

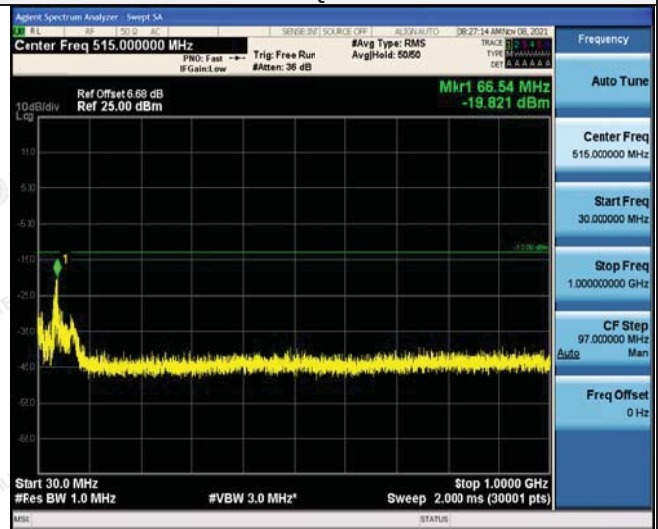


LTE FDD Band 4-15MHz Channel Bandwidth Low Channel

QPSK



16QAM



30~1000MHz



30~1000MHz



1000~5000MHz



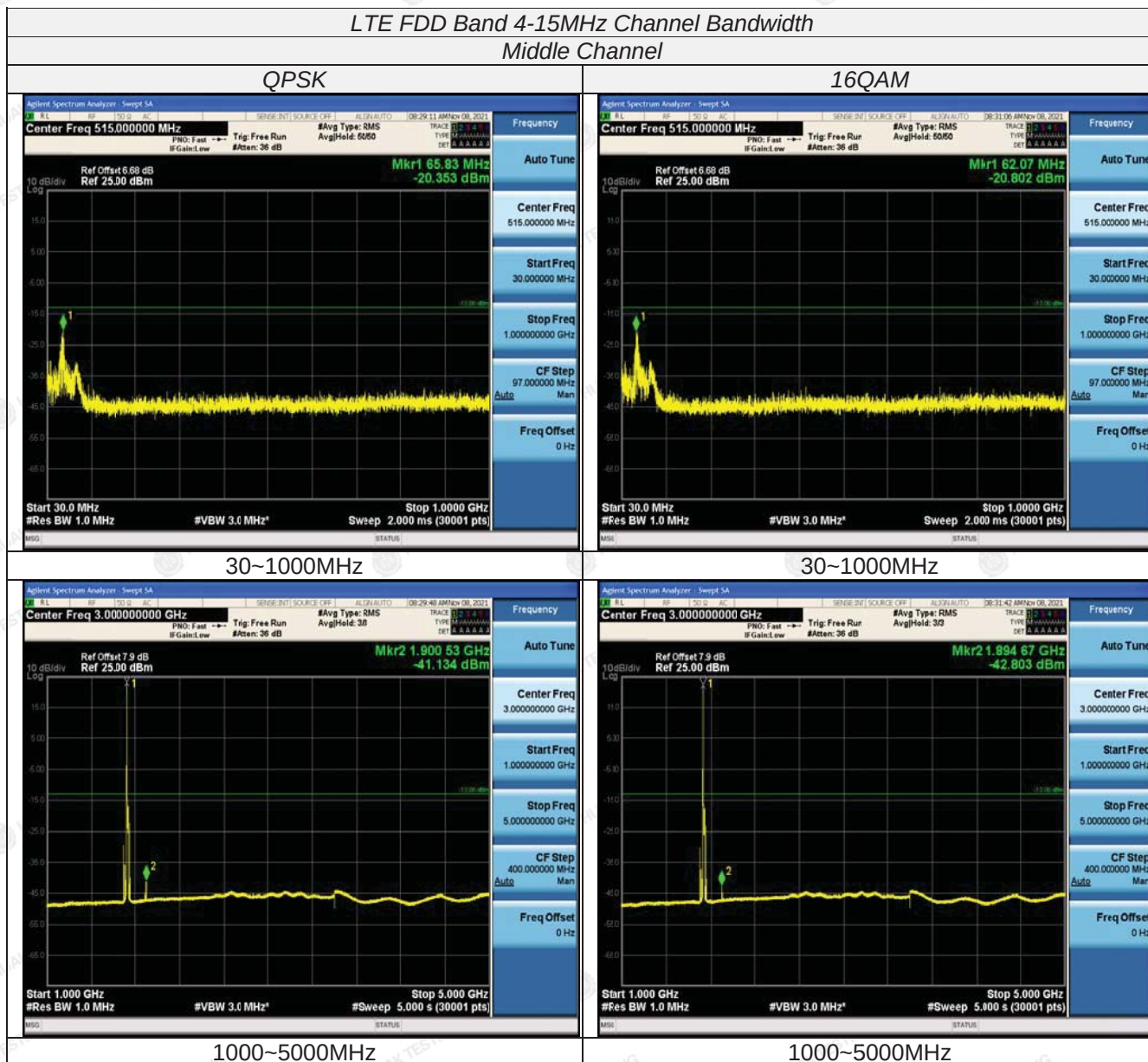
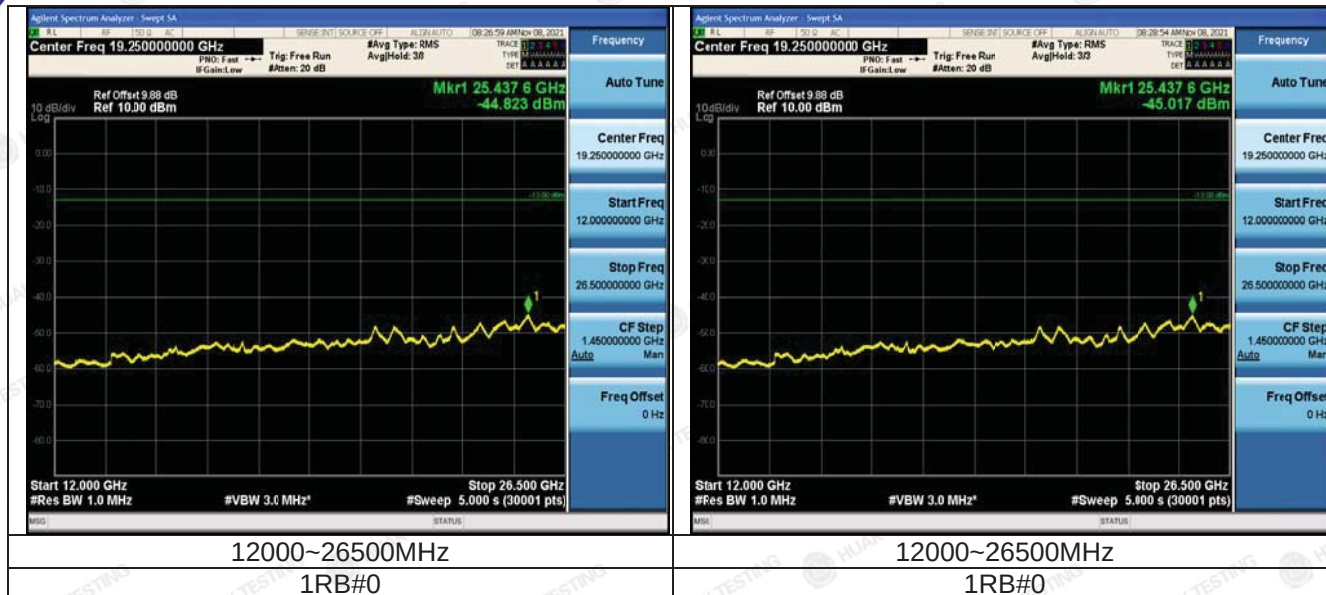
1000~5000MHz



