3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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For Band 7

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30MHz up to a frequency including its 10th harmonic.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. The middle channel for the highest RF power within the transmitting frequency was measured.
- 4. The conducted spurious emission for the whole frequency range was taken.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 7. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
 - = P(W)- [43 + 10log(P)] (dB)
 - = [30 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
 - = -13dBm.
- 8. For Band 7

The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

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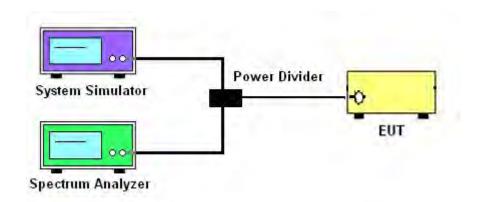
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- = P(W) [55 + 10log(P)] (dB)
- = [30 + 10log(P)] (dBm) [55 + 10log(P)] (dB)
- = -25dBm.

3.6.4 Test Setup

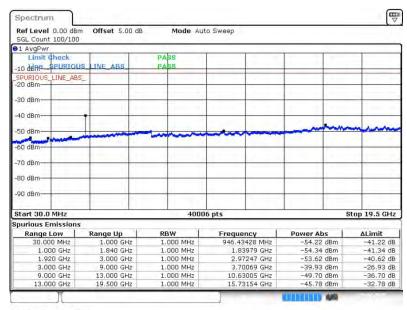


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3.6.5 Test Result (Plots) of Conducted Spurious Emission

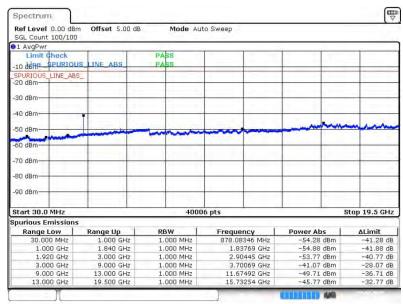
Band :	LTE Band 2	Channel:	CH18607 (Low)
Band Width:	1.4MHz		

QPSK (RB Size 3, RB Offset 1)



Date: 9 FEB.2015 15:27:12

16QAM (RB Size 3, RB Offset 1)

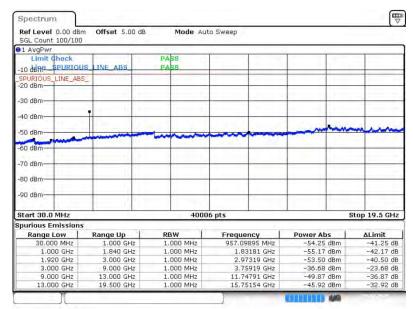


Date: 9.FEB.2015 15:28:31

SPORTON INTERNATIONAL (KUNSHAN) INC.

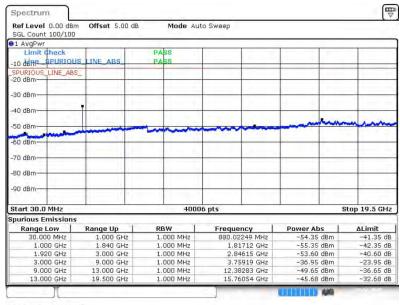
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 165 of 236
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Band :	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	1.4MHz		



Date: 9.FEB.2015 15:30:32

16QAM (RB Size 3, RB Offset 2)



Date: 9 FEB.2015 15:31:51

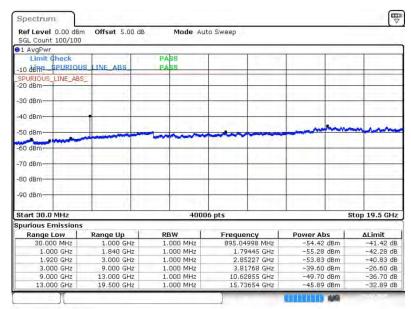
SPORTON INTERNATIONAL (KUNSHAN) INC.

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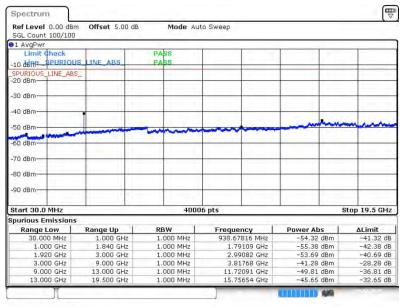
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Band :	LTE Band 2	Channel:	CH19193 (High)
Band Width:	1.4MHz	_	



Date: 9.FEB.2015 15:33:53

16QAM (RB Size 1, RB Offset 2)

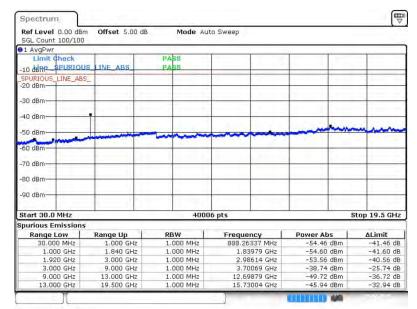


Date: 9 FEB.2015 15:35:11

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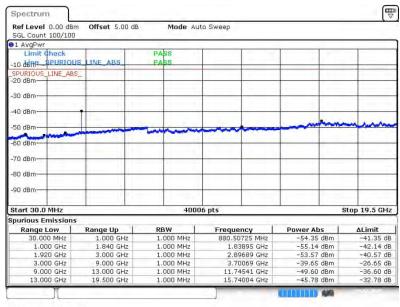
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Band:	LTE Band 2	Channel:	CH18615 (Low)
Band Width:	3MHz		



Date: 9 FEB.2015 15:37:13

16QAM (RB Size 1, RB Offset 7)

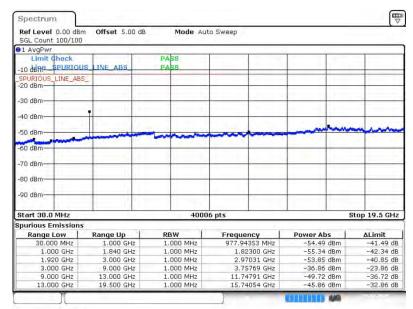


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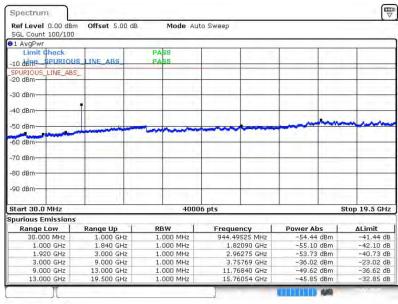
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 168 of 236
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Band :	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	3MHz		



Date: 9.FEB.2015 15:40:34

16QAM (RB Size 1, RB Offset 14)

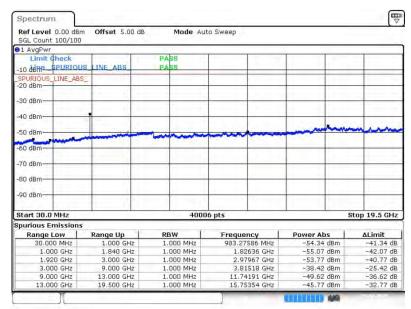


Date: 9 FEB.2015 15:41:52

SPORTON INTERNATIONAL (KUNSHAN) INC.

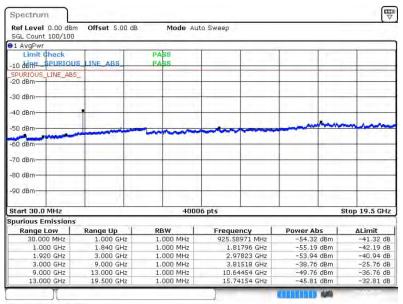
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 169 of 236
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Band :	LTE Band 2	Channel:	CH19185 (High)
Band Width:	3MHz		



Date: 9.FEB.2015 15:43:54

16QAM (RB Size 1, RB Offset 0)

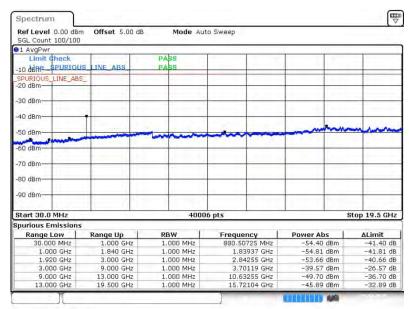


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SPORTON INTERNATIONAL (KUNSHAN) INC.

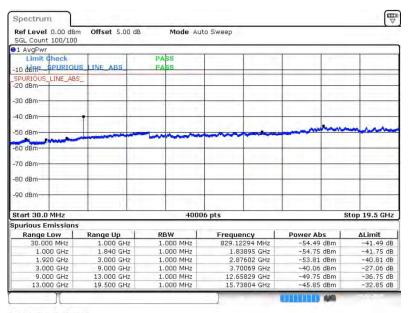
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 170 of 236
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Band:	LTE Band 2	Channel:	CH18625 (Low)
Band Width:	5MHz		



Date: 9.FEB.2015 15:47:21

16QAM (RB Size 1, RB Offset 12)

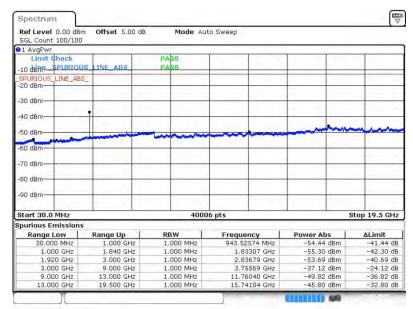


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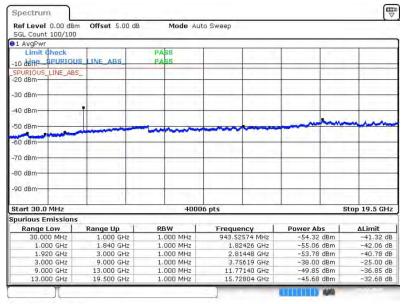
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 171 of 236
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Band:	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	5MHz		



Date: 9.FEB.2015 15:50:45

16QAM (RB Size 1, RB Offset 12)



Date: 9 FEB.2015 15:52:03

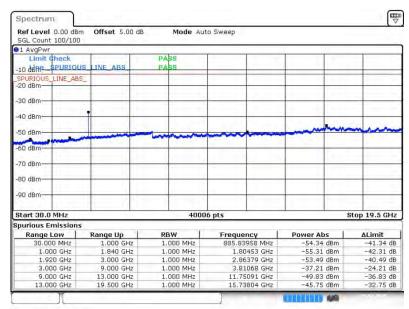
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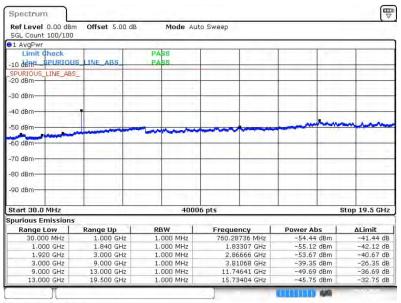
Report Version : Rev. 03

Band :	LTE Band 2	Channel:	CH19175 (High)
Band Width:	5MHz		



Date: 9.FEB.2015 15:54:05

16QAM (RB Size 1, RB Offset 12)

