



Appendix B

LTE-NB1 Band 13





CONTENT

	Page
1 EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA.....	3
1.1 TEST RESULT FOR LTE NB1 BAND 13	3
2 PEAK-TO-AVERAGE RATIO.....	4
2.1 FOR LTE-NB1	4
2.1.1 Test Band = LTE-NB1 Band 13	4
3 MODULATION CHARACTERISTICS	6
3.1 FOR LTE-NB1	6
3.1.1 Test Band = LTE-NB1 Band 13	6
4 BANDWIDTH	8
4.1 FOR LTE-NB1	8
4.1.1 Test Band = LTE-NB1 Band 13	8
5 BAND EDGES COMPLIANCE.....	10
5.1 FOR LTE-NB1	10
5.1.1 Test Band = LTE-NB1 Band 13	10
6 SPURIOUS EMISSION AT ANTENNA TERMINAL	15
6.1 FOR LTE-NB1	15
6.1.1 Test Band = LTE-NB1 Band 13	15
7 FIELD STRENGTH OF SPURIOUS RADIATION.....	22
7.1 FOR LTE-NB1	22
7.1.1 Test Band = LTE-NB1 Band 13	22
8 FREQUENCY STABILITY	24
8.1 FREQUENCY ERROR VS. VOLTAGE	24
8.2 FREQUENCY ERROR VS. TEMPERATURE.....	24



1 Effective (Isotropic) Radiated Power Output Data

1.1 Test Result for LTE NB1 Band 13

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 13	BPSK	3.75	23181	1T0	23.12	22.08	34.77	PASS
NB1 Band 13	BPSK	3.75	23181	1T47	23.03	21.99	34.77	PASS
NB1 Band 13	BPSK	3.75	23230	1T0	22.80	21.76	34.77	PASS
NB1 Band 13	BPSK	3.75	23230	1T47	23.14	22.10	34.77	PASS
NB1 Band 13	BPSK	3.75	23279	1T0	22.81	21.77	34.77	PASS
NB1 Band 13	BPSK	3.75	23279	1T47	23.07	22.03	34.77	PASS
NB1 Band 13	QPSK	3.75	23181	1T0	23.17	22.13	34.77	PASS
NB1 Band 13	QPSK	3.75	23181	1T47	22.88	21.84	34.77	PASS
NB1 Band 13	QPSK	3.75	23230	1T0	23.08	22.04	34.77	PASS
NB1 Band 13	QPSK	3.75	23230	1T47	22.94	21.90	34.77	PASS
NB1 Band 13	QPSK	3.75	23279	1T0	22.92	21.88	34.77	PASS
NB1 Band 13	QPSK	3.75	23279	1T47	23.12	22.08	34.77	PASS

Test Band	Test Mode	Sub-carrier Spacing (kHz)	Test channel	Number of T	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
NB1 Band 13	BPSK	15	23181	1T0	22.98	21.94	34.77	PASS
NB1 Band 13	BPSK	15	23181	1T11	23.12	22.08	34.77	PASS
NB1 Band 13	BPSK	15	23230	1T0	22.95	21.91	34.77	PASS
NB1 Band 13	BPSK	15	23230	1T11	23.11	22.07	34.77	PASS
NB1 Band 13	BPSK	15	23279	1T0	23.02	21.98	34.77	PASS
NB1 Band 13	BPSK	15	23279	1T11	22.83	21.79	34.77	PASS
NB1 Band 13	QPSK	15	23181	1T0	22.96	21.92	34.77	PASS
NB1 Band 13	QPSK	15	23181	1T11	23.07	22.03	34.77	PASS
NB1 Band 13	QPSK	15	23181	12T0	21.60	20.56	34.77	PASS
NB1 Band 13	QPSK	15	23230	1T0	23.20	22.16	34.77	PASS
NB1 Band 13	QPSK	15	23230	1T11	23.15	22.11	34.77	PASS
NB1 Band 13	QPSK	15	23230	12T0	21.44	20.40	34.77	PASS
NB1 Band 13	QPSK	15	23279	1T0	22.97	21.93	34.77	PASS
NB1 Band 13	QPSK	15	23279	1T11	23.13	22.09	34.77	PASS
NB1 Band 13	QPSK	15	23279	12T0	21.44	20.40	34.77	PASS

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$EIRP [dBm] = \text{Conducted Power} [dBm] + \text{Gain} [dBi]$

$ERP [dBm] = \text{Conducted Power} [dBm] + \text{Gain} [dBi] - 2.15$



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

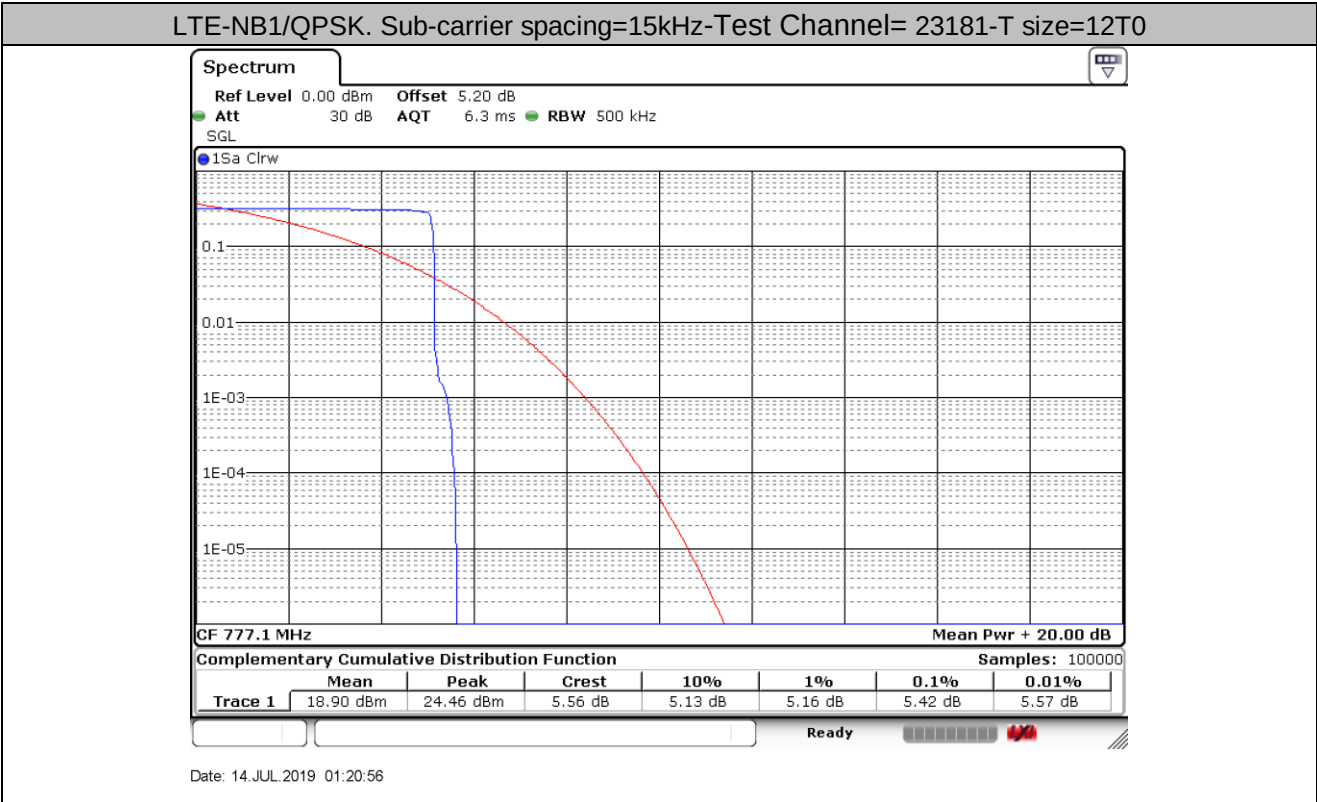
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

2 Peak-to-Average Ratio

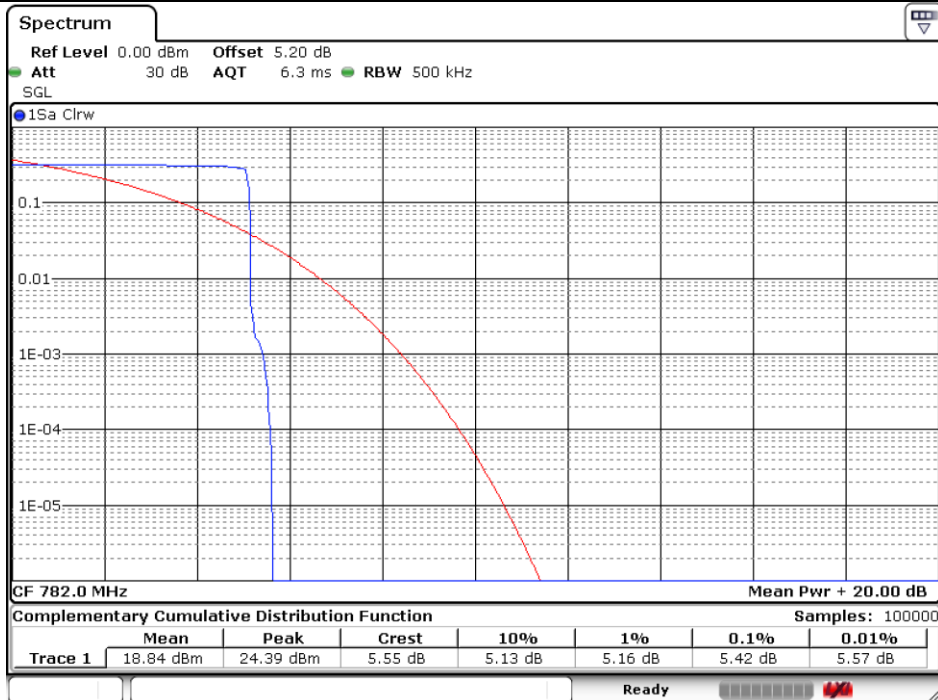
Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
NB1 Band 13	QPSK/12T0	23181	5.42	13	PASS
NB1 Band 13	QPSK/12T0	23230	5.42	13	PASS
NB1 Band 13	QPSK/12T0	23279	6.14	13	PASS

