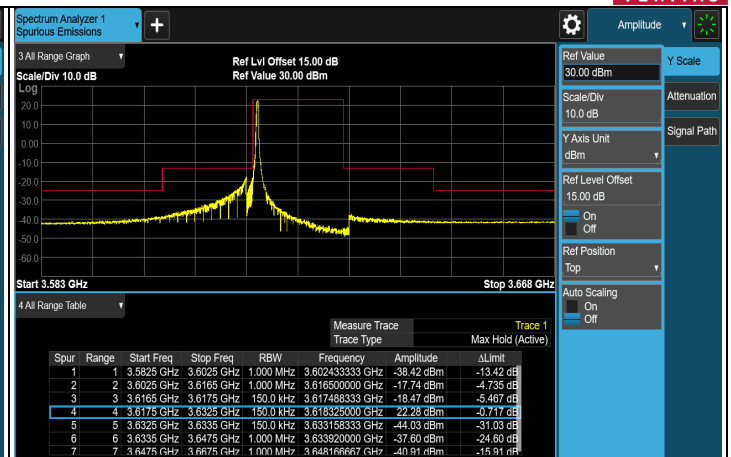
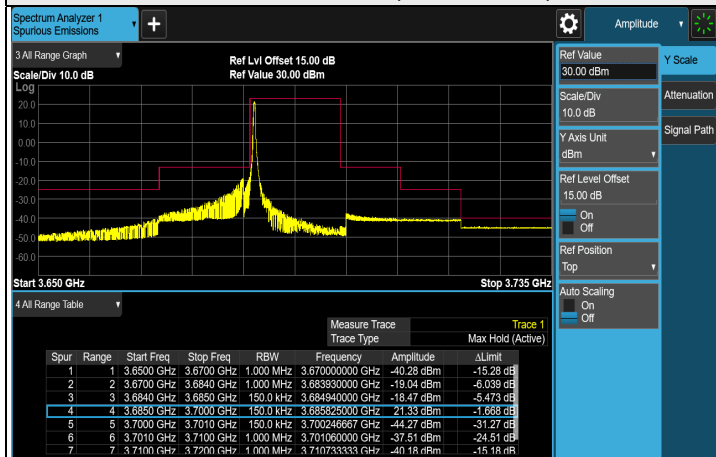


1RB#0 CH 55315 (3557.5 MHz)



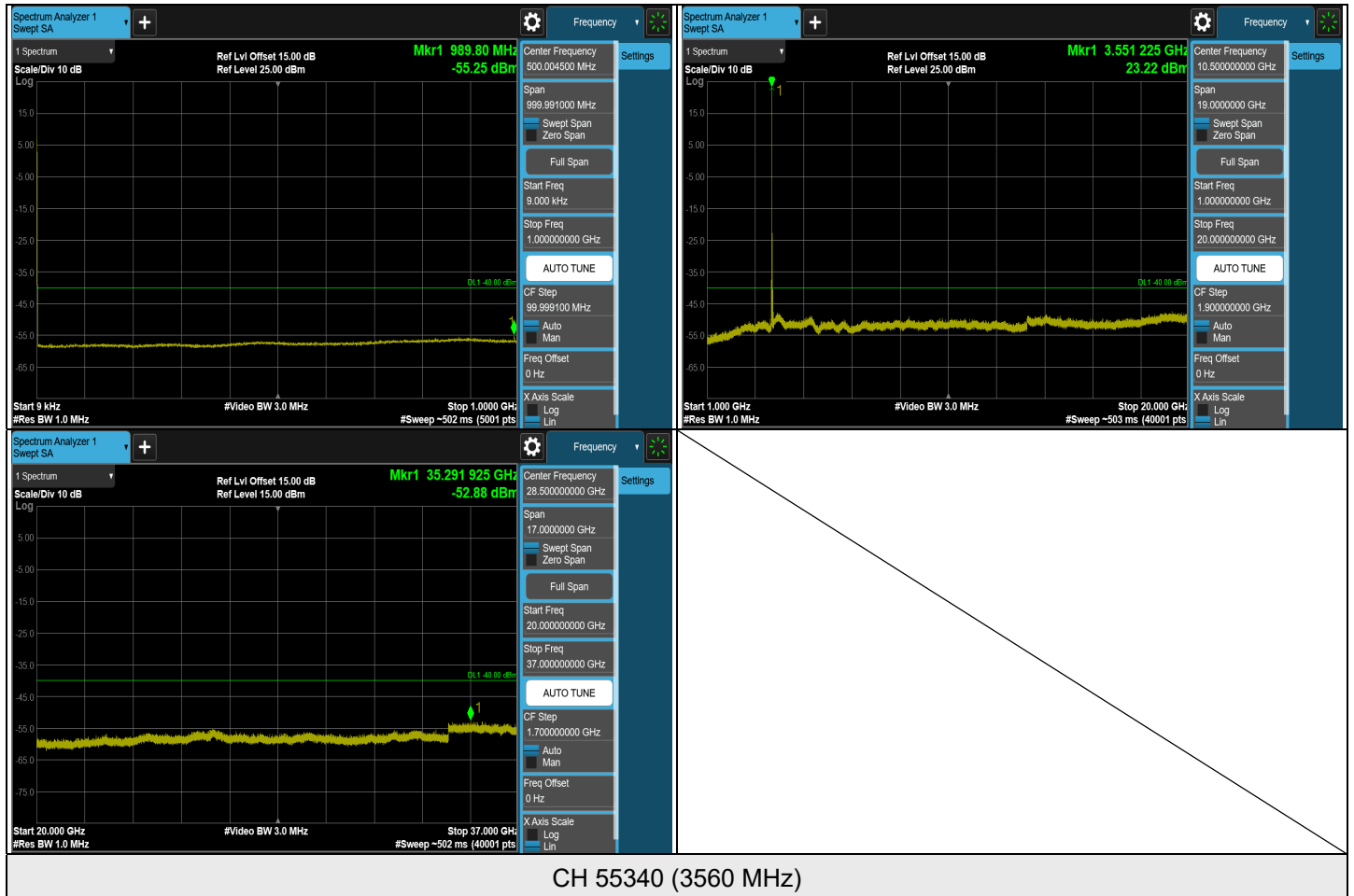
1RB#0 CH 55990 (3625 MHz)



