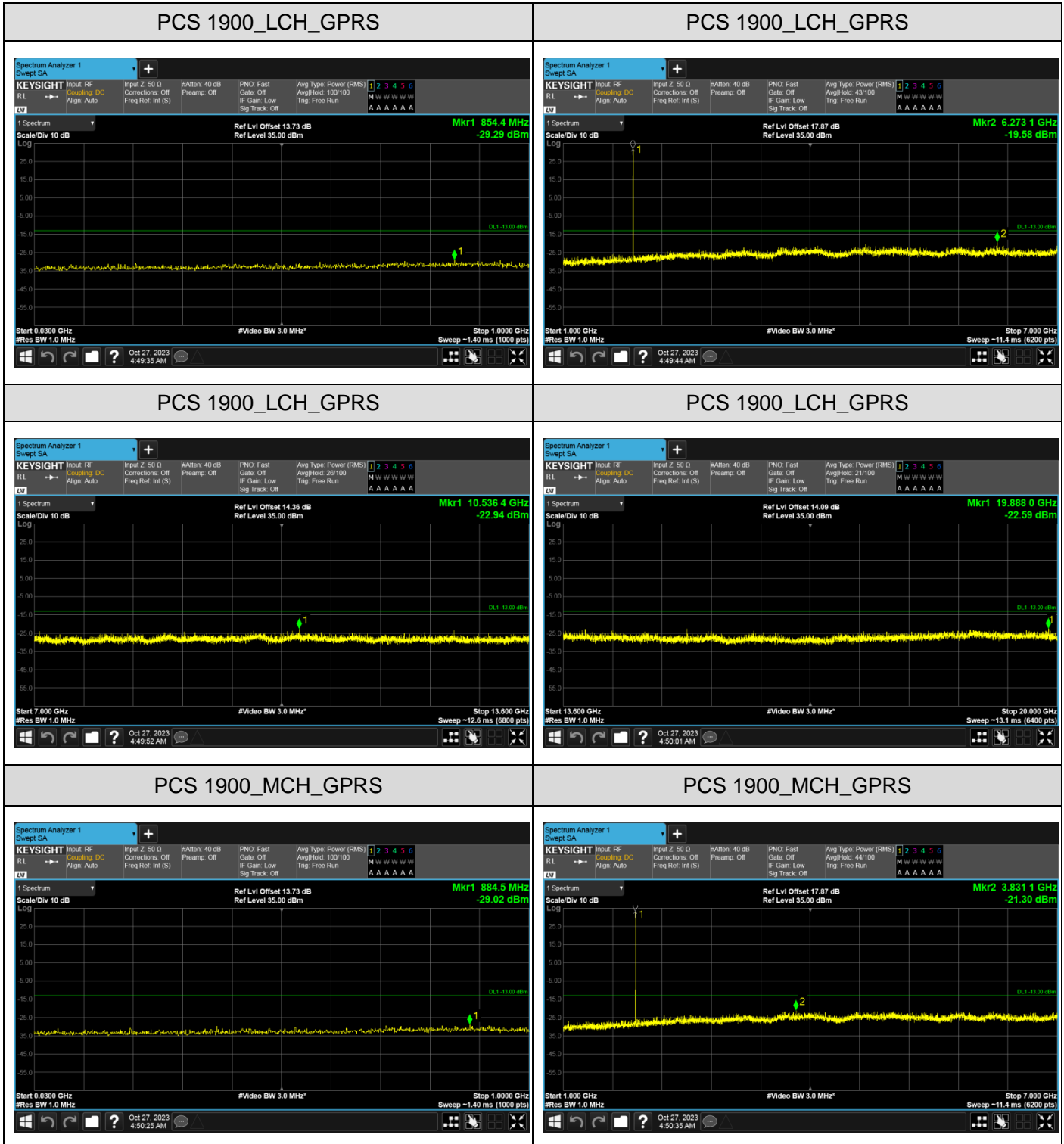
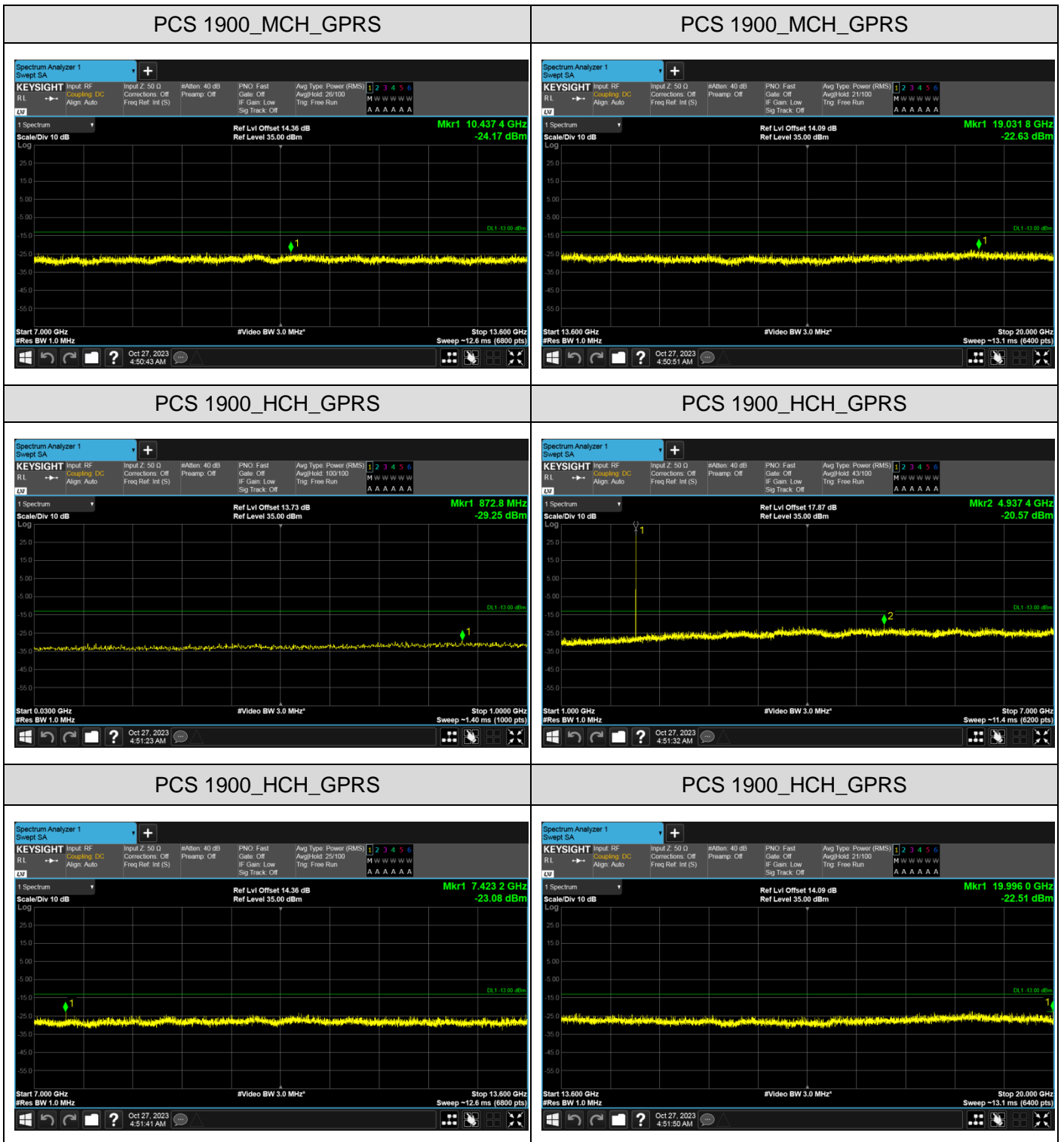