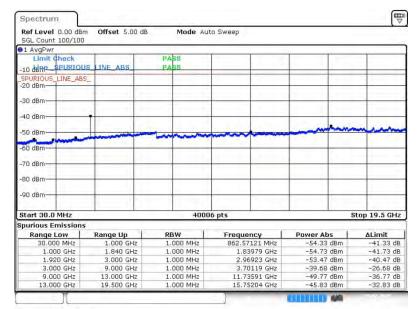


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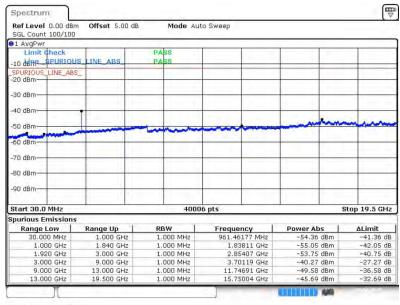
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 173 of 236
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Band :	LTE Band 2	Channel:	CH18650 (Low)
Band Width:	10MHz		



Date: 9.FEB.2015 15:57:26

16QAM (RB Size 1, RB Offset 49)

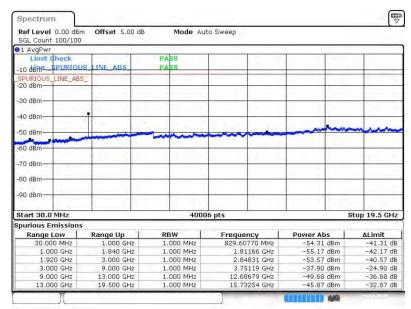


Date: 9 FEB.2015 15:58:44

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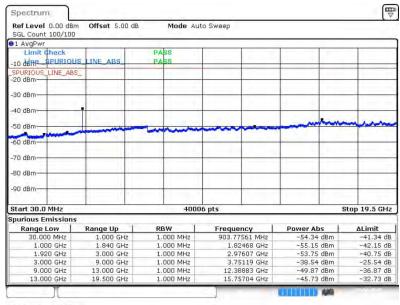
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 174 of 236
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Band :	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	10MHz		



Date: 9.FEB.2015 16:00:47

16QAM (RB Size 1, RB Offset 0)

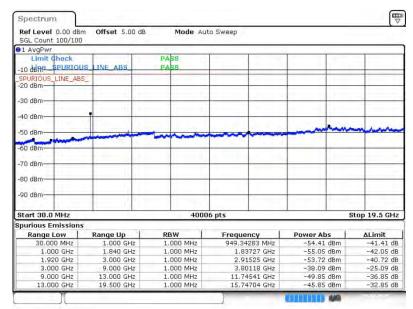


Date: 9 FEB.2015 16:02:05

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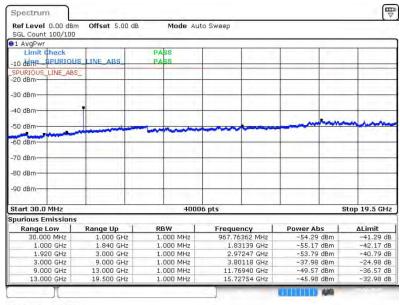
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 175 of 236
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Band :	LTE Band 2	Channel:	CH19150 (High)
Band Width:	10MHz		



Date: 9 FEB.2015 16:04:07

16QAM (RB Size 1, RB Offset 0)

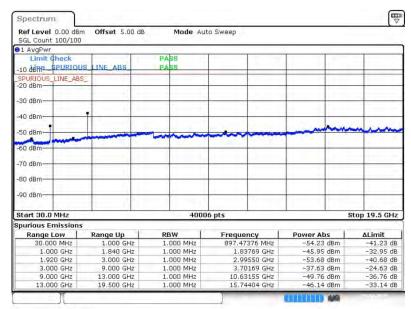


Date: 9 FEB.2015 16:05:26

SPORTON INTERNATIONAL (KUNSHAN) INC.

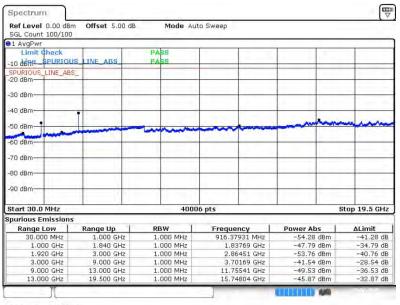
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 176 of 236
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Band :	LTE Band 2	Channel:	CH18675 (Low)
Band Width:	15MHz		



Date: 9 FEB.2015 16:07:28

16QAM (RB Size 1, RB Offset 0)



Date: 9 FEB.2015 16:08:46

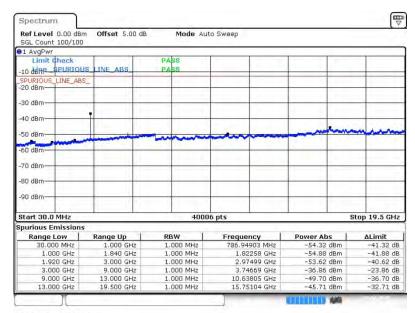
SPORTON INTERNATIONAL (KUNSHAN) INC.

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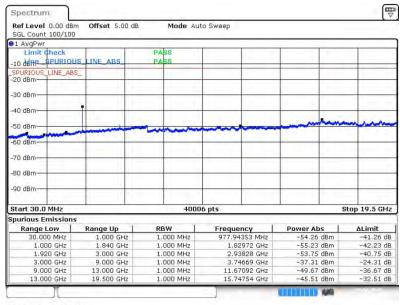
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Band :	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	15MHz		



Date: 9 FEB.2015 16:10:48

16QAM (RB Size 1, RB Offset 0)

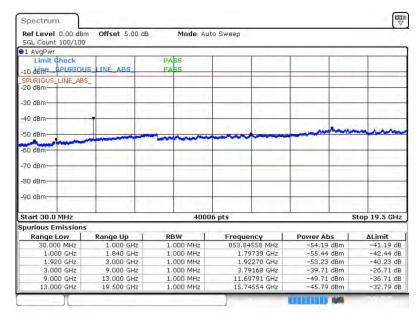


Date: 9 FEB.2015 16:12:06

SPORTON INTERNATIONAL (KUNSHAN) INC.

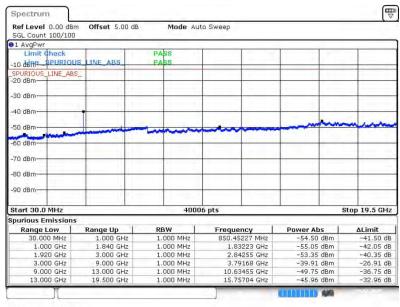
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 178 of 236
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Band :	LTE Band 2	Channel:	CH19125 (High)
Band Width:	15MHz		



Date: 9 FEB.2015 16:14:31

16QAM (RB Size 1, RB Offset 0)

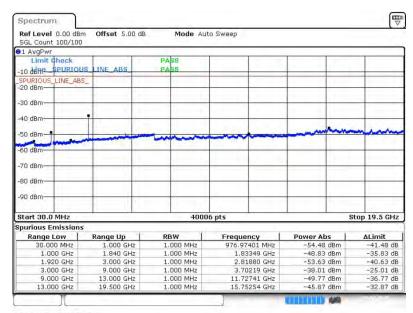


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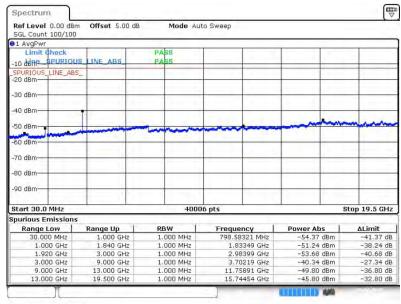
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 179 of 236
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Band:	LTE Band 2	Channel:	CH18700 (Low)
Band Width:	20MHz		



Date: 9.FEB.2015 16:17:51

16QAM (RB Size 1, RB Offset 0)

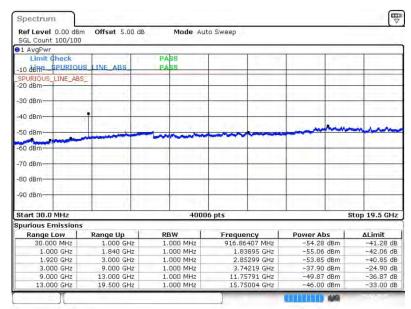


Date: 9 FEB.2015 16:19:10

SPORTON INTERNATIONAL (KUNSHAN) INC.

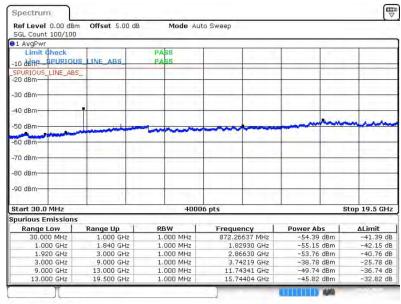
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 180 of 236
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Band:	LTE Band 2	Channel:	CH18900 (Middle)
Band Width:	20MHz		



Date: 9.FEB.2015 16:21:12

16QAM (RB Size 1, RB Offset 49)

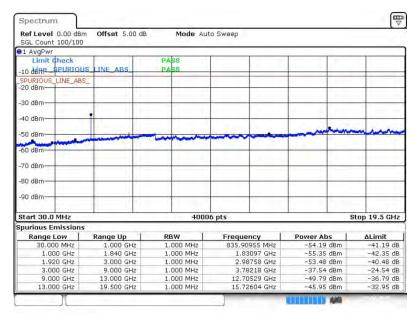


Date: 9 FEB.2015 16:22:30

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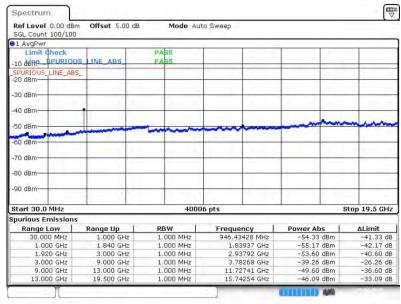
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 181 of 236
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Band :	LTE Band 2	Channel:	CH19100 (High)
Band Width:	20MHz		



Date: 9 FEB.2015 16:24:32

16QAM (RB Size 1, RB Offset 49)



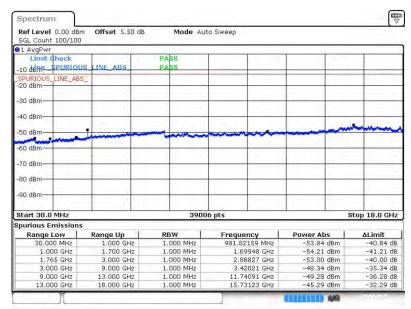
Date: 9.FEB.2015 16:25:51

SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 182 of 236
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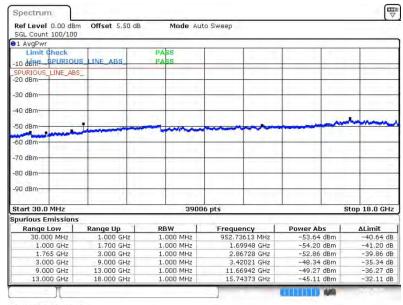
Report Version : Rev. 03

Band:	LTE Band 4	Channel:	CH19957 (Low)
Band Width:	1.4MHz		



Date: 10.FEB.2015 11:46:37

16QAM (RB Size 3, RB Offset 2)

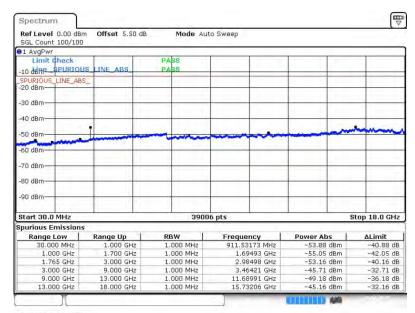


Date: 10.FEB.2015 11:47:58

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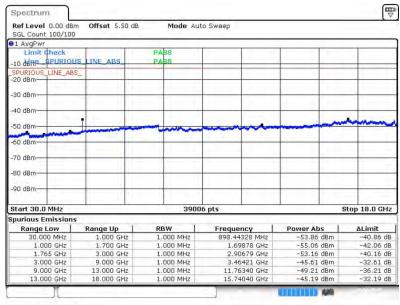
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 183 of 236
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Band:	LTE Band 4	Channel:	CH20175 (Middle)
Band Width:	1.4MHz		



Date: 10.FEB.2015 11:50:00

16QAM (RB Size 1, RB Offset 0)

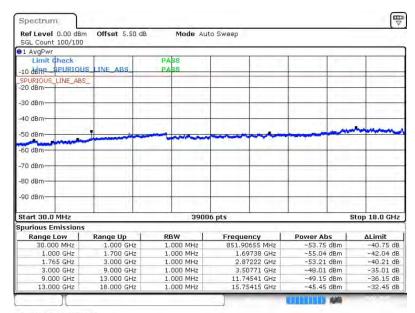


Date: 10.FEB.2015 11:51:19

SPORTON INTERNATIONAL (KUNSHAN) INC.

