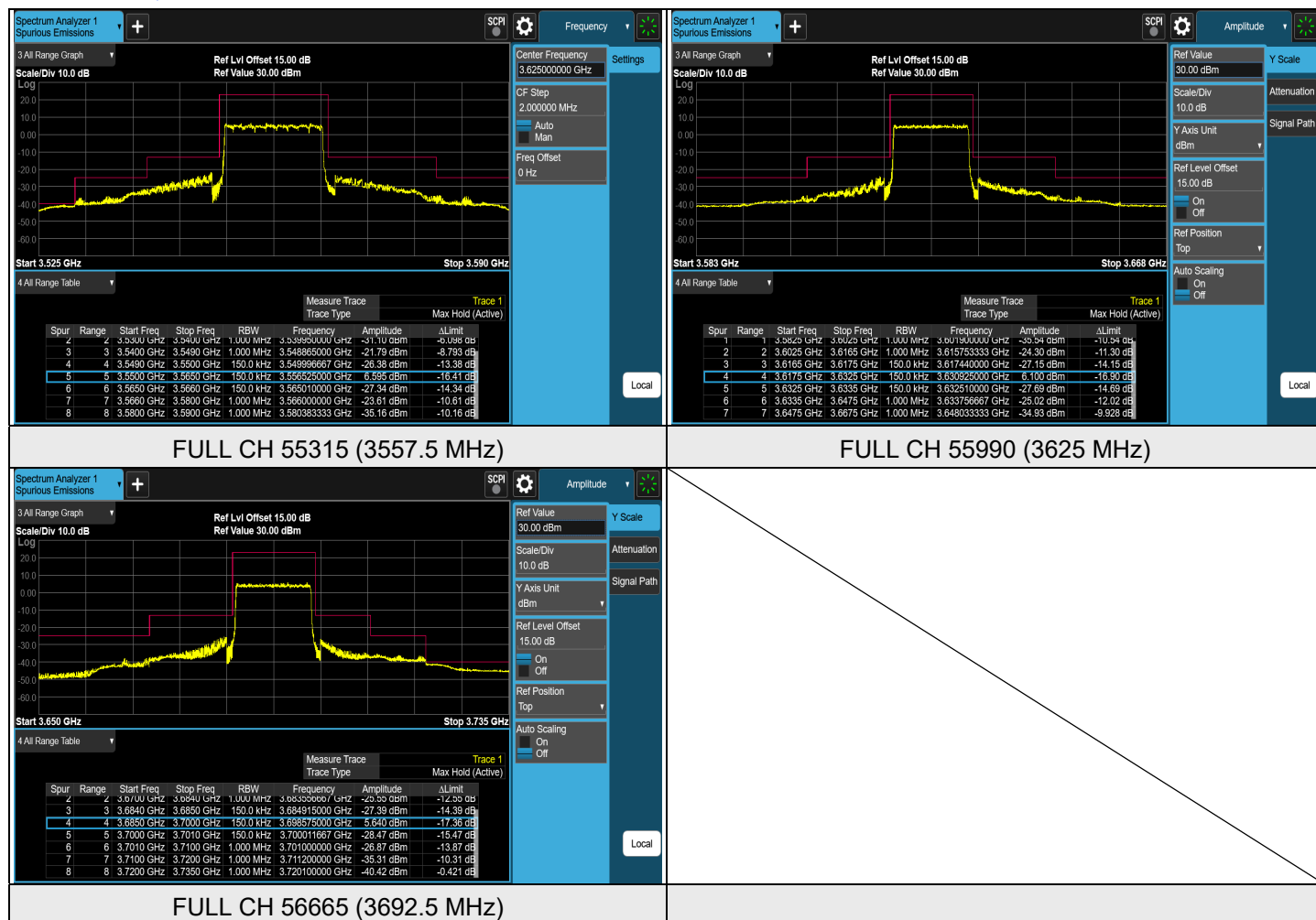
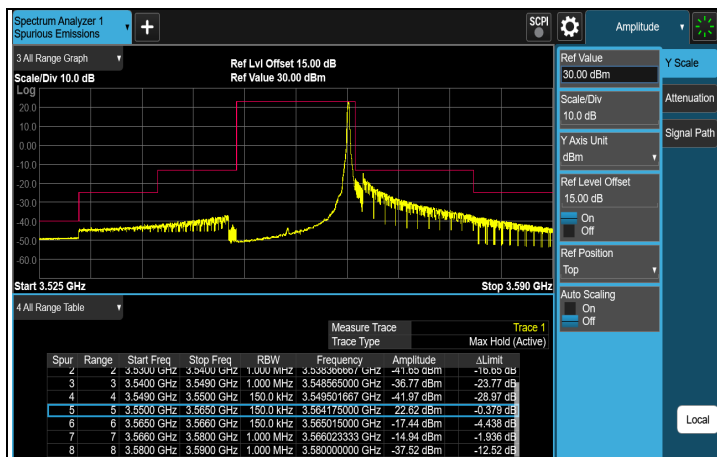
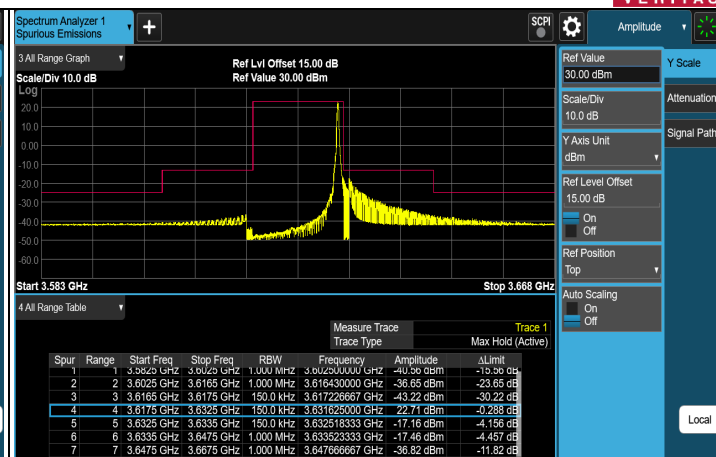


