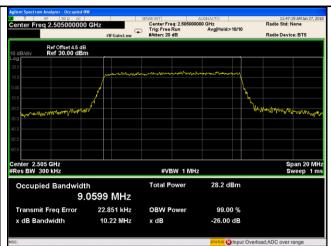
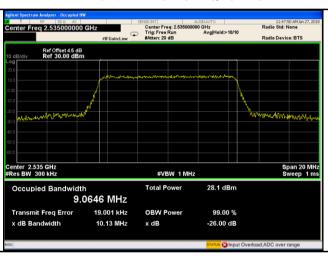


Test Report	18070046-FCC-R5
Page	71 of 146





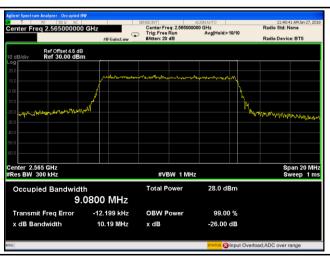
LTE Band VII - Low CH QPSK-10



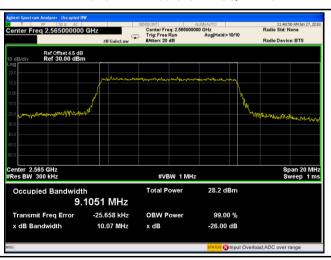
LTE Band VII - Low CH 16QAM-10



LTE Band VII - Middle CH QPSK-10



LTE Band VII - Middle CH 16QAM-10



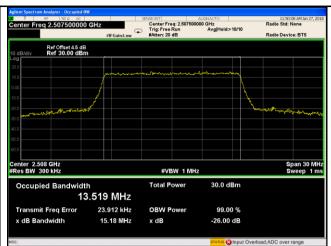
LTE Band VII - High CH QPSK-10

LTE Band VII - High CH 16QAM-10

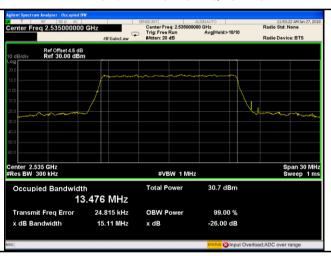


Test Report	18070046-FCC-R5
Page	72 of 146





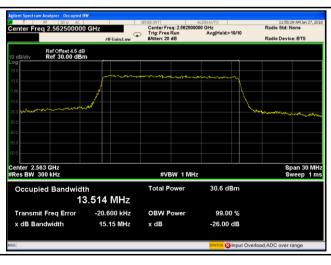
LTE Band VII - Low CH QPSK-15



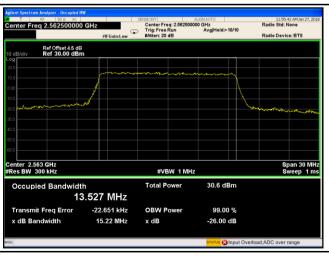
LTE Band VII - Low CH 16QAM-15



LTE Band VII - Middle CH QPSK-15



LTE Band VII - Middle CH 16QAM-15



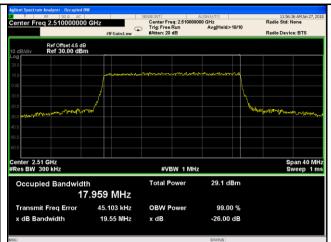
LTE Band VII - High CH QPSK-15

LTE Band VII - High CH 16QAM-15



Test Report	18070046-FCC-R5
Page	73 of 146





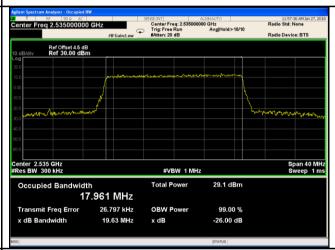
LTE Band VII - Low CH QPSK-20

11:57:05 AM Jar Radio Std: None SENSE INT ALIGNAUTO

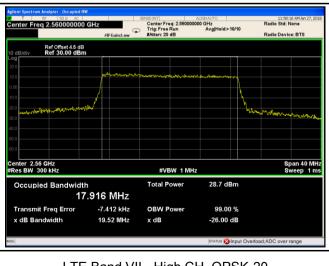
Center Freq: 2.535000000 GHz

Trig: Free Run Avg|Hold>10/10 Ref Offset 4.5 dB Ref 30.00 dBm Management Center 2.535 GHz #Res BW 300 kHz Span 40 MHz Sweep 1 ms #VBW 1 MHz Occupied Bandwidth Total Power 28.4 dBm 17.951 MHz 32.878 kHz **OBW Power** Transmit Freq Error 99.00 % 19.49 MHz x dB Bandwidth -26.00 dB x dB