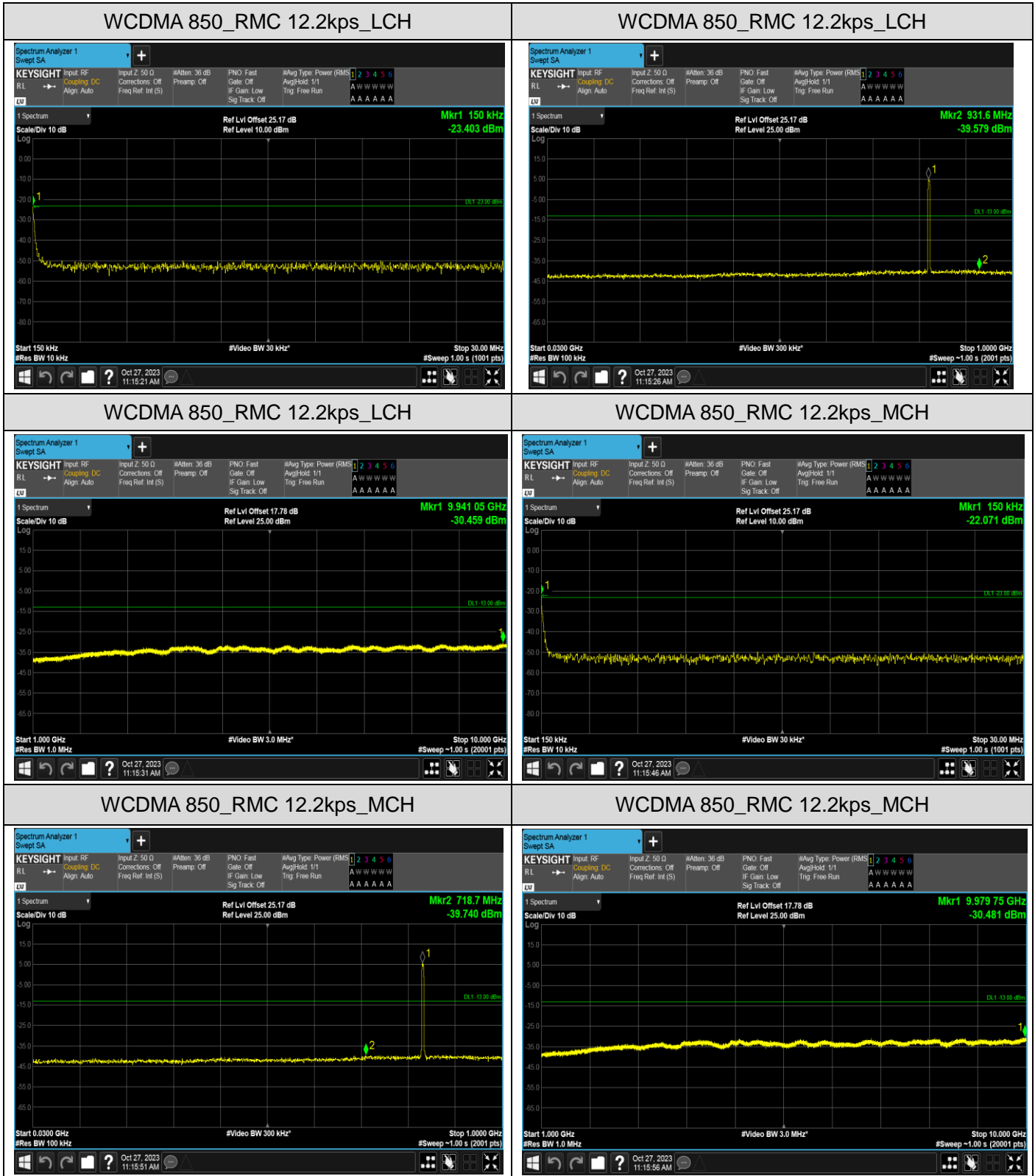
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.



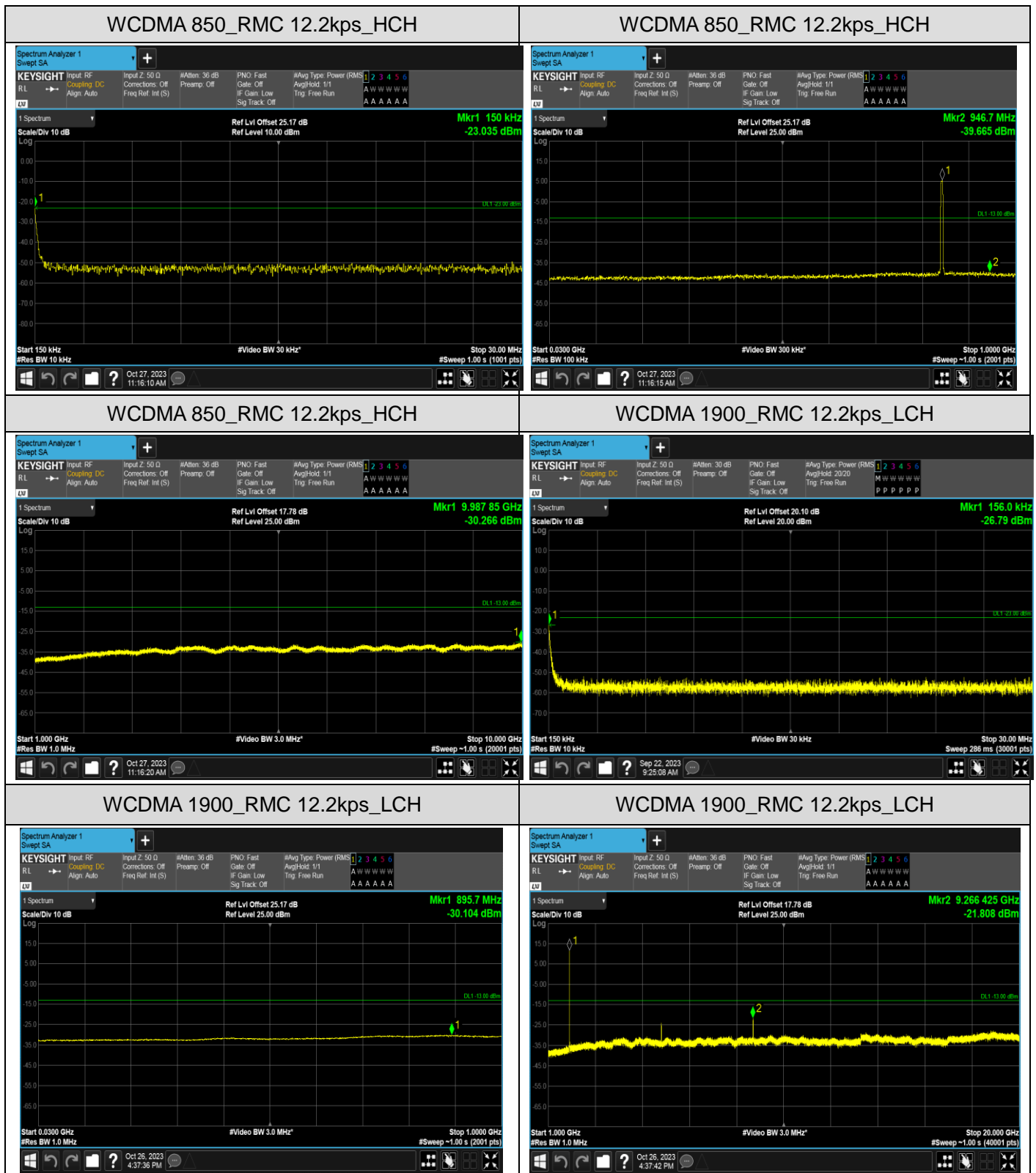
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.