LTE Band 48, Channel Bandwidth: 15 MHz

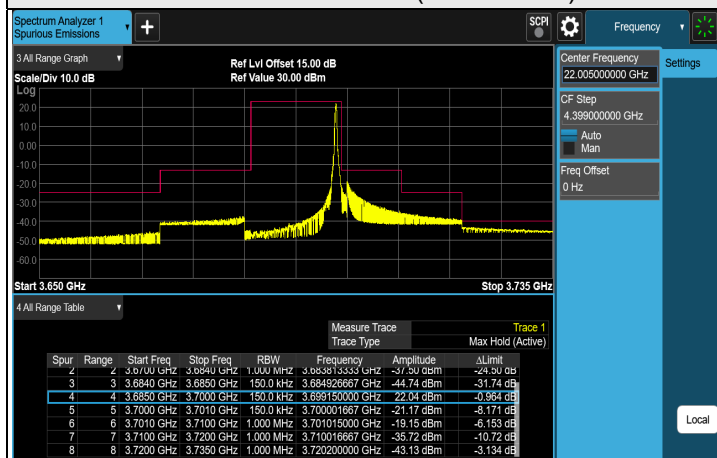




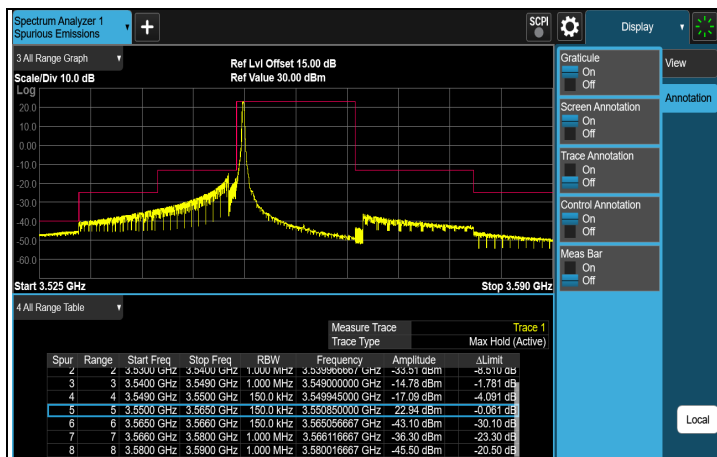
1RB#MAX CH 55315 (3557.5 MHz)



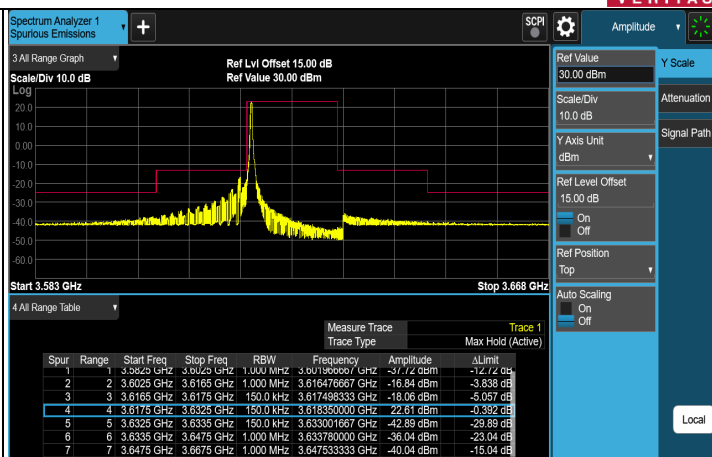
1RB#MAX CH 55990 (3625 MHz)



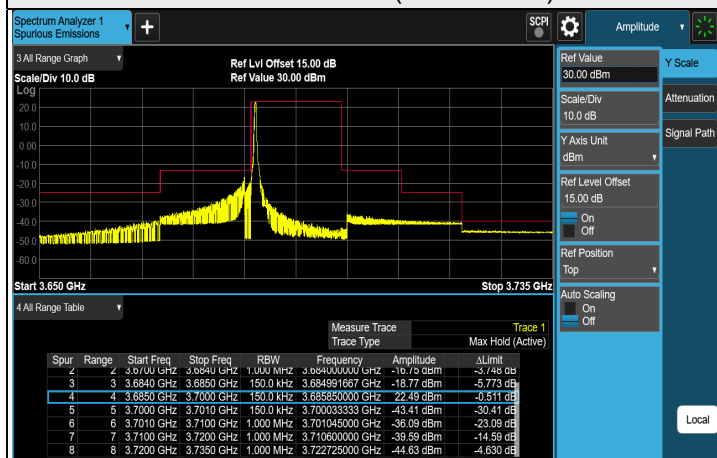
1RB#MAX CH 56665 (3692.5 MHz)



1RB#0 CH 55315 (3557.5 MHz)