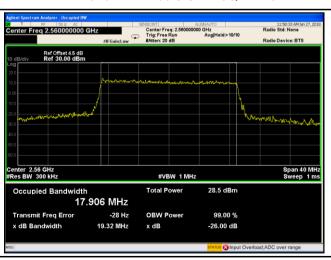
LTE Band VII - Low CH 16QAM-20



LTE Band VII - Middle CH QPSK-20



LTE Band VII - Middle CH 16QAM-20



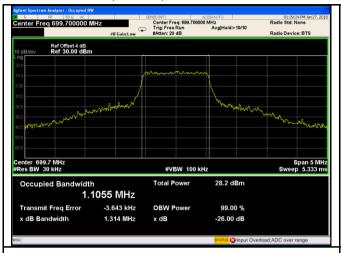
LTE Band VII - High CH QPSK-20

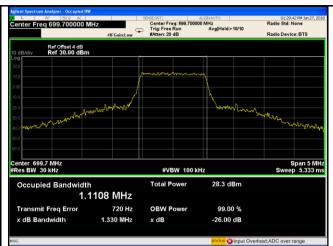
LTE Band VII - High CH 16QAM-20



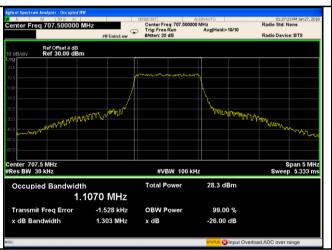
Test Report	18070046-FCC-R5
Page	74 of 146

LTE Band XII (Part 27)