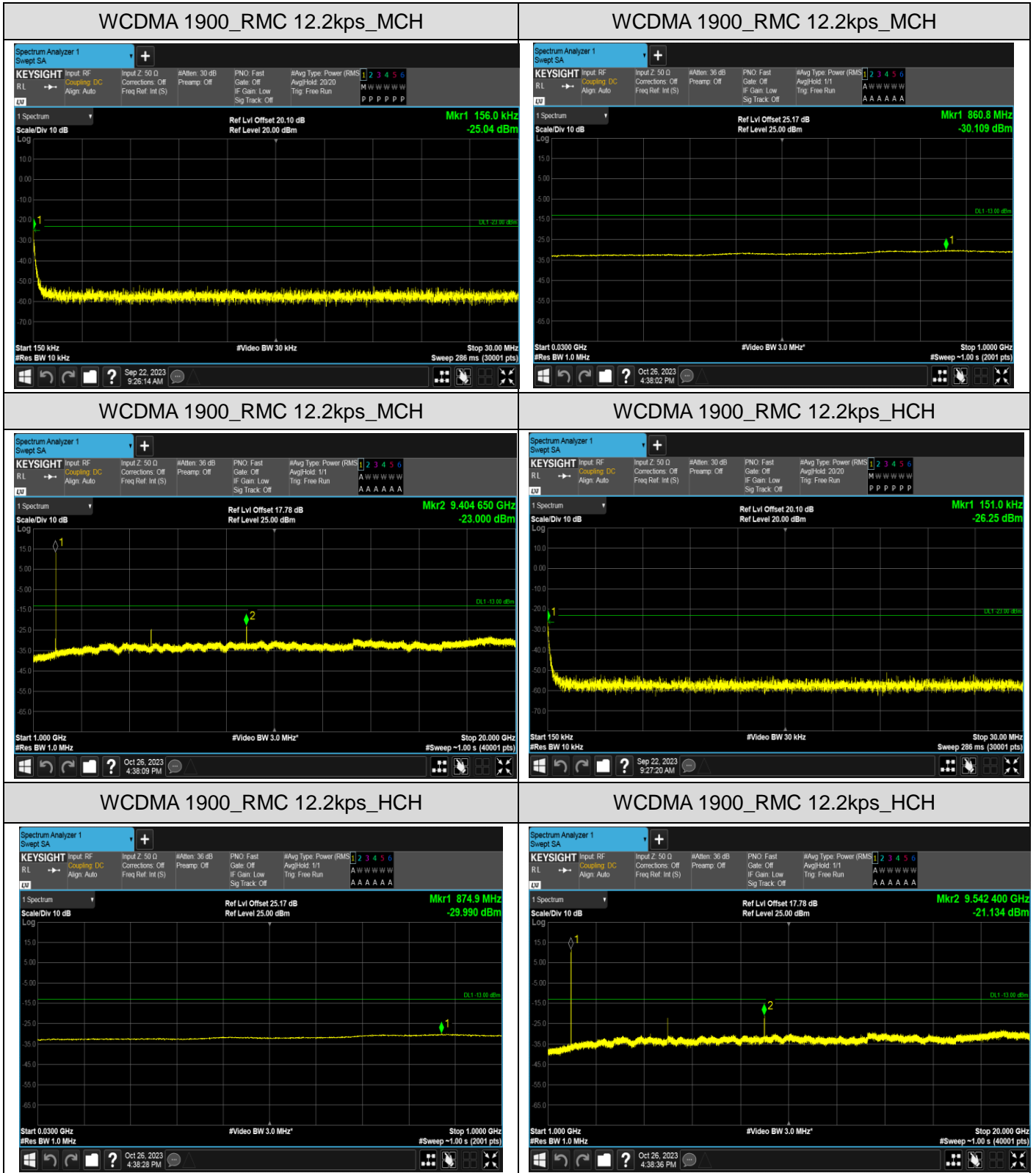
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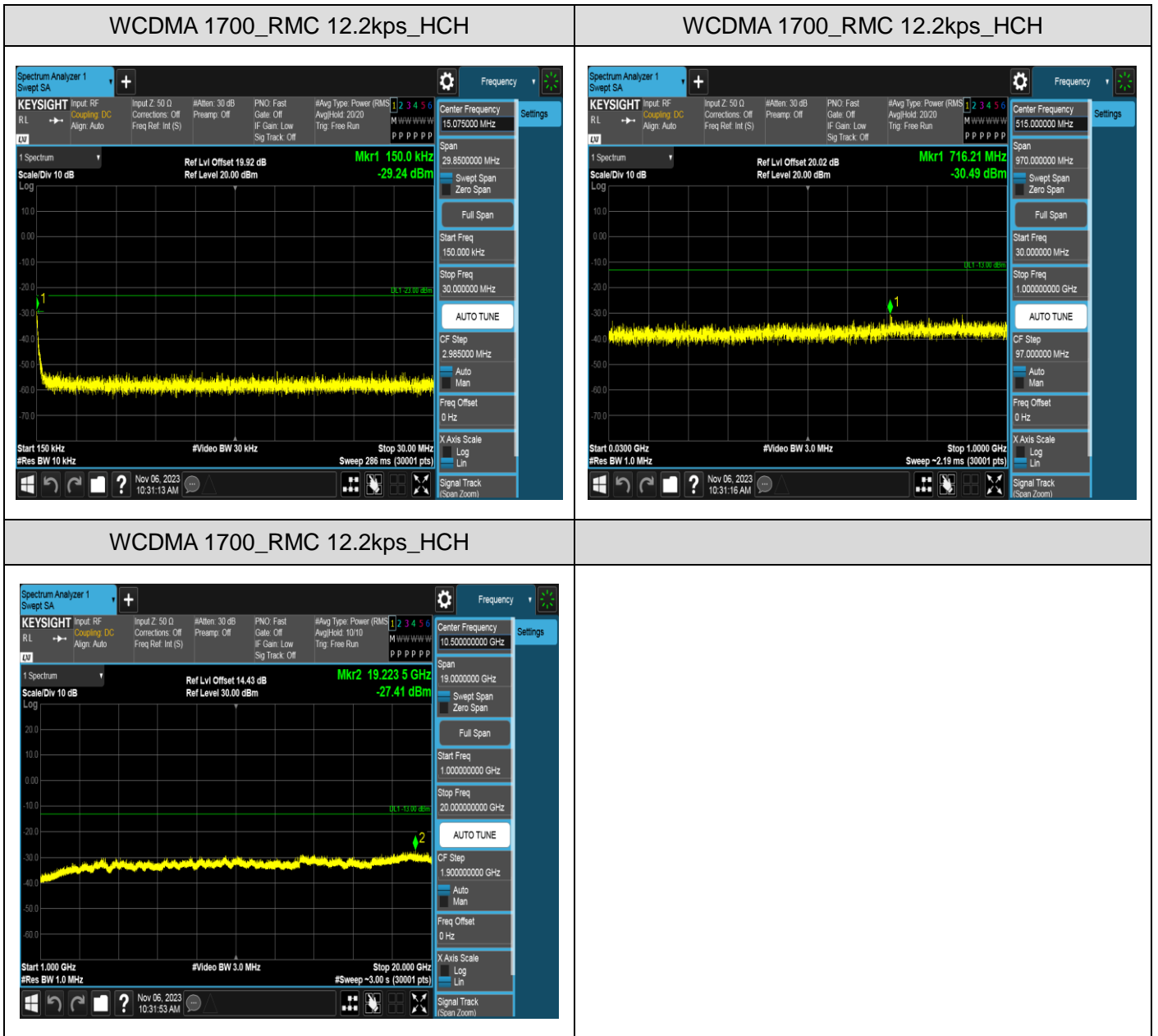
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**Note:**

1. Below 30MHz no Spurious found and above is the worst mode data.
2. As no emission found in standby or receive mode, no recording in this report.