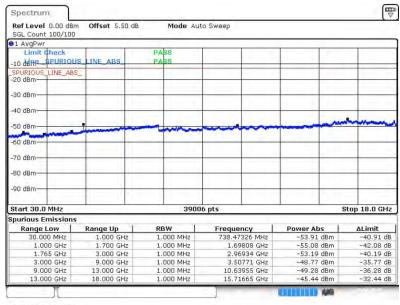
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 184 of 236
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Band :	LTE Band 4	Channel:	CH20393 (High)
Band Width:	1.4MHz		



Date: 10.FEB.2015 11:53:22

16QAM (RB Size 3, RB Offset 2)

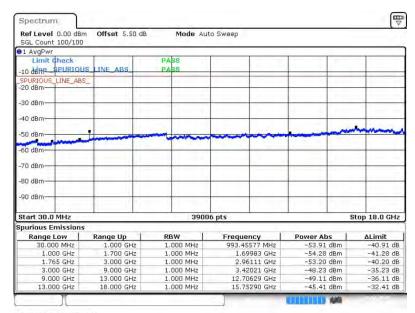


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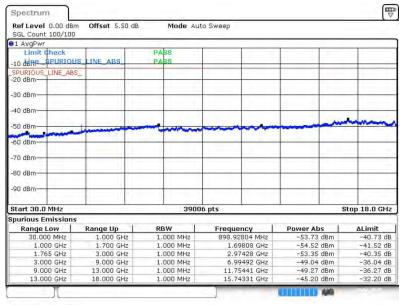
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 185 of 236
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Band :	LTE Band 4	Channel:	CH19965 (Low)
Band Width:	3MHz		



Date: 10.FEB.2015 11:56:42

16QAM (RB Size 1, RB Offset 7)



Date: 10.FEB.2015 11:58:00

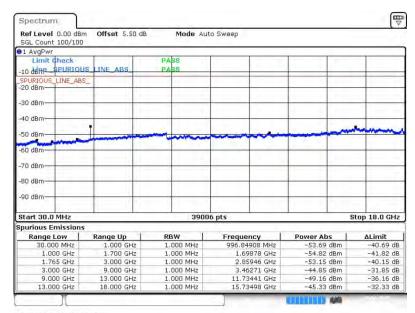
SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 186 of 236
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Band: LTE Band 4 Channel: CH20175 (Middle)

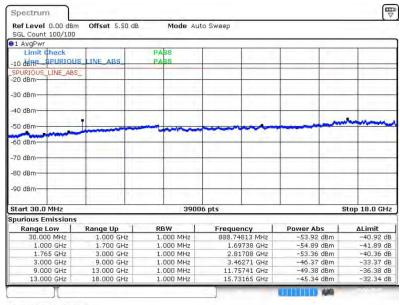
Band Width: 3MHz

QPSK (RB Size 1, RB Offset 7)



Date: 10.FEB.2015 12:00:02

16QAM (RB Size 1, RB Offset 0)

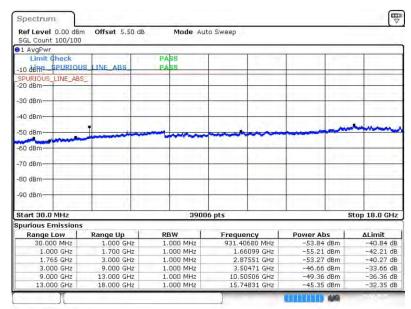


Date: 10.FEB.2015 12:01:20

SPORTON INTERNATIONAL (KUNSHAN) INC.

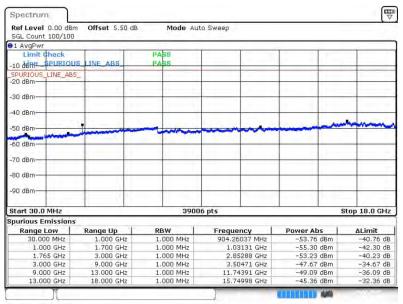
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 187 of 236
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Band :	LTE Band 4	Channel:	CH20385 (High)
Band Width:	3MHz		



Date: 10.FEB.2015 13:14:05

16QAM (RB Size 1, RB Offset 7)

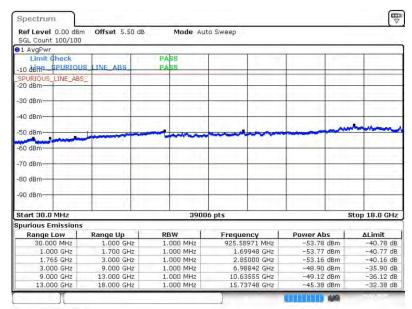


Date: 10.FEB.2015 13:15:23

SPORTON INTERNATIONAL (KUNSHAN) INC.

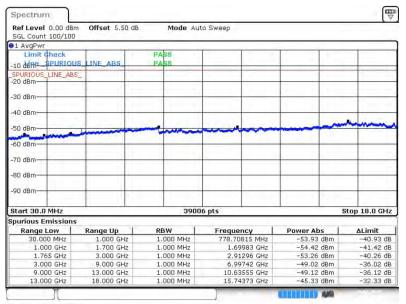
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 188 of 236
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Band :	LTE Band 4	Channel:	CH19975 (Low)
Band Width:	5MHz		



Date: 10.FEB.2015 13:17:25

16QAM (RB Size 1, RB Offset 0)

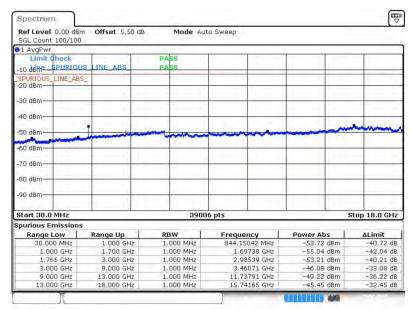


Date: 10.FEB.2015 13:18:43

SPORTON INTERNATIONAL (KUNSHAN) INC.

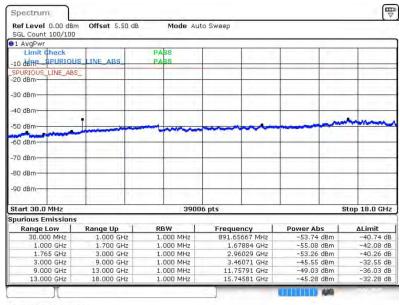
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 189 of 236
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Band :	LTE Band 4	Channel:	CH20175 (Middle)
Band Width:	5MHz		



Date: 10.FEB.2015 13:20:45

16QAM (RB Size 1, RB Offset 24)

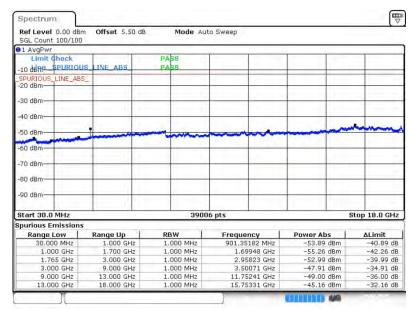


Date: 10.FEB.2015 13:22:04

SPORTON INTERNATIONAL (KUNSHAN) INC.

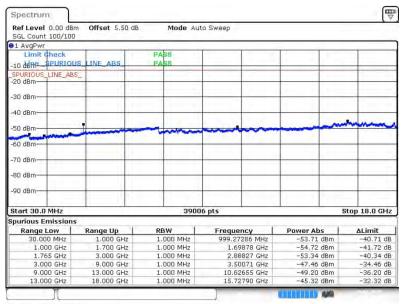
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 190 of 236
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Band:	LTE Band 4	Channel:	CH20375 (High)
Band Width:	5MHz		



Date: 10.FEB.2015 13:24:06

16QAM (RB Size 1, RB Offset 12)



Date: 10.FEB.2015 13:25:24

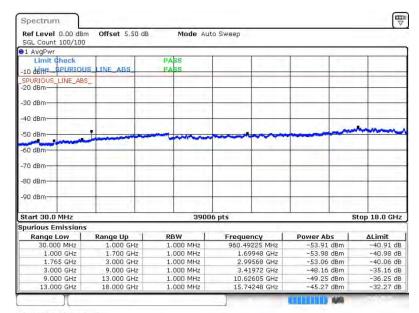
SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 191 of 236
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 Band :
 LTE Band 4
 Channel :
 CH20000 (Low)

 Band Width :
 10MHz

QPSK (RB Size 1, RB Offset 24)



Date: 10.FEB.2015 13:27:26

16QAM (RB Size 1, RB Offset 0)

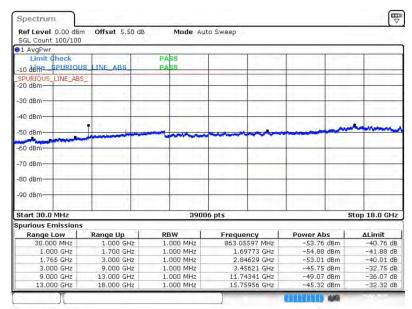


Date: 10.FEB.2015 13:28:44

SPORTON INTERNATIONAL (KUNSHAN) INC.

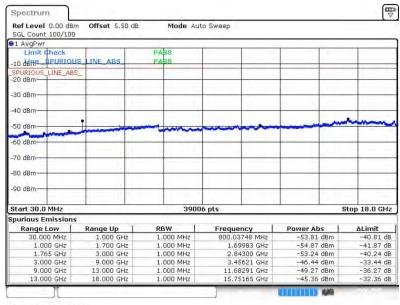
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 192 of 236
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Band :	LTE Band 4	Channel:	CH20175 (Middle)
Band Width:	10MHz		



Date: 10.FEB.2015 13:30:46

16QAM (RB Size 1, RB Offset 49)

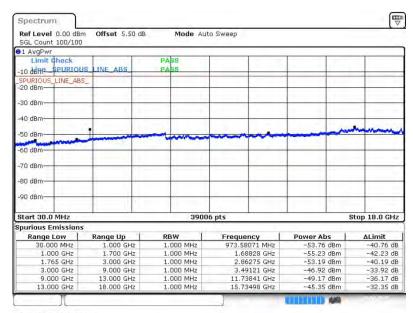


Date: 10.FEB.2015 13:32:04

SPORTON INTERNATIONAL (KUNSHAN) INC.