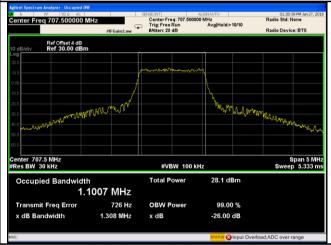




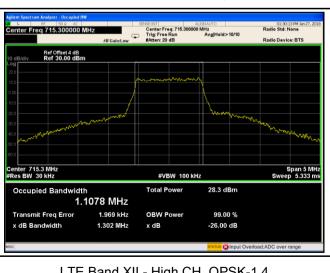
LTE Band XII - Low CH QPSK-1.4



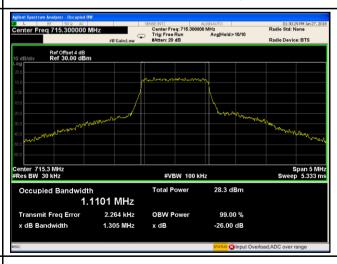
LTE Band XII - Low CH 16QAM-1.4



LTE Band XII - Middle CH QPSK-1.4



LTE Band XII - Middle CH 16QAM-1.4

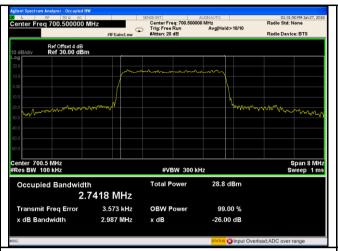


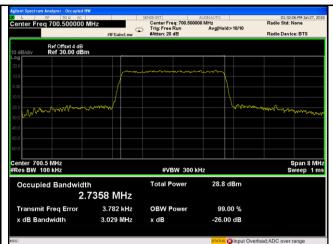
LTE Band XII - High CH QPSK-1.4

LTE Band XII - High CH 16QAM-1.4

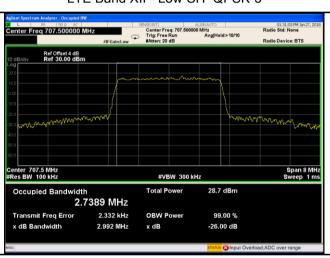


Test Report	18070046-FCC-R5
Page	75 of 146





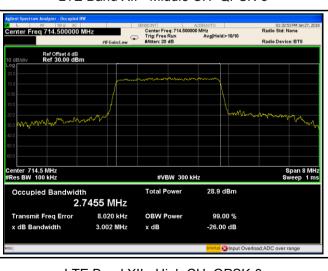
LTE Band XII - Low CH QPSK-3



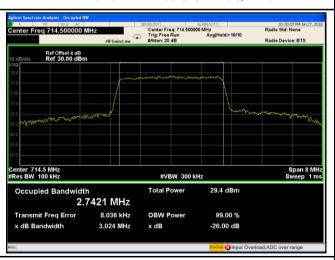
LTE Band XII - Low CH 16QAM-3



LTE Band XII - Middle CH QPSK-3



LTE Band XII - Middle CH 16QAM-3



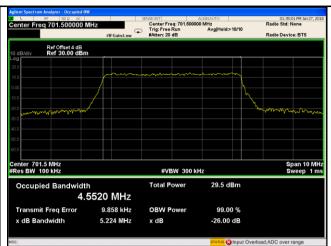
LTE Band XII - High CH QPSK-3

LTE Band XII - High CH 16QAM-3

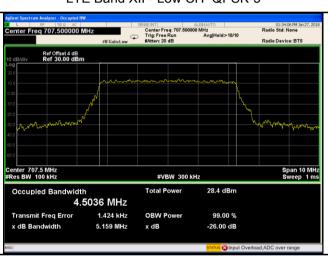


Test Report	18070046-FCC-R5
Page	76 of 146





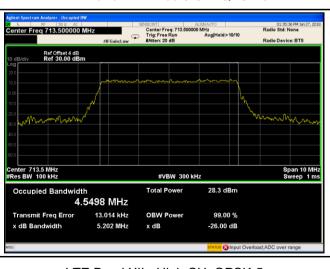
LTE Band XII - Low CH QPSK-5



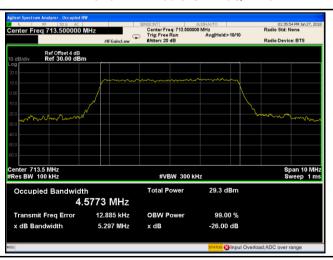
LTE Band XII - Low CH 16QAM-5



LTE Band XII - Middle CH QPSK-5



LTE Band XII - Middle CH 16QAM-5



LTE Band XII - High CH QPSK-5

LTE Band XII - High CH 16QAM-5



Test Report	18070046-FCC-R5
Page	77 of 146





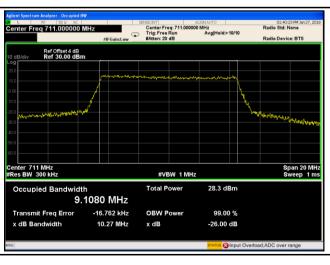
LTE Band XII - Low CH QPSK-10

01:39:17 PM Ja Radio Std: None Ref Offset 4 dB Ref 30.00 dBm Center 707.5 MHz #Res BW 300 kHz Span 20 MHz Sweep 1 ms #VBW 1 MHz Occupied Bandwidth Total Power 27.7 dBm 9.0373 MHz 13.729 kHz **OBW Power** Transmit Freq Error 99.00 % 10.05 MHz x dB Bandwidth x dB -26.00 dB

LTE Band XII - Low CH 16QAM-10



LTE Band XII - Middle CH QPSK-10



LTE Band XII - Middle CH 16QAM-10



LTE Band XII - High CH QPSK-10

LTE Band XII - High CH 16QAM-10



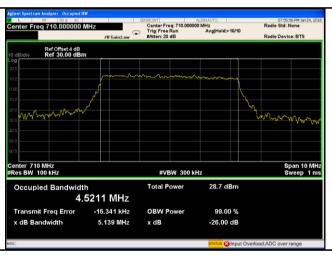
Test Report	18070046-FCC-R5
Page	78 of 146

LTE Band XVII (Part 27)