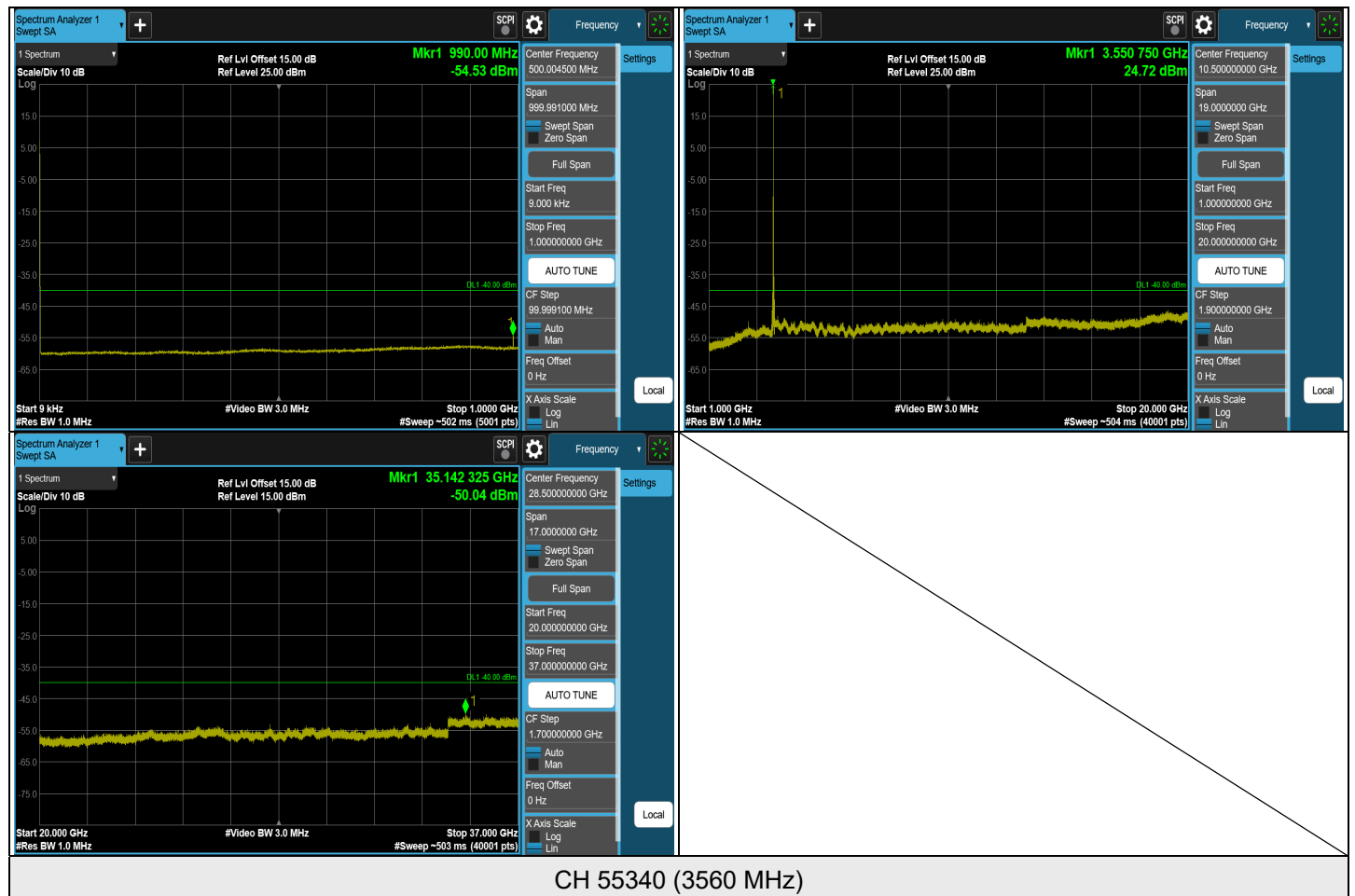


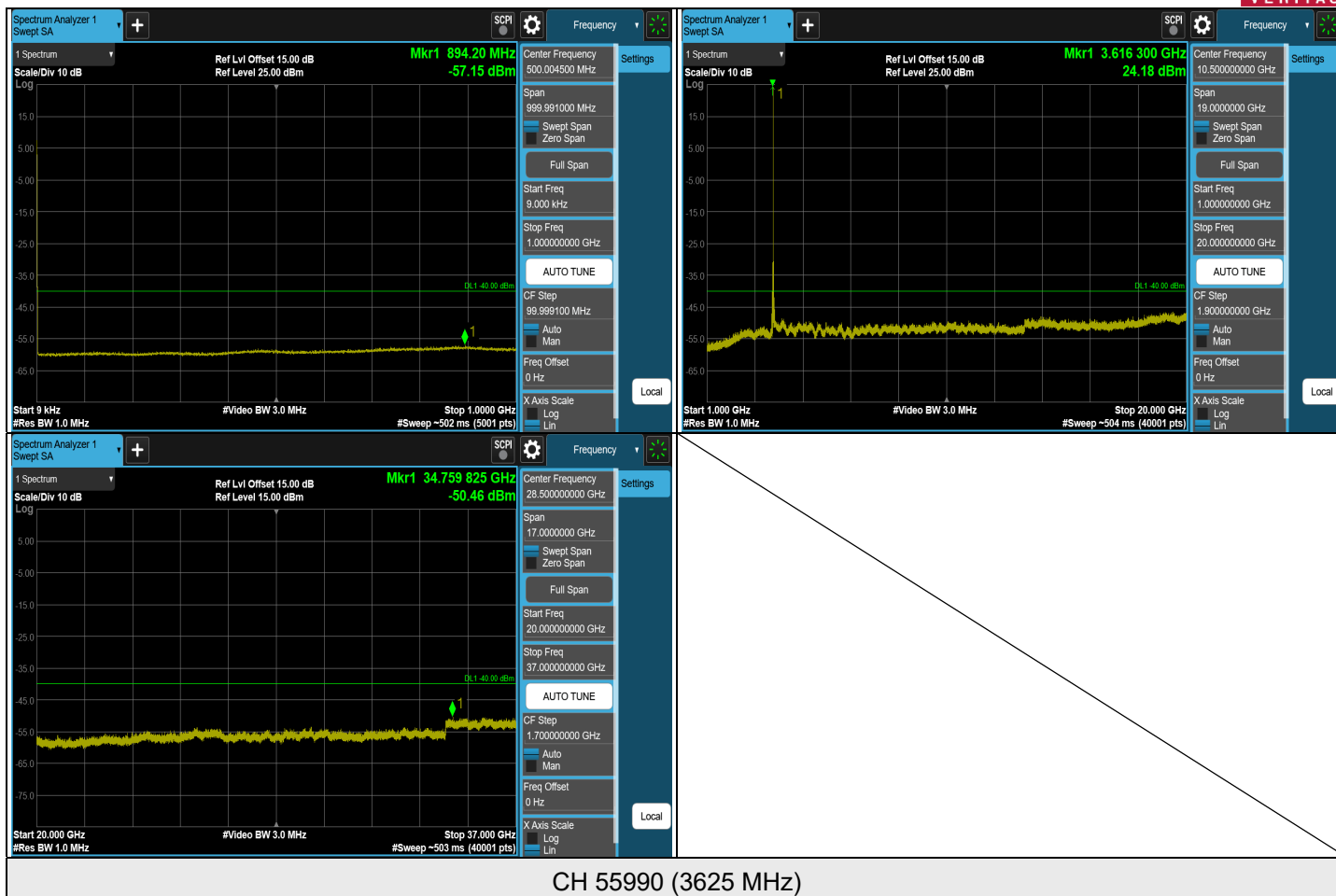
1RB#0 CH 55990 (3625 MHz)

