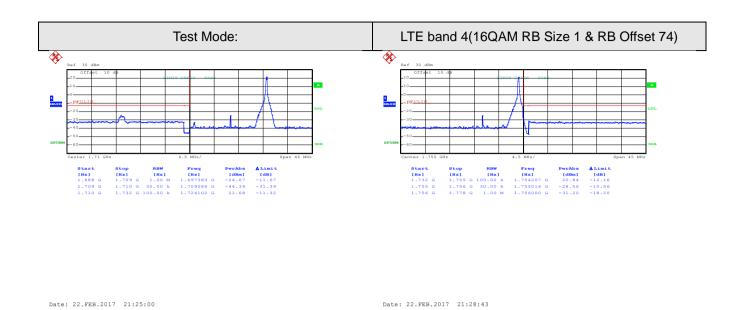
Lowest channel

Highest channel

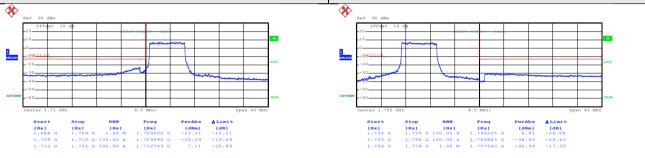


Highest channel









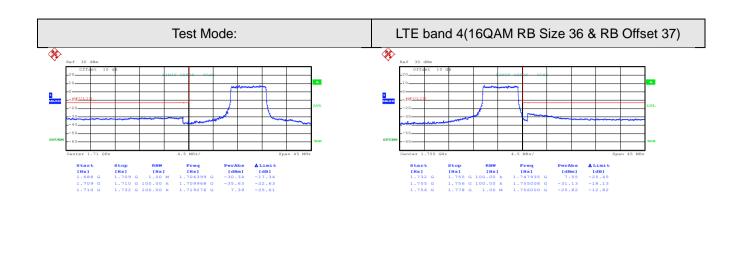
Date: 22.FEB.2017 21:25:45 Date: 22.FEB.2017 21:29:19

Lowest channel

Lowest channel Highest channel

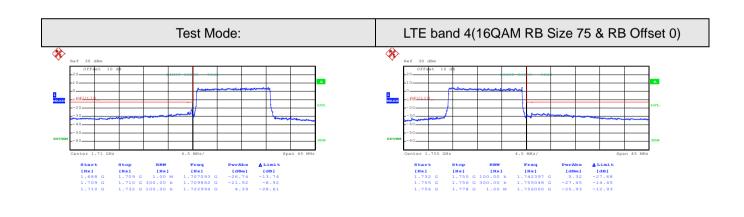






Date: 22.FEB.2017 21:26:13

Highest channel



Date: 22.FEB.2017 21:27:22

Date: 22.FEB.2017 21:30:17

Date: 22.FEB.2017 21:29:44

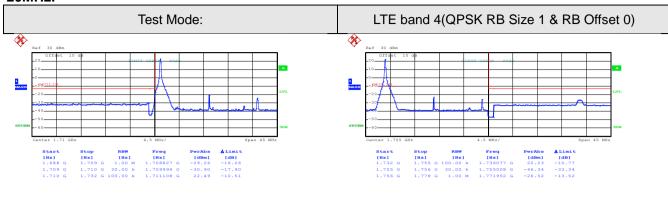
Lowest channel

Highest channel





### 20MHz:

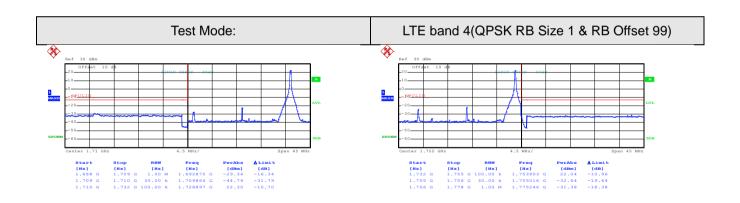


Date: 22.FEB.2017 21:31:58

Date: 22.FEB.2017 21:35:06

Lowest channel

Highest channel



Date: 22.FEB.2017 21:32:28

Date: 22.FEB.2017 21:35:35

Lowest channel

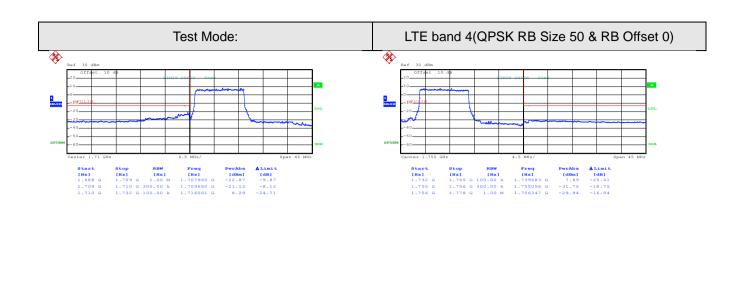
Highest channel

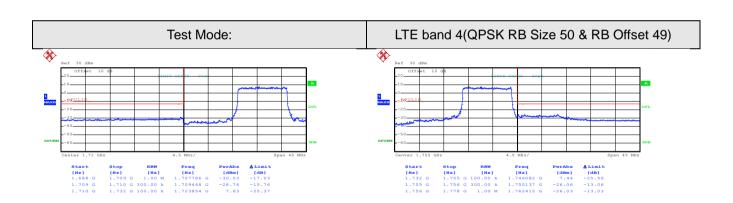




Date: 22.FEB.2017 21:33:21

Lowest channel





Date: 22.FEB.2017 21:36:11

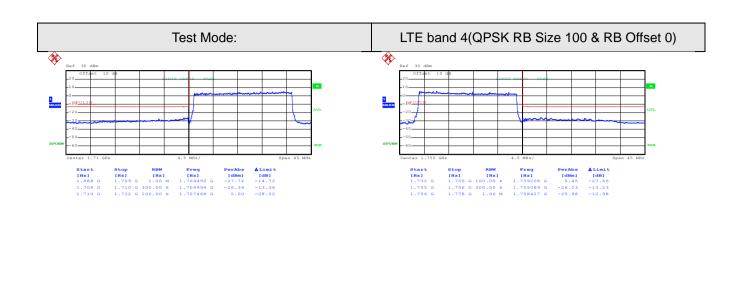
Highest channel

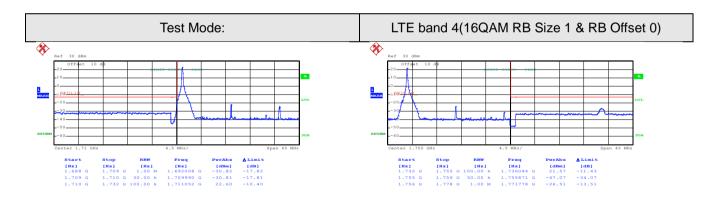
Date: 22.FEB.2017 21:33:47 Date: 22.FEB.2017 21:36:44