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## 13. Radiated Spurious Emission

### 13.1. Provisions Applicable

(A) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least  $43+10\log(P)$  dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm.

At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

(B) For specific criteria, please refer to the description in section 9.2 of the report for corresponding evaluation.

### 13.2. Measurement Procedure

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the

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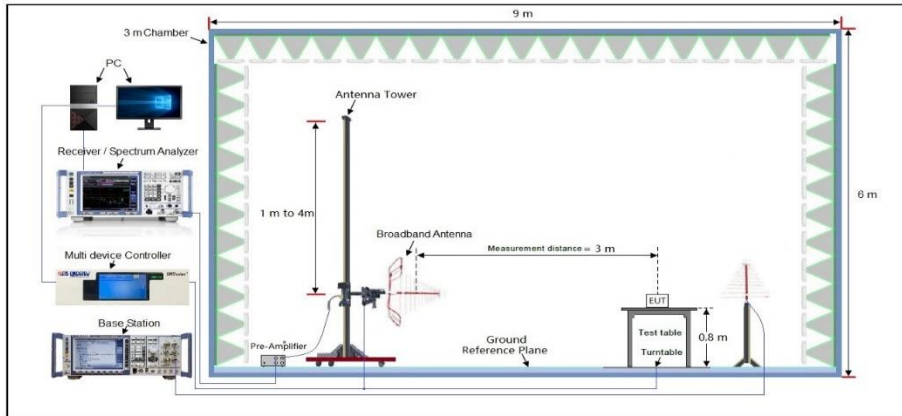
pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.

8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.
11. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT.
12. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
13. The spurious emissions is calculated by the following formula;
  - ✧  $\text{Result(dBm)} = \text{Pg(dBm)} + \text{Factor(dB)}$
  - ✧  $\text{Factor(dB)} = \text{Ant Gain(dB)} - \text{Cable Loss(dB)} + \text{Power Splitter(dB)}$  (Above 1GHz)
  - ✧  $\text{Factor(dB)} = \text{Ant Gain(dB)} - \text{Cable Loss(dB)}$  (Below 1GHz)
14. Where:  $P_{\text{gis}}$  the generator output power into the substitution antenna.
15. If the Fundamental frequency is below 1GHz, RF output power has been converted to EIRP.
  - ✧  $\text{EIRP (dBm)} = \text{ERP (dBm)} + 2.15$

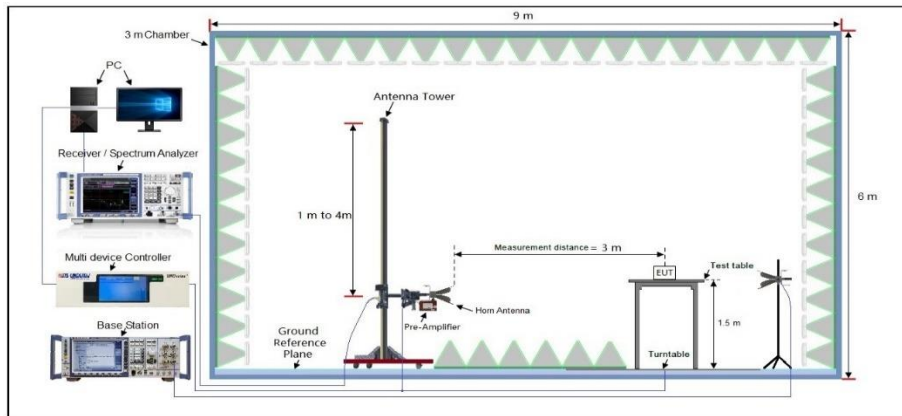
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### 13.3. Measurement Setup

#### Radiated Emissions 30MHz to 1GHz Test setup



#### Radiated Emissions Above 1GHz Test setup



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### 13.4 Measurement Result

The measurement Below 1GHz data as follows:

GSM 850							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>GSM_ Lowest Channel</b>							
1	160.120	-65.39	15.52	-49.87	-13.00	-36.87	Horizontal
2	251.111	-62.44	16.75	-45.69	-13.00	-32.69	Horizontal
3	759.521	-59.33	19.35	-39.98	-13.00	-26.98	Horizontal
4	50.125	-64.57	10.44	-54.13	-13.00	-41.13	Vertical
5	429.366	-61.84	17.75	-44.09	-13.00	-31.09	Vertical
6	511.407	-58.47	18.66	-39.81	-13.00	-26.81	Vertical
<b>GSM_ Middle Channel</b>							
1	31.854	-62.91	9.78	-53.13	-13.00	-40.13	Horizontal
2	160.759	-62.61	13.75	-48.86	-13.00	-35.86	Horizontal
3	259.144	-60.64	16.75	-43.89	-13.00	-30.89	Horizontal
4	45.233	-63.80	10.23	-53.57	-13.00	-40.57	Vertical
5	419.340	-61.76	17.75	-44.01	-13.00	-31.01	Vertical
6	500.730	-59.00	18.02	-40.98	-13.00	-27.98	Vertical
<b>GSM_ Highest Channel</b>							
1	143.601	-63.45	13.75	-49.70	-13.00	-36.70	Horizontal
2	251.412	-62.30	16.75	-45.55	-13.00	-32.55	Horizontal
3	628.435	-58.01	19.01	-39.00	-13.00	-26.00	Horizontal
4	51.233	-61.58	10.23	-51.35	-13.00	-38.35	Vertical
5	413.340	-60.51	17.75	-42.76	-13.00	-29.76	Vertical
6	496.220	-57.94	18.02	-39.92	-13.00	-26.92	Vertical