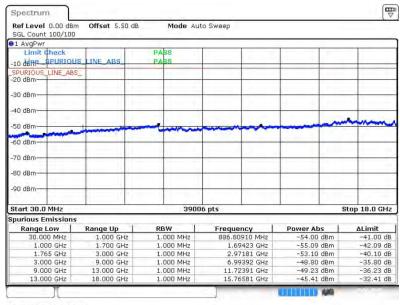
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 193 of 236
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Band:	LTE Band 4	Channel:	CH20350 (High)
Band Width:	10MHz		



Date: 10.FEB.2015 13:34:06

16QAM (RB Size 1, RB Offset 0)

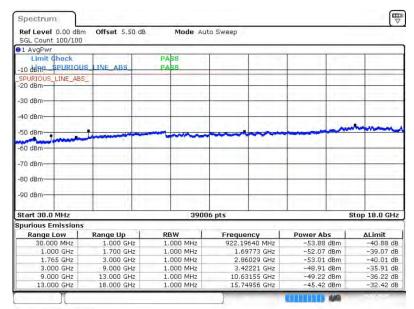


Date: 10.FEB.2015 15:39:58

SPORTON INTERNATIONAL (KUNSHAN) INC.

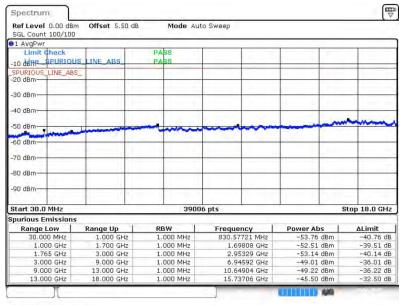
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 194 of 236
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Band :	LTE Band 4	Channel:	CH20025 (Low)
Band Width:	15MHz		



Date: 10.FEB.2015 13:37:27

16QAM (RB Size 1, RB Offset 0)

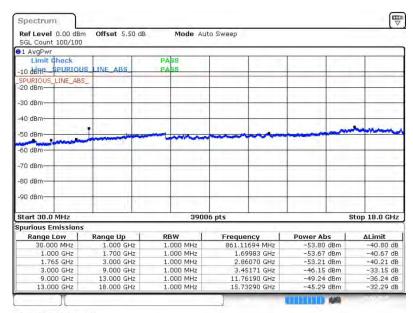


Date: 10.FEB.2015 13:38:45

SPORTON INTERNATIONAL (KUNSHAN) INC.

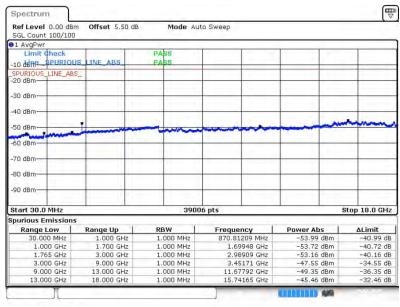
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 195 of 236
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Band :	LTE Band 4	Channel:	CH20175 (Middle)
Band Width:	15MHz		



Date: 10.FEB.2015 13:40:47

16QAM (RB Size 1, RB Offset 0)

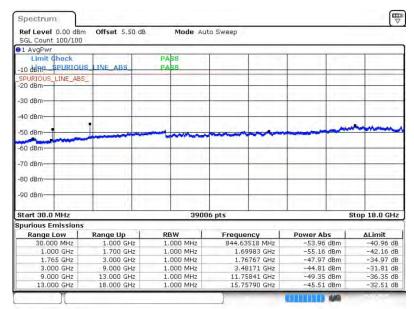


Date: 10.FEB.2015 13:42:05

SPORTON INTERNATIONAL (KUNSHAN) INC.

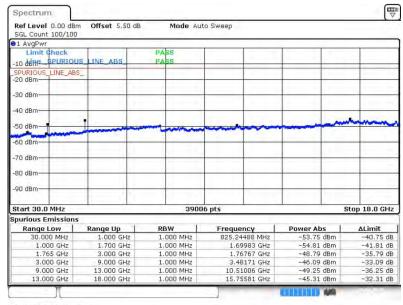
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 196 of 236
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Band :	LTE Band 4	Channel:	CH20325 (High)
Band Width:	15MHz		



Date: 10.FEB.2015 13:44:07

16QAM (RB Size 1, RB Offset 0)

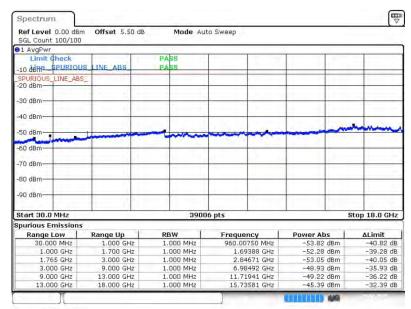


Date: 10.FEB.2015 13:45:26

SPORTON INTERNATIONAL (KUNSHAN) INC.

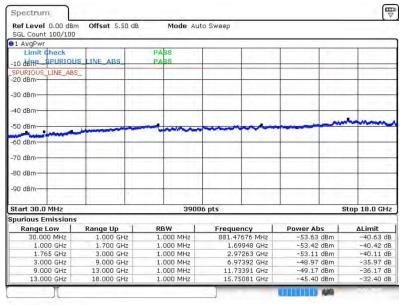
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 197 of 236
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Band:	LTE Band 4	Channel:	CH20050 (Low)
Band Width:	20MHz		



Date: 10.FEB.2015 13:47:28

16QAM (RB Size 1, RB Offset 0)

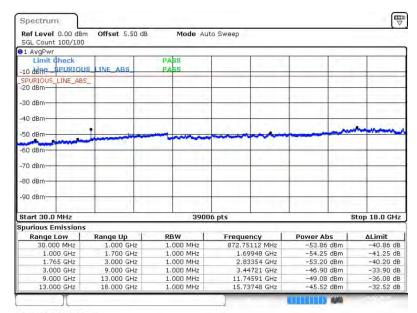


Date: 10.FEB.2015 13:48:46

SPORTON INTERNATIONAL (KUNSHAN) INC.

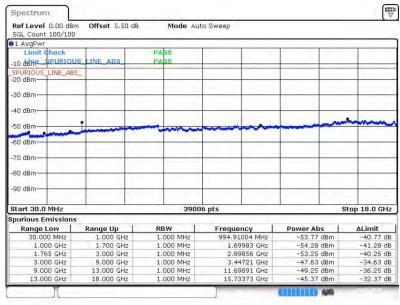
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 198 of 236
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Band:	LTE Band 4	Channel:	CH20175 (Middle)
Band Width:	20MHz		



Date: 10.FEB.2015 13:50:48

16QAM (RB Size 1, RB Offset 0)

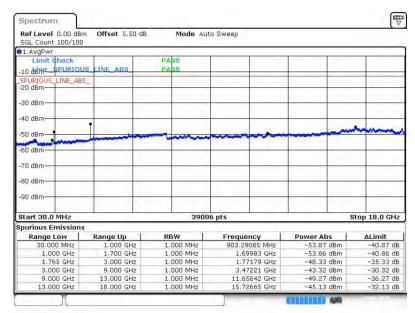


Date: 10.FEB.2015 13:52:06

SPORTON INTERNATIONAL (KUNSHAN) INC.

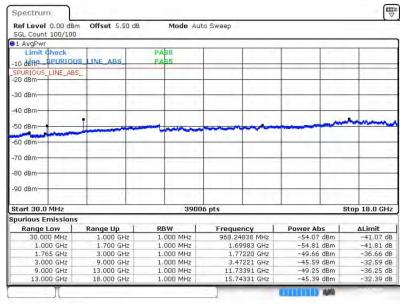
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 199 of 236
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Band :	LTE Band 4	Channel:	CH20300 (High)
Band Width:	20MHz		



Date: 10.FEB.2015 13:54:08

16QAM (RB Size 1, RB Offset 99)

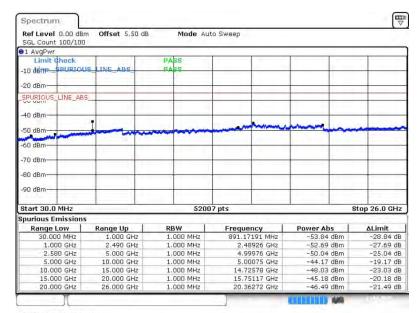


Date: 10.FEB.2015 13:55:26

SPORTON INTERNATIONAL (KUNSHAN) INC.

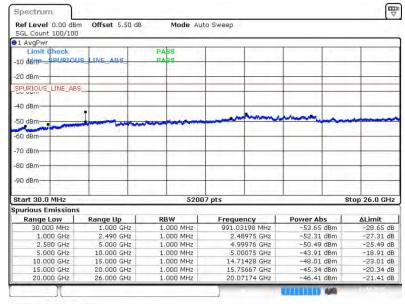
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 200 of 236
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Band :	LTE Band 7	Channel:	CH20775 (Low)
Band Width:	5MHz		



Date: 11.FEB.2015 14:48:13

16QAM (RB Size 1, RB Offset 12)



Date: 11.FEB.2015 14:49:32

SPORTON INTERNATIONAL (KUNSHAN) INC.

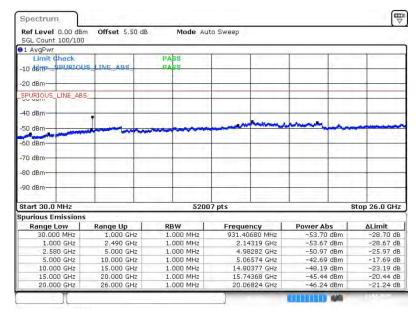
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001

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Report No.: FG511301B

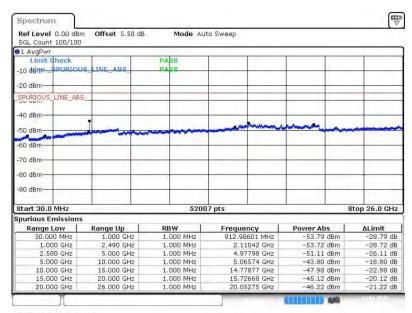
Report Version : Rev. 03 Band :LTE Band 7Channel :CH21100 (Middle)Band Width :5MHz

QPSK (RB Size 1, RB Offset 12)



Date: 11.FEB.2015 14:51:34

16QAM (RB Size 1, RB Offset 12)



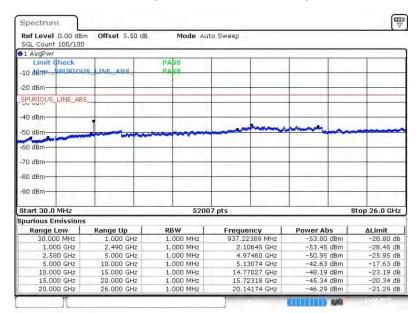
Date: 11.FEB.2015 14:52:52

SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 202 of 236
Report Issued Date : Apr. 20, 2015
Report Version : Rev. 03

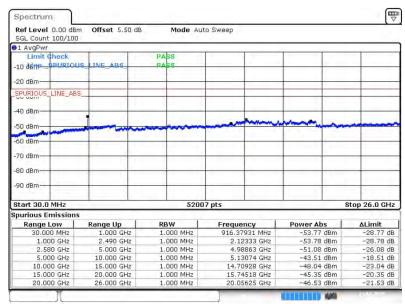
Band: LTE Band 7 Channel: CH21425 (High)
Band Width: 5MHz

QPSK (RB Size 1, RB Offset 12)



Date: 11.FEB.2015 14:54:55

16QAM (RB Size 1, RB Offset 12)



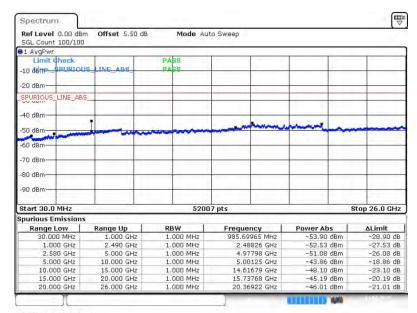
Date: 11.FEB.2015 14:56:13

SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 203 of 236
Report Issued Date : Apr. 20, 2015
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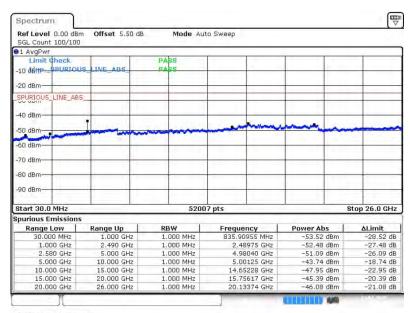
LTE Band 7 CH20800 (Low) Band: Channel: **Band Width:** 10MHz

QPSK (RB Size 1, RB Offset 24)



Date: 11.FEB.2015 14:58:15

16QAM (RB Size 1, RB Offset 0)



Date: 11.FEB.2015 14:59:33

SPORTON INTERNATIONAL (KUNSHAN) INC.