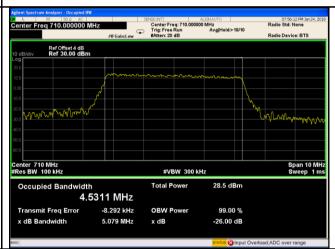




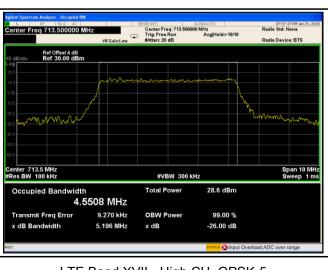
LTE Band XVII - Low CH QPSK-5



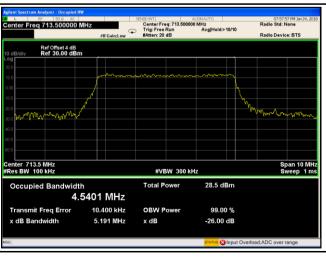
LTE Band XVII - Low CH 16QAM-5



LTE Band XVII - Middle CH QPSK-5



LTE Band XVII - Middle CH 16QAM-5



LTE Band XVII - High CH QPSK-5

LTE Band XVII - High CH 16QAM-5



Test Report	18070046-FCC-R5
Page	79 of 146





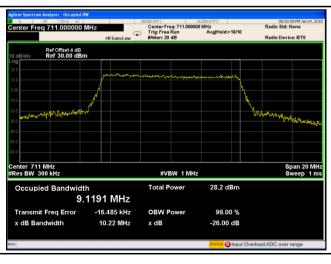
LTE Band XVII - Low CH QPSK-10

08:00:12 PM 3a Radio Std: None RF S0Ω AC er Freq 710.000000 MHz Ref Offset 4 dB Ref 30.00 dBm Center 710 MHz #Res BW 300 kHz Span 20 MHz Sweep 1 ms #VBW 1 MHz Occupied Bandwidth Total Power 28.1 dBm 9.0807 MHz -12.633 kHz **OBW Power** Transmit Freq Error 99.00 % 10.18 MHz x dB Bandwidth x dB -26.00 dB

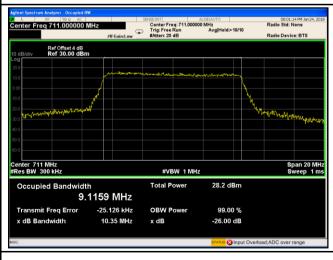
LTE Band XVII - Low CH 16QAM-10



LTE Band XVII - Middle CH QPSK-10



LTE Band XVII - Middle CH 16QAM-10



LTE Band XVII - High CH QPSK-10

LTE Band XVII - High CH 16QAM-10



Test Report	18070046-FCC-R5
Page	80 of 146

6.5 Spurious Emissions at Antenna Terminals

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	January 24&27, 2018
Tested By :	Aaron Liang

Requirement(s):

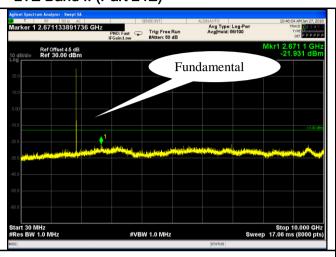
- toquilonioni(o)			
Spec	Item	Requirement	Applicable
§2.1051, §22.917(a)& §24.238(a) § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB	V
Test Setup	■ B	EUT Spectrum Analyzer	
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. - Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pa	ss Fail	

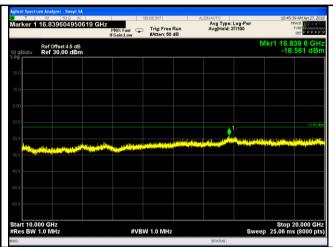
Test Data	Yes	□ _{N/A}
Test Plot	Yes (See below)	□ _{N/A}



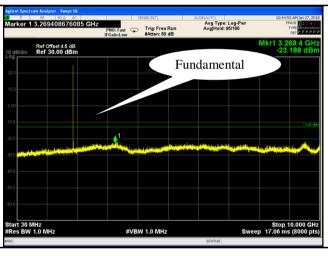
Test Report	18070046-FCC-R5
Page	81 of 146

Test Plots 30MHz-5GHz LTE Band II (Part 24E)