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PCS 1900							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>GSM_ Lowest Channel</b>							
1	136.012	-66.06	15.52	-50.54	-13.00	-37.54	Horizontal
2	258.367	-62.04	16.75	-45.29	-13.00	-32.29	Horizontal
3	796.458	-57.98	19.35	-38.63	-13.00	-25.63	Horizontal
4	58.116	-64.29	10.44	-53.85	-13.00	-40.85	Vertical
5	396.285	-60.16	17.75	-42.41	-13.00	-29.41	Vertical
6	512.116	-58.69	18.66	-40.03	-13.00	-27.03	Vertical
<b>GSM_ Middle Channel</b>							
1	45.215	-61.38	9.78	-51.60	-13.00	-38.60	Horizontal
2	189.307	-62.59	13.75	-48.84	-13.00	-35.84	Horizontal
3	211.269	-61.00	16.75	-44.25	-13.00	-31.25	Horizontal
4	49.114	-62.63	10.23	-52.40	-13.00	-39.40	Vertical
5	402.259	-60.59	17.75	-42.84	-13.00	-29.84	Vertical
6	458.436	-59.44	18.02	-41.42	-13.00	-28.42	Vertical
<b>GSM_ Highest Channel</b>							
1	174.058	-61.68	13.75	-47.93	-13.00	-34.93	Horizontal
2	212.315	-61.42	16.75	-44.67	-13.00	-31.67	Horizontal
3	689.421	-55.25	19.01	-36.24	-13.00	-23.24	Horizontal
4	45.974	-62.35	10.23	-52.12	-13.00	-39.12	Vertical
5	405.259	-60.35	17.75	-42.60	-13.00	-29.60	Vertical
6	474.361	-56.05	18.02	-38.03	-13.00	-25.03	Vertical

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WCDMA Band II							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	181.034	-65.90	15.52	-50.38	-13.00	-37.38	Horizontal
2	305.125	-62.79	16.75	-46.04	-13.00	-33.04	Horizontal
3	695.847	-59.10	19.35	-39.75	-13.00	-26.75	Horizontal
4	38.635	-65.40	10.44	-54.96	-13.00	-41.96	Vertical
5	396.284	-60.94	17.75	-43.19	-13.00	-30.19	Vertical
6	493.934	-59.44	18.66	-40.78	-13.00	-27.78	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	28.425	-61.31	9.78	-51.53	-13.00	-38.53	Horizontal
2	117.621	-61.64	13.75	-47.89	-13.00	-34.89	Horizontal
3	253.196	-61.21	16.75	-44.46	-13.00	-31.46	Horizontal
4	48.145	-63.26	10.23	-53.03	-13.00	-40.03	Vertical
5	410.059	-61.61	17.75	-43.86	-13.00	-30.86	Vertical
6	520.741	-57.50	18.02	-39.48	-13.00	-26.48	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	164.073	-64.02	13.75	-50.27	-13.00	-37.27	Horizontal
2	208.539	-63.25	16.75	-46.50	-13.00	-33.50	Horizontal
3	531.274	-60.49	19.01	-41.48	-13.00	-28.48	Horizontal
4	52.196	-64.72	10.23	-54.49	-13.00	-41.49	Vertical
5	416.285	-62.29	17.75	-44.54	-13.00	-31.54	Vertical
6	487.117	-60.41	18.02	-42.39	-13.00	-29.39	Vertical

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WCDMA Band IV							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	166.005	-65.63	15.52	-50.11	-13.00	-37.11	Horizontal
2	317.234	-62.54	16.75	-45.79	-13.00	-32.79	Horizontal
3	625.417	-59.32	19.35	-39.97	-13.00	-26.97	Horizontal
4	53.636	-65.26	10.44	-54.82	-13.00	-41.82	Vertical
5	471.118	-61.87	17.75	-44.12	-13.00	-31.12	Vertical
6	496.109	-59.08	18.66	-40.42	-13.00	-27.42	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	29.265	-60.20	9.78	-50.42	-13.00	-37.42	Horizontal
2	214.301	-59.64	13.75	-45.89	-13.00	-32.89	Horizontal
3	336.293	-56.83	16.75	-40.08	-13.00	-27.08	Horizontal
4	58.157	-65.10	10.23	-54.87	-13.00	-41.87	Vertical
5	365.063	-60.96	17.75	-43.21	-13.00	-30.21	Vertical
6	501.071	-59.04	18.02	-41.02	-13.00	-28.02	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	167.114	-65.43	13.75	-51.68	-13.00	-38.68	Horizontal
2	296.360	-66.26	16.75	-49.51	-13.00	-36.51	Horizontal
3	701.455	-61.86	19.01	-42.85	-13.00	-29.85	Horizontal
4	39.239	-61.45	10.23	-51.22	-13.00	-38.22	Vertical
5	456.345	-62.55	17.75	-44.80	-13.00	-31.80	Vertical
6	511.731	-58.00	18.02	-39.98	-13.00	-26.98	Vertical

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WCDMA Band V							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	150.524	-65.66	15.52	-50.14	-13.00	-37.14	Horizontal
2	221.151	-62.22	16.75	-45.47	-13.00	-32.47	Horizontal
3	789.336	-58.54	19.35	-39.19	-13.00	-26.19	Horizontal
4	52.254	-61.75	10.44	-51.31	-13.00	-38.31	Vertical
5	365.212	-60.54	17.75	-42.79	-13.00	-29.79	Vertical
6	511.581	-61.31	18.66	-42.65	-13.00	-29.65	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	29.001	-61.78	9.78	-52.00	-13.00	-39.00	Horizontal
2	203.219	-59.49	13.75	-45.74	-13.00	-32.74	Horizontal
3	335.567	-56.87	16.75	-40.12	-13.00	-27.12	Horizontal
4	58.436	-60.09	10.23	-49.86	-13.00	-36.86	Vertical
5	425.850	-61.67	17.75	-43.92	-13.00	-30.92	Vertical
6	563.112	-67.28	18.02	-49.26	-13.00	-36.26	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	160.326	-64.35	13.75	-50.60	-13.00	-37.6	Horizontal
2	255.449	-62.58	16.75	-45.83	-13.00	-32.83	Horizontal
3	704.586	-58.74	19.01	-39.73	-13.00	-26.73	Horizontal
4	59.665	-60.05	10.23	-49.82	-13.00	-36.82	Vertical
5	412.359	-60.99	17.75	-43.24	-13.00	-30.24	Vertical
6	560.127	-61.04	18.02	-43.02	-13.00	-30.02	Vertical

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The measurement Above 1GHz data as follows:

GSM 850							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>GSM_ Lowest Channel</b>							
1	1648.400	-79.36	23.50	-55.86	-13.00	-42.86	Horizontal
2	2472.600	-87.68	29.47	-58.21	-13.00	-45.21	Horizontal
3	1648.400	-87.10	23.72	-63.38	-13.00	-50.38	Vertical
4	2472.600	-89.63	29.47	-60.16	-13.00	-47.16	Vertical
<b>GSM_ Middle Channel</b>							
1	1673.200	-81.52	23.50	-58.02	-13.00	-45.02	Horizontal
2	2509.800	-88.49	29.47	-59.02	-13.00	-46.02	Horizontal
3	1673.200	-79.22	23.72	-55.50	-13.00	-42.50	Vertical
4	2509.800	-92.37	29.47	-62.90	-13.00	-49.90	Vertical
<b>GSM_ Highest Channel</b>							
1	1697.600	-86.77	23.50	-63.27	-13.00	-50.27	Horizontal
2	2546.400	-89.72	29.47	-60.25	-13.00	-47.25	Horizontal
3	1697.600	-83.14	23.72	-59.42	-13.00	-46.42	Vertical
4	2546.400	-87.71	29.47	-58.24	-13.00	-45.24	Vertical