2.1 For LTE-NB1

2.1.1 Test Band = LTE-NB1 Band 13

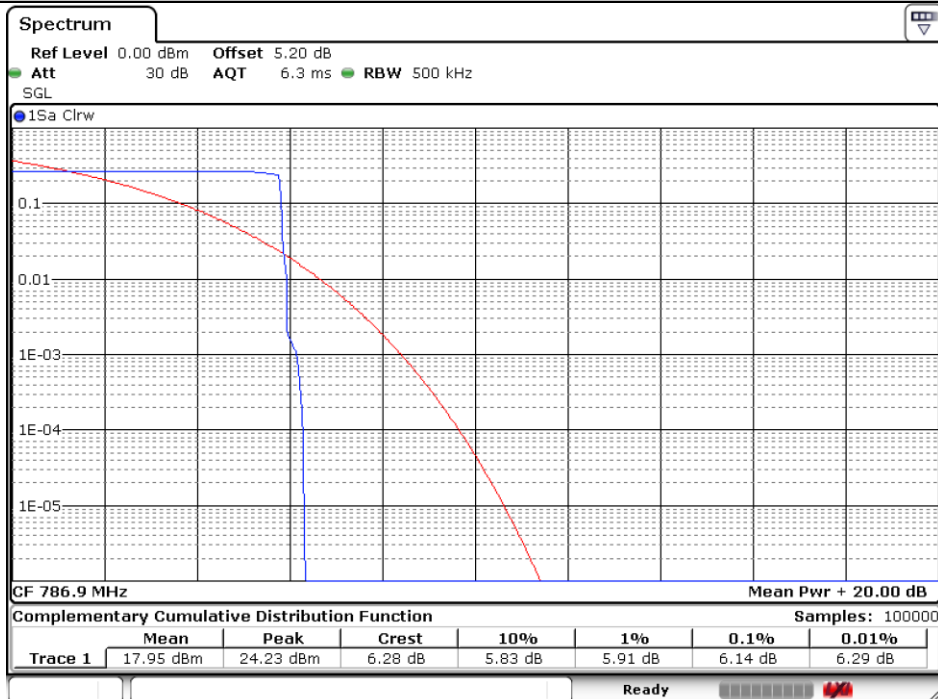


LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel= 23230-T size=12T0



Date: 14.JUL.2019 01:34:23

LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel= 23279-T size=12T0



Date: 14.JUL.2019 01:42:12



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

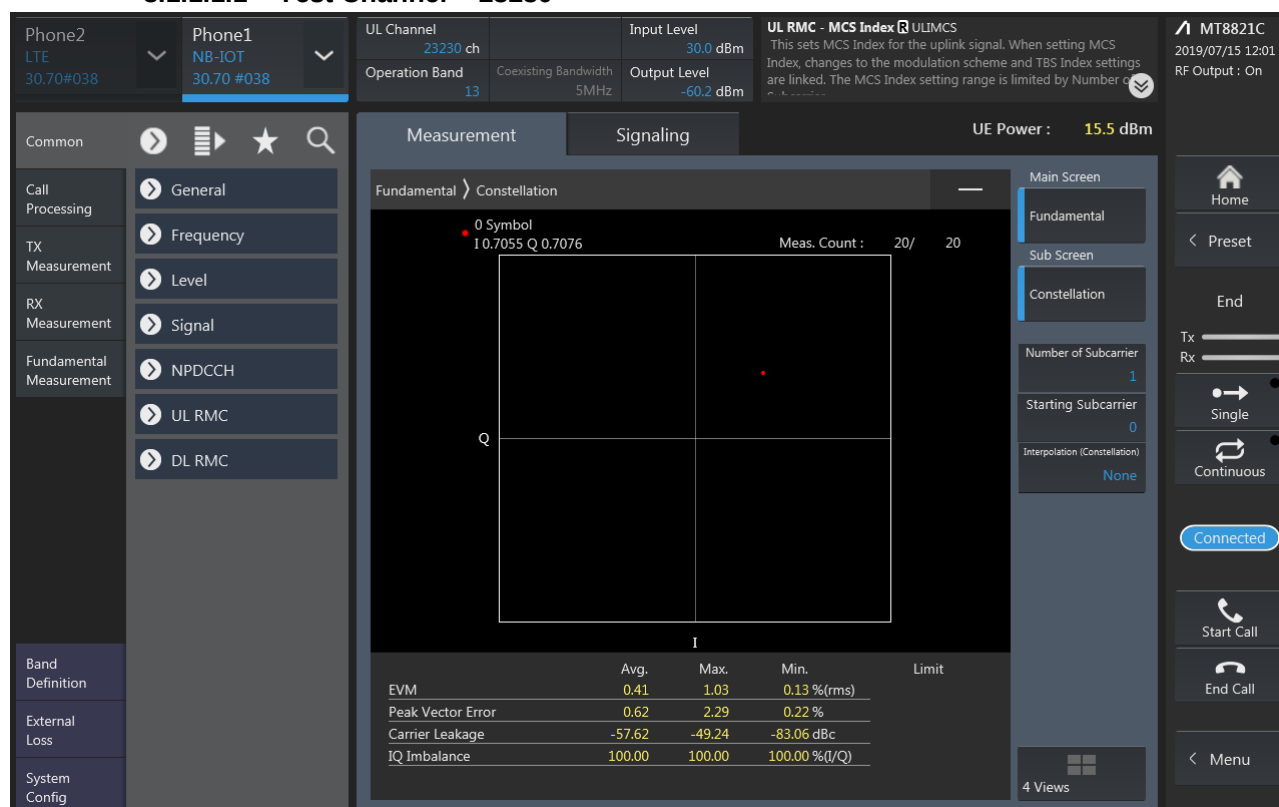
3 Modulation Characteristics

3.1 For LTE-NB1

3.1.1 Test Band = LTE-NB1 Band 13

3.1.1.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=15kHz.T size=12T0

3.1.1.1.1 Test Channel = 23230



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

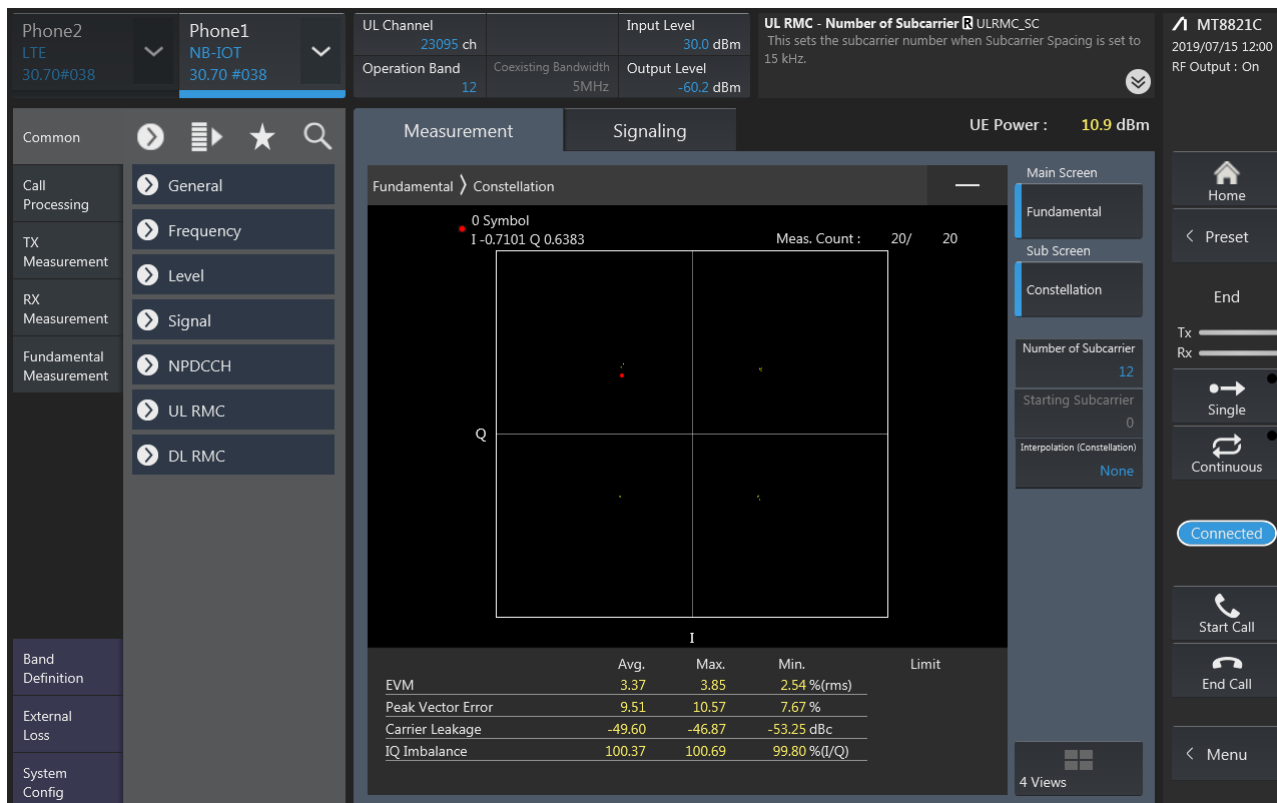
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

SGS-CSTC Standards Technical Services Co.,Ltd.
Shenzhen Branch Inspection & Testing Services Laboratory