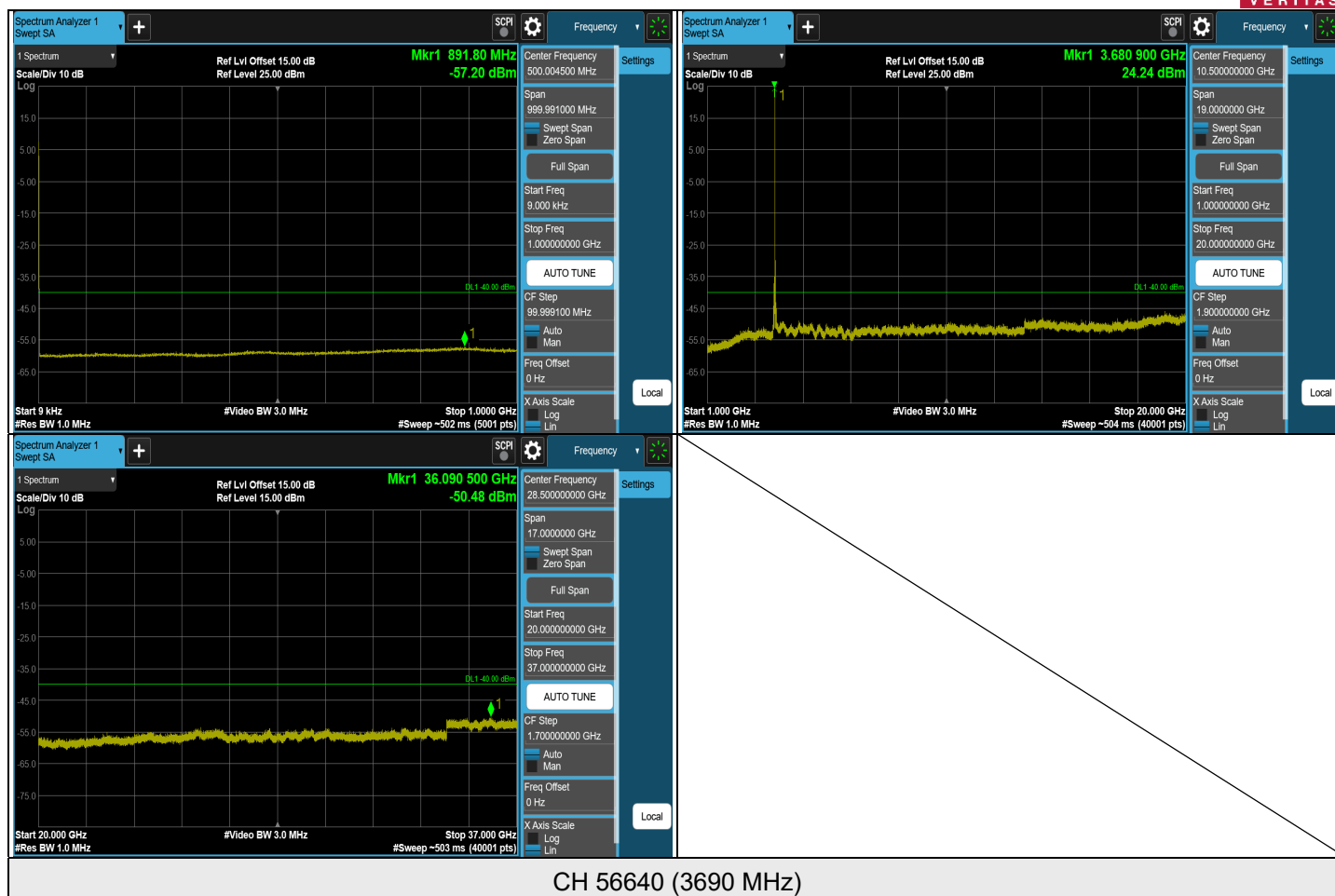


1RB#0 CH 56665 (3692.5 MHz)