Lowest channel Highest channel









Date: 22.FEB.2017 21:32:11

Date: 22.FEB.2017 21:34:17

Date: 22.FEB.2017 21:35:17

Date: 22.FEB.2017 21:37:08

Lowest channel

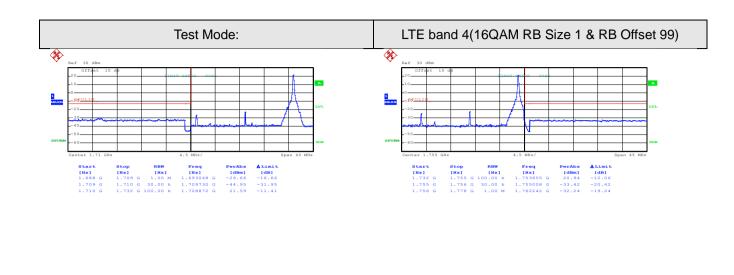
Lowest channel

Highest channel

Highest channel

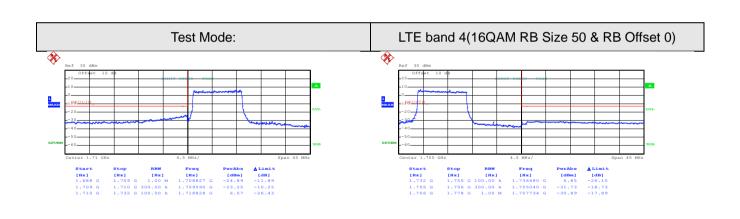






Date: 22.FEB.2017 21:32:38

Highest channel



Date: 22.FEB.2017 21:33:34

Date: 22.FEB.2017 21:36:25

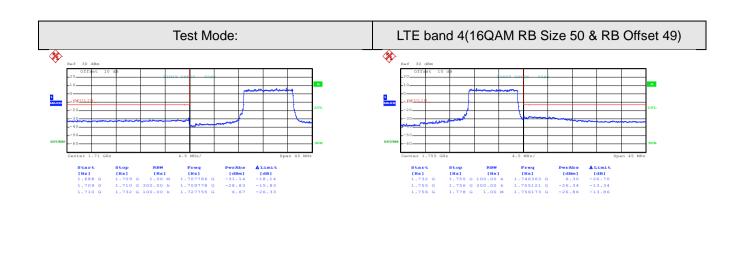
Date: 22.FEB.2017 21:35:47

Lowest channel

Highest channel







Date: 22.FEB.2017 21:34:03

Highest channel

Date: 22.FEB.2017 21:36:55

# Test Mode: LTE band 4(16QAM RB Size 100 & RB Offset 0) \*\*Page 30 dBs\*\* \*\*Page 10 db\*\* \*\*Pa

Date: 22.FEB.2017 21:34:27

Date: 22.FEB.2017 21:37:15

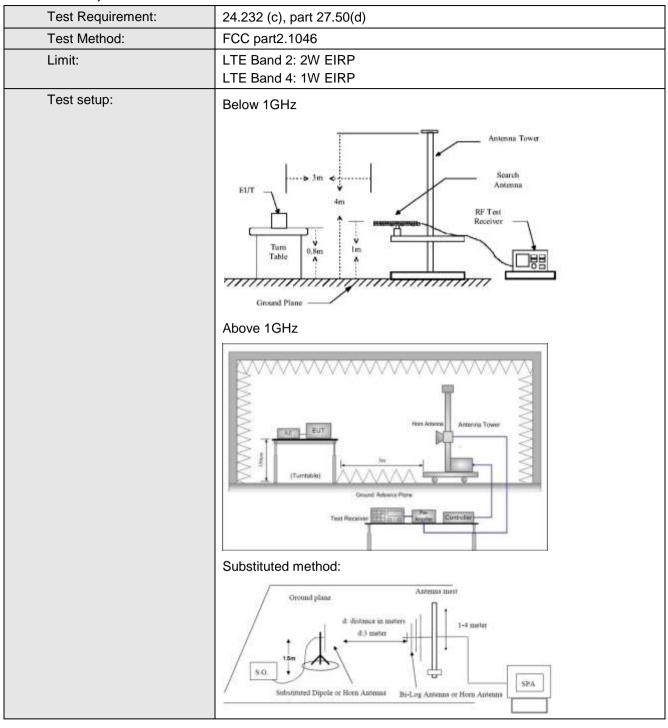
Lowest channel

Highest channel





# 6.10 ERP, EIRP Measurement







Test Procedure:	<ol> <li>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.</li> </ol>
	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 below 1GHz 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:
	<ul> <li>ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)</li> <li>4. EIRP in frequency band above 1GHz 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:</li> </ul>
	EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)  5. The worse case was relating to the conducted output power.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed





# Measurement Data (worst case):

# LTE band 2 part

### Lowest channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result								
1.4MHz(RB size 1 & RB offset 0)																
1950.70	10607	OBSK	1.4	Н	V	25.62										
1850.70	18607	QPSK	1.4	П	Н	17.90	00.00	Door								
1950.70	10607	16OAM	1 1	Н	V	21.64	33.00	Pass								
1850.70	18607	16QAM	1.4	П	Н	17.97										
		1.	4MHz(RB s	ize 3 & RB	offset 0)											
1050.70	10607	ODSK	1.4	Н	V	24.12										
1850.70	18607	QPSK	1.4		Н	18.86	33.00	Pass								
1850.70	18607	16QAM	1.4	Н	V	20.03		rass								
1650.70	10007	IOQAW	1.4		Н	18.85										
		1.	4MHz(RB s	size 6 & RB	offset 0)											
4050.70	40007	ODCK	4.4		V	24.15										
1850.70	18607	QPSK	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	Н	Н	18.96	22.00	Door
1950.70	10607	40007 400004 4.4	1.4	Н	V	22.51	33.00	Pass								
1850.70	18607	16QAM	1.4		Н	18.93										

### Middle channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result				
1.4MHz(RB size 1 & RB offset 0)												
1000.00	19000	QPSK	1.1	Н	V	24.15						
1880.00	18900	QPSK	1.4	Г	Н	18.56	33.00	Door				
1880.00	18900	16QAM	1.4	Н	V	22.36	33.00	Pass				
1000.00	16900	IOQAW	1.4	П	Н	18.54						
		1.4	4MHz(RB	size 3 & RE	3 offset 0)							
1880.00	18900	QPSK	1.4	Н	V	25.13						
1000.00	10900	QFSK	1.4	П	Н	19.63	33.00	Door				
1880.00	18900	16QAM	1 1	1.4	Н	V	21.41	33.00	Pass			
1000.00	10900	IOQAW	1.4	П	Н	19.86						
		1.4	4MHz(RB	size 6 & RE	3 offset 0)							
1880.00	18900	QPSK	1.40	Н	V	23.25	33.00	Door				
1000.00	16900	QFSK	1.40		Н	19.65						
1880.00	18900 16QAM 1.4	1.40	Н	V	23.52	33.00	Pass					
1000.00	10900	IOQAW	1.40	П	Н	19.54						





**Highest channel** 

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result			
1.4MHz(RB size 1 & RB offset 0)											
1909.30	19193	QPSK	1.4	Н	V	23.98					
1909.30	19193	QFSK	1.4	П	Н	19.52	33.00	Pass			
1909.30	10102	19193	10102	16QAM	1.4	Н	V	21.47	33.00	Pass	
1909.30	19193	TOQAM	1.4	П	Н	19.85					
			1.4MHz(RE	3 size 3 & F	RB offset 0)						
1000 20	10102	ODSK		4.4	Н	V	24.51				
1909.30	19193	QPSK	1.4	П	Н	20.03	33.00	Pass			
1909.30	19193	16QAM	1 1	1.4 H	V	22.52	33.00				
1909.30	19193	IOQAW	1.4	П	Н	20.51					
			1.4MHz(RE	3 size 6 & F	RB offset 0)						
1000 20	10102	ODSK	4.4	4.4	4.4	V	22.58				
1909.30	19193	QPSK	1.4	Н	Н	20.63	22.00	Door			
1909.30	19193	16QAM	1.4	Н	V	22.45	33.00	Pass			
1909.30	19193	IOQAW	1.4	П	Н	20.08					