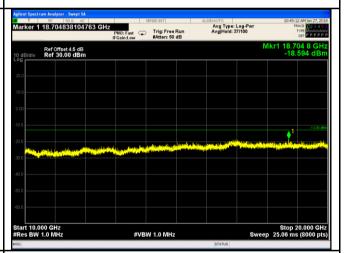




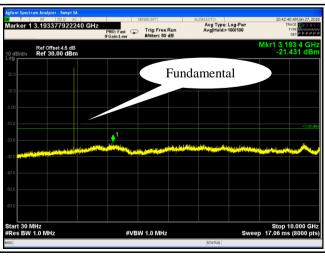
LTE Band II - Low Channel-1



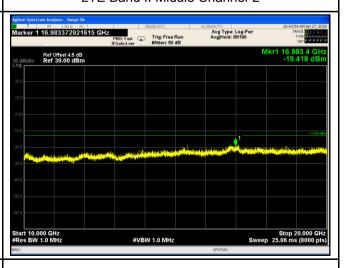
LTE Band II - Low Channel-2



LTE Band II Middle Channel-1



LTE Band II Middle Channel-2



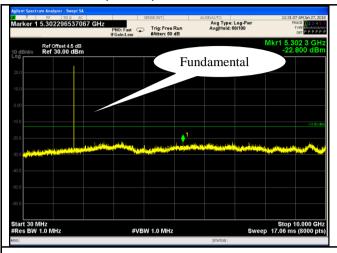
LTE Band II - High Channel-1

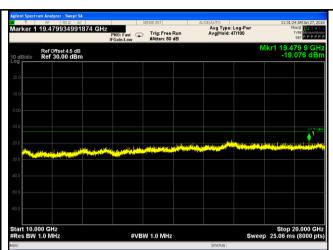
LTE Band II - High Channel-2



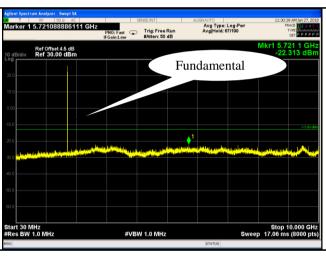
Test Report	18070046-FCC-R5
Page	82 of 146

LTE Band IV (Part27) result





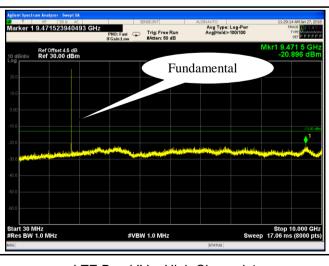
LTE Band IV - Low Channel-1



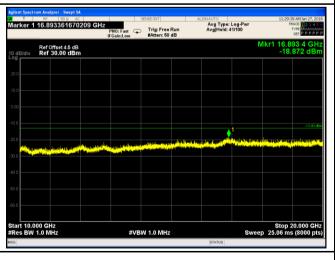
LTE Band IV - Low Channel-2



LTE Band IV - Middle Channel-1



LTE Band IV - Middle Channel-2



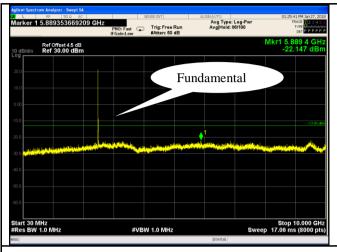
LTE Band IV - High Channel-1

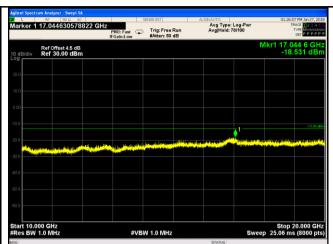
LTE Band IV - High Channel-2



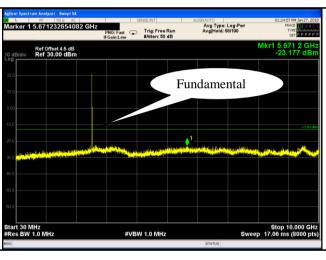
Test Report	18070046-FCC-R5
Page	83 of 146

LTE Band VII (Part 27)