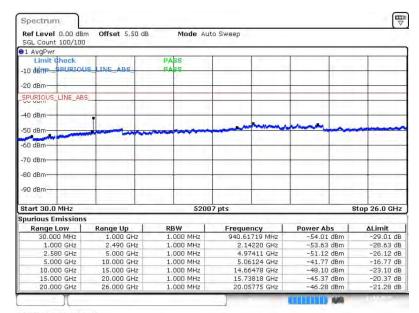
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001

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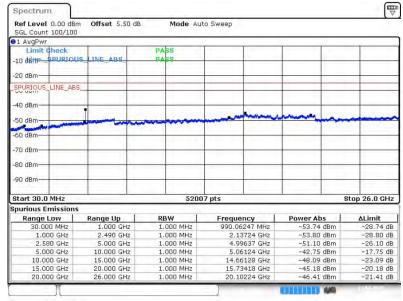
Band :LTE Band 7Channel :CH21100 (Middle)Band Width :10MHz

QPSK (RB Size 1, RB Offset 0)



Date: 11.FEB.2015 15:01:35

16QAM (RB Size 1, RB Offset 24)

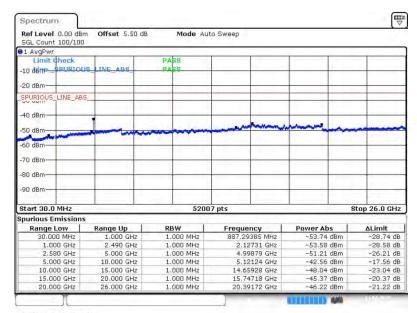


Date: 11.FEB.2015 15:02:54

SPORTON INTERNATIONAL (KUNSHAN) INC.

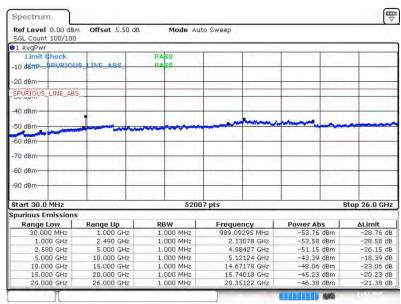
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 205 of 236
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Band :	LTE Band 7	Channel:	CH21400 (High)
Band Width:	10MHz		



Date: 11.FEB.2015 15:04:56

16QAM (RB Size 1, RB Offset 24)



Date: 11.FEB.2015 15:06:15

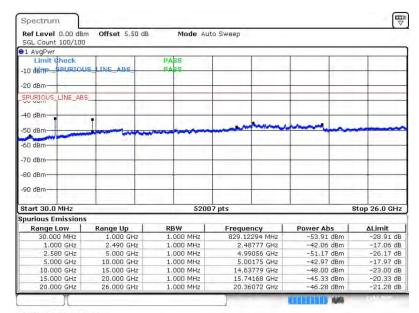
SPORTON INTERNATIONAL (KUNSHAN) INC.

TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 206 of 236
Report Issued Date : Apr. 20, 2015
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Band: LTE Band 7 Channel: CH20825 (Low)

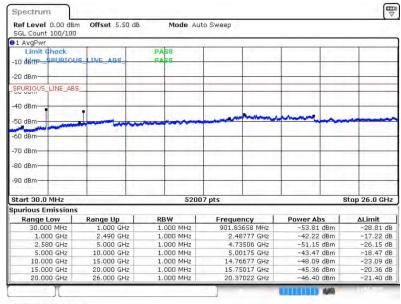
Band Width: 15MHz

QPSK (RB Size 1, RB Offset 37)



Date: 11.FEB.2015 15:08:17

16QAM (RB Size 1, RB Offset 0)

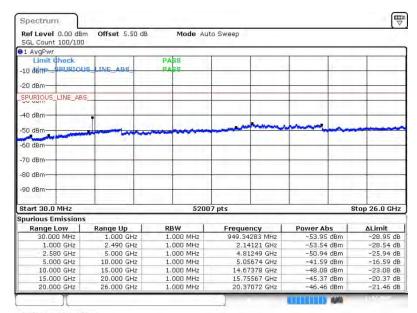


Date: 11.FEB.2015 15:09:35

SPORTON INTERNATIONAL (KUNSHAN) INC.

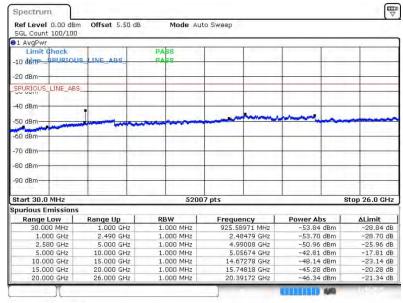
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 207 of 236
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Band:	LTE Band 7	Channel:	CH21100 (Middle)		
Band Width:	15MHz				



Date: 11.FEB.2015 15:11:37

16QAM (RB Size 1, RB Offset 0)

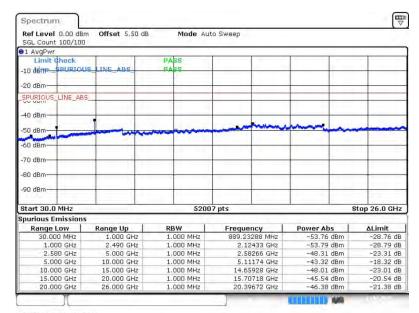


Date: 11.FEB.2015 15:12:56

SPORTON INTERNATIONAL (KUNSHAN) INC.

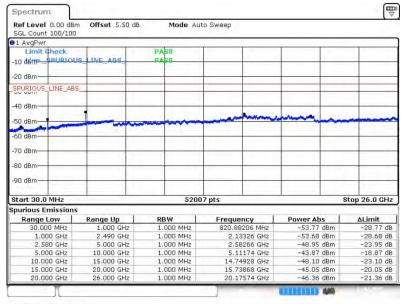
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 208 of 236
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Band :	LTE Band 7	Channel:	CH21375 (High)
Band Width:	15MHz		



Date: 11.FEB.2015 15:14:58

16QAM (RB Size 1, RB Offset 0)

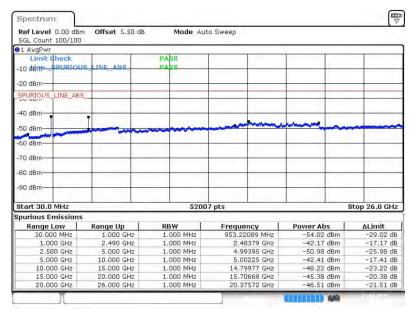


Date: 11.FEB.2015 15:16:16

SPORTON INTERNATIONAL (KUNSHAN) INC.

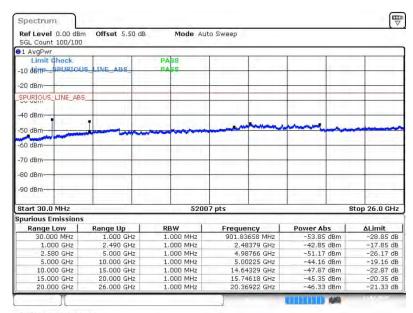
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 209 of 236
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Band :	LTE Band 7	Channel:	CH20850 (Low)
Band Width:	20MHz		



Date: 11.FEB.2015 15:18:18

16QAM (RB Size 1, RB Offset 99)

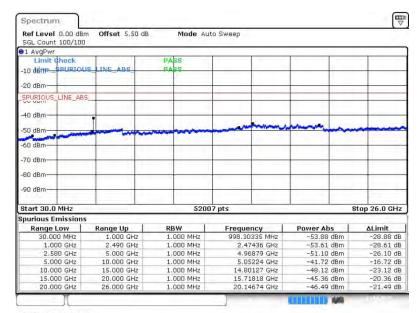


Date: 11.FEB.2015 15:19:37

SPORTON INTERNATIONAL (KUNSHAN) INC.

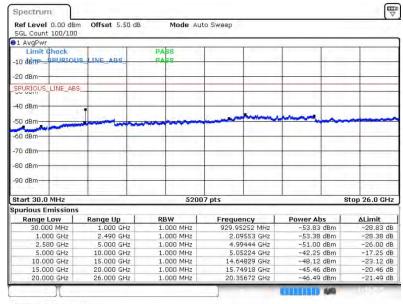
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 210 of 236
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Band :	LTE Band 7	Channel:	CH21100 (Middle)
Band Width:	20MHz		



Date: 11.FEB.2015 15:21:39

16QAM (RB Size 1, RB Offset 0)

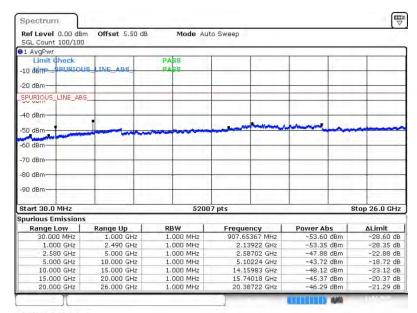


Date: 11.FEB.2015 15:22:57

SPORTON INTERNATIONAL (KUNSHAN) INC.

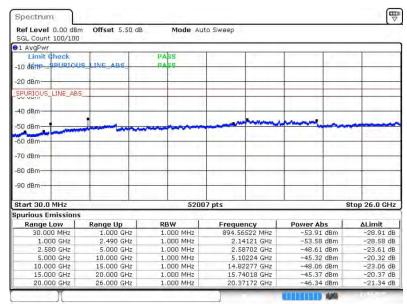
TEL: 86-0512-5790-0158 FAX: 86-0512-5790-0958 FCC ID: 2ACCJN001 Page Number : 211 of 236
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Band :	LTE Band 7	Channel:	CH21350 (High)
Band Width:	20MHz		



Date: 11.FEB.2015 15:25:00

16QAM (RB Size 1, RB Offset 49)



Date: 11.FEB.2015 15:26:19

SPORTON INTERNATIONAL (KUNSHAN) INC.

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3.7 Radiated Spurious Emission Measurement

3.7.1 **Description of Radiated Spurious Emission**

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

For Band 7

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 55 + 10 log (P) dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 **Measuring Instruments**

The measuring equipment is listed in the section 4 of this test report.

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3.7.3 **Test Procedures**

- The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 8. Taking the record of output power at antenna port.
- 9. Repeat step 7 to step 8 for another polarization.
- 10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

```
= P(W) - [43 + 10log(P)] (dB)
```

= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

= -13dBm.