### Lowest channel

	Lowest Channel											
Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result				
	20MHz(RB size 1 & RB offset 0)											
1960.00	10700	OBSK	20	Н	V	25.73						
1860.00	18700	QPSK	20	П	Н	17.87	33.00	Pass				
1860.00	18700	16QAM	20	Н	V	21.29	33.00	Fa55				
1660.00	10700	TOQAM	20	П	Н	17.48						
		2	0MHz(RB si	ze 50 & R	B offset 0)							
1860.00	18700	QPSK	20	Н	V	24.14						
1000.00	16700	QFSK	20	П	Н	18.56	22.00	Pass				
1860.00	18700	16QAM	20	Н	V	20.04	33.00	F488				
1660.00	16700	TOQAM	20	П	Н	18.47						
		20	MHz(RB siz	e 100 & R	B offset 0)							
1960.00	10700	ODCK	20	Н	V	24.15						
1860.00	18700	QPSK	20	∠∪	20	20	П	Н	19.53	22.00	Door	
1860.00	60.00 19700 16OAM	20	Н	V	21.52	33.00	Pass					
1000.00	18700	16QAM	20	П	Н	19.45	1	,				





Middle channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result				
20MHz(RB size 1 & RB offset 0)												
1880.00	18900	QPSK	20	Н	V	24.51						
1880.00	10900	QF5K	20	11	Н	18.74	33.00	Pass				
1880.00	18900	16QAM	20	Н	V	22.63	33.00	F 455				
1880.00	10900	TOQAW	20	11	Н	18.25						
		2	0MHz(RB si	ze 50 & RI	3 offset 0)							
1880.00	19000	QPSK	20	н	V	23.56	33.00					
1000.00	18900	QF5K	20	П	Н	19.85		Pass				
1880.00	18900	16QAM	20	20	20	20	20	Н	V	21.88	33.00	F 455
1000.00	10900	IOQAW	20	П	Н	19.63						
		20	MHz(RB siz	ze 100 & R	B offset 0)							
1000.00	10000	ODSK	20	ш	V	23.52						
1880.00	18900	QPSK	20	Н	Н	20.53	33.00	Pass				
1880.00	30.00 18900 16QAM 20	20	Н	V	20.14	33.00	га55					
1000.00	18900	IOQAM	20	11	Н	20.85						

**Highest channel** 

nignest channel											
Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result			
			20MHz(RB	size 1 &	RB offset 0)						
1900.00	19100	QPSK	20	Н	V	23.69					
1900.00	19100	QFSK	20		Н	19.83	33.00	Pass			
1900.00	19100	16QAM	20	Н	<b>V</b>	23.25	33.00	F 455			
1900.00	19100	TOQAM	20	- 11	Н	19.63					
		2	20MHz(RB s	size 50 &	RB offset 0	)					
1900.00	19100	QPSK	20	Н	V	24.15	33.00				
1900.00	19100	QFSK	20	- 1	Н	20.52		Pass			
1900.00	19100	16QAM	20	- 11	Н	<b>V</b>	22.53	33.00	F 455		
1900.00	19100	TOQAM	20	[1]	Н	20.06					
		2	0MHz(RB s	ize 100 8	& RB offset (	))					
1900.00	19100	QPSK	20	Н	V	24.23					
1900.00	19100	QF SN	20	11	Н	21.53	33.00	Pass			
1900.00	19100	16QAM 20	20	Н	<b>V</b>	21.47	33.00	F a55			
1900.00	19100	IOQAW	ZU   F	11	Н	19.93					





# LTE band 4 part

### Lowest channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result				
	1.4MHz(RB size 1 & RB offset 0)											
1710.70	19957	QPSK	1.4	Н	V	21.56						
17 10.70	19957	QFSK	1.4		Н	20.27	30.00	Pass				
1710.70	19957	16QAM	1.4	н	V	25.31	30.00	F d 5 5				
17 10.70	19931	TOQAW	1.4		Н	18.76						
		1	I.4MHz(RE	3 size 3 &	RB offset 0)							
1710.70	19957	QPSK	1.4	Н	V	20.85		Dese				
1710.70	19937	QFSK	1.4	П	Н	21.35	30.00					
1710.70	19957	16QAM	4.4	1.4	1 /	4 H	V	24.39	30.00	Pass		
1710.70	19937	IOQAW	1.4	П	Н	19.54						
		1	I.4MHz(RE	3 size 6 &	RB offset 0)							
1710 70	10057	ODSK	1.1	Ш	V	22.35						
1710.70	19957	QPSK	1.4	Н	Н	21.45	20.00	Door				
1710.70	19957	16QAM	1.4	Н	V	24.88	30.00	Pass				
1710.70	19907	IOQAW	1.4	П	Н	19.87						

### Middle channel

-	Middle Channel											
Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result				
	1.4MHz(RB size 1 & RB offset 0)											
1732.50	20175	QPSK	1.4	Н	V	22.53						
1732.50	20175	QPSK	1.4	П	Н	21.85	30.00	Pass				
1732.50	20175	16QAM	1.4	Н	V	24.45	30.00	Fa55				
1732.50	20173	IOQAW	1.4	П	Н	19.99		ļ				
		1	.4MHz(RE	3 size 3 &	RB offset 0)							
1732.50	20175	ODSK 4.4	QPSK 1.4	1.4 H	ш	V	21.53					
1732.50	20175	QPSK	1.4	1.4   H	Н	22.54	30.00	Pass				
1732.50	20175	16QAM	1.4	н	V	23.65	30.00	Pass				
1732.50	20175	TOQAM	1.4	- 11	Н	20.55						
		1	.4MHz(RE	3 size 6 &	RB offset 0)							
1732.50	20175	QPSK	1.4	Н	V	21.25						
1732.50	20175	QFSK	1.4 H	П	Н	22.83	20.00	Door				
1732.50	20175	16QAM	1.4	Н	V	25.93	30.00	Pass				
1732.50	20175	TOQAM	1.4	17	Н	18.89						





**Highest channel** 

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
			1.4MHz(RE	size 1 & l	RB offset 0)			
1754.30	20202	QPSK	1.4	Н	V	23.63		
1754.30	20393	QPSK	1.4	П	Н	22.51	30.00	Pass
1754.30	20393	16O A M	1.4	Н	V	23.56	30.00	Fa55
1754.50	20393	16QAM	1.4	П	Н	20.05		
			1.4MHz(RE	3 size 3 & l	RB offset 0)			
1754.30	20393	QPSK	1.4	1.4 H	V	21.52	20.00	
1754.50	20393	QFSK	1.4	П	Н	22.41		Pass
1754.30	20393	16QAM	1.4	Н	V	24.06	30.00	Fa55
1754.50	20393	IOQAW	1.4	П	Н	19.36		
		,	1.4MHz(RE	3 size 6 & F	RB offset 0)			
4754.00	20202	ODCK	4.4	- 11	V	22.36		
1754.30	20393	QPSK	1.4	Н	Н	23.96	20.00	Door
1751 20	20202	160 A M	1.4	Н	V	24.85	30.00	Pass
1754.30	20393	16QAM	1.4	П	Н	19.93		