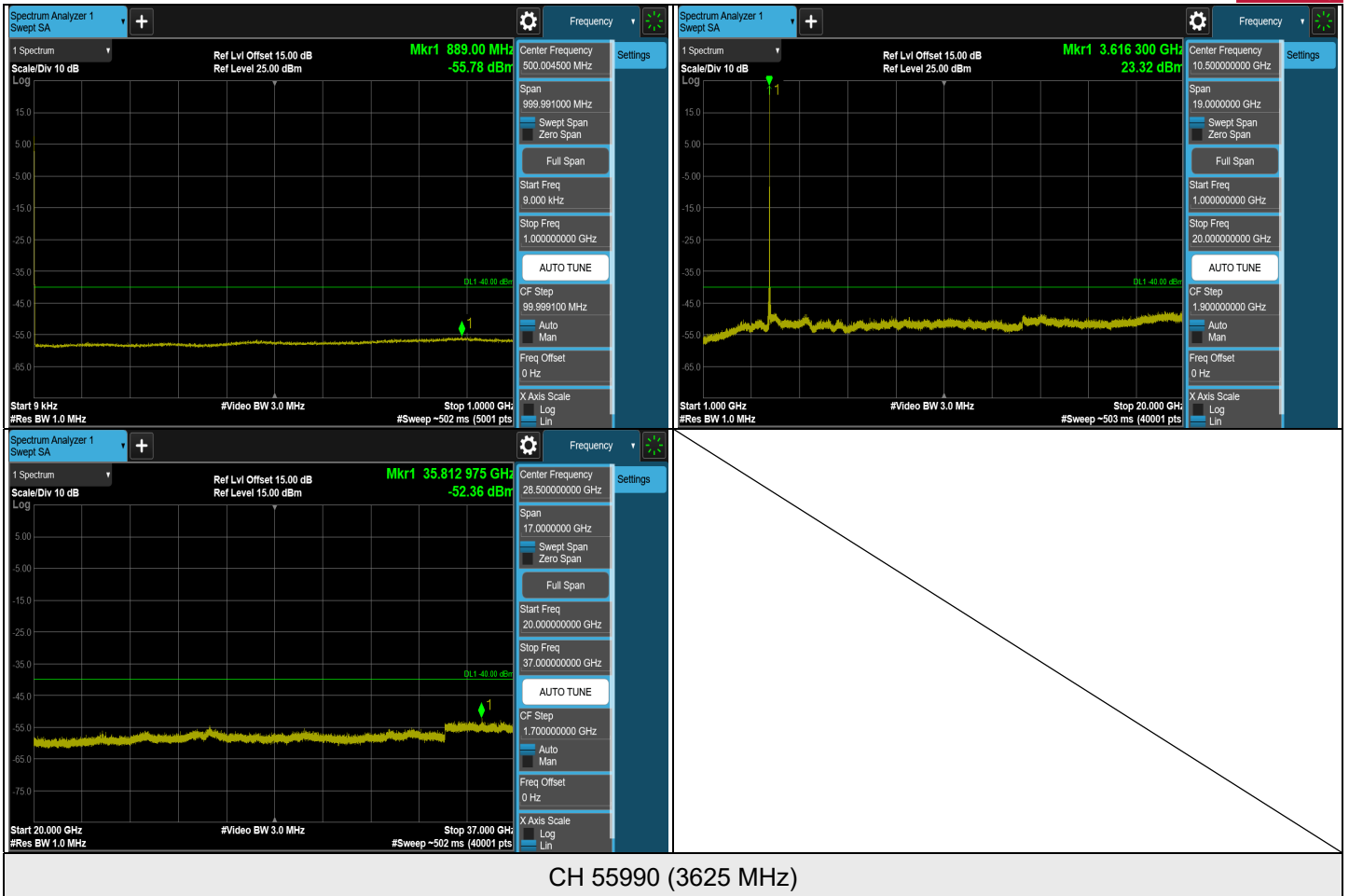
1RB#0 CH 56665 (3692.5 MHz)