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

3.1.1.2 Test Mode = LTE-NB1/QPSK. Sub-carrier spacing=15kHz.T size=12T0

3.1.1.2.1 Test Channel = 23230

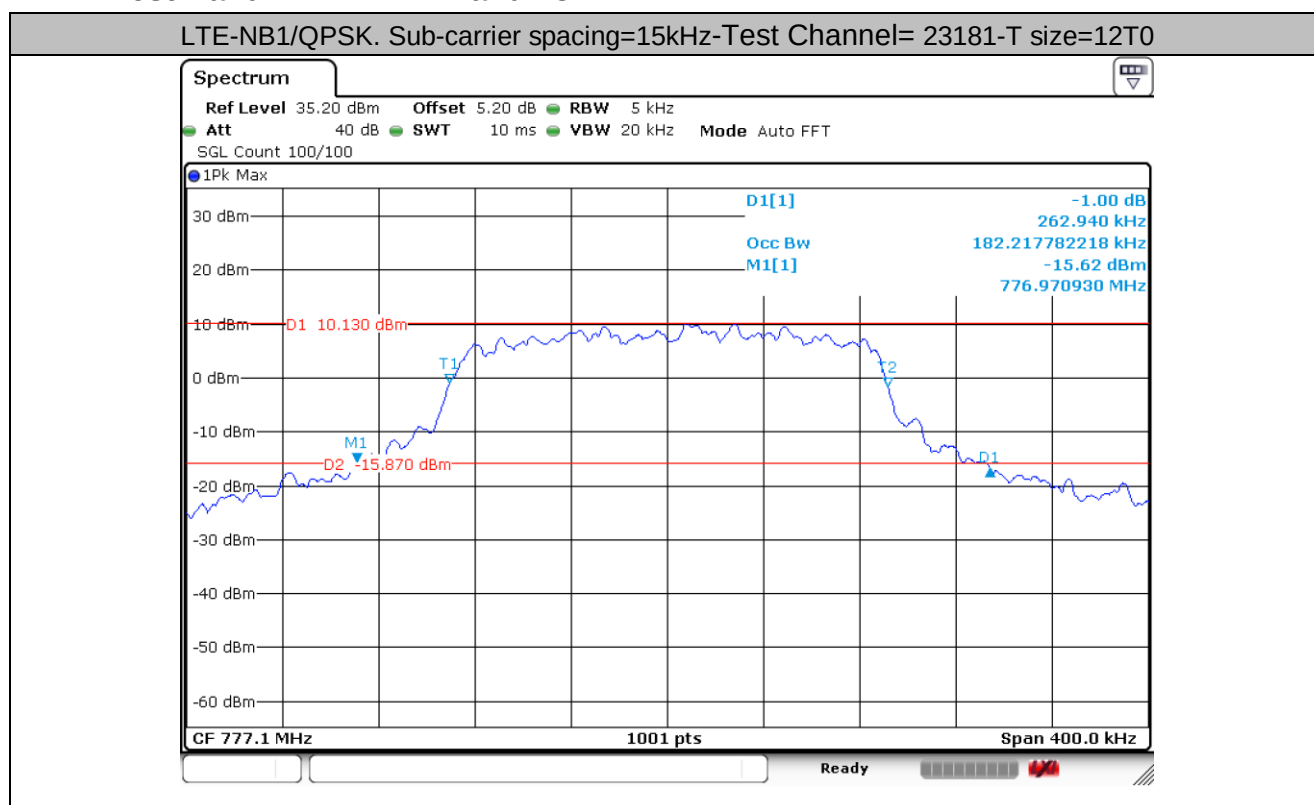


4 Bandwidth

Test Band	Test Mode	T size	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
NB1 Band 13	QPSK/15kHz	12T0	23181	182.22	262.94	PASS
NB1 Band 13	QPSK/15kHz	12T0	23230	181.02	248.15	PASS
NB1 Band 13	QPSK/15kHz	12T0	23279	181.02	248.15	PASS

4.1 For LTE-NB1

4.1.1 Test Band = LTE-NB1 Band 13



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch (SSTC) CEMEX EEC Laboratory.

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed hereinafter, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced or used in full without the approval of the Company. Any unauthorized use, falsification, forgery or falsification of the content or appearance of this document is unlawful and may be prosecuted to the fullest extent of the law. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

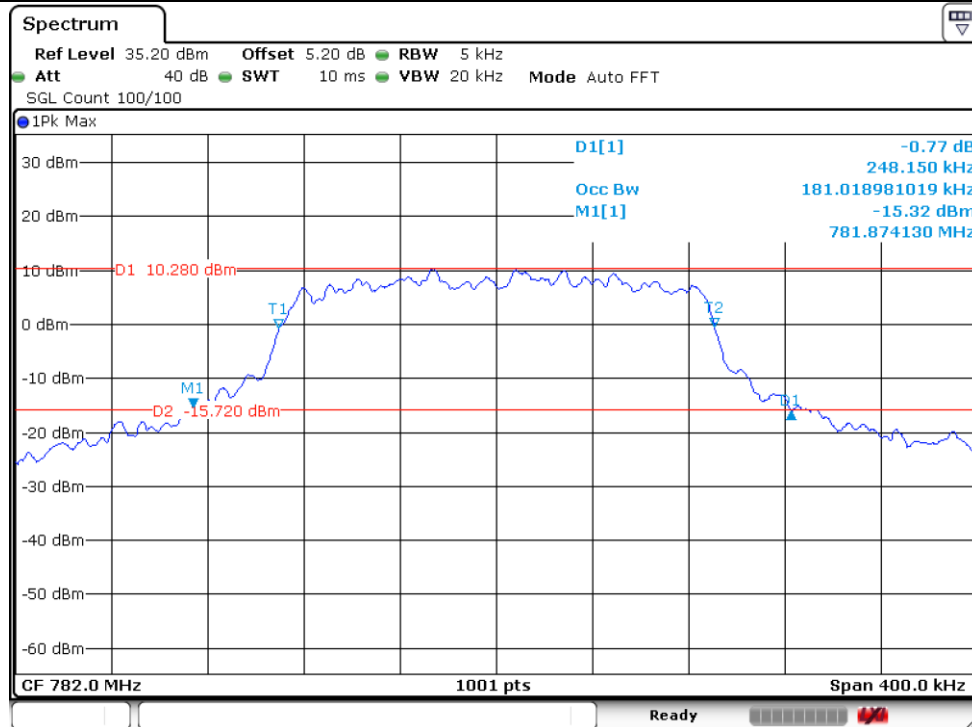
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sqs.com

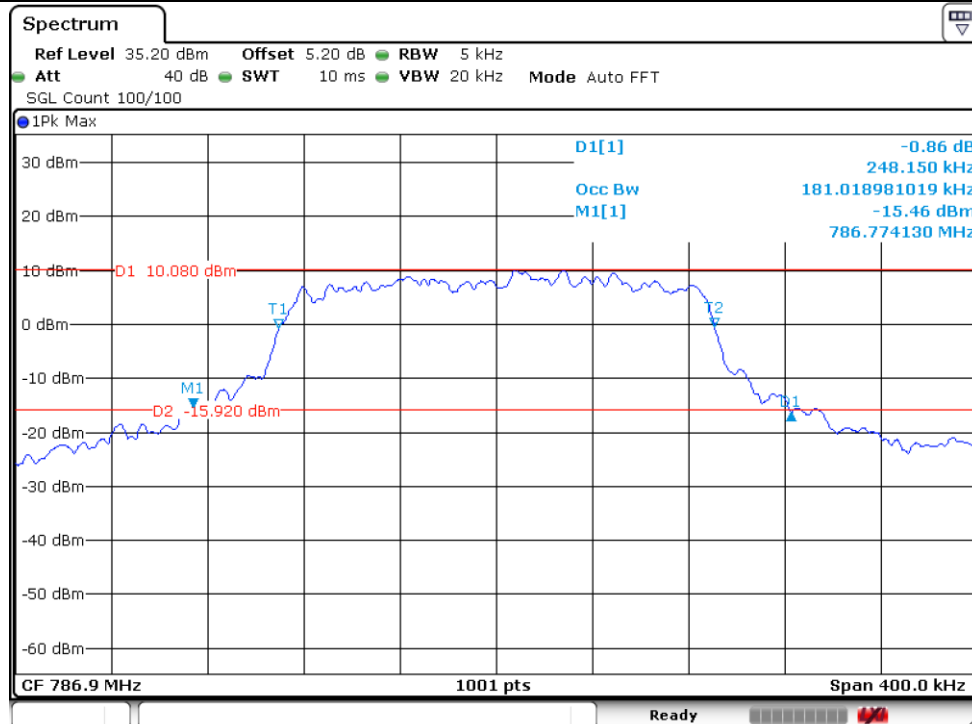
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Member of the SGS Group (SGS SA)

LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel= 23230-T size=12T0



LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel= 23279-T size=12T0

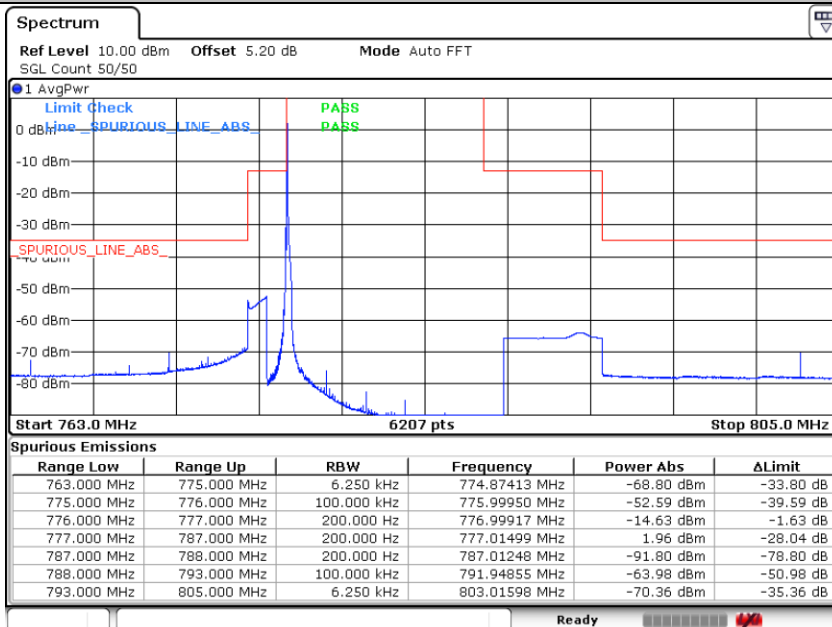


5 Band Edges Compliance

5.1 For LTE-NB1

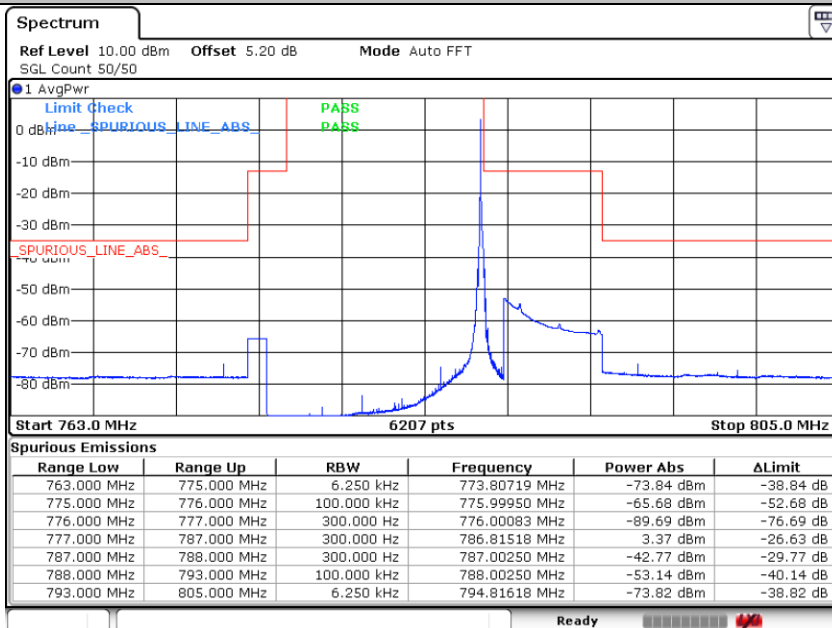
5.1.1 Test Band = LTE-NB1 Band 13

LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz-Test Channel=23181-T size=1T0



Date: 20 AUG 2019 20:30:05

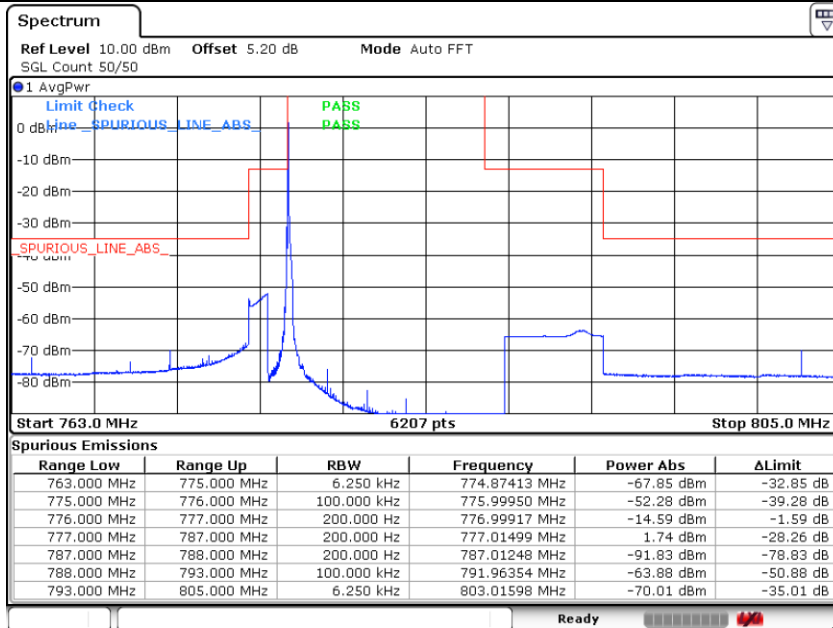
LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz-Test Channel=23279-T size=1T47



Date: 20 AUG 2019 20:41:57

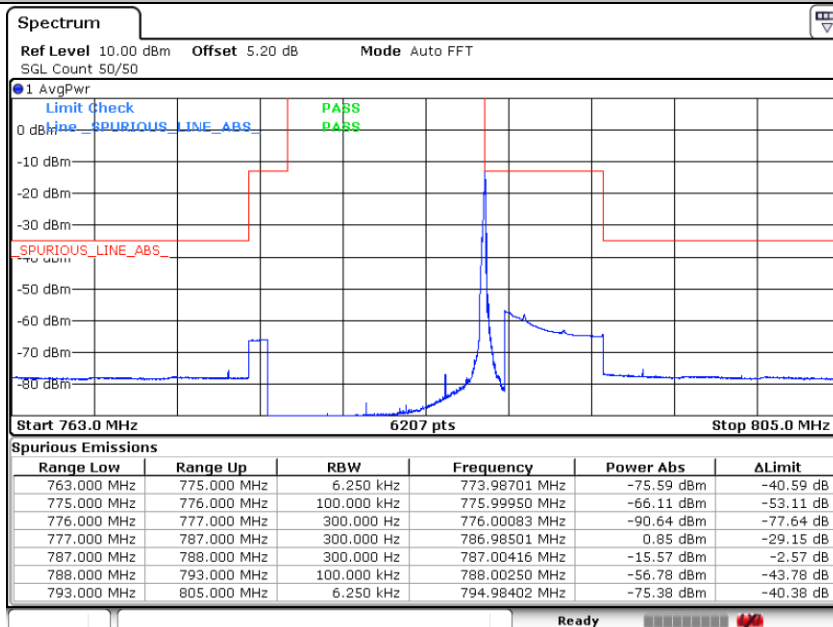


LTE-NB1/QPSK. Sub-carrier spacing=3.75kHz-Test Channel=23181-T size=1T0



Date: 20.AUG.2019 20:32:10

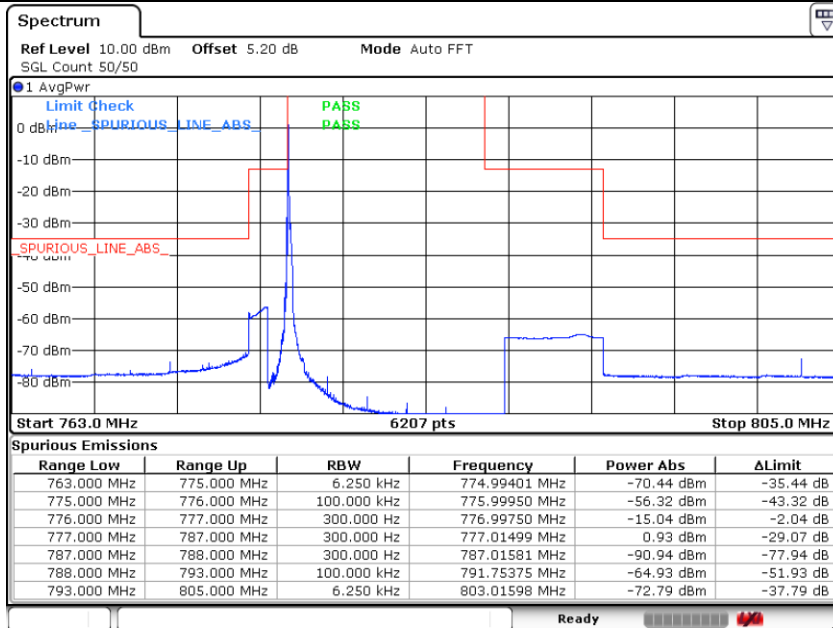
LTE-NB1/QPSK. Sub-carrier spacing=3.75kHz-Test Channel=23279-T size=1T47



Date: 20.AUG.2019 20:40:40

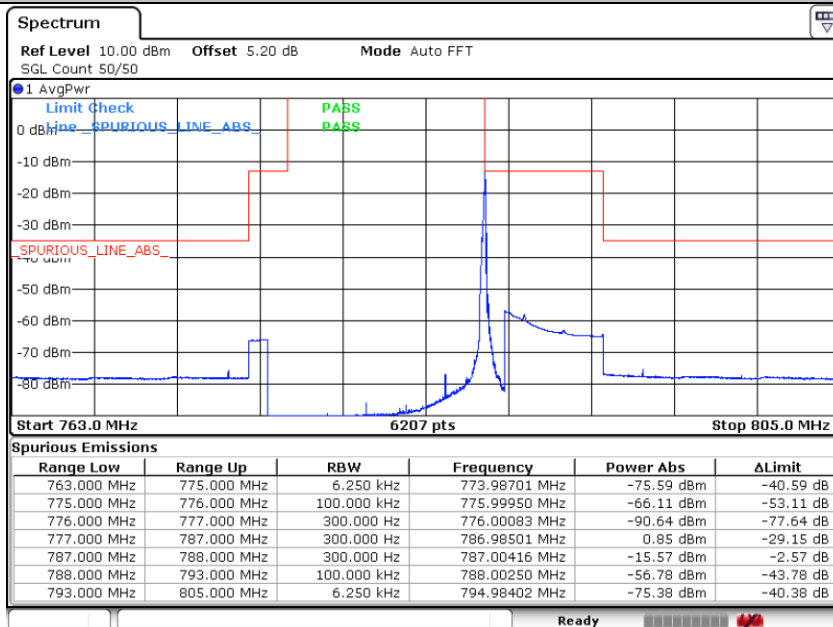


LTE-NB1/BPSK. Sub-carrier spacing=15kHz-Test Channel=23181-T size=1T0



Date: 20.AUG.2019 20:35:01

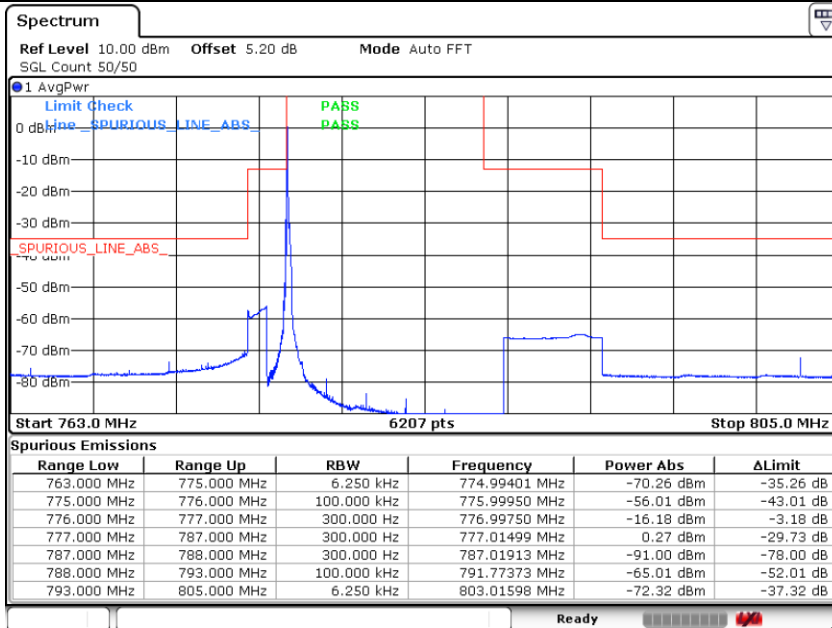
LTE-NB1/BPSK. Sub-carrier spacing=15kHz-Test Channel=23279-T size=1T11