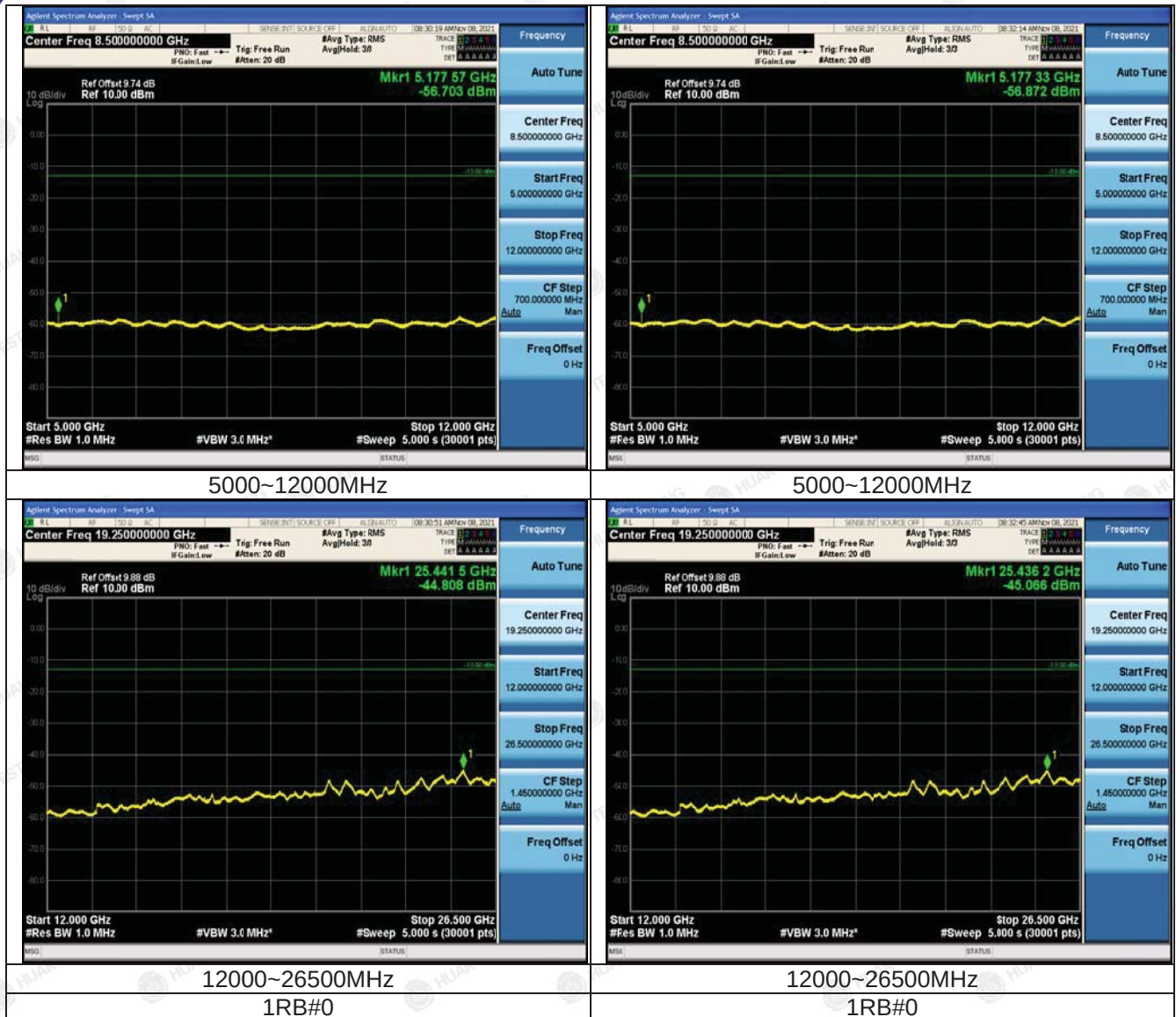
5000~12000MHz

5000~12000MHz

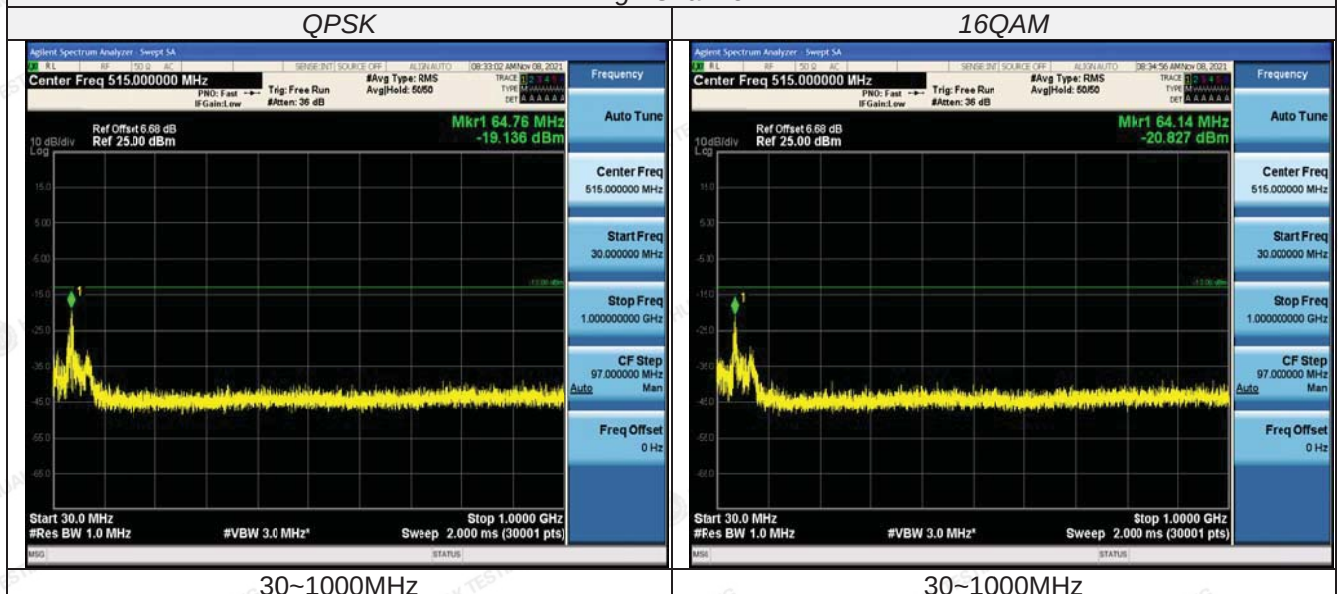