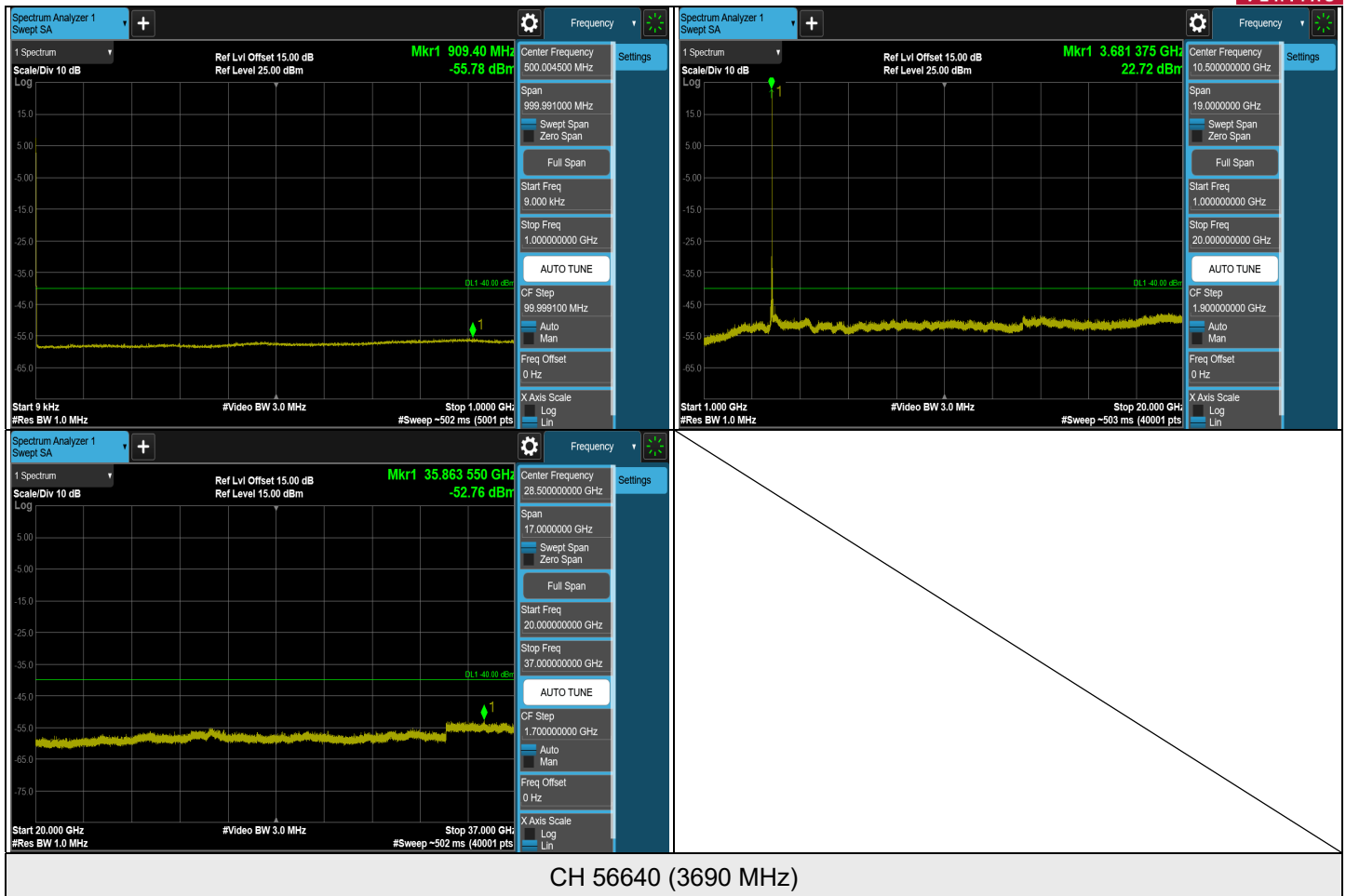
### LTE Band 48, Channel Bandwidth: 20 MHz



Note: The signal at 9 kHz is IF signal from spectrum analyzer.



Note: The signal at 9 kHz is IF signal from spectrum analyzer.