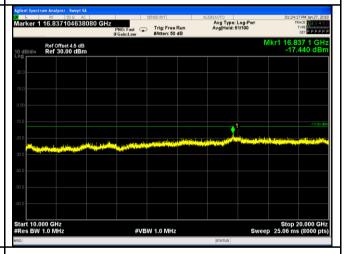




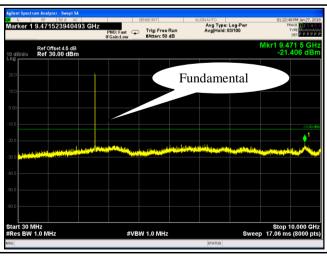
LTE Band VII - Low Channel-1



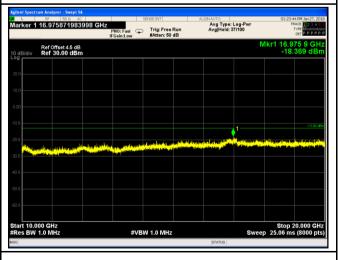
LTE Band VII - Low Channel-2



LTE Band VII- Middle Channel-1



LTE Band VII - Middle Channel-2



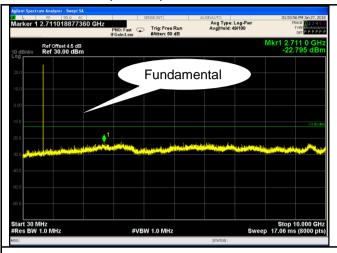
LTE Band VII - High Channel-1

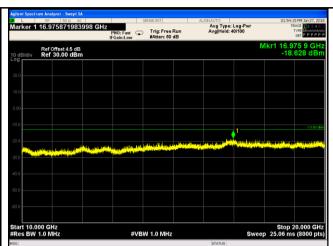
LTE Band VII - High Channel-2



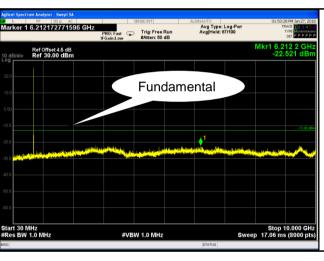
Test Report	18070046-FCC-R5
Page	84 of 146

LTE Band XII (Part 27)

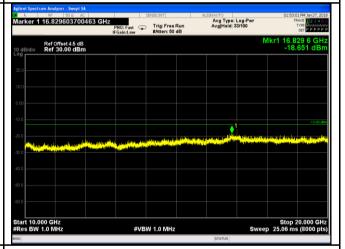




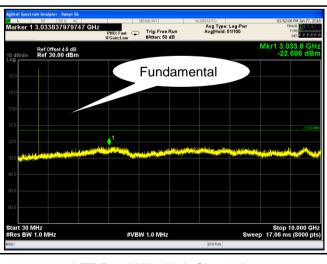
LTE Band XII - Low Channel-1



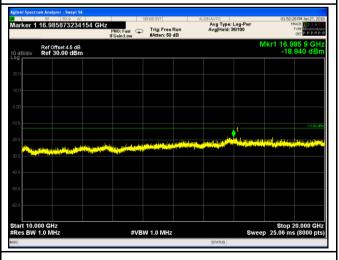
LTE Band XII - Low Channel-2



LTE Band XII- Middle Channel-1



LTE Band XII - Middle Channel-2



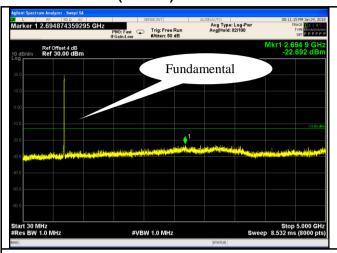
LTE Band XII - High Channel-1

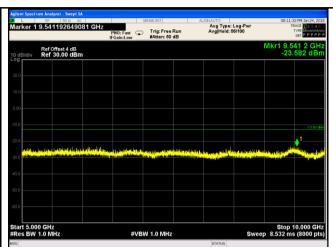
LTE Band XII - High Channel-2



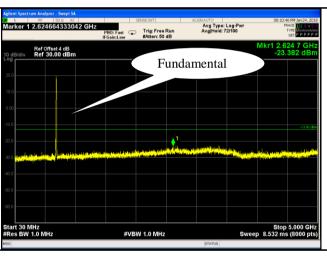
Test Report	18070046-FCC-R5
Page	85 of 146

LTE Band XVII (Part 27)

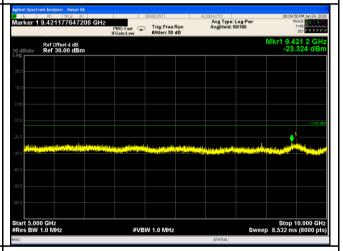




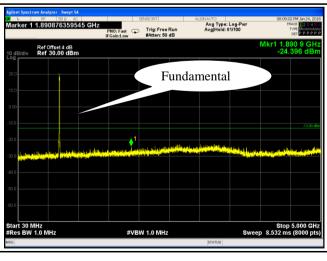
LTE Band XVII - Low Channel-1



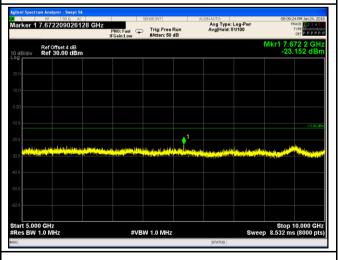
LTE Band XVII - Low Channel-2



LTE Band XVII- Middle Channel-1



LTE Band XVII - Middle Channel-2



LTE Band XVII - High Channel-1

LTE Band XVII - High Channel-2



Test Report	18070046-FCC-R5
Page	86 of 146

6.6 Spurious Radiated Emissions

Temperature	25 °C
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	January 23, 2018
Tested By :	Aaron Liang