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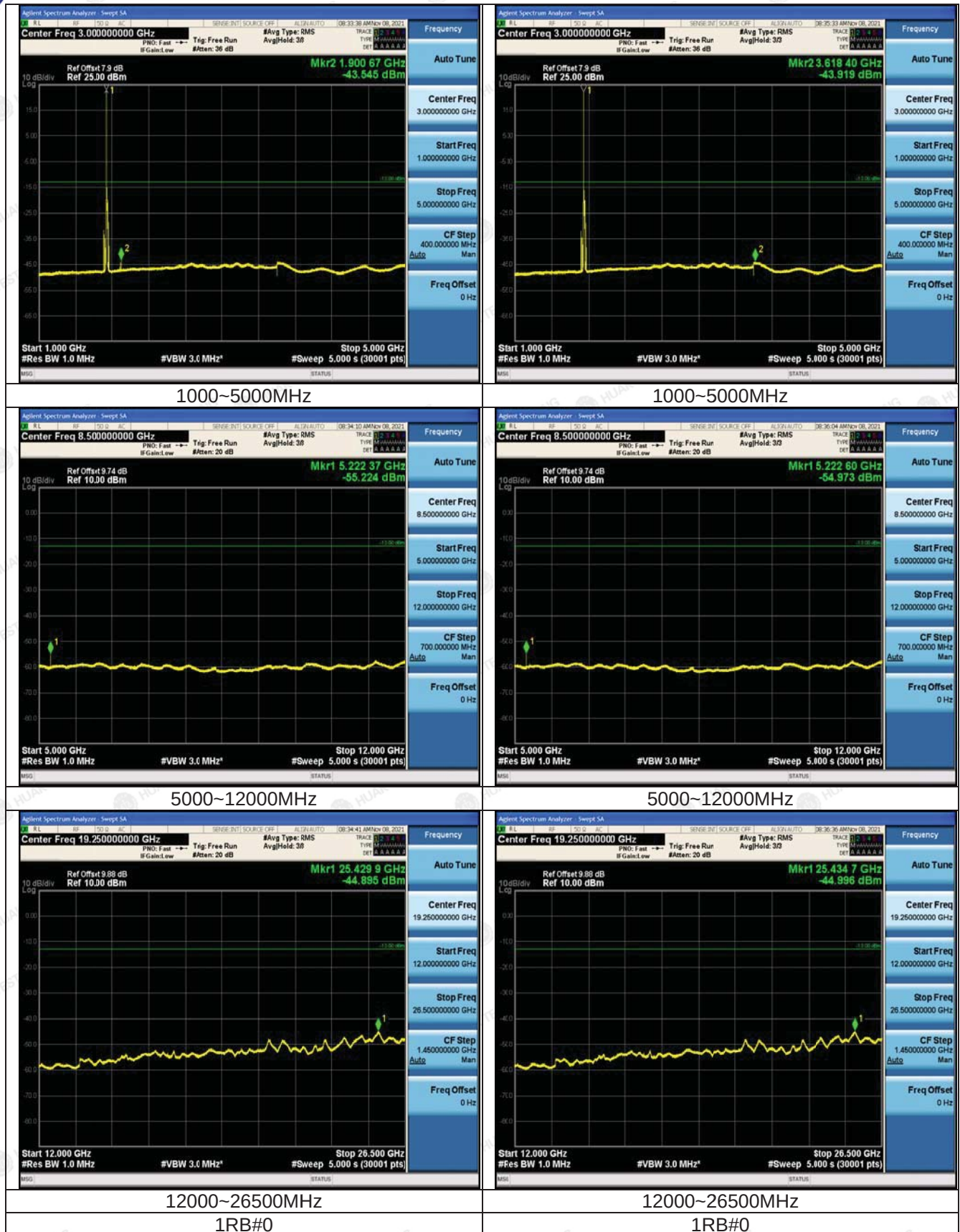
LTE FDD Band 4-15MHz Channel Bandwidth High Channel