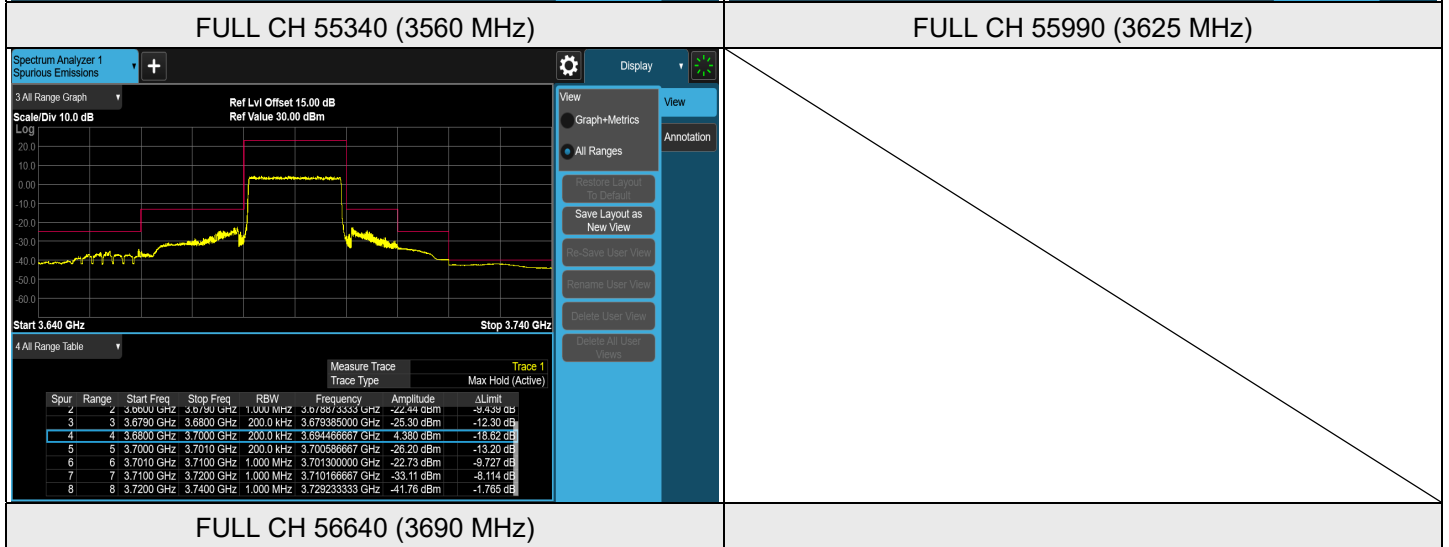
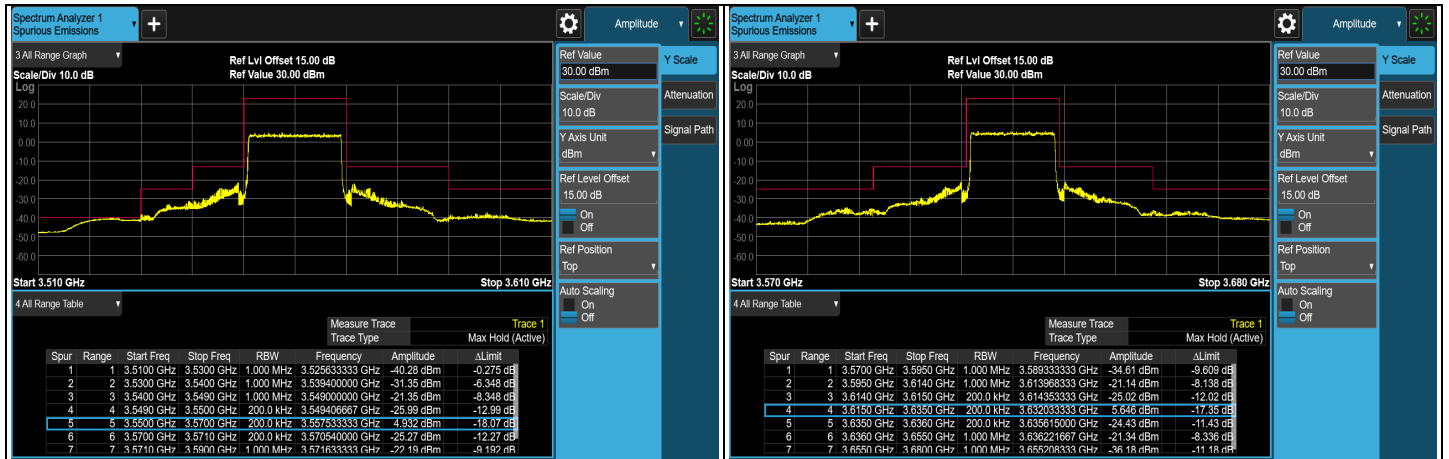