Requirement(s):			
Spec	Item	Requirement	Applicable
§2.1053, §22.917 & §24.238 § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	>
Test setup	Ant. Tower Support Units Ground Plane Test Receiver		
Test Procedure	 The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. Sample Calculation: EUT Field Strength = Raw Amplitude (dBµV/m) - Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used) 		



Test Report	18070046-FCC-R5
Page	87 of 146

Remark				
Result	Pass	☐ Fail		
Test Data	Yes	□ _{N/A}		
Test Plot	Yes (See below)	✓ _{N/A}		



Test Report	18070046-FCC-R5
Page	88 of 146

LTE Band II (Part 24E) result

Low channel

`

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
(IVIIIZ)	(11/ 1/)	(ubiii)	(ubiii)	(uD)
3720	V	-36.96	-13	-23.96
3720	Н	-38.1	-13	-25.1
403.16	V	-40.72	-13	-27.72
393.29	Н	-41.41	-13	-28.41

Middle channel

Frequency	Antenna Polarization	Corrected Reading	Limit	Margin
(MHz)	(H/V)	(dBm)	(dBm)	(dB)
3760	V	-32.8	-13	-19.8
3760	Н	-30.12	-13	-17.12
290.7	V	-36.93	-13	-23.93
798.34	Н	-38.25	-13	-25.25

High channel

Frequency	Antenna Polarization	Corrected Reading	Limit	Margin
(MHz)	(H/V)	(dBm)	(dBm)	(dB)
3800	V	-28.61	-13	-15.61
3800	Н	-30.56	-13	-17.56
269.18	V	-36.51	-13	-23.51
298.52	Н	-40.98	-13	-27.98

Note:

- 1, The testing has been conformed to 10*1907.5MHz=19,075MHz
- 2, All other emissions more than 30 dB below the limit
- 3, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.



Test Report	18070046-FCC-R5
Page	89 of 146

LTE Band IV (Part27) result

Low channel

Frequency	Antenna Polarization	Corrected Reading	Limit	Margin
(MHz)	(H/V)	(dBm)	(dBm)	(dB)
3440	V	-30.51	-13	-17.51
3440	Н	-32.89	-13	-19.89
378.86	V	-40.38	-13	-27.38
305.24	Н	-40.46	-13	-27.46

Middle channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3465	V	-28.06	-13	-15.06
3465	Н	-26.77	-13	-13.77
413.74	V	-34.98	-13	-21.98
270.42	Н	-42.14	-13	-29.14

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3490	V	-28.24	-13	-15.24
3490	Н	-32.99	-13	-19.99
323.86	V	-34.67	-13	-21.67
207.4	Н	-40.25	-13	-27.25

Note:

- 1, The testing has been conformed to 10*1752.5MHz=17,525MHz
- 2, All other emissions more than 30 dB below the limit
- 3, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.



Test Report	18070046-FCC-R5
Page	90 of 146

LTE Band VII (Part27) result

Low channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
(141112)	(11/ V)	(ubiii)	(uDIII)	(uD)
5020	V	-30.67	-13	-17.67
5020	Н	-30.1	-13	-17.1
812.38	V	-41.37	-13	-28.37
393.71	Н	-33.27	-13	-20.27

Middle channel

Frequency	Antenna Polarization	Corrected Reading	Limit	Margin
(MHz)	(H/V)	(dBm)	(dBm)	(dB)
5070	V	-38.62	-13	-25.62
5070	Н	-30.48	-13	-17.48
481.25	V	-41.98	-13	-28.98
481.64	Н	-34.24	-13	-21.24

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
5120	V	-35.12	-13	-22.12
5120	Н	-35.95	-13	-22.95
339.31	V	-37.92	-13	-24.92
396.61	Н	-40.92	-13	-27.92

Note:

- 1, The testing has been conformed to 10*2567.5MHz=25,675MHz
- 2, All other emissions more than 30 dB below the limit
- *3, X-Axis, Y-Axis and Z –Axis were investigated. The results above show only the worst case.*
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.