Date: 20.AUG.2019 20:39:14

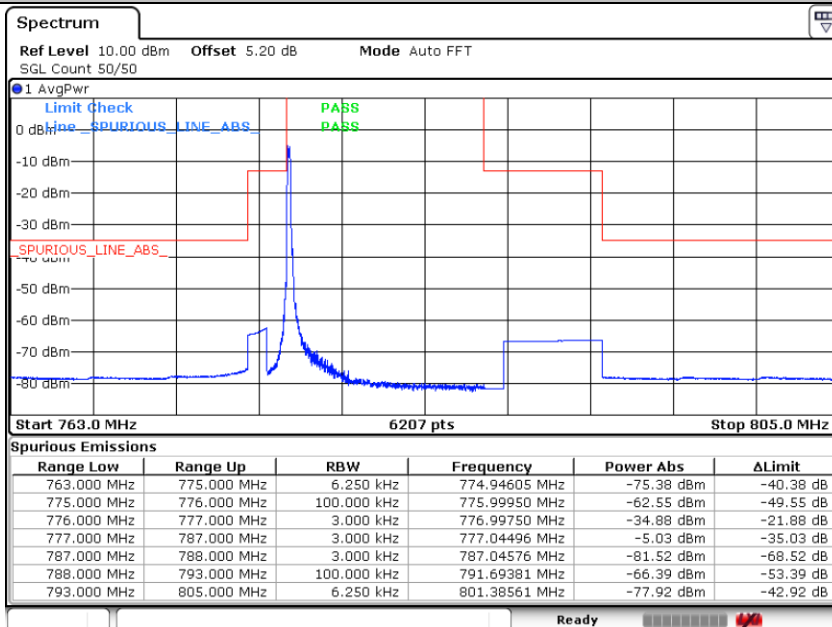


LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23181-T size=1T0



Date: 20 AUG. 2019 20:33:53

LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23181-T size=12T0



Date: 20 AUG. 2019 20:35:46

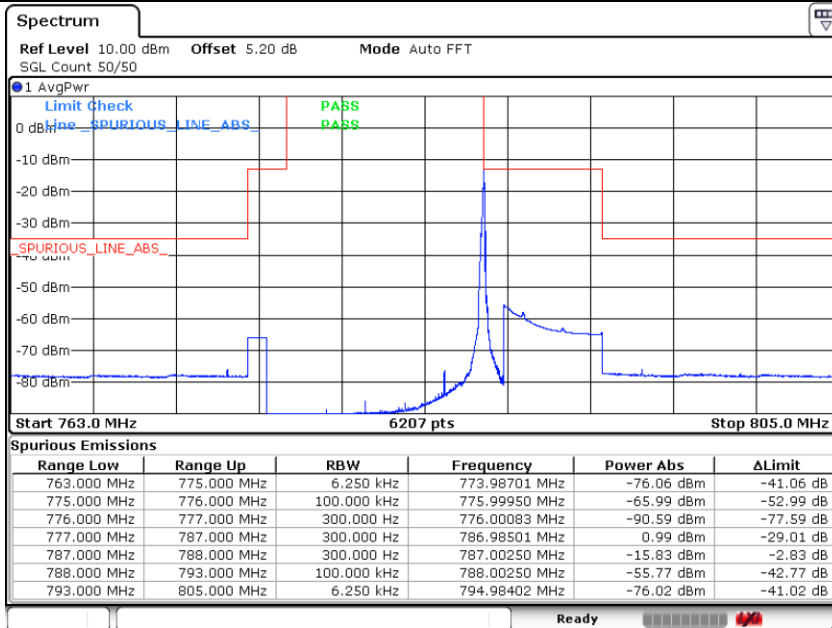


SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Center ETC Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

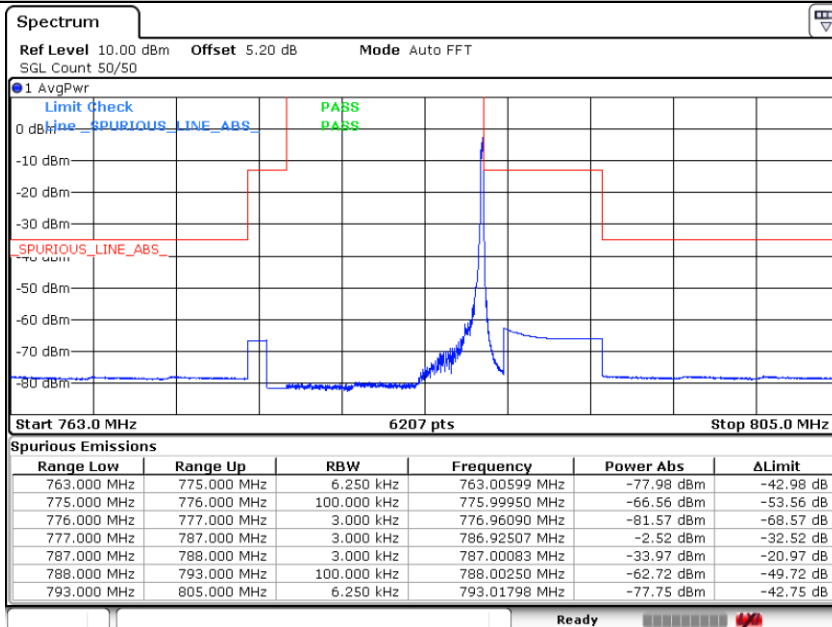
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23279-T size=1T11



Date: 20.AUG.2019 20:38:30

LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23279-T size=12T0



Date: 20.AUG.2019 20:37:24



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Center ETC Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

6 Spurious Emission at Antenna Terminal

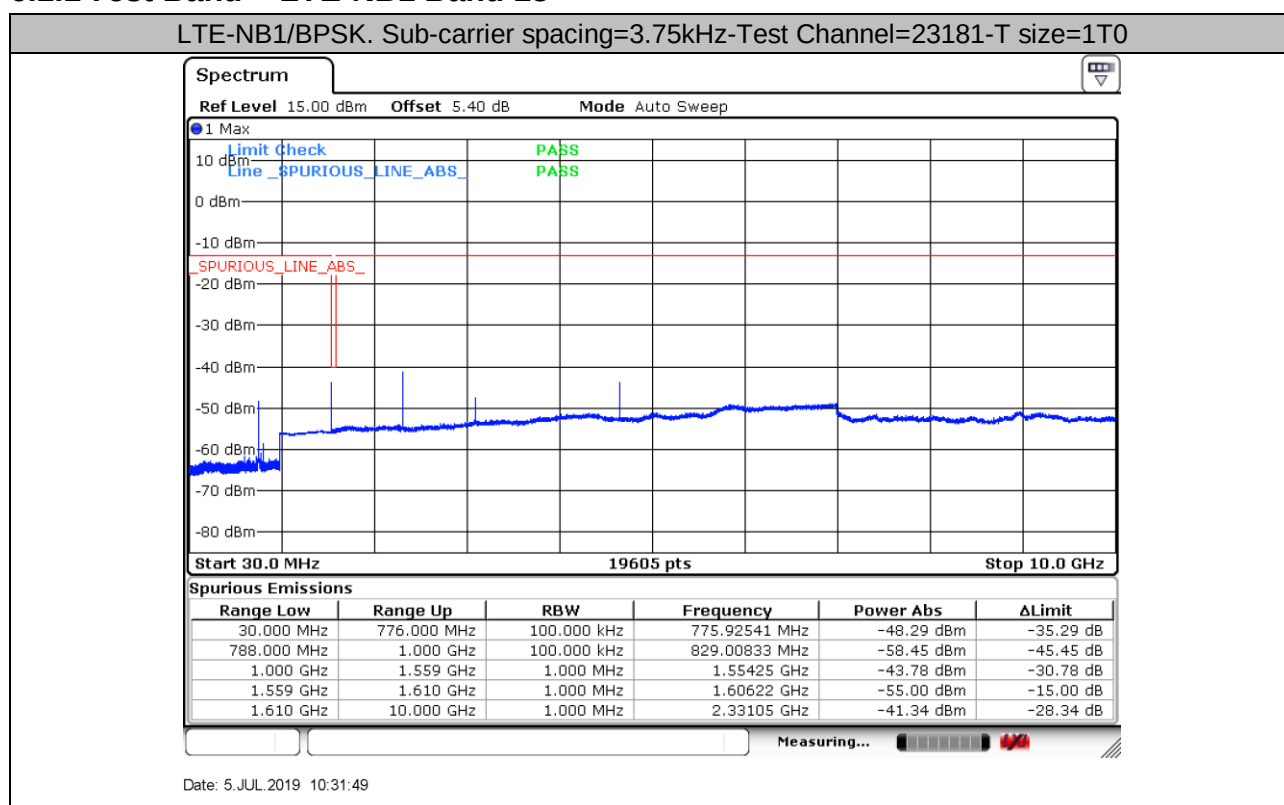
NOTE1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k \cdot (\text{Span} / \text{RBW})$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

NOTE2: only the worst case data displayed in this report.