## Lowest channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
		2	0MHz(RB si	ze 1 & RB	offset 0)			
1720.00	20050	ODSK	20	Ш	V	22.78		
1720.00	20050	QPSK	20	Н	Н	22.13	20.00	Doos
1720.00	20050	16O A M	20	ы	V	21.38	30.00	Pass
1720.00	20050	16QAM	20	Н	Н	17.36		
		20MHz	(RB size 50	& RB offse	et 0)			
1720.00	20050	ODSK	20	Н	V	22.86		
1720.00	20050	QPSK	20	П	Н	23.12	30.00	Pass
1720.00	20050	16QAM	20	Н	V	20.12	30.00	Pa55
1720.00	20030	TOQAM	20		Н	18.56		
		20MHz(	RB size 100	& RB offs	et 0)			
1720.00	20050	QPSK	20	Н	V	23.02		
1720.00	20050	QFSK	20	П	Н	23.07	20.00	Doos
1720.00	20050	16QAM	20	Н	V	20.47	30.00	Pass
1720.00	20000	TOQAM	20	17	Н	18.86		



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Middle channel

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result	
		2	0MHz(RB si	ze 1 & RB	offset 0)				
1732.50	20175	QPSK	20	Н	V	23.85			
1732.50	20175	QFSN	20	П	Н	21.41	30.00	Dace	
1732.50	20175	16QAM	20	Н	V	22.56	30.00	Pass	
1732.50	20175	TOQAW	20	П	Н	18.56	•		
	20MHz(RB size 50 & RB offset 0)								
1732.50	20175	QPSK	20	Н	V	23.52			
1732.50	20175	QFSN	20	П	Н	22.41	30.00	Pass	
1732.50	20175	16QAM	20	Н	V	21.56	30.00	rass	
1732.30	20173	TOQAW	20	!!	Н	19.96			
		20	MHz(RB siz	e 100 & RI	B offset 0)				
1732.50	20175	QPSK	20	Н	V	22.33			
1732.50	20175	QFSN	20	П	Н	24.15	30.00	Pass	
1732.50	20175	16QAM	20	Н	V	19.98	30.00	Fa55	
1732.50	20175	TOQAW	20	11	Н	19.86			

High channel

High channel								
Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
			20MHz(RB si	ze 1 & RB	offset 0)			
1745.00	20300	QPSK	20	Н	V	22.17		
1745.00	20300	QFSK	20	П	Н	22.45	30.00	Pass
1745.00	20300	16QAM	20	Н	V	23.63	30.00	F a 5 5
1743.00	20300	TOQAM	20	11	Н	19.25		
		:	20MHz(RB siz	ze 50 & RE	offset 0)			
1745.00	20300	QPSK	20	Н	V	22.74		
1745.00	20300	QFSK	20	П	Н	21.52	30.00	Pass
1745.00	20300	16QAM	20	Н	V	22.85	30.00	F a 5 5
1745.00	20300	TOQAM	20	П	Н	20.07		
		2	20MHz(RB siz	e 100 & RI	3 offset 0)			
1745.00	20300	QPSK	20	Н	V	21.56		
1745.00	20300	QFSK	20	П	Н	23.17	30.00	Pass
1745.00	20300	00 400414 00	20300 16QAM 20 H	V	20.05	30.00	Fa55	
1745.00	20300	16QAM	20	П	Н	20.47		





# 6.11 Field strength of spurious radiation measurement

6.11 Field strength of sp	urious radiation measurement
Test Requirement:	Part 24.238 (a), Part 27.53(h)
Test Method:	FCC part2.1053
Limit:	LTE Band 2, LTE Band 4: -13dBm,
Test setup:	Below 1GHz  Antenna Tower  Scarch Actemna  RF Test Receiver
	Above 1GHz
	Grant Receive Controller
	Substituted method:
	Ground plane  d: distance in meters  d:3 meter  1-5 meter  S.G. Substituted Dipole or Horn Antenna  Bi-Log Antenna or Horn Antenna
Test Procedure:	<ol> <li>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.</li> <li>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.</li> <li>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.</li> </ol>



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	4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.  ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

# Measurement Data (worst case):

#### **Below 1GHz:**

The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.

#### **Above 1GHz**

For above 1 GHz, all test modes were performed, and just the worst case shown in the report.



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LTE band 2 part:

		ze 1 & RB offset 0) for	or QPSK	
Frequency (MHz)	Spurious I	Emission	Limit (dBm)	Result
riequency (winz)	Polarization	Level (dBm)	LIIIII (UDIII)	Result
		Lowest		
3701.40	Vertical	-36.98		
5552.10	V	-31.03		
7402.00	V	-28.15	40.00	Dana
3701.40	Horizontal	-25.24	-13.00	Pass
5552.10	Н	-19.54		
7402.00	Н	-22.20		
<u> </u>		Middle		
3760.00	Vertical	-33.83		
5640.00	V	-22.72		Dana
7520.00	V	-29.70	40.00	
3760.00	Horizontal	-35.90	-13.00	Pass
5640.00	Н	-28.44		
7520.00	Н	-28.01		
		Highest		
3816.60	Vertical	-24.00		
5724.90	V	-18.87		
7633.20	V	-24.83	10.00	Date
3816.60	Horizontal	-31.31	-13.00	Pass
5724.90	Н	-23.80		
7633.20	Н	-24.41		





3MHz(RB size 1 & RB offset 0) for QPSK						
Frequency (MHz)	Spurious	Emission	Limit (dBm)	Result		
Frequency (MHZ)	Polarization	Level (dBm)	LIIIII (UDIII)	Result		
		Lowest				
3703.00	Vertical	-35.26				
5554.50	V	-30.14				
7406.00	V	-27.53	-13.00	Pass		
3703.00	Horizontal	-24.12	-13.00	Pass		
5554.50	Н	-18.36				
7406.00	Н	-21.53				
<u>.</u>		Middle		·		
3760.00	Vertical	-32.52				
5640.00	V	-21.45				
7520.00	V	-28.63	42.00	Dees		
3760.00	Horizontal	-34.12	-13.00	Pass		
5640.00	Н	-29.63				
7520.00	Н	-27.15				
<u>.</u>		Highest		·		
3817.00	Vertical	-23.14				
5725.50	V	-17.45				
7634.00	V	-23.56	-13.00	Desa		
3817.00	Horizontal	-30.21		Pass		
5725.50	Н	-22.41				
7634.00	Н	-23.85	7			





1	•	ze 1 & RB offset 0) for	or QPSK	1
Frequency (MHz)		Emission	Limit (dBm)	Result
1 104401107 (111112)	Polarization	Level (dBm)		- Troodic
		Lowest		
3705.00	Vertical	-35.21		
5557.50	V	-30.26		
7410.00	V	-29.31	-13.00	Door
3705.00	Horizontal	-26.52	-13.00	Pass
5557.50	Н	-20.14		
7410.00	Н	-23.26		
		Middle		
3760.00	Vertical	-32.56		Pass
5640.00	V	-23.54		
7520.00	V	-28.47	-13.00	
3760.00	Horizontal	-34.15	-13.00	
5640.00	Н	-27.45		
7520.00	Н	-29.36		
<u>.</u>		Highest		
3815.00	Vertical	-23.74	_	
5722.50	V	-19.63		
7630.00	V	-23.65	-13.00	Pass
3815.00	Horizontal	-30.14		Fass
5722.50	Н	-24.58		
7630.00	Н	-25.63		