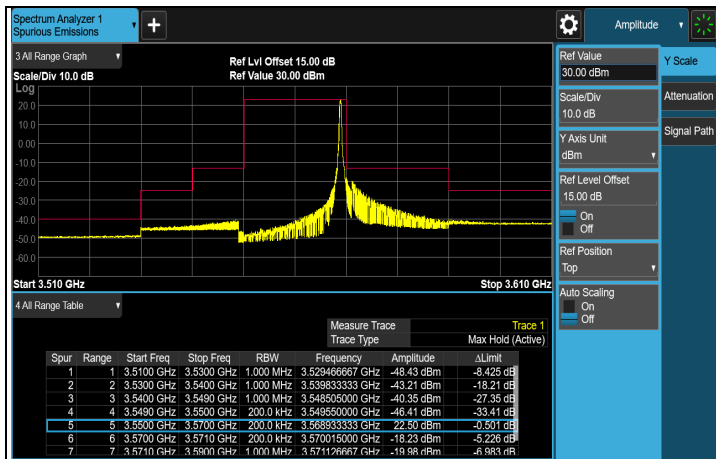
CH 56640 (3690 MHz)

Note: The signal at 9 kHz is IF signal from spectrum analyzer.

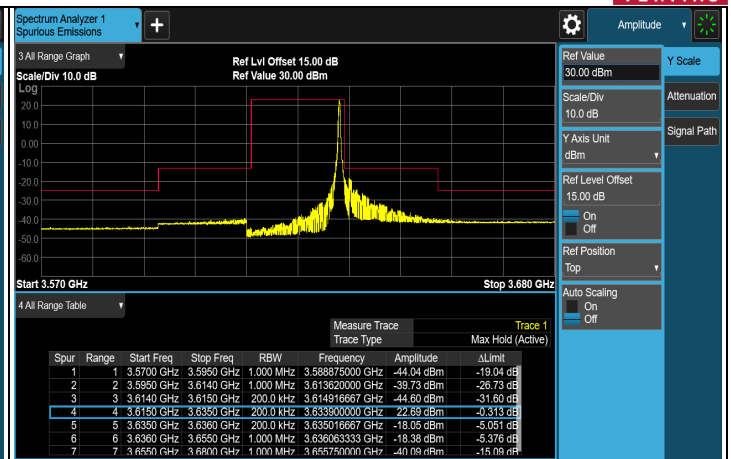


### LTE Band 48, Channel Bandwidth: 20 MHz

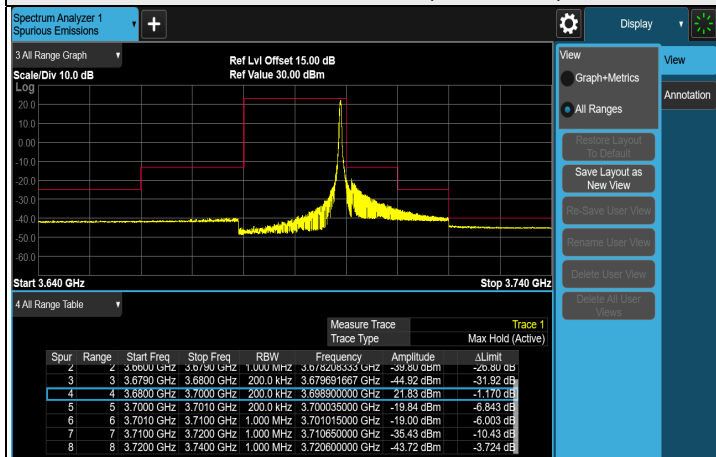




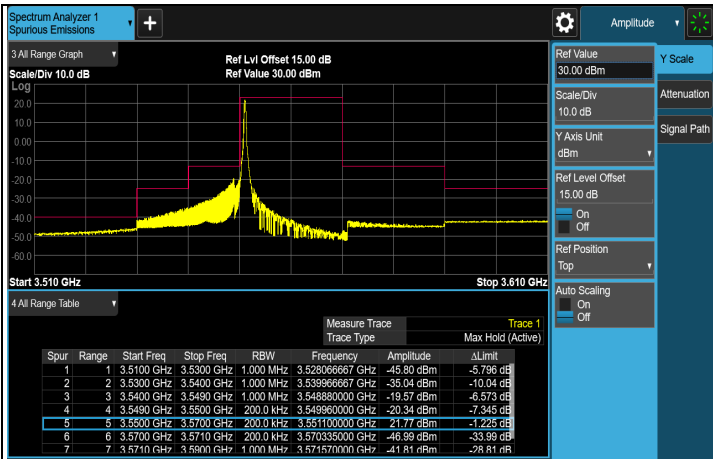
1RB#MAX CH 55340 (3560 MHz)