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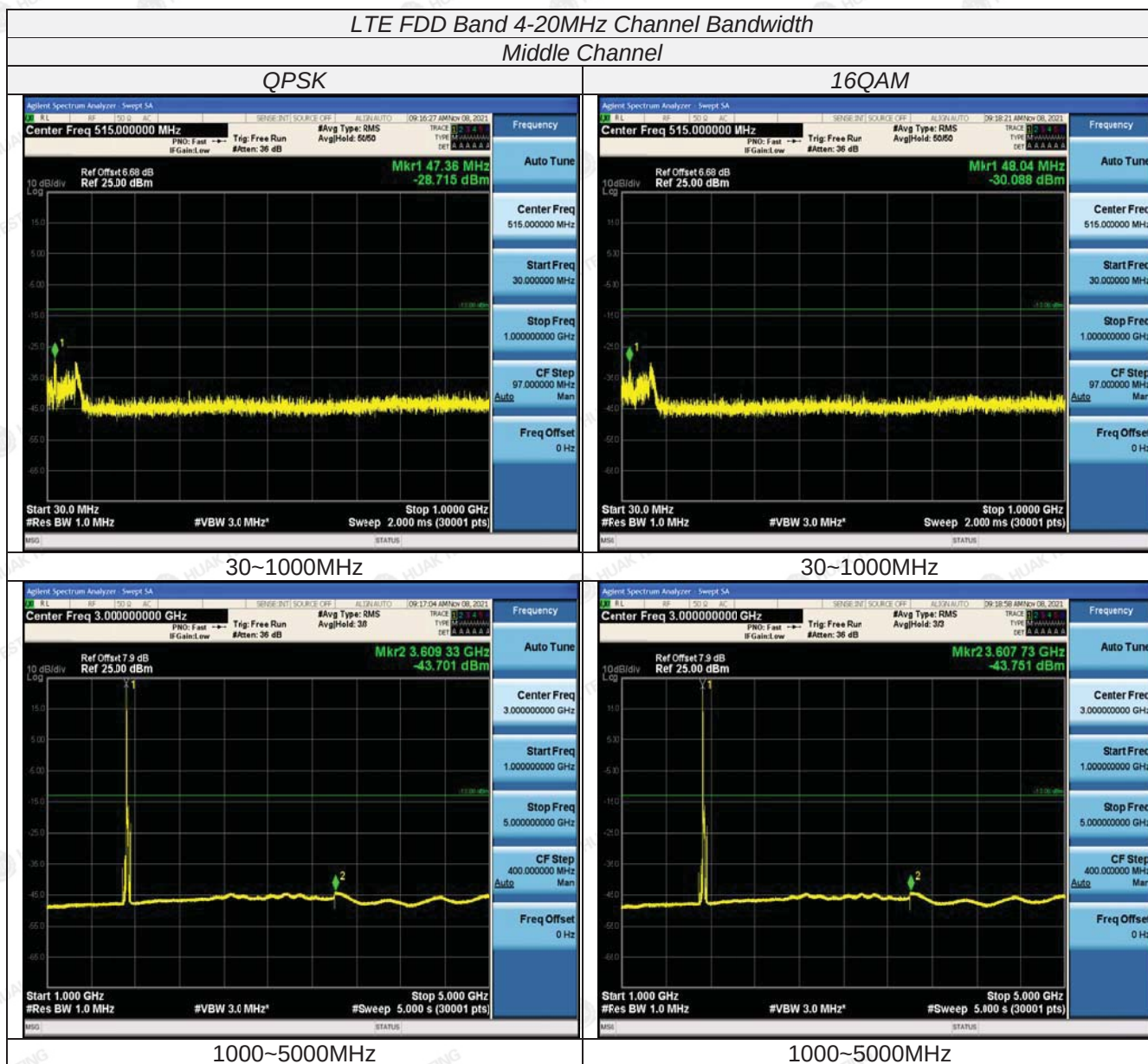
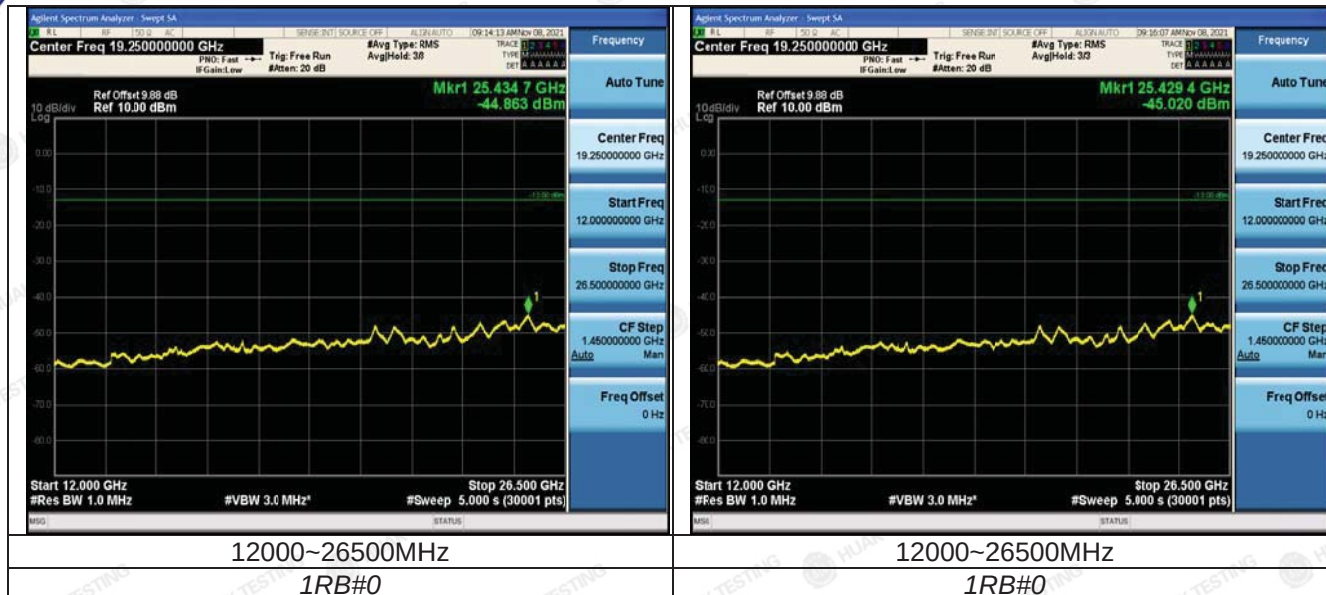
1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