	10MHz(RB si	ze 1 & RB offset 0) f	or QPSK	
	Spurious	Emission		
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result
1		Lowest		
3710.00	Vertical	-27.41		
5565.00	V	-24.56		
7420.00	V	-23.63	-13.00	Door
3710.00	Horizontal	-25.63	-13.00	Pass
5565.00	Н	-23.12		
7420.00	Н	-21.47		
<u>.</u>		Middle		
3760.00	Vertical	-26.35		Pass
5640.00	V	-20.14		
7520.00	V	-24.51	-13.00	
3760.00	Horizontal	-27.85	-13.00	
5640.00	Н	-22.35		
7520.00	Н	-22.47		
		Highest		
3810.00	Vertical	-23.69		
5715.00	V	-20.15		
7620.00	V	-28.35	-13.00	Pass
3810.00	Horizontal	-26.53		Pass
5715.00	Н	-21.51		
7620.00	Н	-22.36		





15MHz(RB size 1 & RB offset 0) for QPSK							
[		s Emission		Desult			
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result			
		Lowest					
3715.00	Vertical	-34.21					
5572.50	V	-29.63					
7430.00	V	-28.51	-13.00	Pass			
3715.00	Horizontal	-27.41	-13.00	Pass			
5572.50	Н	-19.63					
7430.00	Н	-22.85					
		Middle					
3760.00	Vertical	-31.41		Pass			
5640.00	V	-24.56					
7520.00	V	-27.85	-13.00				
3760.00	Horizontal	-33.69	-13.00				
5640.00	Н	-26.93					
7520.00	Н	-28.54					
		Highest					
3805.00	Vertical	-22.58					
5707.50	V	-20.31					
7610.00	V	-24.53	-13.00	Pass			
3805.00	Horizontal	-29.63		rass			
5707.50	Н	-23.65					
7610.00	Н	-24.78					





	20MHz(RB size 1 & RB offset 0) for QPSK							
	Spurious	Emission						
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result				
		Lowest						
3720.00	Vertical	-26.72						
5580.00	V	-23.16						
7440.00	V	-24.25	42.00	Door				
3720.00	Horizontal	-26.26	-13.00	Pass				
5580.00	Н	-22.36						
7440.00	Н	-22.80						
		Middle						
3760.00	Vertical	-27.07						
5640.00	V	-19.41						
7520.00	V	-25.34	12.00	Door				
3760.00	Horizontal	-28.98	-13.00	Pass				
5640.00	Н	-21.34						
7520.00	Н	-23.53						
		Highest						
3800.00	Vertical	-24.53						
5700.00	V	-19.66						
7600.00	V	-29.13	-13.00	Door				
3800.00	Horizontal	-27.78		Pass				
5700.00	Н	-20.58						
7600.00	Н	-23.93						





#### LTE Band 4 Part:

	•	ze 1 & RB offset 0) fe	or QPSK	_	
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result	
1 requeries (Wil 12)	Polarization	Level (dBm)	Limit (dDin)	rtesuit	
		Lowest			
3421.40	Vertical	-35.03			
5132.10	V	-28.72			
6842.80	V	-22.18	-13.00	Pass	
3421.40	Horizontal	-36.25	-13.00	Pass	
5132.10	Н	-34.21			
6842.80	Н	-25.98			
		Middle			
3465.00	Vertical	-38.05		Pass	
5197.50	V	-24.20			
6930.00	V	-20.92	-13.00		
3465.00	Horizontal	-31.79	-13.00		
5197.50	Н	-25.99			
6930.00	Н	-25.85			
		Highest			
3508.60	Vertical	-35.01			
5262.90	V	-24.07			
7017.20	V	-21.27	-13.00	Pass	
3508.60	Horizontal	-34.58	-13.00	Pass	
5262.90	Н	-27.01			
7017.20	Н	-21.30			





	3MHz(RB siz	e 1 & RB offset 0) fo	or QPSK		
Frequency (MHz)		Emission	Limit (dBm)	Result	
rrequericy (Minz)	Polarization	Level (dBm)	Limit (ubin)	Result	
		Lowest			
3423.00	Vertical	-38.54			
5134.50	V	-30.17			
6846.00	V	-23.69	42.00	Daga	
3423.00	Horizontal	-30.12	-13.00	Pass	
5134.50	Н	-25.87			
6846.00	Н	-22.63			
		Middle		•	
3465.00	Vertical	-30.74		Pass	
5197.50	V	-21.47			
6930.00	V	-22.96	42.00		
3465.00	Horizontal	-32.45	-13.00		
5197.50	Н	-26.35			
6930.00	Н	-24.17			
		Highest			
3507.00	Vertical	-29.63			
5260.50	V	-27.48			
7014.00	V	-24.15	42.00	Dees	
3507.00	Horizontal	-28.35	-13.00	Pass	
5260.50	Н	-26.74			
7014.00	Н	-24.15			





5MHz(RB size 1 & RB offset 0) for QPSK						
		Emission				
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result		
		Lowest				
3425.00	Vertical	-34.25				
5137.50	V	-27.14				
6850.00	V	-23.69	-13.00	Pass		
3425.00	Horizontal	-35.41	-13.00	Pass		
5137.50	Н	-33.52				
6850.00	Н	-24.58				
		Middle		•		
3465.00	Vertical	-37.85		Pass		
5197.50	V	-23.65				
6930.00	V	-21.74	-13.00			
3465.00	Horizontal	-30.41	-13.00			
5197.50	Н	-24.78				
6930.00	Н	-24.69				
		Highest				
3505.00	Vertical	-34.25				
5257.50	V	-23.69				
7010.00	V	-20.45	-13.00	Pass		
3505.00	Horizontal	-33.52	-13.00	F d 5 5		
5257.50	Н	-26.35				
7010.00	Н	-22.85				





10MHz(RB size 1 & RB offset 0) for QPSK						
Fragues av (MILIE)	•	Emission		Decult		
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result		
		Lowest				
3430.00	Vertical	-39.65				
5145.00	V	-31.42				
6860.00	V	-24.85	-13.00	Pass		
3430.00	Horizontal	-31.47	-13.00	Pass		
5145.00	Н	-26.93				
6860.00	Н	-21.21				
		Middle		•		
3465.00	Vertical	-31.52		Pass		
5197.50	V	-20.63				
6930.00	V	-21.47	-13.00			
3465.00	Horizontal	-33.24	-13.00			
5197.50	Н	-25.32				
6930.00	Н	-23.65				
		Highest				
3500.00	Vertical	-30.14				
5250.00	V	-28.56				
7000.00	V	-25.47	-13.00	Pass		
3500.00	Horizontal	-29.63	-13.00	Pass		
5250.00	Н	-27.41				
7000.00	Н	-25.61				





15MHz(RB size 1 & RB offset 0) for QPSK					
Frequency (MHz)	Spurious	Emission	Limit (dBm)	Result	
Frequency (Miriz)	Polarization	Level (dBm)	Limit (ubin)	Result	
		Lowest			
3435.00	Vertical	-33.96			
5152.50	V	-26.58			
6870.00	V	-22.54	42.00	Door	
3435.00	Horizontal	-34.21	-13.00	Pass	
5152.50	Н	-32.85	7		
6870.00	Н	-23.41	7		
		Middle	<u>.</u>		
3465.00	Vertical	-36.95		Pass	
5197.50	V	-22.47			
6930.00	V	-22.53	42.00		
3465.00	Horizontal	-29.85	-13.00		
5197.50	Н	-25.69			
6930.00	Н	-23.58			
		Highest	<u>.</u>		
3495.00	Vertical	-33.24			
5242.50	V	-22.74	7		
6990.00	V	-21.69	-13.00	Pass	
3495.00	Horizontal	-32.14	-13.00	Fass	
5242.50	Н	-25.89			
6990.00	Н	-23.64			