For Band 7

The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

```
= P(W)- [55 + 10log(P)] (dB)
```

= [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)

= -25dBm.

11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

12. ERP (dBm) = EIRP - 2.15

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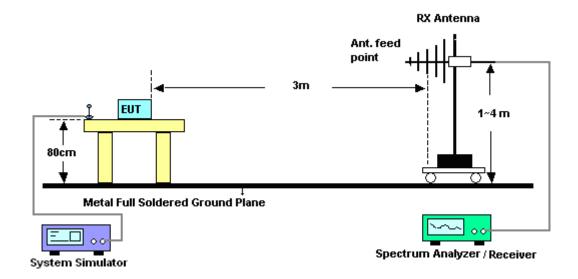
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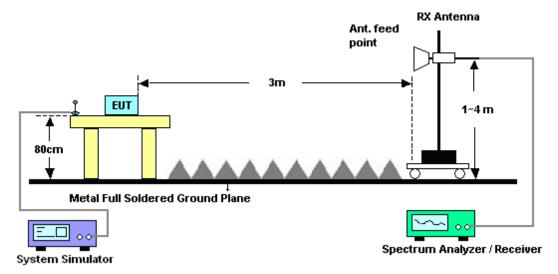
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3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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3.7.5 Test Result of Field Strength of Spurious Radiated

Band :		_TE Band 2	2			Temp	erature :	22~23°C				
Test Mode	:	1.4MHz QF	PSK RB	Size 1 Offse	et 0	Relat	ive Humi	dity:	42~4	2~43%		
Test Engin	eer :	Simon Lu				Polar	ization :		Horiz	zontal		
Remark :	;	Spurious emissions below 1GHz were found more than 20dB below limit line.										
Frequency	EIRP	Limit	Over	SPA	S.G.	•	TX Cable	TX Anto	enna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gai	n			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	1)	(dB)	(dB	i)	(H/V)		
3759	-58.08	3 -13	-45.08	-65.07	-61.6	6	3	6.58	3	Н	Pass	
5637.9	-55.29	9 -13	-42.29	-59.91	-60.6	6	3.84	9.2	1	Н	Pass	
7518	-51.10	6 -13	-38.16	-60.40	-57.8	3	4.43	11.1	0	Н	Pass	

Band :		LTE Band 2					Temperature : 22~23°C				
Test Mode :		1.4MHz QPSK RB Size 1 Offset 0 Relative Humidity: 42~43%									
Test Engine	er:	Simon Lu Polarization : Vertical					cal				
Remark :		Spurious e	Spurious emissions below 1GHz were found more than 20dB below limit line.								
Frequency	EIRF	P Limit	Over	SPA	S.G		TX Cable	TX Ante	enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gaiı	า		
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dBi)	(H/V)	
3759	-60.8	5 -13	-47.85	-64.93	-64.4	13	3	6.58	3	V	Pass
5637	-54.5	7 -13	-41.57	-60.8	-59.9	94	3.84	9.21		V	Pass
7518	-51.9	4 -13	-38.94	-60.6	-58.6	61	4.43	11.1	0	V	Pass

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Band :		LTE Band 2 Temperature : 22~23°C								
Test Mode	: :	BMHz QPSK RB Size 1 Offset 0 Relative Humidity: 42~43%								
Test Engin	eer:	: Simon Lu Polarization : Horizontal								
Remark :	;	Spurious emissions below 1GHz were found more than 20dB below limit line.								
Frequency	EIRP	Limit	Over	SPA	S.G				Polarization	Result
			Limit	Reading	Powe					
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBn	1) (dB) (dB	i)	(H/V)	
3756	-58.63	3 -13	-45.63	-65.62	-62.2	1 3	6.5	8	Н	Pass
5635.5	-56.62	2 -13	-43.62	-60.89	-61.9	9 3.84	9.2	1	Н	Pass
7515	-51.93	3 -13	-38.93	-60.87	-58.6	0 4.43	11.1	0	Н	Pass

Band :		LTE Band 2	2			Temperature :			22~23°C			
Test Mode :		3MHz QPS	K RB Si	ze 1 Offset	0	Rela	tive Humid	dity:	42~4	13%		
Test Engine	er:	Simon Lu					rization :		Verti	Vertical		
Remark :		Spurious e	missions	below 1G	dz wer	e foui	nd more th	an 20dB	belo	w limit line.		
Frequency	EIRI	Spurious emissions below 1GHz P Limit Over SPA					TX Cable	TX Ante	nna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	า			
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dBi)	(H/V)		
3756	-60.9	, , , , , , , ,			-64.4	19	3	6.58	3	V	Pass	
5635.5	-54.2	26 -13 -41.26 -60.49 -				3	3.84	9.21		V	Pass	
7515	-54.3				-61.0	00	4.43	11.1	0	V	Pass	

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Band :		LTE Band	2			Temp	perature :		22~23°C		
Test Mode	:	5MHz QPS	SK RB Si	ze 1 Offset	0	Relat	tive Humi	dity:	42~4	13%	
Test Engin	eer :	Simon Lu				Pola	rization :		Hori	zontal	
Remark :		Spurious e	missions	below 1Gh	dz were	e four	nd more th	an 20dB	belo	w limit line.	
Frequency	EIR	Spurious emissions below 1GHz EIRP Limit Over SPA					TX Cable	TX Anto	enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dB	i)	(H/V)	
3756	-58.0	58.07 -13 -45.07 -65.06				55	3	6.58	3	Н	Pass
5632.5	2.5 -50.08 -13 -37.08 -58.10				-55.4	4	3.84	9.2	1	Н	Pass
7509					-57.8	88	4.43	11.1	0	Н	Pass

Band :		LTE Band	2		ŀ	Temperature :		22~23°C		
Test Mode		5MHz QPS	K RB Si	ze 1 Offset	0	Relative Humid	dity :	42~43%		
Test Engine	eer :	Simon Lu				Polarization :		Vertical		
Remark :		Spurious e	missions	below 1Gl	dz were	found more that	an 20dB	below limit line.		
Frequency	EIRE	<u> </u>				TX Cable	TX Ante	nna Polarization	Result	
, ,			Limit	Reading	Powe	r loss	Gair	1		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm) (dB)	(dBi) (H/V)		
3756	-61.2	, , , , , , , ,				3 3	6.58	8 V	Pass	
5632.5	-52.8	.82 -13 -39.82 -59.58 -				3.84	9.21	V	Pass	
7509	-50.5	5 -13	-37.55	-59.89	-57.22	2 4.43	11.10) V	Pass	

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Band :		LTE Band 2	2			Tem	perature :		22~23°C		
Test Mode	:	10MHz QP	SK RB S	Size 1 Offse	et O	Rela	tive Humi	dity:	42~4	13%	
Test Engin	eer :	Simon Lu				Pola	rization :		Hori	zontal	
Remark :		Spurious e	missions	below 1Gl	dz were	e fou	nd more th	an 20dB	belo	w limit line.	
Frequency	EIR						TX Cable			Polarization	Result
			Limit	Reading	Pow	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dB	i)	(H/V)	
3750	-57.4)7	3	6.58	3	Н	Pass
5625	-56.68 -13 -43.68 -60.95				-62.0)5	3.84	9.2	1	Н	Pass
7500	-50.4	50.45 -13 -37.45 -60.02				12	4.43	11.1	0	Н	Pass

Band :		LTE Band 2	2			Temperatur	e :	22~2	3°C		
Test Mode		10MHz QP	SK RB S	Size 1 Offse	et O	Relative Hu	midity :	42~4	3%		
Test Engine	eer :	Simon Lu				Polarization	n :	Vertic	Vertical		
Remark :		Spurious e	missions	below 1Gł	dz were	e found more	than 20dB	belov	w limit line.		
Frequency	EIRE	•				. TX Cab	le TX Ante	enna	Polarization	Result	
. ,			Limit	Reading	Powe	er loss	Gai	n			
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n) (dB)	(dB	i)	(H/V)		
3750	-60.8					7 3	6.58	3	V	Pass	
5628	-50.5	50.57 -13 -37.57 -58.58				4 3.84	9.2	1	V	Pass	
7500	-54.3					7 4.43	11.1	0	V	Pass	

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Band :		LTE Band 2	2			Tem	perature :		22~23°C		
Test Mode	:	15MHz QP	SK RB S	Size 1 Offse	et O	Rela	tive Humi	dity:	42~4	13%	
Test Engin	eer :	Simon Lu				Pola	rization :		Hori	zontal	
Remark :		Spurious emissions below 1GHz wer					nd more th	an 20dB	below limit line.		
Frequency	EIR					i .	TX Cable	TX Anto	enna	Polarization	Result
			Limit	Reading	Pow	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dB	i)	(H/V)	
3744	-58.2	-58.21 -13 -45.21 -65.20				79	3	6.58	3	Н	Pass
5617.5	5 -53.80 -13 -40.80 -59.53				-59.1	16	3.84	9.2	1	Н	Pass
7491	-51.96 -13 -38.96 -60.89				-58.6	3	4.43	11.1	0	Н	Pass

Band :		LTE Band 2	2			Temperature :		22~23°C	
Test Mode	:	15MHz QP	SK RB S	Size 1 Offse	et 0	Relative Humi	dity:	42~43%	
Test Engine	eer:	Simon Lu			ı	Polarization :		Vertical	
Remark :		Spurious e	missions	below 1GI	dz were	found more th	an 20dB	below limit line.	
Frequency	EIRP	P Limit Over SPA					TX Ante	nna Polarization	Result
(MHz)	(dBm	Limit Reading F m)(dBm)(dB) (dBm) () (dB)	(dBi)		
3744	-60.7	, , , , , , , ,			-64.32	2 3	6.58	V	Pass
5617.5	-54.2	4.21 -13 -41.21 -60.44			-59.58	3.84	9.21	V	Pass
7491	-54.2					2 4.43	11.10) V	Pass

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Band :		LTE Band	2			Temperature :			22~23°C		
Test Mode	:	20MHz QP	SK RB S	Size 1 Offse	et O	Relative Humic	dity:	42~4	13%		
Test Engin	eer :	Simon Lu				Polarization :		Horiz	zontal		
Remark :		Spurious emissions below 1GHz were found more than 20						belo	w limit line.		
Frequency	EIRI	P Limit							Polarization	Result	
			Limit	Reading	Powe	er loss	Gai	n			
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm	n) (dB)	(dBi	i)	(H/V)		
3741	-58.1					3 3	6.58	3	Н	Pass	
5610	-48.6	7 -13	-35.67	-57.38	-54.0	4 3.84	9.2	1	Н	Pass	
7479	-52.7					8 4.43	11.1	0	Н	Pass	

Band :		LTE Band 2	2			Tempe	rature :		22~23°C		
Test Mode :		20MHz QP	SK RB S	Size 1 Offse	et O	Relativ	e Humi	dity :	42~4	13%	
Test Engine	er:	Simon Lu					ation :		Verti	cal	
Remark:		Spurious e	missions	below 1GI	dz were	e found	more th	an 20dB	belo	w limit line.	
Frequency	EIRE	P Limit	Spurious emissions below 1GHz Limit Over SPA				Cable	TX Ante	enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gaiı	า		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	1) ((dB)	(dBi)	(H/V)	
3741	-60.7					2	3	6.58	3	V	Pass
5610	-54.7	3 -13 -41.73 -60.96 -				0	3.84	9.21		V	Pass
7479	-52.7	9 -13					4.43	11.1	0	V	Pass