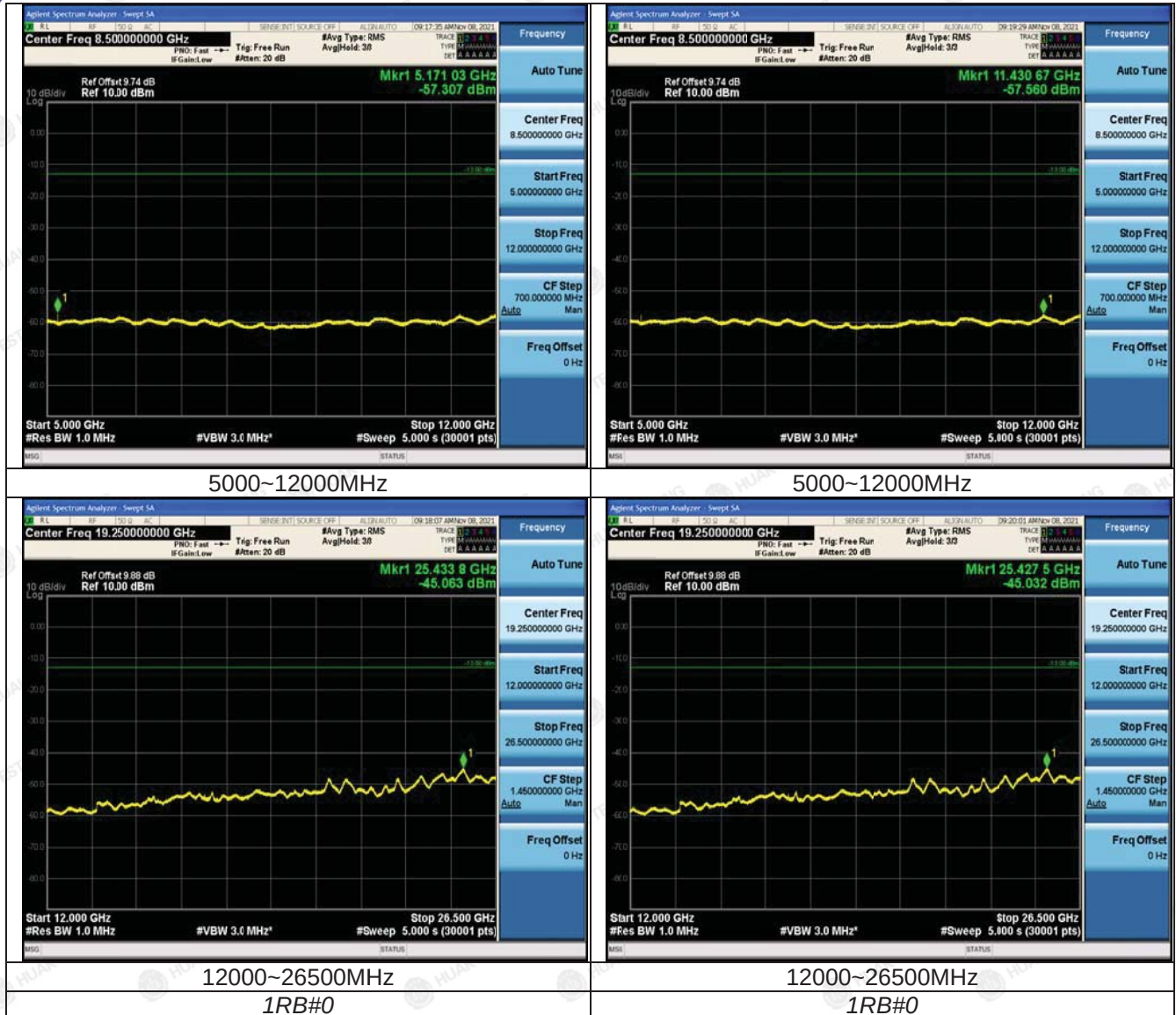
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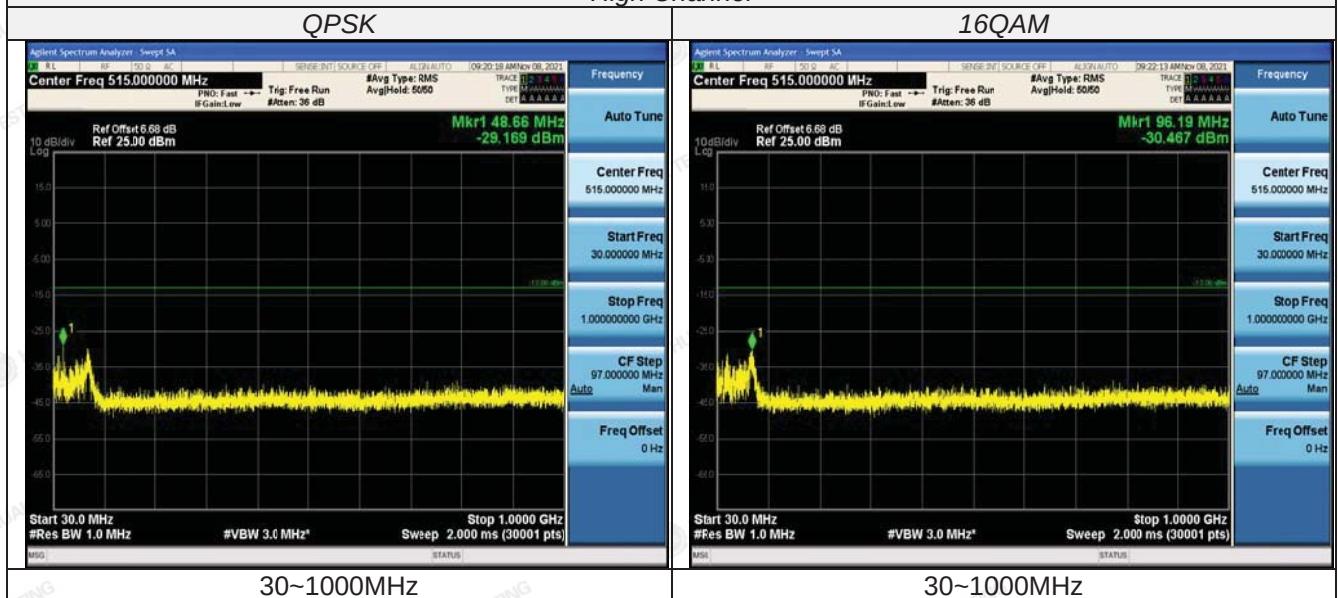
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LTE FDD Band 4-20MHz Channel Bandwidth High Channel



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Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case for each Channel Bandwidth of LTE FDD Band 4.
2. $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + G_a(dBi)$
3. We were not recorded other points as values lower than limits.
4. $Margin = Limit - EIRP$

LTE FDD Band 4 Channel Bandwidth 1.4MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3421.4	-43.29	4.02	3.00	12.5	-34.81	-13.00	21.81	H
5132.1	-49.1	5.11	3.00	13.38	-40.83	-13.00	27.83	H
3421.4	-49.74	4.02	3.00	12.5	-41.26	-13.00	28.26	V
5132.1	-49.32	5.11	3.00	13.38	-41.05	-13.00	28.05	V

LTE FDD Band 4 Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.34	4.02	3.00	12.45	-35.91	-13.00	22.91	H
5197.5	-47.73	5.11	3.00	13.38	-39.46	-13.00	26.46	H
3465.0	-49.62	4.02	3.00	12.45	-41.19	-13.00	28.19	V
5197.5	-47.24	5.11	3.00	13.38	-38.97	-13.00	25.97	V

LTE FDD Band 4 Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3508.6	-42.59	4.02	3.00	12.21	-34.4	-13.00	21.4	H
5262.9	-47.18	5.11	3.00	13.26	-39.03	-13.00	26.03	H
3508.6	-48.94	4.02	3.00	12.21	-40.75	-13.00	27.75	V
5262.9	-48.24	5.11	3.00	13.26	-40.09	-13.00	27.09	V

LTE FDD Band 4 Channel Bandwidth 3MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3423.0	-43.95	4.02	3.00	12.5	-35.47	-13.00	22.47	H
5134.5	-48.29	5.11	3.00	13.38	-40.02	-13.00	27.02	H
3423.0	-50.13	4.02	3.00	12.5	-41.65	-13.00	28.65	V
5134.5	-47.6	5.11	3.00	13.38	-39.33	-13.00	26.33	V

LTE FDD Band 4 Channel Bandwidth 3MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.87	4.02	3.00	12.45	-35.44	-13.00	22.44	H
5197.5	-47.54	5.11	3.00	13.38	-39.27	-13.00	26.27	H
3465.0	-50.01	4.02	3.00	12.45	-41.58	-13.00	28.58	V
5197.5	-48.11	5.11	3.00	13.38	-39.84	-13.00	26.84	V



LTE FDD Band 4_Channel Bandwidth 3MHz_QPSK_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3507.0	-43.09	4.02	3.00	12.21	-34.9	-13.00	21.9	H
5260.5	-47.27	5.11	3.00	13.26	-39.12	-13.00	26.12	H
3507.0	-49	4.02	3.00	12.21	-40.81	-13.00	27.81	V
5260.5	-48.1	5.11	3.00	13.26	-39.95	-13.00	26.95	V

LTE FDD Band 4_Channel Bandwidth 5MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3425.0	-43.2	4.02	3.00	12.5	-34.72	-13.00	21.72	H
5137.5	-47.67	5.11	3.00	13.38	-39.4	-13.00	26.4	H
3425.0	-50.54	4.02	3.00	12.5	-42.06	-13.00	29.06	V
5137.5	-48.28	5.11	3.00	13.38	-40.01	-13.00	27.01	V