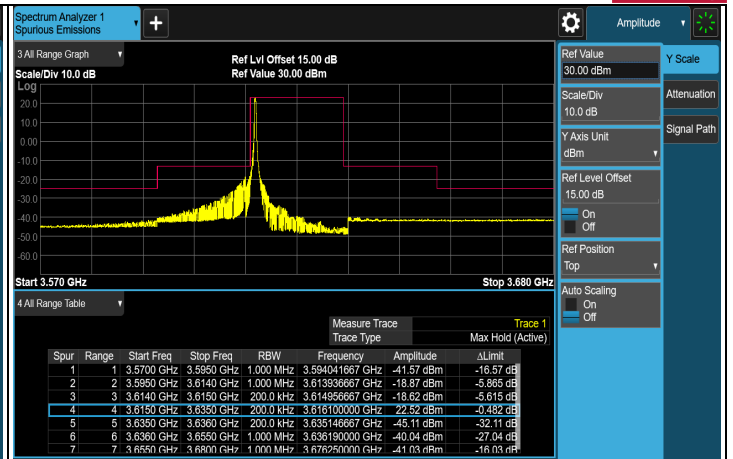
1RB#MAX CH 55990 (3625 MHz)



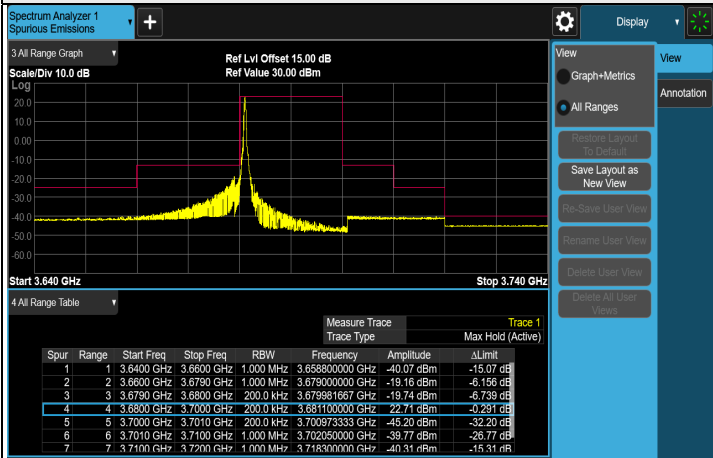
1RB#MAX CH 56640 (3690 MHz)



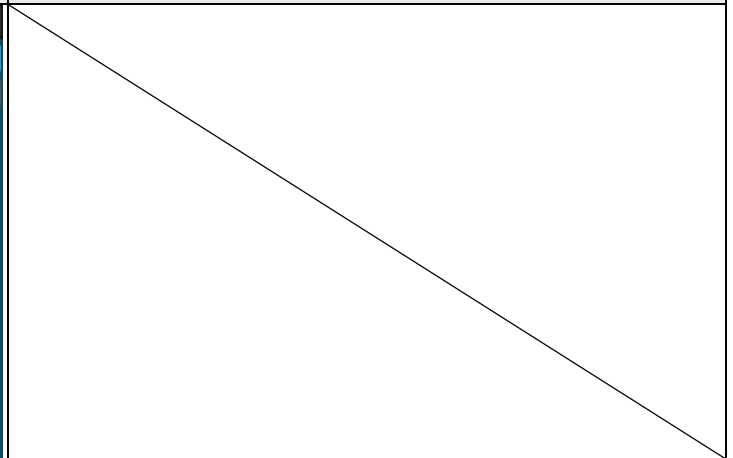
1RB#0 CH 55340 (3560 MHz)



1RB#0 CH 55990 (3625 MHz)



1RB#0 CH 56640 (3690 MHz)



## 7.6 Radiated Spurious Emissions below 1GHz

### 7.6.1 LTE Band 48

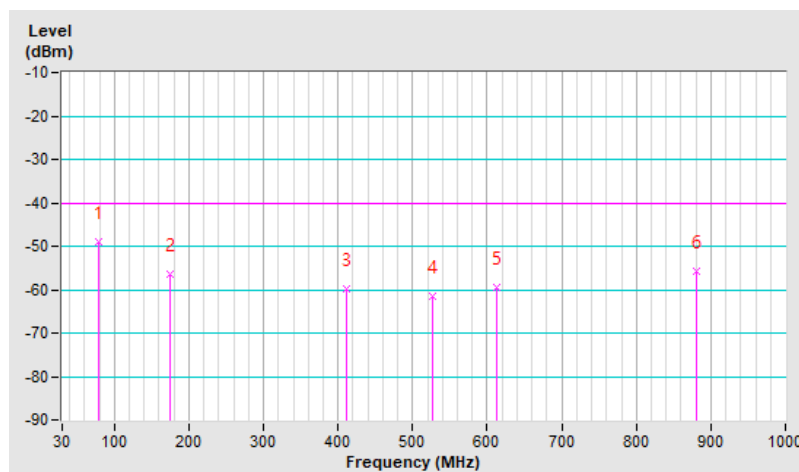
<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 20MHz	<b>Channel</b>	CH 56640 : 3690 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	24°C, 64% RH
<b>Tested By</b>	vincent chen		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	78.50	-49.06	-40.00	-9.06	1.00 H	135	63.20	-112.26
2	174.53	-56.61	-40.00	-16.61	2.00 H	239	52.19	-108.80
3	411.21	-59.87	-40.00	-19.87	1.00 H	266	44.77	-104.64
4	527.61	-61.46	-40.00	-21.46	2.00 H	280	40.04	-101.50
5	612.00	-59.42	-40.00	-19.42	1.00 H	2	40.64	-100.06
6	880.69	-55.79	-40.00	-15.79	1.50 H	259	40.32	-96.11