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Band :		LTE Band	4			Tem	perature :		22~23°C		
Test Mode :		1.4MHz QF	PSK RB	Size 1 Offs	et 0	Rela	tive Humid	dity:	42~4	13%	
Test Engine	er:	Simon Lu				Pola	rization :		Horiz	zontal	
Remark :		Spurious e	missions	below 1Gl	dz were	e fou	nd more tha	an 20dB	belo	w limit line.	
Frequency	EIRI	P Limit	Spurious emissions below 1GHz Limit Over SPA				G. TX Cable TX Anto			Polarization	Result
			Limit	Reading	Powe	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm	າ)	(dB)	(dBi	i)	(H/V)	
3465	-57.3	, (, (, , , , , , , , , , , ,				'3	3.12	6.49)	Н	Pass
5196	-54.4	7 -13 -41.47 -60.39 -5				5	3.65	8.64	1	Н	Pass
6927	-46.8	31 -13					4.15	10.7	2	Н	Pass

Band :		LTE Band	4			Tempe	erature :		22~23°C		
Test Mode	:	1.4MHz QI	PSK RB	Size 1 Offs	et 0	Relativ	ve Humi	dity :	42~4	13%	
Test Engir	neer :	Simon Lu				Polariz	zation :		Verti	cal	
Remark :		Spurious emissions below 1GHz were found more than 2						an 20dB	belo	w limit line.	
Frequency	EIRF	Limit	Over	SPA					nna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gaiı	1		
(MHz)	(dBn) (dBm)	(dB)	(dBm)	(dBm	ı)	(dB)	(dBi)	(H/V)	
3465	-61.7				-65.0	6	3.12	6.49)	V	Pass
5196	-57.7	.73 -13 -44.73 -61.13			-62.7	1	3.65	8.64	ļ	V	Pass
6927	-49.5					07 4.15 10.72			V	Pass	

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Band :		LTE Band	4			Temp	perature :		22~23°C		
Test Mode :		3MHz QPS	K RB Si	ze 1 Offset	0	Relat	tive Humic	dity:	42~4	13%	
Test Engine	er:	Simon Lu				Pola	rization :		Horiz	zontal	
Remark :		Spurious e	missions	below 1Gh	dz were	e foun	nd more tha	an 20dB	belo	w limit line.	
Frequency	EIRI	P Limit	Over	SPA	S.G.	i. TX Cable TX Anto			enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm	າ)	(dB)	(dB	i)	(H/V)	
3462	-57.2	7 -13 -44.27 -64.53				3	3.12	6.49	9	Н	Pass
5193	-55.7	9 -13 -42.79 -61.71 -6				7	3.65	8.64	1	Н	Pass
6924	-49.8	0 -13					37 4.15 10.72			Н	Pass

Band :		LTE Band	4			Tempe	rature :		22~2	23°C		
Test Mode	:	3MHz QPS	SK RB S	ze 1 Offset	0	Relativ	e Humi	dity :	42~4	13%		
Test Engir	neer :	Simon Lu				Polariz	ation :		Verti	Vertical		
Remark :		Spurious e	missions	below 1GI	dz were	found	more th	an 20dB	belo	below limit line.		
Frequency	EIRF	Limit	Over	SPA	S.G.	. T)	(Cable	TX Ante	nna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	1			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	ı) ((dB)	(dBi)	(H/V)		
3462	-62.5	9 -13	-49.59	-64.67	-65.9	5	3.12	6.49	9 V Pass			
5193	-58.1	4 -13	-45.14	-61.54	-63.1	-63.12 3.65 8.64 V Pa			Pass			
6924	-51.8	3 -13	-38.83	-61.59	-58.4	8.40 4.15 10.72 V F			Pass			

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Band :		LTE Band 4	1			Tempera	ture :		22~2	23°C	
Test Mode :		5MHz QPS	K RB Si	ze 1 Offset	0	Relative	Humi	dity :	42~4	13%	
Test Engine	er:	Simon Lu				Polarizat	ion :		Horiz	zontal	
Remark : Spurious emissions below 1GHz were found more than 20dB below limit line.											
Frequency	EIRF	P Limit	Over	SPA	S.G	G. TX Cable TX Anto			enna	Polarization	Result
			Limit	Reading	Powe	er lo	ss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n) (d	B)	(dB	i)	(H/V)	
3459	-57.5	7.53 -13 -44.53 -64.79				9 3.	12	6.49 H		Н	Pass
5190	-55.2	5.28 -13 -42.28 -61.20			-60.2	6 3.	65	8.64 H		Н	Pass
6921	-50.0					.58 4.15 10.			2	Н	Pass

Band :		LTE Band	4			Temp	erature :		22~2	23°C		
Test Mode	:	5MHz QPS	K RB Si	ze 1 Offset	0	Relati	ive Humi	dity:	42~4	13%		
Test Engir	neer :	Simon Lu				Polari	ization :		Verti	Vertical		
Remark :		Spurious e	missions	below 1Gl	dz were	e found	d more th	an 20dB	below limit line.			
Frequency	EIRF	Limit	Over	SPA	S.G.	. 1	TX Cable	TX Ante	enna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	า			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	ı)	(dB)	(dBi)	(H/V)		
3459	-63.6	3 -13	-50.63	-65.71	-66.9	9	3.12	6.49)	V Pass		
5190	-58.3	3 -13	-45.33	-61.73	-63.3	-63.31 3.65 8.64 V Pa			Pass			
6921	-52.0	7 -13	-39.07	-61.83	-58.6	58.64 4.15 10.72 V P			Pass			

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Test Mode :		10MHz QP	SK RB S	Size 1 Offse	et O	Rela	tive Humid	dity:	42~4	13%	
Test Engine	er:	Simon Lu				Pola	rization :		Horiz	zontal	
Remark :		Spurious e	missions	below 1Gh	dz were	e four	nd more tha	an 20dB	dB below limit line.		
Frequency	EIRI	P Limit	Over	SPA	S.G.		TX Cable	TX Ante	enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm	n)	(dB)	(dB	i)	(H/V)	
3455	-57.0	8 -13	-44.08	-64.34	-60.4	4	3.12	6.49)	Н	Pass
5184	-51.84 -13 -38.84 -58.53			-56.8	3	3.65	8.64	1	Н	Pass	
6909	-49.5					7	4.15	10.7	2	Н	Pass

Band :		LTE Band	4			Tem	perature :		22~2	23°C		
Test Mode	:	10MHz QP	SK RB S	Size 1 Offse	et O	Rela	ative Humi	dity :	42~4	13%		
Test Engir	neer :	Simon Lu				Pola	arization :		Verti	Vertical		
Remark :		Spurious e	missions	below 1GI	dz were	e fou	nd more th	an 20dB	belo	below limit line.		
Frequency	EIRF	Limit	Over	SPA	S.G.		TX Cable	TX Ante	enna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	n			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	n)	(dB)	(dBi	i)	(H/V)		
3456	-62.0	5 -13	-49.05	-64.13	-65.4	-1	3.12	6.49)	V	Pass	
5182.5	-57.7	9 -13	-44.79	-61.19	-62.7	62.77 3.65 8.64 V			Pass			
6909	-50.6	5 -13	-37.65	-60.41	-57.2	7.22 4.15 10.72			2	V	Pass	

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Test Mode :		15MHz QP	SK RB S	Size 1 Offse	et O	Relative Humi	dity :	42~43%		
Test Engine	er:	Simon Lu				Polarization :		Horizontal		
Remark:		Spurious e	missions	below 1Gl	dz were	e found more th	an 20dB	below limit line.		
Frequency	EIRF	P Limit	Over	SPA	S.G	. TX Cable	TX Ante	enna Polarization	Result	
			Limit	Reading	Powe	er loss	Gai	n		
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBn	n) (dB)	(dB	i) (H/V)		
3450	-57.4	7.49 -13 -44.49 -64.75 -60.85			3.12	6.49) Н	Pass		
5175	-55.9	5.97 -13 -42.97 -61.89			-60.9	3.65	8.64	1 H	Pass	
6900	-49.8	1 -13	3 -36.81 -61.45 -56.38 4.15 10.72 H P				Pass			

Band :		LTE Band	4			Temp	erature :		22~2	23°C		
Test Mode	:	15MHz QP	SK RB S	Size 1 Offse	et O	Relati	ive Humi	dity :	42~4	13%		
Test Engir	neer :	Simon Lu				Polar	ization :		Verti	Vertical		
Remark :		Spurious e	missions	below 1GI	dz were	e found	d more th	an 20dB	belo	below limit line.		
Frequency	EIRF	Limit	Over	SPA	S.G.	. 1	TX Cable	TX Ante	nna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	1			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	ı)	(dB)	(dBi)	(H/V)		
3450	-63.0	6 -13	-50.06	-65.14	-66.4	2	3.12	6.49	V Pass			
5175	-57.8	0 -13	-44.80	-61.2	-62.7	2.78 3.65 8.64 V			V	Pass		
6900	-51.8	5 -13	-38.85	-61.61	-58.4	.42 4.15 10.72			V	Pass		

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Test Mode :	2	20MHz QP	SK RB S	Size 1 Offse	t O	Relati	ive Humi	dity:	42~4	13%		
Test Engine	er:	Simon Lu				Polar	ization :		Horiz	Horizontal		
Remark :	Ş	Spurious e	missions	below 1GH	dz were	e found	d more tha	an 20dB	B below limit line.			
Frequency	EIRP	Limit	Over	SPA	S.G	. 1	TX Cable	TX Ante		Polarization	Result	
			Limit	Reading	Pow	er	loss	Gai	n			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dBi	i)	(H/V)		
3447	-57.34	4 -13	-44.34	-64.60	-60.7	' 0	3.12	6.49)	Н	Pass	
5166	-55.56	6 -13	-42.56	-61.48	-60.5	54	3.65	8.64	1	Н	Pass	
6891	-50.49	9 -13	-37.49	-62.13	-57.0)6	4.15	10.7	2			

Band :		LTE Band	4			Temper	rature :		22~2	23°C		
Test Mode	:	20MHz QP	SK RB S	Size 1 Offse	et 0	Relativ	e Humi	dity :	42~4	13%		
Test Engir	neer :	Simon Lu				Polariz	ation :		Verti	Vertical		
Remark :		Spurious e	missions	below 1Gl	dz were	found	more th	an 20dB	belo	below limit line.		
Frequency	EIRF	Limit	Over	SPA	S.G.	ТХ	Cable	TX Ante	enna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	า			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	1) (dB)	(dBi)	(H/V)		
3450	-61.7	0 -13	-48.70	-63.99	-65.0	6	3.12	6.49)	V Pass		
5166	-58.2	9 -13	-45.29	-61.69	-63.2	3.27 3.65 8.64 V Pass			Pass			
6891	-51.5	9 -13	-38.59	-61.35	-58.1	.16 4.15 10.72 V Pas			Pass			

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Band :		LTE Band	7			Temp	erature :		22~2	23°C		
Test Mode	:	5MHz QPS	K RB Si	ze 1 Offset	0	Relat	ive Humi	dity:	42~4	13%		
Test Engir	neer :	Simon Lu				Polar	rization :		Horiz	Horizontal		
Remark :		Spurious e	missions	below 1GH	dz were	e foun	d more th	an 20dB	below limit line.			
Frequency	EIRI	P Limit	Over	SPA	S.G					Polarization	Result	
			Limit	Reading	Pow	er	loss	Gai	n			
(MHz)	(dBn	1) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dB	i)	(H/V)		
5066	-54.0	8 -25	-29.08	-60.87	-59.0)7	3.49	8.48	3	Н	Pass	
7597.5	-51.2	-51.20 -25 -26.20 -61.32 -5			-58.0)6	4.28	11.1	5	Н	Pass	
10128	-46.1	-46.17 -25 -21.17 -63.02				.01 5.1 12.94 H			Н	Pass		