LTE FDD Band 4_Channel Bandwidth 5MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.97	4.02	3.00	12.45	-35.54	-13.00	22.54	H
5197.5	-47.16	5.11	3.00	13.38	-38.89	-13.00	25.89	H
3465.0	-49.63	4.02	3.00	12.45	-41.2	-13.00	28.2	V
5197.5	-47.78	5.11	3.00	13.38	-39.51	-13.00	26.51	V

LTE FDD Band 4_Channel Bandwidth 5MHz_QPSK_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3505.0	-43.28	4.02	3.00	12.21	-35.09	-13.00	22.09	H
5257.5	-47.14	5.11	3.00	13.26	-38.99	-13.00	25.99	H
3505.0	-48.52	4.02	3.00	12.21	-40.33	-13.00	27.33	V
5257.5	-47.95	5.11	3.00	13.26	-39.8	-13.00	26.8	V

LTE FDD Band 4_Channel Bandwidth 10MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3430.0	-44.03	4.02	3.00	12.5	-35.55	-13.00	22.55	H
5145.0	-49.04	5.11	3.00	13.38	-40.77	-13.00	27.77	H
3430.0	-49.12	4.02	3.00	12.5	-40.64	-13.00	27.64	V
5145.0	-47.94	5.11	3.00	13.38	-39.67	-13.00	26.67	V

LTE FDD Band 4_Channel Bandwidth 10MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.94	4.02	3.00	12.45	-35.51	-13.00	22.51	H
5197.5	-47.27	5.11	3.00	13.38	-39	-13.00	26	H
3465.0	-49.2	4.02	3.00	12.45	-40.77	-13.00	27.77	V
5197.5	-47.18	5.11	3.00	13.38	-38.91	-13.00	25.91	V



LTE FDD Band 4_Channel Bandwidth 10MHz_QPSK_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3500.0	-42.98	4.02	3.00	12.21	-34.79	-13.00	21.79	H
5250.0	-47.24	5.11	3.00	13.26	-39.09	-13.00	26.09	H
3500.0	-49.15	4.02	3.00	12.21	-40.96	-13.00	27.96	V
5250.0	-48.15	5.11	3.00	13.26	-40	-13.00	27	V

LTE FDD Band 4_Channel Bandwidth 15MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3435.0	-43.71	4.02	3.00	12.5	-35.23	-13.00	22.23	H
5152.5	-47.97	5.11	3.00	13.38	-39.7	-13.00	26.7	H
3435.0	-50.25	4.02	3.00	12.5	-41.77	-13.00	28.77	V
5152.5	-47.06	5.11	3.00	13.38	-38.79	-13.00	25.79	V

LTE FDD Band 4_Channel Bandwidth 15MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.35	4.02	3.00	12.45	-35.92	-13.00	22.92	H
5197.5	-47.1	5.11	3.00	13.38	-38.83	-13.00	25.83	H
3465.0	-49.2	4.02	3.00	12.45	-40.77	-13.00	27.77	V
5197.5	-47.87	5.11	3.00	13.38	-39.6	-13.00	26.6	V

LTE FDD Band 4_Channel Bandwidth 15MHz_QPSK_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3495.0	-43.3	4.02	3.00	12.21	-35.11	-13.00	22.11	H
5242.5	-47.26	5.11	3.00	13.26	-39.11	-13.00	26.11	H
3495.0	-48.61	4.02	3.00	12.21	-40.42	-13.00	27.42	V
5242.5	-47.94	5.11	3.00	13.26	-39.79	-13.00	26.79	V

LTE FDD Band 4_Channel Bandwidth 20MHz_QPSK_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3440.0	-44.81	4.02	3.00	12.5	-36.33	-13.00	23.33	H
5160.0	-48.14	5.11	3.00	13.38	-39.87	-13.00	26.87	H
3440.0	-50.16	4.02	3.00	12.5	-41.68	-13.00	28.68	V
5160.0	-49.73	5.11	3.00	13.38	-41.46	-13.00	28.46	V

LTE FDD Band 4_Channel Bandwidth 20MHz_QPSK_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.46	4.02	3.00	12.45	-36.03	-13.00	23.03	H
5197.5	-47.77	5.11	3.00	13.38	-39.5	-13.00	26.5	H
3465.0	-49.18	4.02	3.00	12.45	-40.75	-13.00	27.75	V
5197.5	-47.33	5.11	3.00	13.38	-39.06	-13.00	26.06	V



LTE FDD Band 4 Channel Bandwidth 20MHz QPSK High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.0	-43.03	4.02	3.00	12.21	-34.84	-13.00	21.84	H
5235.0	-46.99	5.11	3.00	13.26	-38.84	-13.00	25.84	H
3490.0	-49.19	4.02	3.00	12.21	-41	-13.00	28	V
5235.0	-47.86	5.11	3.00	13.26	-39.71	-13.00	26.71	V

LTE FDD Band 4 Channel Bandwidth 1.4MHz 16QAM Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3421.4	-42.77	4.02	3.00	12.5	-34.29	-13.00	21.29	H
5132.1	-50.34	5.11	3.00	13.38	-42.07	-13.00	29.07	H
3421.4	-49.41	4.02	3.00	12.5	-40.93	-13.00	27.93	V
5132.1	-49.28	5.11	3.00	13.38	-41.01	-13.00	28.01	V

LTE FDD Band 4 Channel Bandwidth 1.4MHz 16QAM Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.81	4.02	3.00	12.45	-35.38	-13.00	22.38	H
5197.5	-47.31	5.11	3.00	13.38	-39.04	-13.00	26.04	H
3465.0	-49.83	4.02	3.00	12.45	-41.4	-13.00	28.4	V
5197.5	-47.27	5.11	3.00	13.38	-39	-13.00	26	V

LTE FDD Band 4 Channel Bandwidth 1.4MHz 16QAM High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3508.6	-42.98	4.02	3.00	12.21	-34.79	-13.00	21.79	H
5262.9	-46.59	5.11	3.00	13.26	-38.44	-13.00	25.44	H
3508.6	-49.15	4.02	3.00	12.21	-40.96	-13.00	27.96	V
5262.9	-48.3	5.11	3.00	13.26	-40.15	-13.00	27.15	V

LTE FDD Band 4 Channel Bandwidth 3MHz 16QAM Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3423.0	-44.04	4.02	3.00	12.5	-35.56	-13.00	22.56	H
5134.5	-50.41	5.11	3.00	13.38	-42.14	-13.00	29.14	H
3423.0	-50.85	4.02	3.00	12.5	-42.37	-13.00	29.37	V
5134.5	-47.54	5.11	3.00	13.38	-39.27	-13.00	26.27	V

LTE FDD Band 4 Channel Bandwidth 3MHz 16QAM Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.7	4.02	3.00	12.45	-35.27	-13.00	22.27	H
5197.5	-47.03	5.11	3.00	13.38	-38.76	-13.00	25.76	H
3465.0	-50.09	4.02	3.00	12.45	-41.66	-13.00	28.66	V
5197.5	-47.82	5.11	3.00	13.38	-39.55	-13.00	26.55	V