#### Remarks:

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3.  $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



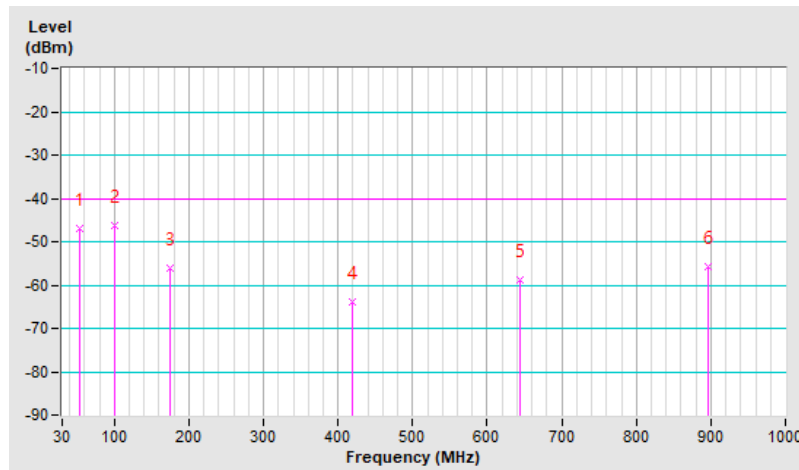


<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 20MHz	<b>Channel</b>	CH 56640 : 3690 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	24°C, 64% RH
<b>Tested By</b>	vincent chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	53.28	-46.97	-40.00	-6.97	1.00 V	54	60.89	-107.86
2	99.84	<b>-46.26</b>	<b>-40.00</b>	<b>-6.26</b>	<b>1.50 V</b>	<b>186</b>	<b>65.97</b>	<b>-112.23</b>
3	174.53	-56.12	-40.00	-16.12	1.00 V	93	52.68	-108.80
4	418.97	-64.01	-40.00	-24.01	2.00 V	131	40.37	-104.38
5	644.98	-58.93	-40.00	-18.93	2.00 V	23	40.35	-99.28
6	896.21	-55.86	-40.00	-15.86	1.00 V	3	40.17	-96.03

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3.  $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



## 7.7 Radiated Spurious Emissions above 1GHz

### 7.7.1 LTE Band 48

<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 5MHz	<b>Channel</b>	CH 55265 : 3552.5 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7105.00	-41.99	-40.00	-1.99	1.23 H	339	43.67	-85.66

#### Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7105.00	-42.19	-40.00	-2.19	2.44 V	246	43.47	-85.66

#### Remarks:

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 5MHz	<b>Channel</b>	CH 55990 : 3625 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-41.38	-40.00	-1.38	1.26 H	341	43.43	-84.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-41.86	-40.00	-1.86	2.48 V	247	42.95	-84.81

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3.  $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.



<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 5MHz	<b>Channel</b>	CH 56715 : 3697.5 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7395.00	-41.66	-40.00	-1.66	1.29 H	346	43.36	-85.02
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7395.00	-42.35	-40.00	-2.35	2.44 V	251	42.67	-85.02

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 20MHz	<b>Channel</b>	CH 55340 : 3560 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7120.00	-42.01	-40.00	-2.01	1.21 H	341	43.57	-85.58
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7120.00	-42.57	-40.00	-2.57	2.47 V	250	43.01	-85.58

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 20MHz	<b>Channel</b>	CH 55990 : 3625 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-41.15	-40.00	-1.15	1.29 H	344	43.66	-84.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-41.76	-40.00	-1.76	2.51 V	246	43.05	-84.81

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3.  $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.



<b>RF Mode</b>	LTE Band 48 Channel Bandwidth: 20MHz	<b>Channel</b>	CH 56640 : 3690 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	1 MHz/3 MHz (RMS)
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7380.00	-41.44	-40.00	-1.44	1.19 H	345	43.56	-85.00
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7380.00	-41.79	-40.00	-1.79	2.43 V	245	43.21	-85.00

**Remarks:**

1.  $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2.  $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3.  $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

## 7.8 Frequency Stability

Environmental Conditions:	25°C, 60% RH	Tested By:	Ted Chang
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### 7.8.1 LTE Band 48

#### LTE Band 48, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 55265 (3552.5 MHz)		CH 56715 (3697.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.27	3552.500003	0.0008	3697.500007	0.0019
3.85	3552.500001	0.0003	3697.500005	0.0014
4.43	3552.499991	-0.0025	3697.499993	-0.0019