20MHz(RB size 1 & RB offset 0) for QPSK						
F (MIL)	-	Emission		D 14		
Frequency (MHz)	Polarization	Level (dBm)	Limit (dBm)	Result		
		Lowest				
3440.00	Vertical	-40.63				
5160.00	V	-32.75				
6880.00	V	-25.44	12.00	Desa		
3440.00	Horizontal	-32.31	-13.00	Pass		
5160.00	Н	-27.73				
6880.00	Н	-20.74				
		Middle				
3465.00	Vertical	-32.67		Pass		
5197.50	V	-19.99				
6930.00	V	-20.63	-13.00			
3465.00	Horizontal	-34.14	-13.00			
5197.50	Н	-24.59				
6930.00	Н	-22.37				
		Highest				
3490.00	Vertical	-31.99				
5235.00	V	-29.46				
6980.00	V	-26.54	12.00	Door		
3490.00	Horizontal	-30.95	-13.00	Pass		
5235.00	Н	-28.22				
6980.00	Н	-24.16				



# 6.12 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	±2.5ppm
Test setup:	Spectrum analyzer  EUT  Att.  Variable Power Supply
Test procedure:	<ol> <li>Note: Measurement setup for testing on Antenna connector</li> <li>The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>The EUT was placed inside the temperature chamber.</li> <li>Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached</li> </ol>
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 (the worst channel):





LTE Band 2(QPSK):

	LTE Band 2(QPSK):						
Reference Fr	equency: LTE Band	2(1.4MHz) N	Middle channel=18900	channel=1880.00	)MHz		
Power supplied	Temperature (°C)	Fr	equency error	Limit (ppm)	Result		
(Vdc)	` ` `	Hz	ppm	Еппі (рріп)	Nesuit		
	-30	185	0.098404				
	-20	163	0.086702				
	-10	144	0.076596				
	0	153	0.081383				
3.70	10	163	0.086702	±2.5	Pass		
	20	170	0.090426				
	30	138	0.073404				
	40	156	0.082979				
	50	180	0.095745				
Reference F	requency: LTE Band	l 2(3MHz) M	iddle channel=18900 c	channel=1880.00	MHz		
Power supplied	Temperature (°ℂ)	Fr	equency error	Line it (non men)	Result		
(Vdc)	remperature (C)	Hz	ppm	Limit (ppm)			
	-30	177	0.094149				
	-20	163	0.086702				
	-10	160	0.085106				
	0	158	0.084043	±2.5			
3.70	10	159	0.084574		Pass		
	20	150	0.079787				
	30	127	0.067553				
	40	136	0.072340				
	50	155	0.082447				
Reference F	requency: LTE Band	l 2(5MHz) M	iddle channel=18900 c	channel=1880.00	MHz		
Power supplied (Vdc)	Temperature (°C)	Fr	equency error	Limit (ppm)	Result		
rower supplied (vac)	remperature ( C)	Hz	ppm	Limit (ppin)	Nesuit		
	-30	165	0.087766				
	-20	175	0.093085				
	-10	163	0.086702				
	0	177	0.094149				
3.70	10	181	0.096277	±2.5	Pass		
-	20	163	0.086702				
	30	155	0.082447				
	40	174	0.092553				
	50	190	0.101064				





Reference F	requency: LTE Band	2(10MHz) M	fiddle channel=18900	channel=1880.00	MHz
Power supplied (Vdc)	Temperature (°C)	Fro Hz	equency error ppm	Limit (ppm)	Result
	-30	166	0.088298		
	-20	174	0.092553		
	-10	158	0.084043		
	0	159	0.084574	]	
3.70	10	162	0.086170	±2.5	Pass
<b>5 5</b>	20	152	0.080851		
	30	144	0.076596		
	40	103	0.054787	1	
	50	107	0.056915	1	
Reference F			fiddle channel=18900	channel-1880 00	IMH7
Neierence i	requericy. LTL band				7111112
Power supplied (Vdc)	Temperature (°C)	Hz	equency error ppm	Limit (ppm)	Result
	-30	163	0.086702		Pass
	-20	105	0.055851	1	
	-10	137	0.072872	±2.5	
	0	146	0.077660		
3.70	10	155	0.082447		
	20	145	0.077128	]	
	30	108	0.057447		
	40	136	0.072340		
	50	157	0.083511		
Reference F	requency: LTE Band	2(20MHz) M	/liddle channel=18900	channel=1880.00	MHz
Davisa avantia d () (da)	Tamanaratura (°C)	Fre	equency error	Limit (none)	
Power supplied (Vdc)	Temperature (°C)	Hz	ppm	Limit (ppm)	Result
	-30	168	0.089362		
	-20	152	0.080851		
	-10	143	0.076064		
	0	126	0.067021		
3.70	10	155	0.082447	±2.5	Pass
	20	178	0.094681	]	
	30	186	0.098936	1	
	40	189	0.100532	_	
	50	174	0.092553		





LTE Band 2(16QAM):						
Reference F	requency: LTE Band	2(1.4MHz)	Middle channel=18900	channel=1880.0	0MHz	
	Temperature (°C)	Temperature (°C) Frequency error		Limit (ppm)		
Power supplied (Vdc)	remperature (C)	Hz	ppm	сипи (ррпі)	Result	
	-30	163	0.086702			
	-20	174	0.092553			
	-10	188	0.100000			
	0	157	0.083511			
3.70	10	169	0.089894	±2.5	Pass	
	20	155	0.082447			
	30	174	0.092553			
	40	108	0.057447			
	50	125	0.066489			
Reference F	requency: LTE Band	2(3MHz) M	liddle channel=18900 c	hannel=1880.00	MHz	
Power supplied (Vdc)	Temperature (℃)	Fr	equency error	Limit (ppm)	Result	
rower supplied (vdc)	romporataro ( o)	Hz	ppm	( -	Kesuit	
	-30	155	0.082447			
	-20	163	0.086702			
	-10	147	0.078191			
	0	152	0.080851		Pass	
3.70	10	135	0.071809	±2.5		
	20	146	0.077660			
	30	158	0.084043			
	40	147	0.078191			
	50	129	0.068617			
Reference F	requency: LTE Band	2(5MHz) M	liddle channel=18900 c	hannel=1880.00	MHz	
Power supplied (Vdc)	Temperature (°C)		equency error	Limit (ppm)	Result	
11 ( /	` ` `	Hz	ppm	41 /		
	-30	167	0.088830			
	-20	152	0.080851			
	-10	142	0.075532			
	0	136	0.072340			
3.70	10	152	0.080851	±2.5	Pass	
	20	146	0.077660	]		
	30	105	0.055851			
	40	174	0.092553	]		
	50	163	0.086702			





Reference F	requency: LTE Band	2(10MHz) M	liddle channel=18900	channel=1880.00	MHz
Power supplied (Vdc)	Temperature ( $^{\circ}$ )	Fro Hz	equency error ppm	Limit (ppm)	Result
	-30	167	0.088830		l
	-20	129	0.068617		
	-10	152	0.080851		
	0	187	0.099468	7	
3.70	10	166	0.088298	±2.5	Pass
<b>5 5</b>	20	105	0.055851		
	30	123	0.065426		
	40	124	0.065957		
	50	156	0.082979		
Reference F			1iddle channel=18900	channel-1880 00	MHz
Power supplied			equency error		1011 12
(Vdc)	Temperature ( $^{\circ}$ C)	Hz	ppm	Limit (ppm)	Result
(122)	-30	174	0.092553		Pass
	-20	123	0.065426		
	-10	158	0.084043		
	0	130	0.069149		
3.70	10	159	0.084574	±2.5	
	20	175	0.093085		
	30	145	0.077128		
	40	106	0.056383		
	50	166	0.088298		
Reference F	requency: LTE Band	2(20MHz) M	fiddle channel=18900	channel=1880.00	MHz
Power supplied	Temperature (°ℂ)	Fre	equency error	1.1	D !!
(Vdc)		Hz	ppm	Limit (ppm)	Result
	-30	147	0.078191	_	
	-20	162	0.086170	_	
	-10	155	0.082447	_	
	0	146	0.077660		_
3.70	10	105	0.055851	±2.5	Pass
	20	146	0.077660	4	
	30	187	0.099468	4	
	40	169	0.089894	4	
	50	160	0.085106		