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PCS 1900							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>GSM_ Lowest Channel</b>							
1	3700.400	-86.16	32.11	-54.05	-13.00	-41.05	Horizontal
2	5550.600	-85.50	33.21	-52.29	-13.00	-39.29	Horizontal
3	3700.400	-88.56	32.09	-56.47	-13.00	-43.47	Vertical
4	5550.600	-86.39	34.03	-52.36	-13.00	-39.36	Vertical
<b>GSM_ Middle Channel</b>							
1	3760.000	-81.33	32.11	-49.22	-13.00	-36.22	Horizontal
2	5640.000	-84.65	33.21	-51.44	-13.00	-38.44	Horizontal
3	3760.000	-88.61	32.09	-56.52	-13.00	-43.52	Vertical
4	5640.000	-86.76	34.03	-52.73	-13.00	-39.73	Vertical
<b>GSM_ Highest Channel</b>							
1	3819.600	-88.36	32.11	-56.25	-13.00	-43.25	Horizontal
2	5729.400	-87.55	33.21	-54.34	-13.00	-41.34	Horizontal
3	3819.600	-90.55	32.09	-58.46	-13.00	-45.46	Vertical
4	5729.400	-88.61	34.03	-54.58	-13.00	-41.58	Vertical

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WCDMA Band II							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	3704.800	-85.34	31.09	-54.25	-13.00	-41.25	Horizontal
2	5557.200	-87.27	34.14	-53.13	-13.00	-40.13	Horizontal
3	3704.800	-81.30	33.13	-48.17	-13.00	-35.17	Vertical
4	5557.200	-86.97	32.66	-54.31	-13.00	-41.31	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	3760.000	-81.67	31.09	-50.58	-13.00	-37.58	Horizontal
2	5640.000	-86.61	34.14	-52.47	-13.00	-39.47	Horizontal
3	3760.000	-81.25	33.13	-48.12	-13.00	-35.12	Vertical
4	5640.000	-86.02	32.66	-53.36	-13.00	-40.36	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	3815.200	-80.24	31.09	-49.15	-13.00	-36.15	Horizontal
2	5722.800	-81.36	34.14	-47.22	-13.00	-34.22	Horizontal
3	3815.200	-84.60	33.13	-51.47	-13.00	-38.47	Vertical
4	5722.800	-81.97	32.66	-49.31	-13.00	-36.31	Vertical

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WCDMA Band IV							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	3424.800	-91.44	32.11	-59.33	-13.00	-46.33	Horizontal
2	5137.200	-87.63	33.21	-54.42	-13.00	-41.42	Horizontal
3	3424.800	-87.28	32.09	-55.19	-13.00	-42.19	Vertical
4	5137.200	-88.14	34.03	-54.11	-13.00	-41.11	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	3464.800	-88.36	32.11	-56.25	-13.00	-43.25	Horizontal
2	5197.200	-86.63	33.21	-53.42	-13.00	-40.42	Horizontal
3	3464.800	-90.45	32.09	-58.36	-13.00	-45.36	Vertical
4	5197.200	-86.20	34.03	-52.17	-13.00	-39.17	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	3505.200	-88.63	32.11	-56.52	-13.00	-43.52	Horizontal
2	5257.800	-85.46	33.21	-52.25	-13.00	-39.25	Horizontal
3	3505.200	-89.42	32.09	-57.33	-13.00	-44.33	Vertical
4	5257.800	-86.50	34.03	-52.47	-13.00	-39.47	Vertical

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WCDMA Band V							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
<b>RMC 12.2kbps_ Lowest Channel</b>							
1	1652.800	-81.16	23.12	-58.04	-13.00	-45.04	Horizontal
2	2479.200	-84.64	28.47	-56.17	-13.00	-43.17	Horizontal
3	1652.800	-81.60	23.12	-58.48	-13.00	-45.48	Vertical
4	2479.200	-84.03	28.47	-55.56	-13.00	-42.56	Vertical
<b>RMC 12.2kbps_ Middle Channel</b>							
1	1672.800	-76.34	23.12	-53.22	-13.00	-40.22	Horizontal
2	2509.200	-83.21	28.47	-54.74	-13.00	-41.74	Horizontal
3	1672.800	-78.68	23.12	-55.56	-13.00	-42.56	Vertical
4	2509.200	-82.46	28.47	-53.99	-13.00	-40.99	Vertical
<b>RMC 12.2kbps_ Highest Channel</b>							
1	1693.200	-78.63	23.12	-55.51	-13.00	-42.51	Horizontal
2	2539.800	-84.75	28.47	-56.28	-13.00	-43.28	Horizontal
3	1693.200	-77.59	23.12	-54.47	-13.00	-41.47	Vertical
4	2539.800	-86.16	28.47	-57.69	-13.00	-44.69	Vertical

**Note:**

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit
4. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test. Subsequently, only the worst case emissions are reported.

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## 14. Frequency Stability / Variation of Ambient Temperature

### 14.1 Provisions Applicable

#### 14.1.1 For Hand carried battery powered equipment

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 14.1.2 For equipment powered by primary supply voltage

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a
2. reference).
3. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to
4. the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
5. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at
6. least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### 14.2 Measurement Procedure

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

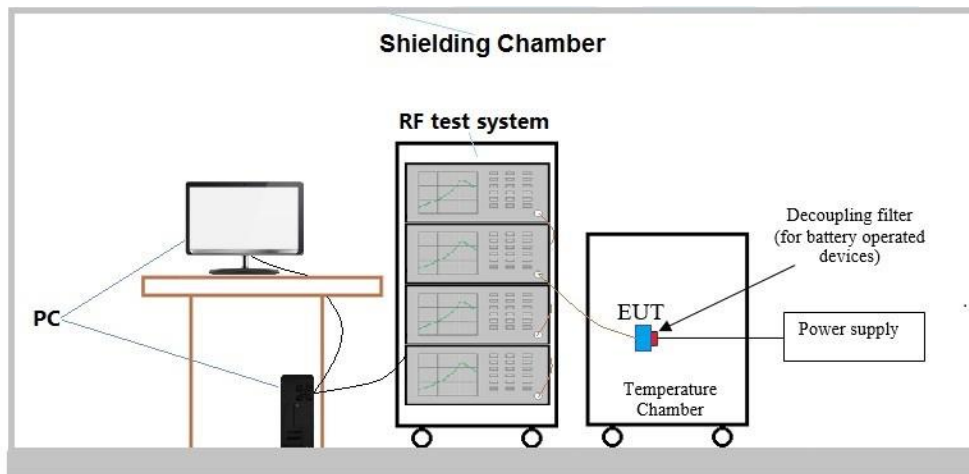
1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on channel 20175 for LTE band 4 measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
3. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
4. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each

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voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

5. Subject the EUT to overnight soak at +50°C.
6. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
7. Repeat the above measurements at 10°C increments from +50°C to -30°C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
8. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

### 14.3 Measurement Setup



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#### 14.4 Measurement Result

● **Frequency Error vs. Voltage:**

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	GSM	LCH	TN	VL	5.94	0.007207	±2.5	PASS
			TN	VN	3.62	0.004392	±2.5	PASS
			TN	VH	8.65	0.010495	±2.5	PASS
		MCH	TN	VL	-1.68	-0.002008	±2.5	PASS
			TN	VN	4.33	0.005176	±2.5	PASS
			TN	VH	0.77	0.000920	±2.5	PASS
		HCH	TN	VL	7.23	0.008518	±2.5	PASS
			TN	VN	7.43	0.008754	±2.5	PASS
			TN	VH	7.04	0.008294	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	GPRS	LCH	TN	VL	2.91	0.003531	±2.5	PASS
			TN	VN	4.58	0.005557	±2.5	PASS
			TN	VH	4.46	0.005411	±2.5	PASS
		MCH	TN	VL	3.55	0.004243	±2.5	PASS
			TN	VN	6.13	0.007327	±2.5	PASS
			TN	VH	6.39	0.007638	±2.5	PASS
		HCH	TN	VL	2.97	0.003499	±2.5	PASS
			TN	VN	2.65	0.003122	±2.5	PASS
			TN	VH	2.26	0.002663	±2.5	PASS