LTE Band 48, Channel Bandwidth: 20 MHz

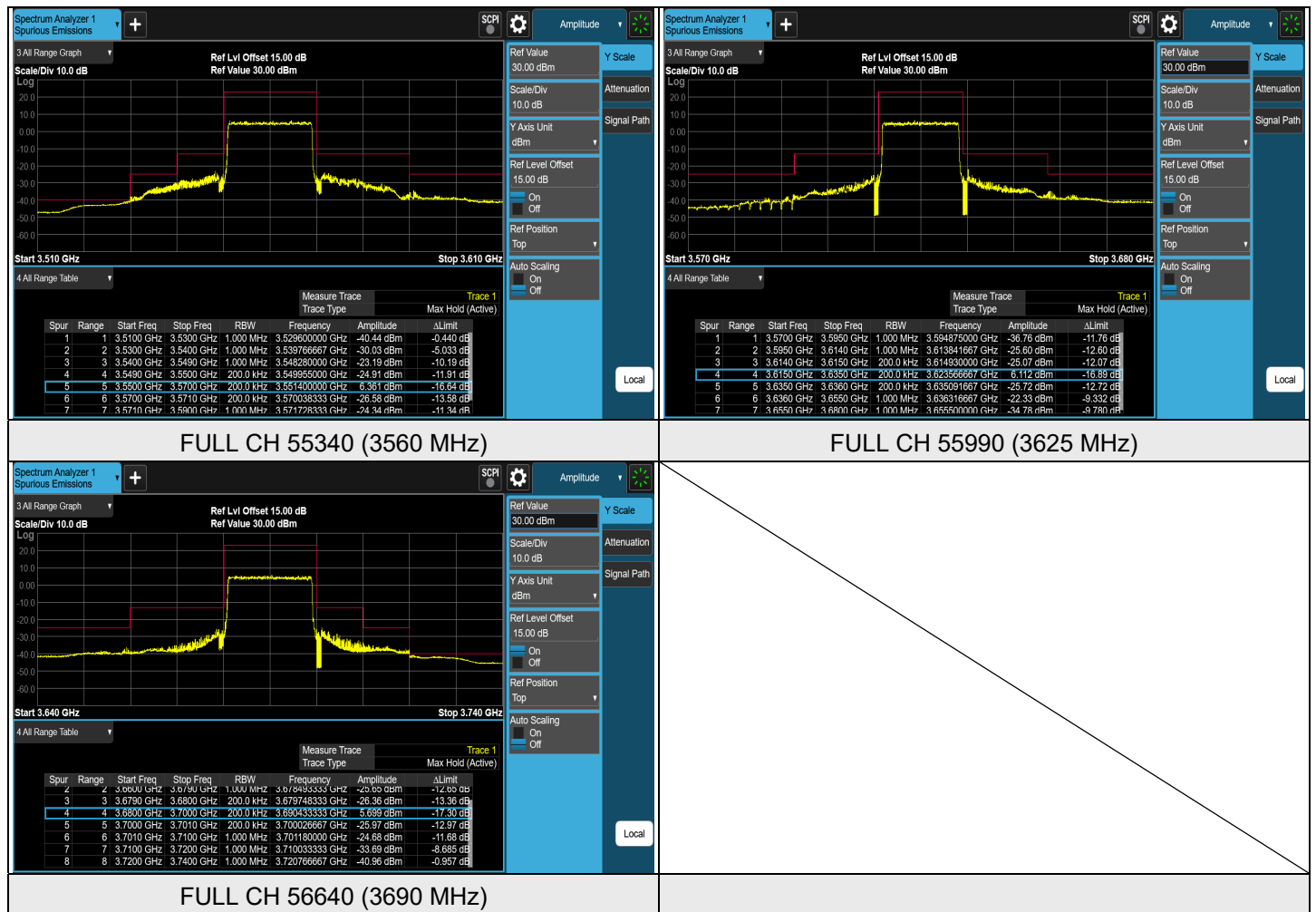


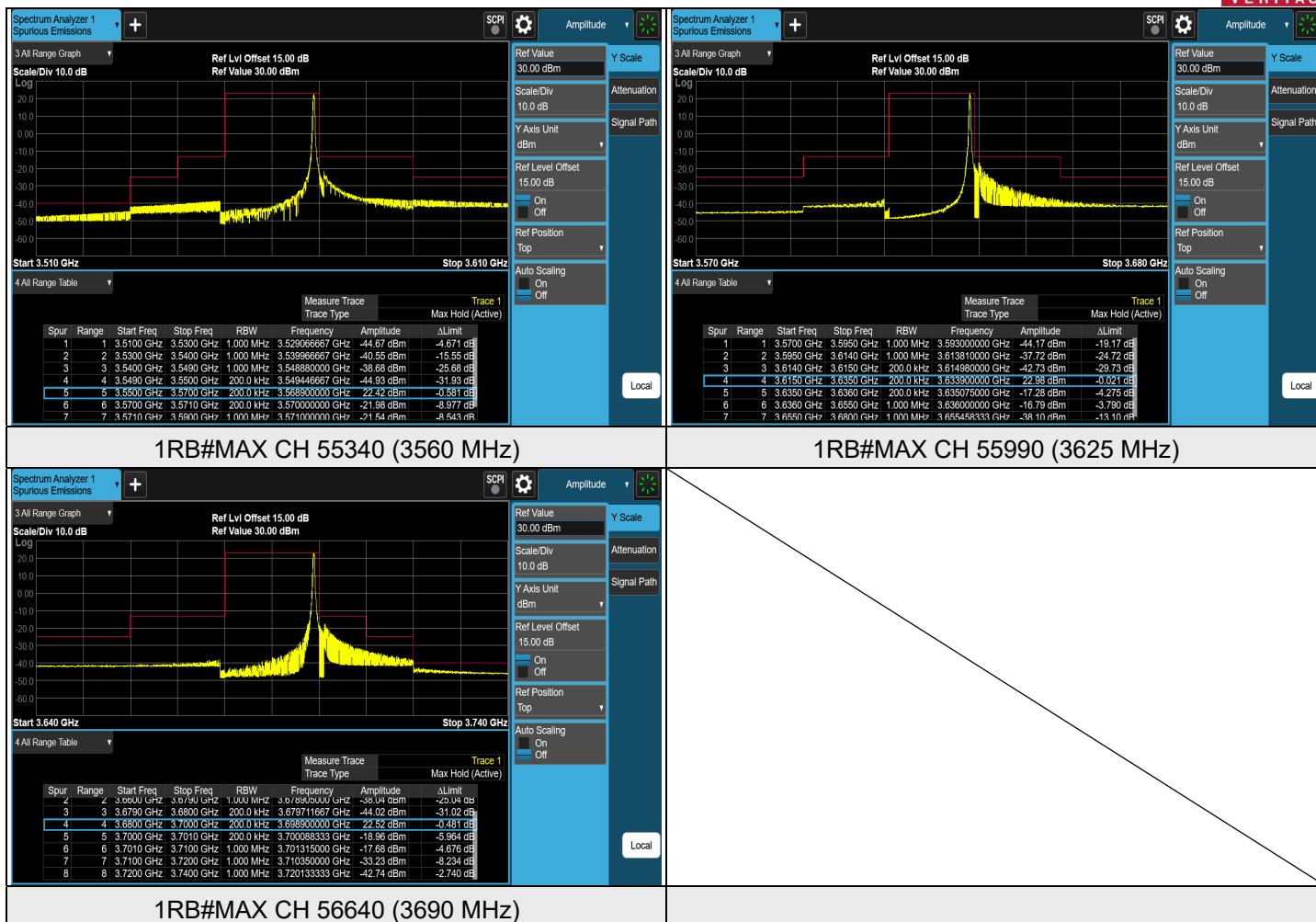


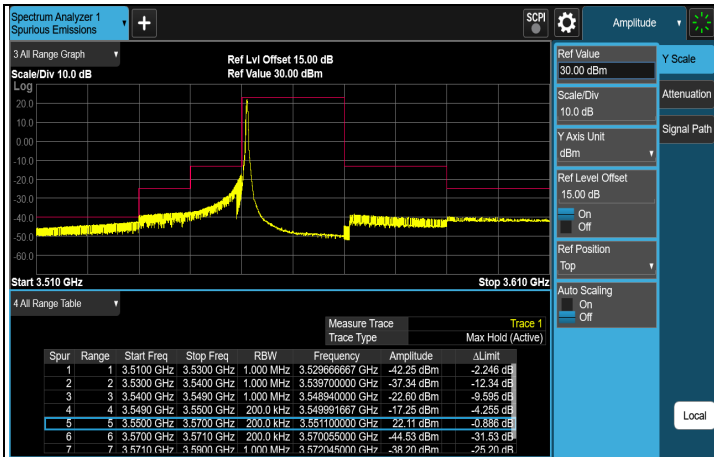


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