		LTE Band	4(QPSK):		
Reference Fr	equency: LTE Band	4(1.4MHz) N	Middle channel=20175	channel=1732.50	OMHz
Power supplied	ed Temperature (%) Frequency error		Limit (nnm)	Dogult	
(Vdc)	Temperature (°C)	Hz	ppm	Limit (ppm)	Result
	-30	177	0.102165		
	-20	163	0.094084		
	-10	152	0.087734		
	0	159	0.091775		
3.70	10	107	0.061760	±2.5	Pass
	20	125	0.072150		
	30	133	0.076768		
	40	156	0.090043		
	50	187	0.107937		
Reference F	requency: LTE Band	1 4(3MHz) M	liddle channel=20175	channel=1732.50	MHz
Power supplied	Temperature (°ℂ)	Fr	equency error	Limit (none)	Decult
(Vdc)	remperature ( C)	Hz	ppm	Limit (ppm)	Result
	-30	169	0.097547		
	-20	122	0.070418		
	-10	128	0.073882		
	0	155	0.089466		
3.70	10	146	0.084271	±2.5	Pass
	20	167	0.096392		
	30	125	0.072150		
	40	122	0.070418		
	50	167	0.096392		
Reference F	requency: LTE Band	l 4(5MHz) M	liddle channel=20175	channel=1732.50	MHz
Power supplied (Vdc)	Temperature (°C)		equency error	Limit (ppm)	Result
rower supplied (vuc)	remperature ( c)	Hz	ppm	Limit (ppm)	Nesuit
	-30	126	0.072727		
	-20	120	0.069264		
	-10	147	0.084848		
	0	149	0.086003		
3.70	10	168	0.096970	±2.5	Pass
	20	152	0.087734		
	30	163	0.094084		
	40	177	0.102165		
	50	162	0.093506		





Reference Fi	requency: LTE Band		fiddle channel=20175	cnannel=1/32.50	JIVIHZ
Power supplied (Vdc)	Temperature (°C)	Hz	equency error	Limit (ppm)	Result
	-30		ppm		Pass
	-20	174	0.100433		
		155	0.089466	_	
	-10	136	0.078499		
	0	130	0.075036		
3.70	10	189	0.109091	±2.5	
	20	155	0.089466		
	30	174	0.100433		
	40	165	0.095238		
	50	126	0.072727		
Reference Fi	requency: LTE Band	4(15MHz) M	liddle channel=20175	channel=1732.50	)MHz
Dower aupplied (\/de)	Tomporoture (°C)	Frequency error		Limit ( )	
Power supplied (Vdc)	Temperature (°C)	Hz	ppm	Limit (ppm)	Result
	-30	157	0.090620	±2.5	Pass
	-20	142	0.081962		
	-10	133	0.076768		
	0	126	0.072727		
3.70	10	187	0.107937		
	20	192	0.110823		
	30	158	0.091198		
	40	136	0.078499		
	50	122	0.070418		
Reference Fi	requency: LTE Band	4(20MHz) M	liddle channel=20175	channel=1732.50	)MHz
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	D !'
· onor oupplied (vde)	. ,	Hz	ppm	Lillit (PPIII)	Result
	-30	174	0.100433	_	
3.70	-20	152	0.087734	4	
	-10	166	0.095815	4	
	0	145	0.083694		
	10	133	0.076768	±2.5	Pass
	20	174	0.100433	4	
	30	166	0.095815	4	
	40	187	0.107937	4	
	50	125	0.072150	ļ	





LTE Band 4(16QAM):

		LTE Band	4(16QAM):		
Reference F	requency: LTE Band	4(1.4MHz)	Middle channel=20175	channel=1732.5	0MHz
	Temperature (°C)	F	requency error	Limit (nnm)	Result
Power supplied (Vdc)		Hz	ppm	Limit (ppm)	
	-30	163	0.094084		
	-20	142	0.081962		
	-10	127	0.073304		
	0	105	0.060606		
3.70	10	116	0.066955	±2.5	Pass
	20	117	0.067532		
	30	126	0.072727		
	40	133	0.076768		
	50	138	0.079654		
Reference F	requency: LTE Band	4(3MHz) M	liddle channel=20175 o	hannel=1732.50l	MHz
Dower aupplied (\/de)	Temperature (℃)	Fr	equency error	Limit (ppm)	Result
Power supplied (Vdc)	remperature ( c)	Hz	ppm	(pp)	Result
	-30	162	0.093506	±2.5	
	-20	174	0.100433		
	-10	185	0.106782		
	0	169	0.097547		
3.70	10	145	0.083694		Pass
	20	173	0.099856		
	30	126	0.072727		
	40	145	0.083694		
	50	174	0.100433		
Reference F	requency: LTE Band	4(5MHz) M	liddle channel=20175 o	channel=1732.50	MHz
Power supplied (Vdc)	Temperature (°C)		equency error	Limit (ppm)	Result
· one: cappilea (1 ac)	. ,	Hz	ppm	Σ (ββ)	rtoodit
	-30	155	0.089466	_	
	-20	146	0.084271		
	-10	125	0.072150	_	
	0	103	0.059452		
3.70	10	155	0.089466	±2.5	Pass
-	20	142	0.081962	]	
	30	135	0.077922		
	40	126	0.072727		
	50	145	0.083694		





Reference Fi	requency: LTE Band	4(10MHz) N	liddle channel=20175	channel=1732.50	MHz
Dower ownlied ()/de)	Temperature (°C)	Fre	equency error	Limit (none)	Result
Power supplied (Vdc)		Hz	ppm	Limit (ppm)	
	-30	147	0.084848		
	-20	133	0.076768		
	-10	106	0.061183		
	0	128	0.073882		
3.70	10	152	0.087734	±2.5	Pass
	20	127	0.073304		
	30	106	0.061183		
	40	148	0.085426		
	50	169	0.097547		
Reference Fu	requency: LTF Band		liddle channel=20175	channel=1732 50	MHz
		, ,	equency error		2
Power supplied (Vdc)	Temperature (°C)	Hz	ppm	Limit (ppm)	Result
	-30	174	0.100433	±2.5	Pass
	-20	105	0.060606		
	-10	163	0.094084		
	0	155	0.089466		
3.70	10	124	0.071573		
	20	143	0.082540		
	30	125	0.072150		
	40	106	0.061183		
	50	148	0.085426		
Reference Fi	requency: LTE Band	4(20MHz) N	liddle channel=20175	channel=1732.50	MHz
Power supplied (Vdc)	Temperature (°ℂ)		equency error	Limit (ppm)	Result
(vuc)	-30	Hz	ppm	( - )	
	-20	160	0.092352		
3.70	-20 -10	147	0.084848	_	
	0	106	0.061183	-	
	10	116	0.066955		Б
	20	135	0.077922	±2.5	Pass
	30	128 190	0.073882 0.109668		
	40	152			
	50	141	0.087734 0.081385		