LTE FDD Band 4 Channel Bandwidth 3MHz_16QAM_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3507.0	-43.08	4.02	3.00	12.21	-34.89	-13.00	21.89	H
5260.5	-46.7	5.11	3.00	13.26	-38.55	-13.00	25.55	H
3507.0	-48.39	4.02	3.00	12.21	-40.2	-13.00	27.2	V
5260.5	-48.7	5.11	3.00	13.26	-40.55	-13.00	27.55	V

LTE FDD Band 4 Channel Bandwidth 5MHz_16QAM_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3425.0	-45.11	4.02	3.00	12.5	-36.63	-13.00	23.63	H
5137.5	-48.31	5.11	3.00	13.38	-40.04	-13.00	27.04	H
3425.0	-49.58	4.02	3.00	12.5	-41.1	-13.00	28.1	V
5137.5	-47.33	5.11	3.00	13.38	-39.06	-13.00	26.06	V

LTE FDD Band 4 Channel Bandwidth 5MHz_16QAM_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.55	4.02	3.00	12.45	-36.12	-13.00	23.12	H
5197.5	-47.93	5.11	3.00	13.38	-39.66	-13.00	26.66	H
3465.0	-49.67	4.02	3.00	12.45	-41.24	-13.00	28.24	V
5197.5	-47.36	5.11	3.00	13.38	-39.09	-13.00	26.09	V

LTE FDD Band 4 Channel Bandwidth 5MHz_16QAM_High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3505.0	-43.31	4.02	3.00	12.21	-35.12	-13.00	22.12	H
5257.5	-46.62	5.11	3.00	13.26	-38.47	-13.00	25.47	H
3505.0	-48.81	4.02	3.00	12.21	-40.62	-13.00	27.62	V
5257.5	-48.24	5.11	3.00	13.26	-40.09	-13.00	27.09	V

LTE FDD Band 4 Channel Bandwidth 10MHz_16QAM_Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3430.0	-45.62	4.02	3.00	12.5	-37.14	-13.00	24.14	H
5145.0	-50.41	5.11	3.00	13.38	-42.14	-13.00	29.14	H
3430.0	-49.27	4.02	3.00	12.5	-40.79	-13.00	27.79	V
5145.0	-47.58	5.11	3.00	13.38	-39.31	-13.00	26.31	V

LTE FDD Band 4 Channel Bandwidth 10MHz_16QAM_Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-43.94	4.02	3.00	12.45	-35.51	-13.00	22.51	H
5197.5	-47.86	5.11	3.00	13.38	-39.59	-13.00	26.59	H
3465.0	-49.99	4.02	3.00	12.45	-41.56	-13.00	28.56	V
5197.5	-47.8	5.11	3.00	13.38	-39.53	-13.00	26.53	V



LTE FDD Band 4 Channel Bandwidth 10MHz 16QAM High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3500.0	-43.29	4.02	3.00	12.21	-35.1	-13.00	22.1	H
5250.0	-46.72	5.11	3.00	13.26	-38.57	-13.00	25.57	H
3500.0	-49.06	4.02	3.00	12.21	-40.87	-13.00	27.87	V
5250.0	-48.44	5.11	3.00	13.26	-40.29	-13.00	27.29	V

LTE FDD Band 4 Channel Bandwidth 15MHz 16QAM Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3435.0	-43.54	4.02	3.00	12.5	-35.06	-13.00	22.06	H
5152.5	-47.96	5.11	3.00	13.38	-39.69	-13.00	26.69	H
3435.0	-51.11	4.02	3.00	12.5	-42.63	-13.00	29.63	V
5152.5	-47.61	5.11	3.00	13.38	-39.34	-13.00	26.34	V

LTE FDD Band 4 Channel Bandwidth 15MHz 16QAM Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.25	4.02	3.00	12.45	-35.82	-13.00	22.82	H
5197.5	-47.11	5.11	3.00	13.38	-38.84	-13.00	25.84	H
3465.0	-49.97	4.02	3.00	12.45	-41.54	-13.00	28.54	V
5197.5	-47.48	5.11	3.00	13.38	-39.21	-13.00	26.21	V

LTE FDD Band 4 Channel Bandwidth 15MHz 16QAM High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3495.0	-43.15	4.02	3.00	12.21	-34.96	-13.00	21.96	H
5242.5	-46.34	5.11	3.00	13.26	-38.19	-13.00	25.19	H
3495.0	-48.87	4.02	3.00	12.21	-40.68	-13.00	27.68	V
5242.5	-47.85	5.11	3.00	13.26	-39.7	-13.00	26.7	V

LTE FDD Band 4 Channel Bandwidth 20MHz 16QAM Low Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3440.0	-42.97	4.02	3.00	12.5	-34.49	-13.00	21.49	H
5160.0	-50.38	5.11	3.00	13.38	-42.11	-13.00	29.11	H
3440.0	-51.24	4.02	3.00	12.5	-42.76	-13.00	29.76	V
5160.0	-47.65	5.11	3.00	13.38	-39.38	-13.00	26.38	V

LTE FDD Band 4 Channel Bandwidth 20MHz 16QAM Middle Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.0	-44.17	4.02	3.00	12.45	-35.74	-13.00	22.74	H
5197.5	-47.41	5.11	3.00	13.38	-39.14	-13.00	26.14	H
3465.0	-49.66	4.02	3.00	12.45	-41.23	-13.00	28.23	V
5197.5	-47.67	5.11	3.00	13.38	-39.4	-13.00	26.4	V



LTE FDD Band 4 Channel Bandwidth 20MHz 16QAM High Channel

Frequency (MHz)	PMea (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.0	-42.62	4.02	3.00	12.21	-34.43	-13.00	21.43	H
5235.0	-47.03	5.11	3.00	13.26	-38.88	-13.00	25.88	H
3490.0	-48.6	4.02	3.00	12.21	-40.41	-13.00	27.41	V
5235.0	-48.7	5.11	3.00	13.26	-40.55	-13.00	27.55	V

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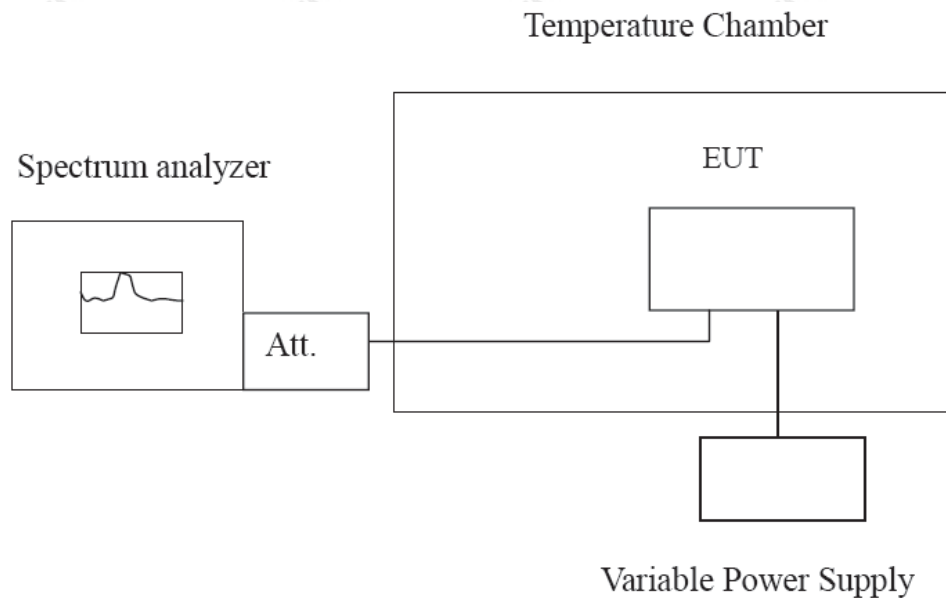