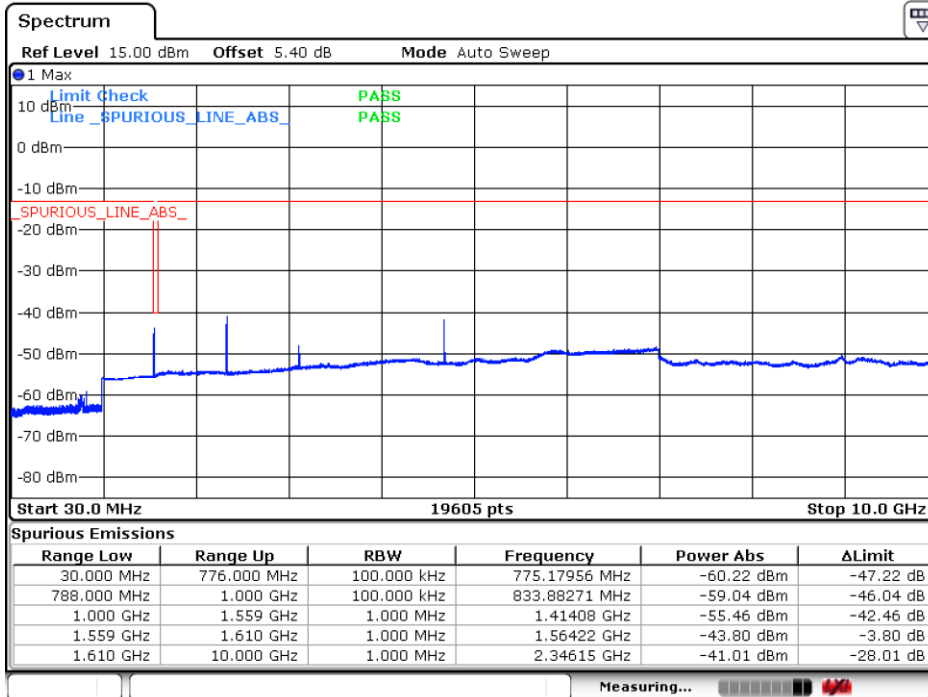
Part I - Test Plots

6.1 For LTE-NB1

6.1.1 Test Band = LTE-NB1 Band 13

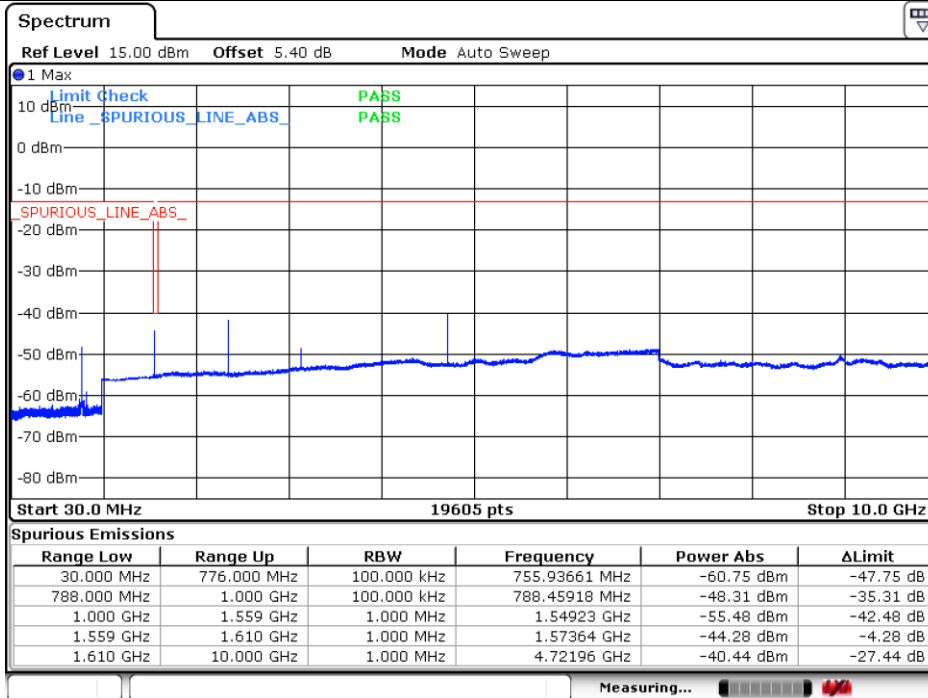


LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz-Test Channel=23230-T size=1T0



Date: 5 JUL 2019 10:42:57

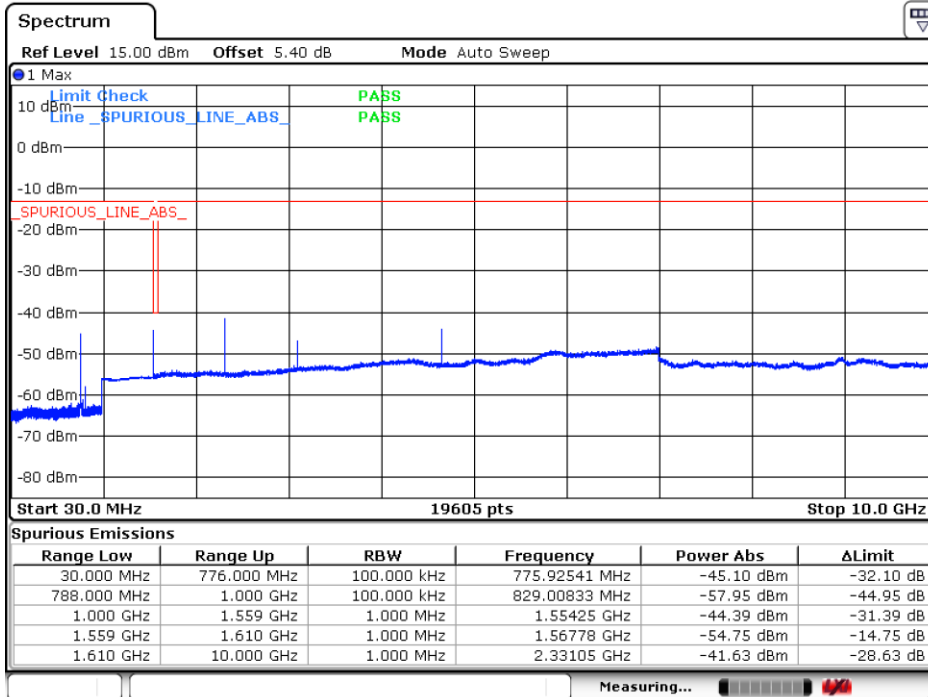
LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz-Test Channel=23279-T size=1T0



Date: 5 JUL 2019 10:45:06

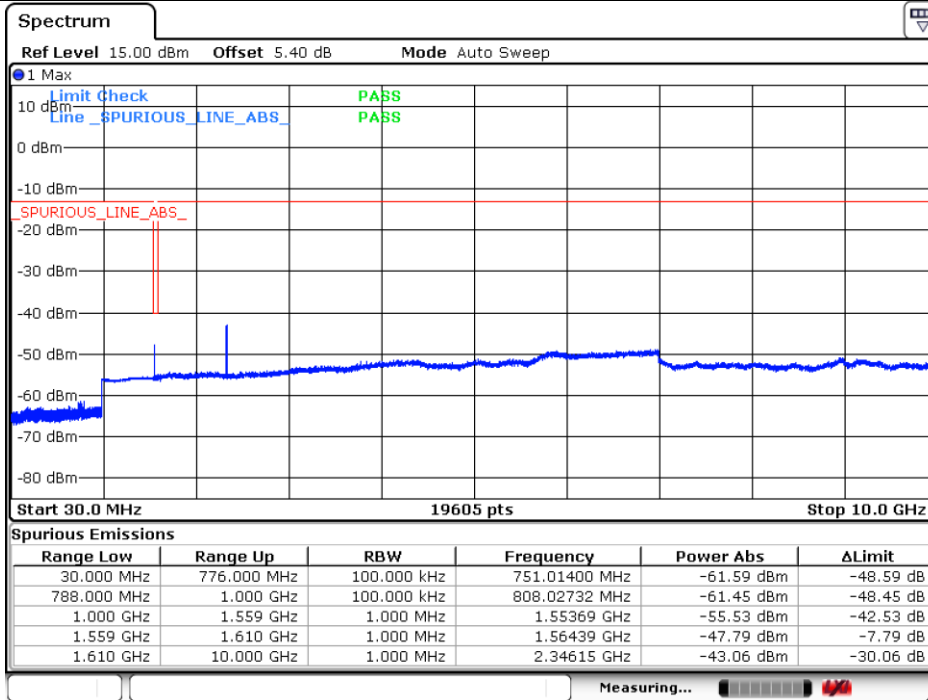


LTE-NB1/QPSK. Sub-carrier spacing=3.75kHz-Test Channel=23181-T size=1T0



Date: 5 JUL 2019 10:32:47

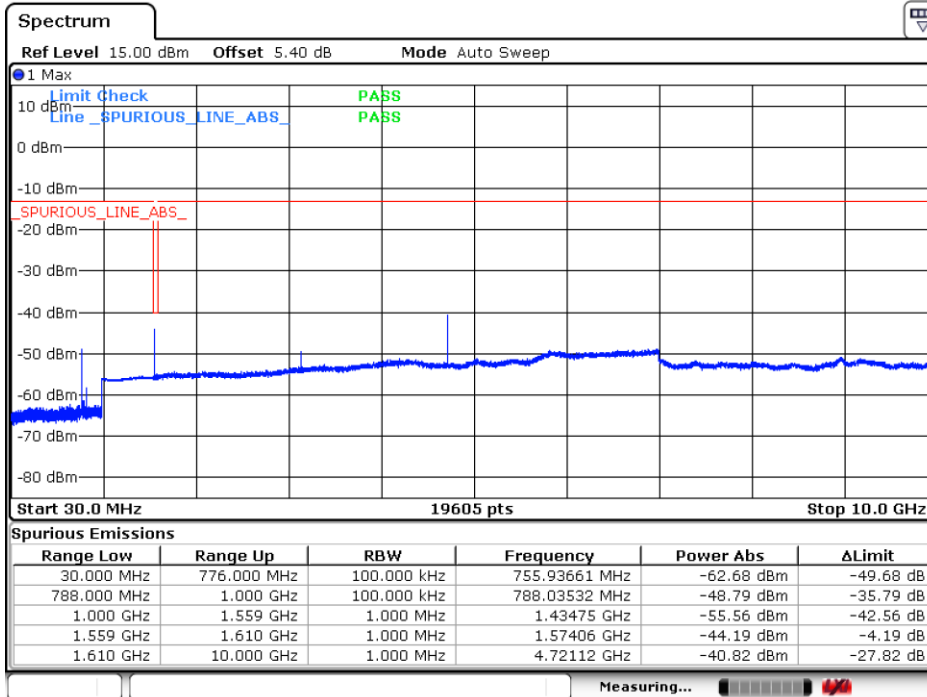
LTE-NB1/QPSK. Sub-carrier spacing=3.75kHz-Test Channel=23230-T size=1T0