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt. (V)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
PCS1900	GSM	LCH	TN	VL	10.78	0.005826	Pass
			TN	VN	8.52	0.004605	Pass
			TN	VH	10.59	0.005724	Pass
		MCH	TN	VL	17.89	0.009516	Pass
			TN	VN	16.14	0.008585	Pass
			TN	VH	18.14	0.009649	Pass
		HCH	TN	VL	21.11	0.011054	Pass
			TN	VN	17.89	0.009367	Pass
			TN	VH	13.56	0.007100	Pass

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt. (V)	Freq. Error (Hz)	Freq. vs. rated (ppm)	Verdict
PCS1900	GPRS	LCH	TN	VL	18.14	0.009804	Pass
			TN	VN	16.01	0.008653	Pass
			TN	VH	16.92	0.009145	Pass
		MCH	TN	VL	19.18	0.010202	Pass
			TN	VN	20.66	0.010989	Pass
			TN	VH	18.14	0.009649	Pass
		HCH	TN	VL	16.79	0.008791	Pass
			TN	VN	15.43	0.008079	Pass
			TN	VH	16.08	0.008420	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Limit (ppm)	Verdict
WCDMA850	UMTS	LCH	TN	VL	1.31	0.001585	±2.5	Pass
			TN	VN	-1.52	-0.001839	±2.5	Pass
			TN	VH	-1.02	-0.001234	±2.5	Pass
		MCH	TN	VL	0.02	0.000024	±2.5	Pass
			TN	VN	-2.22	-0.002654	±2.5	Pass
			TN	VH	2.71	0.003240	±2.5	Pass
		HCH	TN	VL	-1.87	-0.002209	±2.5	Pass
			TN	VN	-0.53	-0.000626	±2.5	Pass
			TN	VH	0.67	0.000791	±2.5	Pass

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
WCDMA1700	UMTS	LCH	TN	VL	1.97	0.001150	Pass
			TN	VN	1.67	0.000975	Pass
			TN	VH	2.56	0.001495	Pass
		MCH	TN	VL	-4.08	-0.002355	Pass
			TN	VN	-0.73	-0.000421	Pass
			TN	VH	-6.49	-0.003746	Pass
		HCH	TN	VL	0.06	0.003201	Pass
			TN	VN	0.05	0.001605	Pass
			TN	VH	0.04	0.002107	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.(V)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
WCDMA1900	UMTS	LCH	TN	VL	-10.52	-0.005679	Pass
			TN	VN	-17.66	-0.009534	Pass
			TN	VH	-15.76	-0.008508	Pass
		MCH	TN	VL	-16.86	-0.008968	Pass
			TN	VN	-18.80	-0.010000	Pass
			TN	VH	-11.77	-0.006261	Pass
		HCH	TN	VL	-17.69	-0.009273	Pass
			TN	VN	-12.14	-0.006364	Pass
			TN	VH	-8.54	-0.004477	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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● **Frequency Error vs. Temperature:**

Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs. Rated (ppm)	Limit (ppm)	Verdict
GSM850	GSM	LCH	VN	-30	7.94	0.009634	±2.5	Pass
			VN	-20	8.33	0.010107	±2.5	Pass
			VN	-10	7.10	0.008614	±2.5	Pass
			VN	0	8.65	0.010495	±2.5	Pass
			VN	10	6.78	0.008226	±2.5	Pass
			VN	20	3.23	0.003919	±2.5	Pass
			VN	30	9.75	0.011830	±2.5	Pass
			VN	40	7.17	0.008699	±2.5	Pass
			VN	50	7.30	0.008857	±2.5	Pass
GSM850	GSM	MCH	VN	-30	2.97	0.003550	±2.5	Pass
			VN	-20	1.23	0.001470	±2.5	Pass
			VN	-10	0.39	0.000466	±2.5	Pass
			VN	0	1.16	0.001387	±2.5	Pass
			VN	10	1.16	0.001387	±2.5	Pass
			VN	20	-0.32	-0.000383	±2.5	Pass
			VN	30	9.30	0.011116	±2.5	Pass
			VN	40	8.14	0.009730	±2.5	Pass
			VN	50	0.52	0.000622	±2.5	Pass
GSM850	GSM	HCH	VN	-30	7.30	0.008600	±2.5	Pass
			VN	-20	8.39	0.009885	±2.5	Pass
			VN	-10	6.59	0.007764	±2.5	Pass
			VN	0	7.55	0.008895	±2.5	Pass
			VN	10	5.49	0.006468	±2.5	Pass
			VN	20	6.84	0.008058	±2.5	Pass
			VN	30	8.46	0.009967	±2.5	Pass
			VN	40	8.65	0.010191	±2.5	Pass
			VN	50	9.49	0.011180	±2.5	Pass

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Limit (ppm)	Verdict
GSM850	GPRS	LCH	VN	-30	5.29	0.006418	±2.5	Pass
			VN	-20	5.88	0.007134	±2.5	Pass
			VN	-10	7.10	0.008614	±2.5	Pass
			VN	0	4.33	0.005254	±2.5	Pass
			VN	10	5.62	0.006819	±2.5	Pass
			VN	20	10.40	0.012618	±2.5	Pass
			VN	30	8.07	0.009791	±2.5	Pass
			VN	40	7.62	0.009245	±2.5	Pass
			VN	50	10.65	0.012922	±2.5	Pass
GSM850	GPRS	MCH	VN	-30	3.55	0.004243	±2.5	Pass
			VN	-20	6.20	0.007411	±2.5	Pass
			VN	-10	6.46	0.007722	±2.5	Pass
			VN	0	8.14	0.009730	±2.5	Pass
			VN	10	4.33	0.005176	±2.5	Pass
			VN	20	5.94	0.007100	±2.5	Pass
			VN	30	5.10	0.006096	±2.5	Pass
			VN	40	7.75	0.009264	±2.5	Pass
			VN	50	9.04	0.010806	±2.5	Pass
GSM850	GPRS	HCH	VN	-30	1.49	0.001755	±2.5	Pass
			VN	-20	2.78	0.003275	±2.5	Pass
			VN	-10	3.36	0.003959	±2.5	Pass
			VN	0	3.68	0.004336	±2.5	Pass
			VN	10	6.20	0.007304	±2.5	Pass
			VN	20	4.33	0.005101	±2.5	Pass
			VN	30	8.72	0.010273	±2.5	Pass
			VN	40	6.97	0.008212	±2.5	Pass
			VN	50	6.72	0.007917	±2.5	Pass