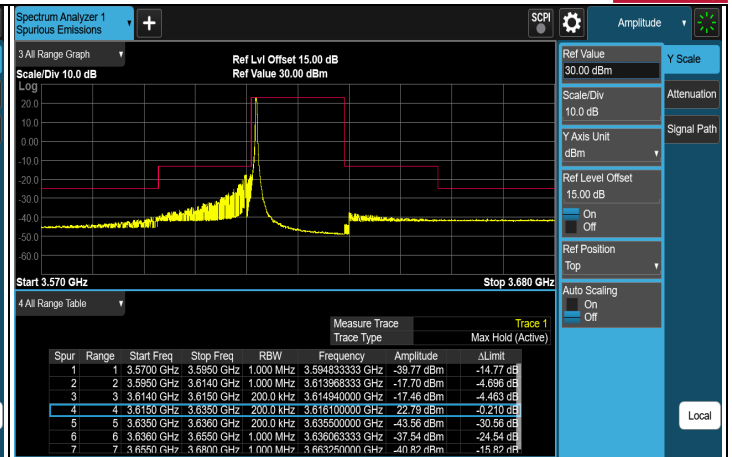
LTE Band 48, Channel Bandwidth: 20 MHz



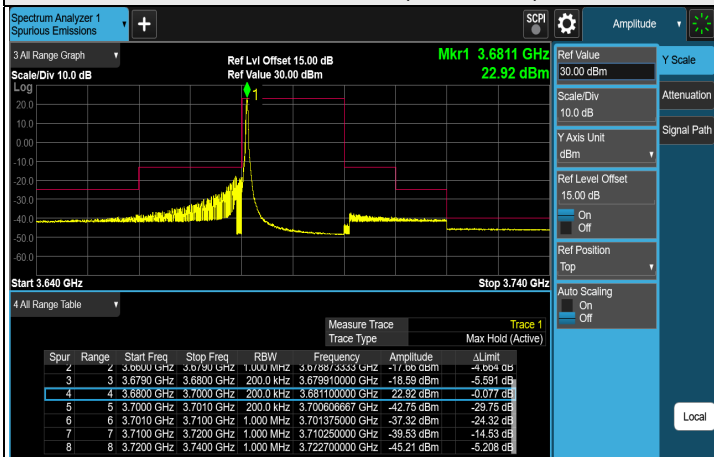




1RB#0 CH 55340 (3560 MHz)



1RB#0 CH 55990 (3625 MHz)



1RB#0 CH 56640 (3690 MHz)