Date: 5 JUL 2019 10:39:49

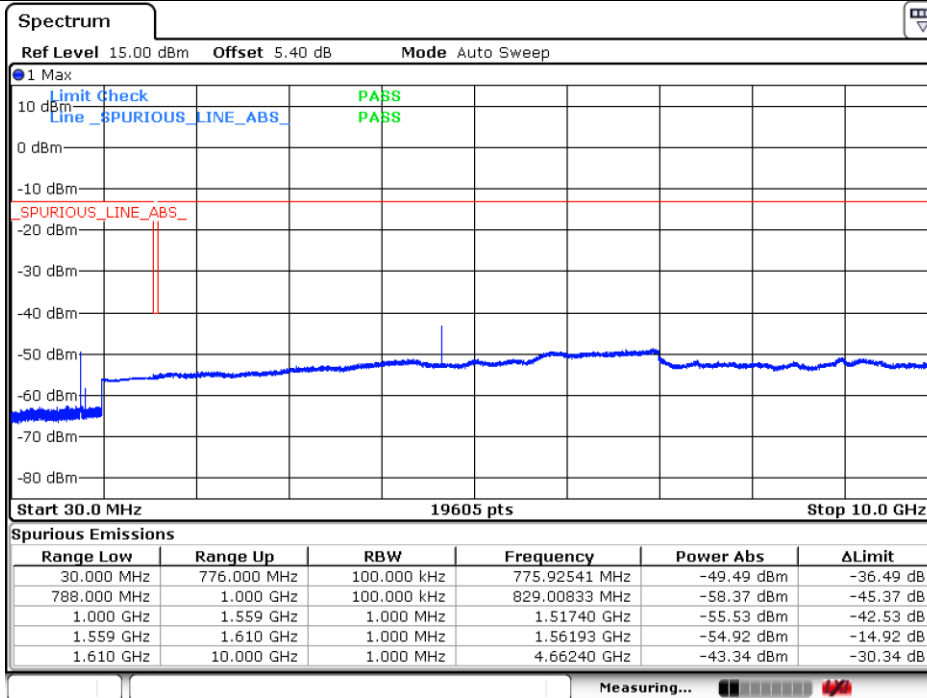


LTE-NB1/QPSK. Sub-carrier spacing=3.75kHz-Test Channel=23279-T size=1T0



Date: 5 JUL 2019 10:45:58

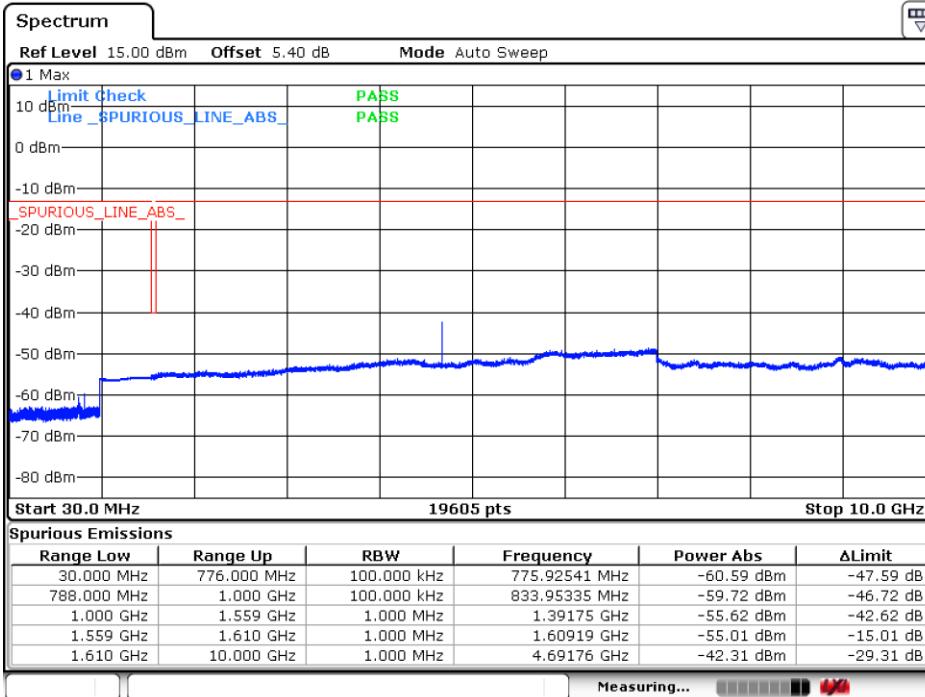
LTE-NB1/BPSK. Sub-carrier spacing=15kHz-Test Channel=23181-T size=1T0



Date: 5 JUL 2019 10:35:14

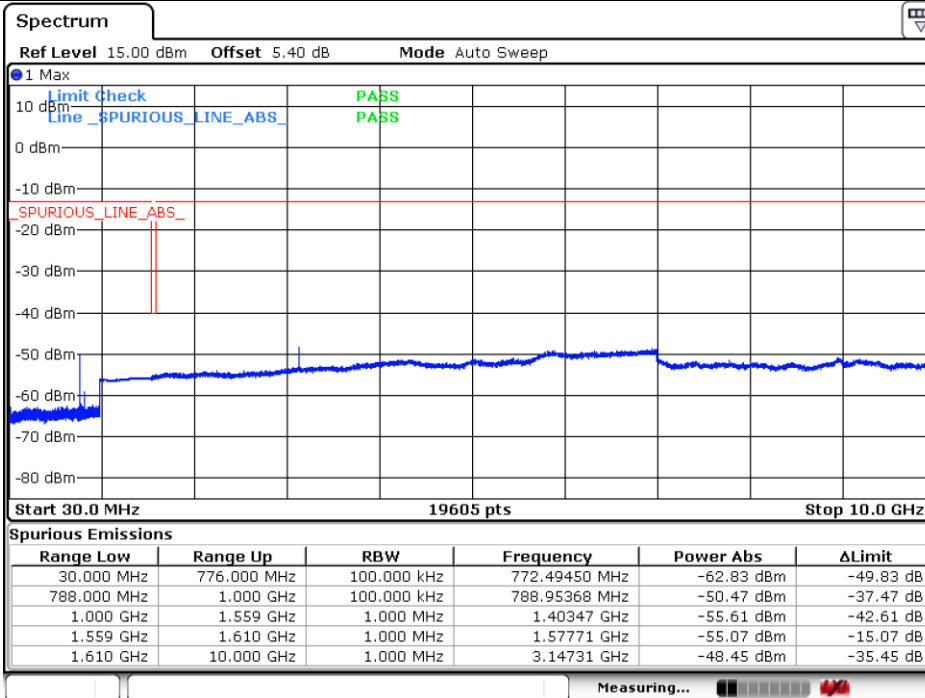


LTE-NB1/BPSK. Sub-carrier spacing=15kHz-Test Channel=23230-T size=1T0



Date: 5 JUL 2019 10:37:01

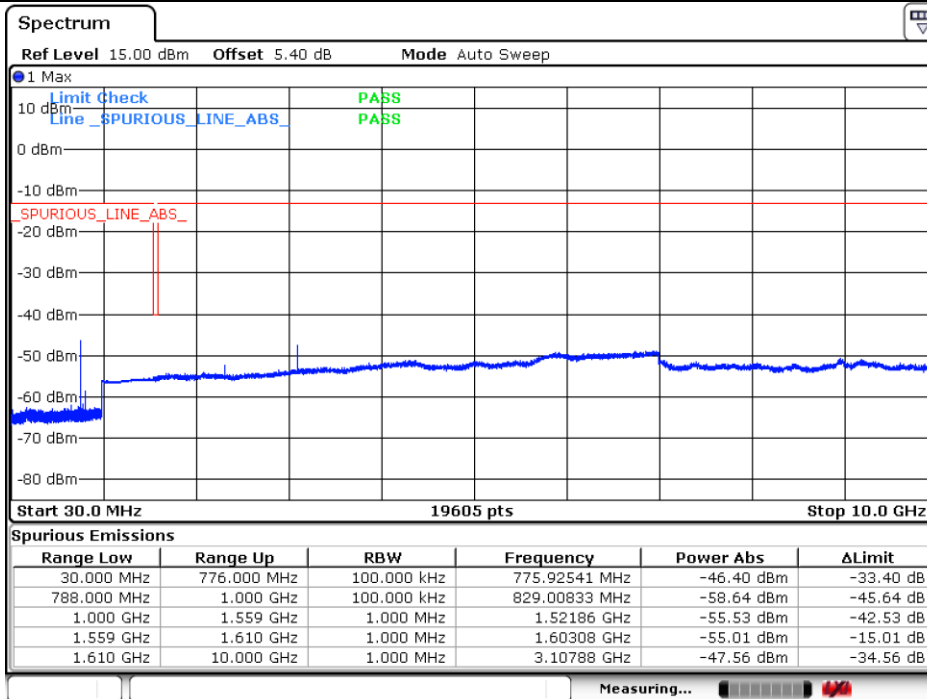
LTE-NB1/BPSK. Sub-carrier spacing=15kHz-Test Channel=23279-T size=1T0