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
PCS1900	GSM	LCH	VN	-30	12.33	0.006664	Pass
			VN	-20	10.59	0.005724	Pass
			VN	-10	12.72	0.006875	Pass
			VN	0	8.20	0.004432	Pass
			VN	10	11.24	0.006075	Pass
			VN	20	12.14	0.006561	Pass
			VN	30	12.07	0.006524	Pass
			VN	40	10.72	0.005794	Pass
			VN	50	7.88	0.004259	Pass
PCS1900	GSM	MCH	VN	-30	19.63	0.010441	Pass
			VN	-20	20.40	0.010851	Pass
			VN	-10	19.05	0.010133	Pass
			VN	0	21.31	0.011335	Pass
			VN	10	18.21	0.009686	Pass
			VN	20	21.89	0.011644	Pass
			VN	30	19.37	0.010303	Pass
			VN	40	19.76	0.010511	Pass
			VN	50	19.95	0.010612	Pass
PCS1900	GSM	HCH	VN	-30	14.27	0.007472	Pass
			VN	-20	18.79	0.009839	Pass
			VN	-10	15.43	0.008079	Pass
			VN	0	17.18	0.008996	Pass
			VN	10	14.53	0.007608	Pass
			VN	20	17.11	0.008959	Pass
			VN	30	16.59	0.008687	Pass
			VN	40	14.66	0.007676	Pass
			VN	50	16.92	0.008860	Pass

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
PCS1900	GPRS	LCH	VN	-30	16.72	0.009037	Pass
			VN	-20	22.79	0.012318	Pass
			VN	-10	18.98	0.010258	Pass
			VN	0	17.11	0.009248	Pass
			VN	10	20.92	0.011307	Pass
			VN	20	13.17	0.007118	Pass
			VN	30	19.89	0.010750	Pass
			VN	40	26.15	0.014134	Pass
			VN	50	27.83	0.015042	Pass
PCS1900	GPRS	MCH	VN	-30	19.82	0.010543	Pass
			VN	-20	19.18	0.010202	Pass
			VN	-10	21.70	0.011543	Pass
			VN	0	19.63	0.010441	Pass
			VN	10	17.24	0.009170	Pass
			VN	20	22.66	0.012053	Pass
			VN	30	28.80	0.015319	Pass
			VN	40	24.99	0.013293	Pass
			VN	50	21.57	0.011473	Pass
PCS1900	GPRS	HCH	VN	-30	15.56	0.008147	Pass
			VN	-20	17.24	0.009027	Pass
			VN	-10	18.53	0.009703	Pass
			VN	0	16.85	0.008823	Pass
			VN	10	20.15	0.010551	Pass
			VN	20	23.50	0.012305	Pass
			VN	30	25.63	0.013420	Pass
			VN	40	22.28	0.011666	Pass
			VN	50	19.63	0.010279	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs rated (ppm)	Limit (ppm)	Verdict
WCDMA850	UMTS	LCH	VN	-30	2.08	0.002517	±2.5	Pass
			VN	-20	0.51	0.000617	±2.5	Pass
			VN	-10	-1.18	-0.001428	±2.5	Pass
			VN	0	2.20	0.002662	±2.5	Pass
			VN	10	-0.94	-0.001137	±2.5	Pass
			VN	20	0.06	0.000073	±2.5	Pass
			VN	30	1.17	0.001416	±2.5	Pass
			VN	40	-1.67	-0.002021	±2.5	Pass
			VN	50	0.54	0.000653	±2.5	Pass
WCDMA850	UMTS	MCH	VN	-30	0.59	0.000705	±2.5	Pass
			VN	-20	3.08	0.003682	±2.5	Pass
			VN	-10	-1.53	-0.001829	±2.5	Pass
			VN	0	-4.65	-0.005560	±2.5	Pass
			VN	10	1.41	0.001686	±2.5	Pass
			VN	20	2.00	0.002391	±2.5	Pass
			VN	30	-2.83	-0.003384	±2.5	Pass
			VN	40	0.98	0.001172	±2.5	Pass
			VN	50	1.45	0.001734	±2.5	Pass
WCDMA850	UMTS	HCH	VN	-30	-0.80	-0.000945	±2.5	Pass
			VN	-20	-1.42	-0.001677	±2.5	Pass
			VN	-10	-1.89	-0.002232	±2.5	Pass
			VN	0	-2.34	-0.002764	±2.5	Pass
			VN	10	-2.39	-0.002823	±2.5	Pass
			VN	20	-2.30	-0.002717	±2.5	Pass
			VN	30	-1.49	-0.001760	±2.5	Pass
			VN	40	2.93	0.003461	±2.5	Pass
			VN	50	-2.09	-0.002469	±2.5	Pass

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
WCDMA1700	UMTS	LCH	VN	-30	-1.04	-0.000561	Pass
			VN	-20	1.88	0.001015	Pass
			VN	-10	-1.37	-0.000740	Pass
			VN	0	-0.98	-0.000529	Pass
			VN	10	1.19	0.000642	Pass
			VN	20	-3.86	-0.002084	Pass
			VN	30	1.01	0.000545	Pass
			VN	40	-0.27	-0.000146	Pass
			VN	50	-4.18	-0.002257	Pass
WCDMA1700	UMTS	MCH	VN	-30	0.35	0.000189	Pass
			VN	-20	1.91	0.001031	Pass
			VN	-10	-0.58	-0.000309	Pass
			VN	0	-0.21	-0.000112	Pass
			VN	10	-4.81	-0.002559	Pass
			VN	20	-9.25	-0.004920	Pass
			VN	30	2.98	0.001585	Pass
			VN	40	-1.33	-0.000707	Pass
			VN	50	-0.60	-0.000319	Pass
WCDMA1700	UMTS	HCH	VN	-30	-4.18	-0.002223	Pass
			VN	-20	-2.35	-0.001250	Pass
			VN	-10	4.71	0.002469	Pass
			VN	0	2.40	0.001258	Pass
			VN	10	0.78	0.000409	Pass
			VN	20	-4.46	-0.002338	Pass
			VN	30	0.87	0.000456	Pass
			VN	40	-4.35	-0.002280	Pass
			VN	50	-2.88	-0.001510	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Test Band	Test Mode	Test Channel	Test Volt.	Test Tem. (°C)	Freq. Error (Hz)	Freq. vs Rated (ppm)	Verdict
WCDMA1900	UMTS	LCH	VN	-30	-13.02	-0.007029	Pass
			VN	-20	-13.21	-0.007131	Pass
			VN	-10	-15.43	-0.008330	Pass
			VN	0	-8.23	-0.004443	Pass
			VN	10	-10.06	-0.005431	Pass
			VN	20	-12.95	-0.006991	Pass
			VN	30	-14.14	-0.007633	Pass
			VN	40	-16.30	-0.008799	Pass
			VN	50	-10.72	-0.005787	Pass
WCDMA1900	UMTS	MCH	VN	-30	-12.02	-0.006394	Pass
			VN	-20	-9.73	-0.005176	Pass
			VN	-10	-13.92	-0.007404	Pass
			VN	0	-15.20	-0.008085	Pass
			VN	10	-9.63	-0.005122	Pass
			VN	20	-14.84	-0.007894	Pass
			VN	30	-8.74	-0.004649	Pass
			VN	40	-15.02	-0.007989	Pass
			VN	50	-11.13	-0.005920	Pass
WCDMA1900	UMTS	HCH	VN	-30	-15.59	-0.008173	Pass
			VN	-20	-17.54	-0.009195	Pass
			VN	-10	-6.77	-0.003549	Pass
			VN	0	-14.97	-0.007848	Pass
			VN	10	-17.12	-0.008975	Pass
			VN	20	-9.19	-0.004818	Pass
			VN	30	-17.45	-0.009148	Pass
			VN	40	-12.34	-0.006469	Pass
			VN	50	-5.41	-0.002836	Pass

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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**Appendix I: Photographs of Test Setup**

Refer to the Report No.: AGC00408231006AP03

**Appendix II: Photographs of EUT**

Refer to the Report No.: AGC00408231006AP05

**-----End of Report-----**

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1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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