7.6 Radiated Spurious Emissions below 1GHz

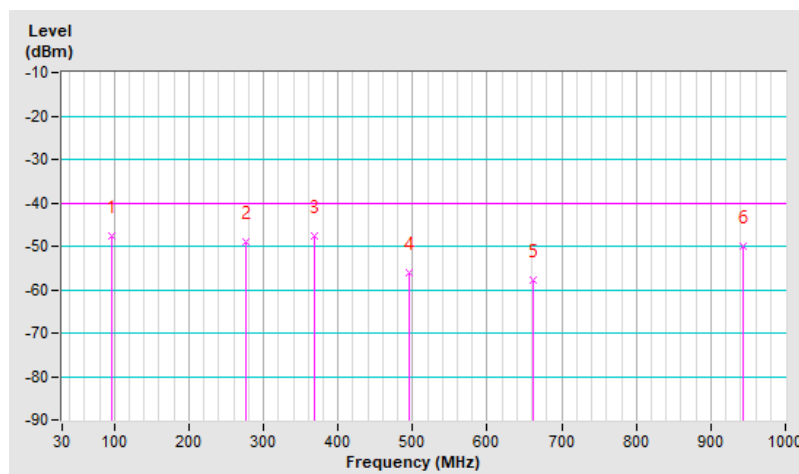
7.6.1 LTE Band 48

RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68 % RH
Tested By	Greg Lin		

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	95.96	-47.67	-40.00	-7.67	1.50 H	120	66.10	-113.77
2	276.38	-49.04	-40.00	-9.04	1.25 H	323	59.45	-108.49
3	368.53	-47.58	-40.00	-7.58	1.00 H	172	58.43	-106.01
4	494.63	-56.14	-40.00	-16.14	1.00 H	183	46.83	-102.97
5	662.44	-57.78	-40.00	-17.78	1.00 H	351	41.87	-99.65
6	942.77	-50.11	-40.00	-10.11	1.50 H	94	45.47	-95.58

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 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.

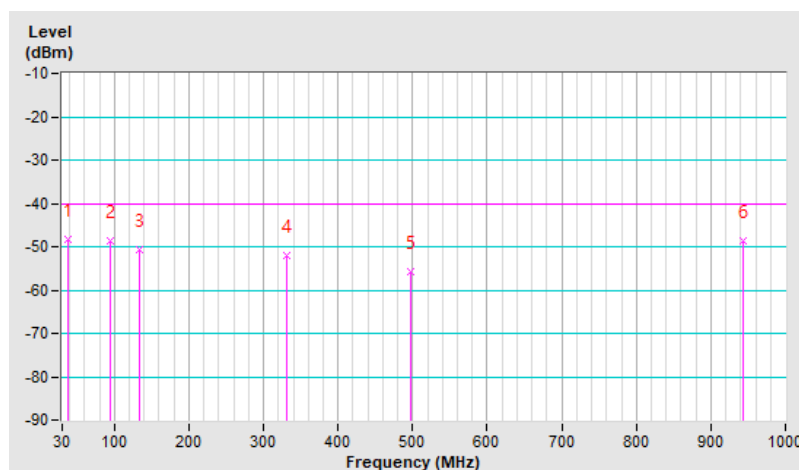


RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68 % RH
Tested By	Greg Lin		

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	37.76	-48.20	-40.00	-8.20	1.50 V	66	60.91	-109.11
2	94.99	-48.65	-40.00	-8.65	1.00 V	176	65.06	-113.71
3	133.79	-50.77	-40.00	-10.77	1.25 V	176	58.50	-109.27
4	331.67	-51.98	-40.00	-11.98	1.00 V	327	54.79	-106.77
5	497.54	-55.80	-40.00	-15.80	1.25 V	164	47.12	-102.92
6	942.77	-48.66	-40.00	-8.66	1.50 V	140	46.92	-95.58

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 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

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

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	-58.79	-40.00	-18.79	1.35 H	295	28.86	-87.65
2	10657.50	-57.49	-40.00	-17.49	1.15 H	24	29.93	-87.42
3	14210.00	-50.49	-40.00	-10.49	1.85 H	334	35.51	-86.00
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	7105.00	-54.77	-40.00	-14.77	1.58 V	126	32.88	-87.65
2	10657.50	-55.88	-40.00	-15.88	1.08 V	241	31.54	-87.42
3	14210.00	-47.62	-40.00	-7.62	1.34 V	175	38.38	-86.00

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.

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

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	-59.05	-40.00	-19.05	2.62 H	153	28.68	-87.73
2	10875.00	-57.09	-40.00	-17.09	1.75 H	249	30.25	-87.34
3	14500.00	-50.52	-40.00	-10.52	1.23 H	85	35.25	-85.77
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	-57.33	-40.00	-17.33	1.28 V	46	30.40	-87.73
2	10875.00	-53.24	-40.00	-13.24	1.58 V	352	34.10	-87.34
3	14500.00	-46.38	-40.00	-6.38	1.27 V	180	39.39	-85.77

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.

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

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	-59.06	-40.00	-19.06	2.53 H	112	28.37	-87.43
2	11092.50	-56.84	-40.00	-16.84	2.62 H	197	29.91	-86.75
3	14790.00	-53.81	-40.00	-13.81	1.53 H	81	32.01	-85.82
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	-57.13	-40.00	-17.13	2.53 V	112	30.30	-87.43
2	11092.50	-56.75	-40.00	-16.75	1.28 V	225	30.00	-86.75
3	14790.00	-53.80	-40.00	-13.80	1.95 V	41	32.02	-85.82

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.

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

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	-59.13	-40.00	-19.13	2.38 H	201	28.55	-87.68
2	10680.00	-58.26	-40.00	-18.26	2.11 H	175	29.33	-87.59
3	14240.00	-52.61	-40.00	-12.61	1.21 H	178	33.45	-86.06
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	-58.23	-40.00	-18.23	2.38 V	201	29.45	-87.68
2	10680.00	-57.89	-40.00	-17.89	2.54 V	127	29.70	-87.59
3	14240.00	-49.98	-40.00	-9.98	1.98 V	314	36.08	-86.06

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.