Date: 5 JUL 2019 10:48:38

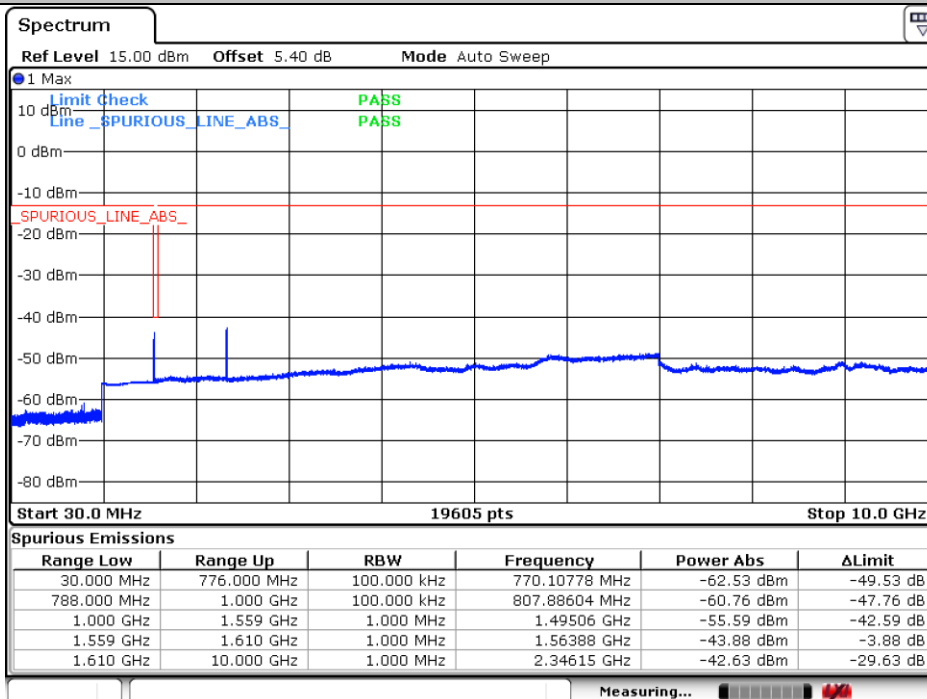


LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23181-T size=1T0



Date: 5 JUL 2019 10:34:15

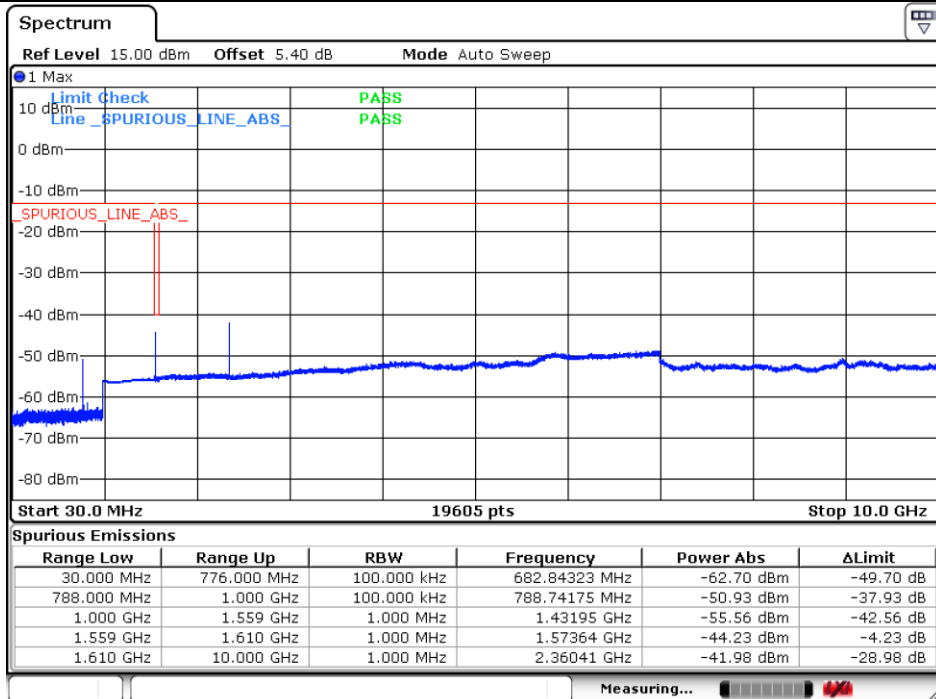
LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23230-T size=1T0



Date: 5 JUL 2019 10:37:38



LTE-NB1/QPSK. Sub-carrier spacing=15kHz-Test Channel=23279-T size=1T0



Date: 5 JUL 2019 10:48:09



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Inspection & Testing Services

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7 Field Strength of Spurious Radiation

7.1 For LTE-NB1

7.1.1 Test Band = LTE-NB1 Band 13

7.1.1.1 Test Mode = LTE-NB1/BPSK. Sub-carrier spacing=3.75kHz

7.1.1.1.1 Test Channel = 23181

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
65.000000	-81.01	-13.00	68.01	Vertical
347.146667	-85.27	-13.00	72.27	Vertical
1570.500000	-66.38	-40.00	26.38	Vertical
2261.000000	-59.23	-13.00	46.23	Vertical
3451.912500	-67.81	-13.00	54.81	Vertical
6490.012500	-63.94	-13.00	50.94	Vertical
62.760000	-76.41	-13.00	63.41	Horizontal
274.393333	-86.09	-13.00	73.09	Horizontal
1559.000000	-61.97	-40.00	21.97	Horizontal
2783.000000	-57.25	-13.00	44.25	Horizontal
3764.887500	-67.37	-13.00	54.37	Horizontal
6824.437500	-64.19	-13.00	51.19	Horizontal

7.1.1.1.2 Test Channel = 23230

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
64.673333	-79.69	-13.00	66.69	Vertical
332.726667	-85.14	-13.00	72.14	Vertical
1570.000000	-66.45	-40.00	26.45	Vertical
2389.000000	-59.27	-13.00	46.27	Vertical
3203.287500	-67.61	-13.00	54.61	Vertical
5962.537500	-64.37	-13.00	51.37	Vertical
63.086667	-76.02	-13.00	63.02	Horizontal
283.493333	-86.86	-13.00	73.86	Horizontal
1564.000000	-62.50	-40.00	22.50	Horizontal
2367.000000	-59.26	-13.00	46.26	Horizontal
3096.525000	-67.48	-13.00	54.48	Horizontal
6054.675000	-63.75	-13.00	50.75	Horizontal



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
 No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



7.1.1.1.3 Test Channel = 23279

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
64.113333	-80.32	-13.00	67.32	Vertical
319.660000	-85.40	-13.00	72.40	Vertical
1570.500000	-66.43	-40.00	26.43	Vertical
2248.000000	-59.28	-13.00	46.28	Vertical
3276.900000	-68.13	-13.00	55.13	Vertical
6453.450000	-64.31	-13.00	51.31	Vertical
62.433333	-76.33	-13.00	63.33	Horizontal
264.920000	-86.04	-13.00	73.04	Horizontal
1569.000000	-62.35	-40.00	22.35	Horizontal
2362.000000	-59.25	-13.00	46.25	Horizontal
4315.275000	-65.46	-13.00	52.46	Horizontal
7870.612500	-62.67	-13.00	49.67	Horizontal

NOTE:

- 1) The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) only the worst case data presented in this report.



8 Frequency Stability

8.1 Frequency Error VS. Voltage

BAND	Band width	Modulation	Channel	Number of T	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	VL	TN	-14.67	-0.018878	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	VN	TN	2.62	0.003371	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	VH	TN	-4.43	-0.005698	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	VL	TN	14.87	0.019018	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	VN	TN	3.01	0.003852	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	VH	TN	9.08	0.011611	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	VL	TN	-5.61	-0.007135	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	VN	TN	-4.63	-0.005879	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	VH	TN	-14.84	-0.018862	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	VL	TN	7.59	0.009766	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	VN	TN	2.36	0.003041	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	VH	TN	3.88	0.004997	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	VL	TN	-8.00	-0.010232	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	VN	TN	1.48	0.001897	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	VH	TN	-5.36	-0.006852	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	VL	TN	-2.88	-0.003664	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	VN	TN	-3.91	-0.004965	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	VH	TN	-12.14	-0.015422	±2.5	PASS

8.2 Frequency Error VS. Temperature

BAND	Band width	Modulation	Channel	Number of T	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	-30	-3.96	-0.005100	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	-20	7.91	0.010184	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	0	1.95	0.002512	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	10	14.10	0.018149	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	20	-7.16	-0.009213	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	30	14.60	0.018789	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	40	10.45	0.013446	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23181	12T0	NV	50	12.99	0.016718	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	-30	-9.99	-0.012781	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	-20	-5.49	-0.007026	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	0	-0.34	-0.000434	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	10	1.50	0.001917	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	20	5.39	0.006896	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	30	7.36	0.009407	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	40	-1.56	-0.001998	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23230	12T0	NV	50	-3.63	-0.004648	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	-30	0.16	0.000209	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	-20	-2.77	-0.003523	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	0	-0.69	-0.000873	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	10	13.18	0.016753	±2.5	PASS



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Center EEC Laboratory

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	20	-5.75	-0.007310	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	30	-3.80	-0.004831	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	40	-9.14	-0.011621	±2.5	PASS
NB1 Band 13	180KHz	BPSK/15KHz	23279	12T0	NV	50	-11.93	-0.015164	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	-30	-0.37	-0.000470	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	-20	13.69	0.017611	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	0	7.03	0.009047	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	10	7.68	0.009889	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	20	-3.88	-0.004990	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	30	-2.81	-0.003611	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	40	2.41	0.003107	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23181	12T0	NV	50	-5.21	-0.006708	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	-30	-1.74	-0.002230	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	-20	-14.51	-0.018559	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	0	7.31	0.009348	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	10	0.01	0.000014	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	20	2.91	0.003726	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	30	2.61	0.003338	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	40	-5.44	-0.006951	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23230	12T0	NV	50	-4.64	-0.005940	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	-30	4.43	0.005625	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	-20	6.77	0.008604	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	0	-9.21	-0.011705	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	10	7.34	0.009334	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	20	14.22	0.018074	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	30	10.67	0.013564	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	40	-5.33	-0.006768	±2.5	PASS
NB1 Band 13	180KHz	QPSK/15KHz	23279	12T0	NV	50	6.99	0.008878	±2.5	PASS

The End



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com