3.7 Frequency Stability under Temperature & Voltage Variations

LIMIT

According to §27.54, §2.1055 requirement, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation and should not exceed 2.5ppm.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

Frequency Stability Under Temperature Variations:

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.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel 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.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. 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 voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. 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.
8. Repeat the above measurements at 10 °C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

**TEST RESULTS**

Remark:

1. We tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 4; recorded worst case.

LTE Band 4, 1.4MHz bandwidth , QPSK (worst case of all bandwidths)

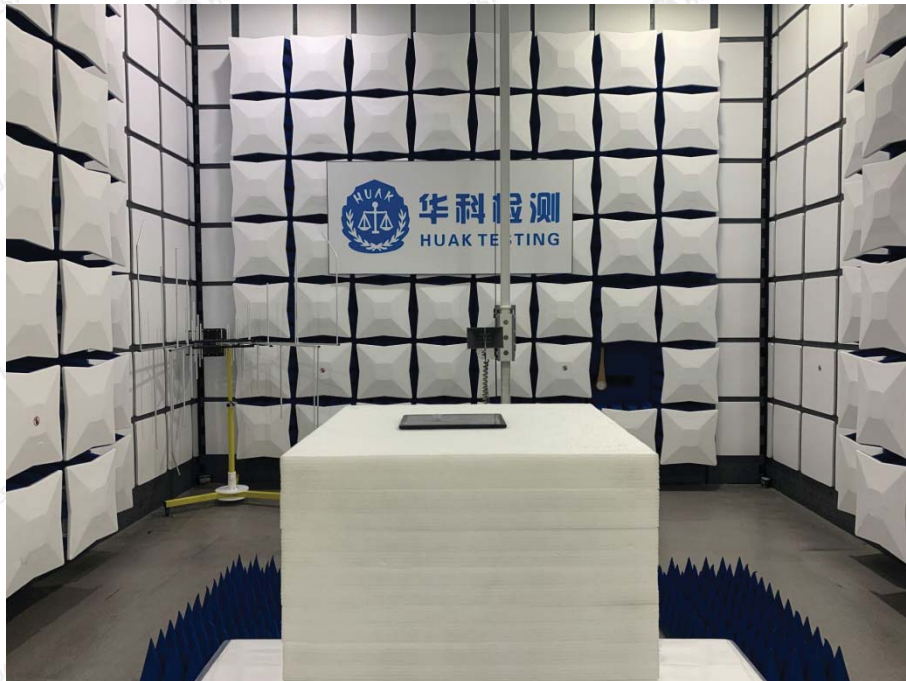
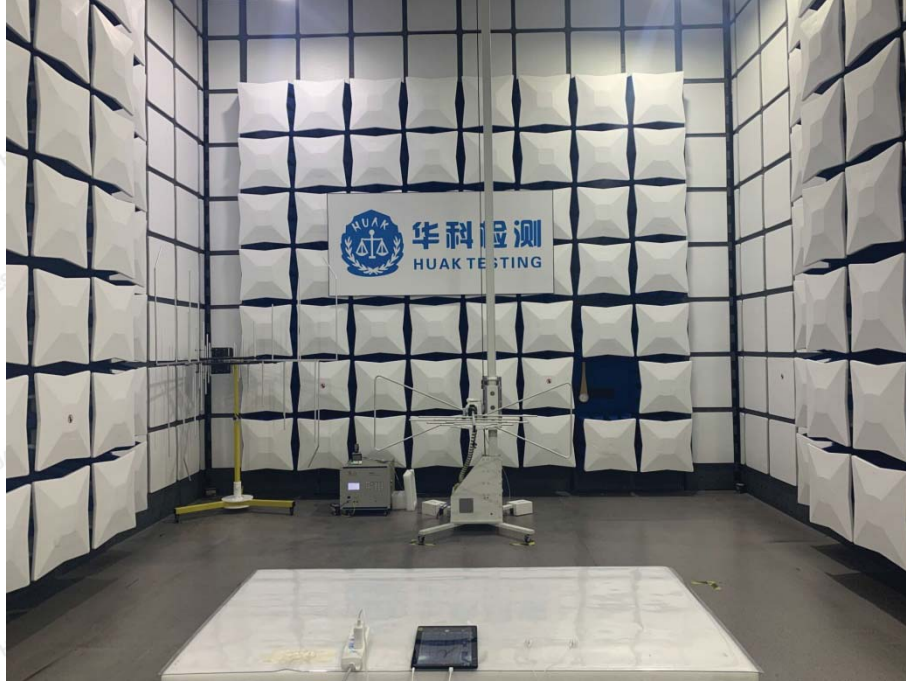
LTE FDD Band 4				
DC Power(V)	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Verdict
4.25	20	-21.10	-0.012334	PASS
5	20	-20.26	-0.011843	PASS
5.75	20	-11.96	-0.006991	PASS
5	-30	-8.84	-0.005167	PASS
5	-20	-4.94	-0.002888	PASS
5	-10	-6.55	-0.003829	PASS
5	0	-6.68	-0.003905	PASS
5	10	4.96	0.002899	PASS
5	20	12.06	0.007050	PASS
5	30	-13.29	-0.007671	PASS
5	40	-12.17	-0.007025	PASS
5	50	-11.96	-0.006903	PASS

LTE Band 4, 1.4MHz bandwidth , 16QAM (worst case of all bandwidths)

LTE FDD Band 4				
DC Power(V)	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Verdict
4.25	20	32.43	0.018957	PASS
5	20	36.01	0.021050	PASS
5.75	20	38.58	0.022552	PASS
5	-30	43.57	0.025469	PASS
5	-20	11.09	0.006483	PASS
5	-10	18.15	0.010610	PASS
5	0	23.73	0.013872	PASS
5	10	27.52	0.016087	PASS
5	20	28.81	0.016841	PASS
5	30	25.03	0.014447	PASS
5	40	18.83	0.010869	PASS
5	50	17.12	0.009882	PASS



4 Test Setup Photos of the EUT



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5 PHOTOS OF THE EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos

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