# 6.13 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	Spectrum analyzer  EUT  Variable Power Supply  Note: Measurement setup for testing on Antenna connector
Test procedure:	<ol> <li>Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>Reduce the input voltage to specify extreme voltage variation (+/-15%) and endpoint, record the maximum frequency change.</li> </ol>
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):**

## LTE Band 2(QPSK):

Reference F	requency: LTE Band	2(1.4MHz) Middle	•	channel=1880.00	)MHz
. (0.0.0.00	Power supplied	,			
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	95	0.050532		
25	3.70	63	0.033511	±2.5	Pass
	3.14	74	0.039362		. 466
Reference F	requency: LTE Band	2(3MHz) Middle	channel=18900 c	channel=1880.00l	ИНz
- (00)	Power supplied	Frequency error			
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	85	0.045213		
25	3.70	96	0.051064	±2.5	Pass
	3.14	45	0.023936		
Reference F	requency: LTE Band	d 2(5MHz) Middle	channel=18900 c	channel=1880.00l	ИНz
- (00)	Power supplied	Freque	ncy error		
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	75	0.039894	±2.5	
25	3.70	66	0.035106		Pass
	3.14	70	0.037234		
Reference F	requency: LTE Band	2(10MHz) Middle	channel=18900	channel=1880.00	MHz
	Power supplied	Frequency error			
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	85	0.045213		
25	3.70	74	0.039362	±2.5	Pass
	3.14	33	0.017553		
Reference F	requency: LTE Band	2(15MHz) Middle	channel=18900	channel=1880.00	MHz
T(°C)	Power supplied	Frequei	ncy error		5 "
Temperature ( $^{\circ}$ C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.039362		
25	3.70	65	0.034574	±2.5	Pass
	3.14	88	0.046809		
Reference F	requency: LTE Band	2(20MHz) Middle	channel=20175	channel=1880.00	MHz
Tomporoture (°C)	Power supplied	Freque	ncy error	Line it (many)	Decult
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.039362		
25	3.70	63	0.033511	±2.5	Pass
	3.14	55	0.029255	<u> </u>	





LTE Band 2(16QAM):

		LTE Band 2(16	QAM):		
Reference Fi	requency: LTE Band	2(1.4MHz) Middle	e channel=18900	channel=1880.00	MHz
Tomporatura (°C)	Power supplied	Freque	ncy error	Limit (nome)	D 11
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.039362		
25	3.70	55	0.029255	±2.5	Pass
	3.14	63	0.033511		
Reference F	requency: LTE Band	d 2(3MHz) Middle	channel=18900 d	channel=1880.00N	ИHz
- (00)	Power supplied	Freque	Frequency error		
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	87	0.046277		
25	3.70	68	0.036170	±2.5	Pass
	3.14	65	0.034574	7	
Reference F	requency: LTE Band	2(5MHz) Middle	channel=18900 c	channel=1880.00N	ИНz
	Power supplied	Freque	ncy error		
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.039362	±2.5	
25	3.70	88	0.046809		Pass
_0	3.14	65	0.034574		. 0.00
- (00)	Power supplied	Freque	ncy error		
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	75	0.039894		
25	3.70	63	0.033511	±2.5	Pass
	3.14	85	0.045213	7	
Reference F	requency: LTE Band	2(15MHz) Middle	channel=18900	channel=1880.00	MHz
- (00)	Power supplied	Freque	ncy error		
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	88	0.046809		
25	3.70	75	0.039894	±2.5	Pass
	3.14	63	0.033511		
Reference F	requency: LTE Band			channel=1880.00	MHz
	Power supplied	, , ,	ncy error	Limit (ppm)	
Temperature (℃)	(Vdc)	Hz	ppm		Result
	4.25	77	0.040957		
25	3.70	65	0.034574	±2.5	Pass
	3.14	60	0.031915		
	•		•		





		LTE Band 4(Q	PSK):		
Reference F	requency: LTE Band	4(1.4MHz) Middle	channel=20175	channel=1732.50	)MHz
Tomorotium (°C)	Power supplied	Frequer	ncy error	1	
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.042713		
25	3.70	96	0.055411	±2.5	Pass
	3.14	85	0.049062		
Reference F	requency: LTE Band	d 4(3MHz) Middle	channel=20175 c	:hannel=1732.50ľ	ИНz
- (00)	Power supplied	Frequer	ncy error		_
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	75	0.043290		
25	3.70	88	0.050794	±2.5	Pass
	3.14	66	0.038095	1	
Reference F	requency: LTE Band	4(5MHz) Middle	channel=20175 c	hannel=1732.50ľ	ИНz
	Power supplied	Frequer	ncy error		
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	67	0.038672	±2.5	
25	3.70	85	0.049062		Pass
	3.14	47	0.027128		. 0.00
Reference F	requency: LTE Band	4(10MHz) Middle		channel=1732.50	MHz
	Power supplied	Frequency error			
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.37	66	0.038095		
25	3.70	38	0.021934	±2.5	Pass
	3.23	97	0.055988		
Reference F	requency: LTE Band	4(15MHz) Middle		channel=1732.50	MHz
	Power supplied		ncy error		
Temperature (℃)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	88	0.050794		
25	3.70	75	0.043290	±2.5	Pass
20	3.14	61	0.035209	-	
Reference F	requency: LTE Band			channel=1732.50	MHz
	Power supplied		ncy error		
Temperature (°C)	(Vdc)	Hz	ppm		Result
	4.25	57	0.032900		
25	3.70	63	0.036364	±2.5	Pass
20	3.14	78	0.045022		. 400
		, 0	0.070022		





LTE Band 4(16QAM):

		LTE Band 4(16	QAM):		
Reference Fi	requency: LTE Band	4(1.4MHz) Middle	e channel=20175	channel=1732.50	MHz
Temperature (°C)	Power supplied	Freque	ncy error	Limit (nnm)	Result
	(Vdc)	Hz	ppm	Limit (ppm)	
	4.25	55	0.031746		Pass
25	3.70	74	0.042713	±2.5	
	3.14	66	0.038095		
Reference F	requency: LTE Band	d 4(3MHz) Middle	channel=20175 c	hannel=1732.50N	ИHz
- (00)	Power supplied	Frequency error			
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	88	0.050794		
25	3.70	55	0.031746	±2.5	Pass
	3.14	74	0.042713	7	
Reference F	requency: LTE Band	4(5MHz) Middle	channel=20175 c	hannel=1732.50N	ИНz
_ (00)	Power supplied	Freque	ncy error		
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	67	0.038672	±2.5	
25	3.70	82	0.047330		Pass
	3.14	69	0.039827		
Reference F	requency: LTE Band	4(10MHz) Middle	channel=20175	channel=1732.50l	MHz
	Power supplied	Frequency error			
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.042713		
25	3.70	55	0.031746	±2.5	Pass
	3.14	62	0.035786	7	
Reference F	requency: LTE Band	4(15MHz) Middle	channel=20175	channel=1732.50l	MHz
	Power supplied		ncy error		
Temperature (°C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
	4.25	74	0.042713		
25	3.70	52	0.030014	±2.5	Pass
	3.14	63	0.036364		
Reference F	requency: LTE Band	4(20MHz) Middle	channel=20175	channel=1732.50l	MHz
	Power supplied	,	ncy error		
Temperature ( $^{\circ}$ C)	(Vdc)	Hz	ppm	Limit (ppm)	Result
25	4.25	74	0.042713		
	3.70	56	0.032323	±2.5	Pass
25	5.70	36	0.032323	±2.5	r ass