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

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	-59.36	-40.00	-19.36	1.52 H	84	28.37	-87.73
2	10875.00	-55.99	-40.00	-15.99	2.63 H	157	31.35	-87.34
3	14500.00	-51.61	-40.00	-11.61	1.38 H	58	34.16	-85.77
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	-56.36	-40.00	-16.36	1.25 V	138	31.37	-87.73
2	10875.00	-53.45	-40.00	-13.45	2.54 V	109	33.89	-87.34
3	14500.00	-45.95	-40.00	-5.95	1.64 V	214	39.82	-85.77

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.

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

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	-58.20	-40.00	-18.20	1.72 H	115	29.27	-87.47
2	11070.00	-57.13	-40.00	-17.13	1.96 H	311	29.58	-86.71
3	14760.00	-53.79	-40.00	-13.79	1.53 H	206	32.11	-85.90
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	-57.69	-40.00	-17.69	2.81 V	112	29.78	-87.47
2	11070.00	-56.06	-40.00	-16.06	1.89 V	94	30.65	-86.71
3	14760.00	-52.81	-40.00	-12.81	1.42 V	176	33.09	-85.90

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, 67% RH	Tested By:	Noah 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)
3.23	3552.499992	-0.0023	3697.499993	-0.0019
3.80	3552.499998	-0.0006	3697.500001	0.0003
4.40	3552.500002	0.0006	3697.500001	0.0003

Note: The applicant defined the normal working voltage is from 3.23 to 4.40 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	3552.500004	0.0011	3697.500008	0.0022
-20	3552.500001	0.0003	3697.500002	0.0005
-10	3552.499996	-0.0011	3697.499992	-0.0022
0	3552.500002	0.0006	3697.499997	-0.0008
10	3552.499995	-0.0014	3697.499995	-0.0014
20	3552.499999	-0.0003	3697.500002	0.0005
30	3552.500002	0.0006	3697.500001	0.0003
40	3552.499991	-0.0025	3697.499994	-0.0016
50	3552.500006	0.0017	3697.500008	0.0022
60	3552.499991	-0.0025	3697.499996	-0.0011
70	3552.499998	-0.0006	3697.500001	0.0003
75	3552.499996	-0.0011	3697.499995	-0.0014

LTE Band 48, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 55290 (3555 MHz)		CH 56690 (3695 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	3554.999997	-0.0008	3694.999998	-0.0005
3.80	3555.000003	0.0008	3695.000007	0.0019
4.40	3554.999997	-0.0008	3694.999996	-0.0011

Note: The applicant defined the normal working voltage is from 3.23 to 4.40 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55290 (3555 MHz)		CH 56690 (3695 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3555.000001	0.0003	3695.000003	0.0008
-20	3555.000003	0.0008	3695.000001	0.0003
-10	3555.000001	0.0003	3695.000004	0.0011
0	3554.999995	-0.0014	3694.999996	-0.0011
10	3555.000001	0.0003	3694.999998	-0.0005
20	3555.000008	0.0023	3695.000004	0.0011
30	3554.999992	-0.0023	3694.999999	-0.0027
40	3554.999997	-0.0008	3694.999993	-0.0019
50	3555.000009	0.0025	3695.000005	0.0014
60	3555.000003	0.0008	3695.000007	0.0019
70	3555.000008	0.0023	3695.000005	0.0014
75	3554.999995	-0.0014	3694.999993	-0.0019

LTE Band 48, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 55315 (3557.5 MHz)		CH 56665 (3692.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	3557.499993	-0.002	3692.499994	-0.0016
3.80	3557.500009	0.0025	3692.500006	0.0016
4.40	3557.499994	-0.0017	3692.499995	-0.0014

Note: The applicant defined the normal working voltage is from 3.23 to 4.40 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55315 (3557.5 MHz)		CH 56665 (3692.5 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3557.499993	-0.002	3692.49999	-0.0027
-20	3557.500001	0.0003	3692.500002	0.0005
-10	3557.499992	-0.0022	3692.49999	-0.0027
0	3557.499992	-0.0022	3692.499995	-0.0014
10	3557.499997	-0.0008	3692.500001	0.0003
20	3557.500005	0.0014	3692.500003	0.0008
30	3557.500009	0.0025	3692.500007	0.0019
40	3557.49999	-0.0028	3692.499991	-0.0024
50	3557.499997	-0.0008	3692.499998	-0.0005
60	3557.499999	-0.0003	3692.500002	0.0005
70	3557.500005	0.0014	3692.500002	0.0005
75	3557.500002	0.0006	3692.499998	-0.0005

LTE Band 48, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 55340 (3560 MHz)		CH 56640 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	3560.000009	0.0025	3690.000005	0.0014
3.80	3560.000004	0.0011	3690.000002	0.0005
4.40	3560.000007	0.002	3690.000003	0.0008

Note: The applicant defined the normal working voltage is from 3.23 to 4.40 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 55340 (3560 MHz)		CH 56640 (3690 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.000003	0.0008	3689.999999	-0.0003
-20	3560.000001	0.0028	3690.000005	0.0014
-10	3560.000003	0.0008	3689.999998	-0.0005
0	3559.999993	-0.002	3689.999991	-0.0024
10	3559.999992	-0.0022	3689.999994	-0.0016
20	3560.000007	0.002	3690.000004	0.0011
30	3560.000009	0.0025	3690.000008	0.0022
40	3560.000002	0.0006	3690.000002	0.0005
50	3560.000006	0.0017	3690.000002	0.0005
60	3559.999991	-0.0025	3689.999999	-0.0027
70	3559.999999	-0.0003	3689.999999	-0.0003
75	3559.999997	-0.0008	3690.000003	0.0008

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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