Note: The applicant defined the normal working voltage is from 3.27 to 4.43 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55265 (3552.5 MHz)		CH 56715 (3697.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3552.500002	0.0006	3697.500005	0.0014
-20	3552.500006	0.0017	3697.500009	0.0024
-10	3552.500007	0.002	3697.500005	0.0014
0	3552.499999	-0.0003	3697.5	0
10	3552.499993	-0.002	3697.499992	-0.0022
20	3552.499998	-0.0006	3697.5	0
30	3552.500006	0.0017	3697.500009	0.0024
40	3552.500003	0.0008	3697.499999	-0.0003
50	3552.499999	-0.0003	3697.499997	-0.0008
55	3552.500001	0.0028	3697.500001	0.0027



**LTE Band 48, Channel Bandwidth: 10 MHz**

<b>Frequency Stability Versus Voltage</b>				
<b>Voltage (Vdc)</b>	<b>CH 55290 (3555 MHz)</b>		<b>CH 56690 (3695 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
3.27	3554.999992	-0.0023	3694.999993	-0.0019
3.85	3555.000004	0.0011	3695.000009	0.0024
4.43	3555.000008	0.0023	3695.000009	0.0024

Note: The applicant defined the normal working voltage is from 3.27 to 4.43 Vdc.

<b>Frequency Stability Versus Temperature</b>				
<b>Temperature (°C)</b>	<b>CH 55290 (3555 MHz)</b>		<b>CH 56690 (3695 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	3555.000007	0.002	3695.000005	0.0014
-20	3554.999997	-0.0008	3695.000001	0.0003
-10	3554.999991	-0.0025	3694.999995	-0.0014
0	3554.999994	-0.0017	3694.999997	-0.0008
10	3554.999995	-0.0014	3694.999996	-0.0011
20	3554.999992	-0.0023	3694.999993	-0.0019
30	3555.000006	0.0017	3695.000008	0.0022
40	3554.999991	-0.0025	3694.999993	-0.0019
50	3554.999993	-0.002	3694.999997	-0.0008
55	3554.999991	-0.0025	3694.999995	-0.0014

**LTE Band 48, Channel Bandwidth: 15 MHz**

<b>Frequency Stability Versus Voltage</b>				
<b>Voltage (Vdc)</b>	<b>CH 55315 (3557.5 MHz)</b>		<b>CH 56665 (3692.5 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
3.27	3557.500009	0.0025	3692.500005	0.0014
3.85	3557.499992	-0.0022	3692.499999	-0.0027
4.43	3557.500005	0.0014	3692.500006	0.0016

Note: The applicant defined the normal working voltage is from 3.27 to 4.43 Vdc.

<b>Frequency Stability Versus Temperature</b>				
<b>Temperature (°C)</b>	<b>CH 55315 (3557.5 MHz)</b>		<b>CH 56665 (3692.5 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	3557.499994	-0.0017	3692.499991	-0.0024
-20	3557.500008	0.0022	3692.500006	0.0016
-10	3557.5	0	3692.499998	-0.0005
0	3557.500009	0.0025	3692.500006	0.0016
10	3557.500006	0.0017	3692.500001	0.0027
20	3557.500002	0.0006	3692.500005	0.0014
30	3557.500008	0.0022	3692.500005	0.0014
40	3557.500005	0.0014	3692.500007	0.0019
50	3557.499999	-0.0028	3692.499993	-0.0019
55	3557.500008	0.0022	3692.500001	0.0027

**LTE Band 48, Channel Bandwidth: 20 MHz**

<b>Frequency Stability Versus Voltage</b>				
<b>Voltage (Vdc)</b>	<b>CH 55340 (3560 MHz)</b>		<b>CH 56640 (3690 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
3.27	3559.999994	-0.0017	3689.999997	-0.0008
3.85	3559.999997	-0.0008	3689.999995	-0.0014
4.43	3560.000009	0.0025	3690.000008	0.0022

Note: The applicant defined the normal working voltage is from 3.27 to 4.43 Vdc.

<b>Frequency Stability Versus Temperature</b>				
<b>Temperature (°C)</b>	<b>CH 55340 (3560 MHz)</b>		<b>CH 56640 (3690 MHz)</b>	
	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>	<b>Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
-30	3560.000009	0.0025	3690.000007	0.0019
-20	3560.000008	0.0022	3690.00001	0.0027
-10	3560.000003	0.0008	3690	0
0	3559.999997	-0.0008	3689.999998	-0.0005
10	3559.999993	-0.002	3689.999993	-0.0019
20	3559.999992	-0.0022	3689.999993	-0.0019
30	3560.000008	0.0022	3690.000004	0.0011
40	3560.000008	0.0022	3690.000008	0.0022
50	3559.999991	-0.0025	3689.999991	-0.0024
55	3559.999993	-0.002	3689.999992	-0.0022

## 8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)



## 9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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