Band :		LTE Band	7			Temp	erature :		22~2	23°C		
Test Mode	:	5MHz QPS	K RB Si	ze 1 Offset	0	Relat	ive Humi	dity:	42~4	13%		
Test Engir	neer :	Simon Lu				Polar	ization :		Verti	Vertical		
Remark :		Spurious e	missions	below 1Gl	dz were	e foun	d more th	an 20dB	below limit line.			
Frequency	EIRF	Limit	Over	SPA	S.G.		TX Cable	TX Ante	enna	Polarization	Result	
			Limit	Reading	Powe	er	loss	Gaiı	1			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	ı)	(dB)	(dBi)	(H/V)		
5066	-56.7	0 -25	-31.70	-61.31	-61.6	9	3.49	8.48	8 V Pass			
7597.5	-50.1	4 -25	-25.14	-61.11	-57.0	-57.01 4.28 11.15 V Pa			Pass			
10128	-46.0	9 -25	-21.09	-62.72	-53.9	53.93 5.1 12.94 V I			Pass			

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Band :		LTE Band	7			Temperature :	:	22~23°C	
Test Mode	:	10MHz QP	SK RB S	Size 1 Offse	t O	Relative Hum	idity :	42~43%	
Test Engir	neer :	Simon Lu				Polarization :		Horizontal	
Remark :		Spurious e	missions	below 1GH	dz were	e found more th	nan 20dB	below limit line.	
Frequency	EIRF	Limit	Over	SPA	S.G		TX Ant		zation Result
			Limit	Reading	Powe		Gai		
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBn	n) (dB)	(dB	i) (H/	/V)
5060	-54.5	0 -25	-29.50	-60.98	-59.4	9 3.49	8.4	3 F	H Pass
7590	-49.0	0 -25	-24.00	-60.22	-55.8	6 4.28	11.1	5 H	H Pass
10120	-45.6	6 -25	-20.66	-62.64	-53.5	0 5.1	12.9	4 F	H Pass

Band :		LTE Band 7 Temperature :					22~23°C				
Test Mode	:	10MHz QPSK RB Size 1 Offset 0				Relative Humidity :		42~4	42~43%		
Test Engir	neer :	Simon Lu Polarization :					Vertical				
Remark :		Spurious emissions below 1GHz were found more than 20dB below limit line.									
Frequency	EIRF	Limit	Over	SPA	S.G.	TX Cable	TX Ante	enna	Polarization	Result	
			Limit	Reading	Powe	er loss	Gaiı	n			
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm) (dB)	(dBi	i)	(H/V)		
5060	-55.1	5 -25	-30.15	-60.08	-60.1	4 3.49	8.48	3	V	Pass	
7592	-41.9	5 -25	-16.95	-57.35	-48.8	2 4.28	11.1	5	V	Pass	
10120	-45.9	6 -25	-20.96	-62.6	-53.8	1 5.1	12.9	4	V	Pass	

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Band :		LTE Band 7 Temperature :					22~2	23°C			
Test Mode	:	: 15MHz QPSK RB Size 1 Offset 0				Relative Humidity :			42~43%		
Test Engir	gineer : Simon Lu Polarization : Horizontal					zontal					
Remark :		Spurious emissions below 1GHz were found more than 20dB below limit line.									
Frequency	EIRI	P Limit	Over	SPA	S.G	. Т	X Cable	TX Anto	4	Polarization	Result
			Limit	Reading	Pow	er	loss	Gai	n		
(MHz)	(dBn) (dBm)	(dB)	(dBm)	(dBn	n)	(dB)	(dB	i)	(H/V)	
5054	-56.2	0 -25	-31.20	-61.79	-61.1	9	3.49	8.48	3	Н	Pass
7583	-49.6	6 -25	-24.66	-60.55	-56.5	52	4.28	11.1	5	Н	Pass
10112	-44.4	3 -25	-19.43	-61.76	-52.2	27	5.1	12.9	4	Н	Pass

Band :		LTE Band 7 Temperature : 22~23°C									
Test Mode	:	15MHz QPSK RB Size 1 Offset 0 Relative Humidity:				dity:	42~43%				
Test Engir	neer :	r : Simon Lu Polarization : Vertical					cal				
Remark :	emark: Spurious emissions below 1GHz were found more than 20dB below limit line.										
Frequency	EIRP	Limit	Over	SPA	S.G.		TX Cable	TX Ante	enna	Polarization	Result
			Limit	Reading	Powe	er	loss	Gaiı	า		
(MHz)	(dBm) (dBm)	(dB)	(dBm)	(dBm	ı)	(dB)	(dBi)	(H/V)	
5054	-54.90	6 -25	-29.96	-59.97	-59.9	5	3.49	8.48	3	V	Pass
7582.5	-48.1	4 -25	-23.14	-60.02	-55.0	1	4.28	11.1	5	V	Pass
10112	-44.90	0 -25	-19.90	-61.66	-52.7	4	5.1	12.9	4	V	Pass

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Band :		LTE Band 7	7			Temperature	:	22~23°C		
Test Mode	:	20MHz QPSK RB Size 1 Offset 0 Relative Humidity:				idity :	42~43%			
Test Engir	neer :	: Simon Lu Polarization : Horizontal								
Remark :	: Spurious emissions below 1GHz were found more than 20dB below limit line.									
Frequency	EIRI	Limit	Over	SPA	S.G				n Result	
			Limit	Reading	Powe	er loss	Gai	n		
(MHz)	(dBn) (dBm)	(dB)	(dBm)	(dBn	n) (dB)	(dB	i) (H/V)		
5051	-55.1	3 -25	-30.13	-61.17	-60.1	1 3.49	8.48	3 Н	Pass	
7575	-50.3	8 -25	-25.38	-60.93	-57.2	5 4.28	11.1	5 H	Pass	
10100	-43.8	8 -25	-18.88	-61.29	-51.7	2 5.1	12.9	4 H	Pass	

Band :		LTE Band 7				Temperature :			22~23°C		
Test Mode	:	20MHz QPSK RB Size 1 Offset 0				Relative Humi	42~43%				
Test Engir	neer : Simon Lu				Polarization :		Vertical				
Remark :	Remark: Spurious emissions below 1GHz were found more than 20dB below limit line.										
Frequency	EIRF	P Limit	Over	SPA	S.G.				Polarization	Result	
(MHz)	(dBm	ı) (dBm)	Limit (dB)	Reading (dBm)	Powe (dBm		Gaiı (dBi	-	(H/V)		
5051	-56.4	8 -25	-31.48	-61.09	-61.4 ⁻	7 3.49	8.48	3	V	Pass	
7575	-51.0	3 -25	-26.03	-61.6	-57.8	9 4.28	11.1	5	V	Pass	
10100	-46.5	7 -25	-21.57	-63.2	-54.4	1 5.1	12.9	4	V	Pass	

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3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

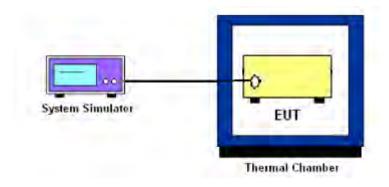
3.8.3 Test Procedures for Temperature Variation

- 1. The EUT was set up in the thermal chamber and connected with the system simulator.
- With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.4 Test Procedures for Voltage Variation

- 1. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
- 2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- 3. The variation in frequency was measured for the worst case.

3.8.5 Test Setup



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3.8.6 Test Result of Temperature Variation (FCC)

Band: LTE Band 2 (QPSK)	Limit (ppm):	within authorized band
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Temperature (°C)	BW 10MHz Deviation (ppm)	Result
50	0.0008	
40	0.0037	
30	0.0023	
20(Ref.)	0.0000	
10	0.0016	PASS
0	0.0070	
-10	0.0085	
-20	0.0010	
-30	0.32	

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Band:	LTE Band 4 (QPSK)	Limit (ppm):	within authorized band			
	BW 10MHz					
Temperature (°C)	Deviation (ppm)	Result				
50	0.0004					
40	0.0009					
30	0.0026					
20(Ref.)	0.0000					
10	0.0054		PASS			
0	0.0009					
-10	0.0044					
-20	0.0003					
-30	0.0024					

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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	BW 10MHz	
Temperature (°C)	Deviation (ppm)	Result
50	0.0004	
40	0.0007	
30	0.0018	
20(Ref.)	0.0000	
10	0.0009	PASS
0	0.0046	
-10	0.0069	
-20	0.0007	
-30	0.0023	

Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

3.8.7 Test Result of Voltage Variation (FCC)

Band	Bandwidth	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
		4.35	0.0040		
LTE Band 2	10M	Normal	0.0027	(Note 3.)	PASS
		3.50	0.0013		
		4.35	0.0008		
LTE Band 4	10M	Normal	0.0066	(Note 3.)	PASS
		3.50	0.0021		
		4.35	0.0043		
LTE Band 7	10M	Normal	0.0050	(Note 3.)	PASS
		3.50	0.0009		

Remark:

- 1. Normal Voltage = 3.80V.
- 2. The manufacturer declared that the EUT could work properly between voltage $3.50V \sim 4.35V$.
- 3. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	9kHz~30GHz	May 04, 2014	Feb. 09, 2015~ Feb. 11, 2015	May 03, 2015	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 25, 2014	Feb. 09, 2015~ Feb. 11, 2015	Oct. 24, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Oct. 25, 2014	Feb. 12, 2015~ Feb. 14, 2015	Oct. 24, 2015	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 04, 2014	Feb. 12, 2015~ Feb. 14, 2015	May 03, 2015	Radiation (03CH01-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30Mhz-2Ghz	Sep. 13, 2014	Feb. 12, 2015~ Feb. 14, 2015	Sep. 12, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Feb. 12, 2015~ Feb. 14, 2015	Nov. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Feb. 12, 2015~ Feb. 14, 2015	Nov. 07, 2015	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA17024 9	15GHz~40GHz	Mar. 10, 2014	Feb. 12, 2015~ Feb. 14, 2015	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Feb. 12, 2015~ Feb. 14, 2015	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Oct. 28, 2014	Feb. 12, 2015~ Feb. 14, 2015	Oct. 27, 2015	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Feb. 12, 2015~ Feb. 14, 2015	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Feb. 12, 2015~ Feb. 14, 2015	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Feb. 12, 2015~ Feb. 14, 2015	NCR	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP 7	100818	9kHz~7GHz	Jul. 17, 2014	Feb. 13, 2015	Jul. 16, 2015	ERP/EIRP (OTA02-SZ)
Quad-Ridged Horn	ETS-Lindgren	3164-08	00102954	700MHz~10000M Hz	N/A	Feb. 13, 2015	N/A	ERP/EIRP (OTA02-SZ)
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00108147	N/A	N/A	Feb. 13, 2015	N/A	ERP/EIRP (OTA02-SZ)
Switch Control Mainframe	Agilent	3499A	MY4200545 1	N/A	N/A	Feb. 13, 2015	N/A	ERP/EIRP (OTA02-SZ)

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Uncertainty of Evaluation 5

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of	2.5 dB
Confidence of 95% (U = 2Uc(y))	2.3 UB

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