

10. PEAK EXCURSION MEASUREMENT

10.1 Standard Applicable

15.407(a)(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

10.2 Measurement Procedure (following procedure G in KDB789033)

- 1. Pre-evaluation in selection for test mode based on KDB789033
- 2. Tests mode selection is based on the variations in signal structure,
 - (i) All signal types OFDM;
 - (ii) All modulation types (BPSK, QPSK, 16-QAM, 64-QAM);
 - (iii) All bandwidth modes (20MHz, and 40MHz for 802.11n);
 - (iv) All variations in signal parameters (inapplicable);
 - (v) Error-correction coding rate (not required);
- 3. Place the EUT on the table and set it in transmitting mode.
- 4. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
- Set RBW=1MHz, VBW = 3MHz, span =enough to capture the signal of the interest, Max. Hold, Detector = peak
- 6. use the procedure specified in KDB 789033 F) to determine the PPSD
- 7. compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD by the subtraction
- 8. Adjust the appropriate offset factor to the spectrum, where *Offset 14.01dB* (5150~5250MHz, where = cable loss + attenuator + duty factor + MIMO factor, MIMO factor = 10* log (2) = 3dB, attenuator = 10dB, cable loss + duty factor = 1.01dB
- 9. Repeat above procedures until all default test mode of default frequency band of the test is completed.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11a

Modulation	Coding rate (R)	Coded bits per subcarrier (N _{BPSC})	Coded bits per OFDM symbol (N _{CBPS})	Data bits per OFDM symbol (N _{DBPS})	Data rate (Mb/s) (20 MHz channel spacing)	Data rate (Mb/s) (10 MHz channel spacing)	Data rate (Mb/s) (5 MHz channel spacing)
BPSK	1/2	1	48	24	б	3	1.5
BPSK	3/4	1	48	36	9	4.5	2.25
QPSK	1/2	2	96	48	12	6	3
QPSK	3/4	2	96	72	18	9	4.5
16-QAM	1/2	4	192	96	24	12	б
16-QAM	3/4	4	192	144	36	18	9
64-QAM	2/3	6	288	192	48	24	12
64-QAM	3/4	6	288	216	54	27	13.5

Table 18-4—Modulation-dependent parameters

802.11n 20

Table 20-30-MCS parameters for mandatory 20 MHz, N_{SS} = 1, N_{ES} = 1

		1.1		1.1	-			Data ra	ate (Mb/s)
MCS Index	Modulation	R	N _{BPSCS} (iss)	N _{SD}	N _{SP}	N _{CBPS}	N _{DBPS}	800 ns GI	400 ns GI (see NOTE)
0	BPSK	1/2	1	52	4	52	26	6.5	7.2
1	QPSK	1/2	2	52	4	104	52	13.0	14.4
2	QPSK	3/4	2	52	4	104	78	19.5	21.7
3	16-QAM	1/2	4	52	4	208	104	26.0	28.9
4	16-QAM	3/4	4	52	4	208	156	39.0	43.3
5	64-QAM	2/3	6	52	4	312	208	52.0	57.8
6	64-QAM	3/4	6	52	4	312	234	58.5	65.0
7	64-QAM	5/6	6	52	4	312	260	65.0	72.2

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此根告結果僅對測試之樣品負責,同時此樣品僅保留90天。本根告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SCGS Taiwan Ltd.</u> [No.134.WuKunRboad.NewTaineiIndustrialPark.WukunIbistrict NewTaineiCity Taiwan24803/s# + ± * BIG ± ± * 124 **



FCC ID: SWX-NBM5 IC: 6545A-NBM5

802.11n_40

MCS			N (L)	N	N	N	N	Data rat	e (Mb/s)
Index	Modulation	R	N _{BPSCS} (i _{SS})	N _{SD}	N _{SP}	N _{CBPS}	N _{DBPS}	800 ns GI	400 ns GI
0	BPSK	1/2	1	108	6	108	54	13.5	15.0
1	QPSK	1/2	2	108	6	216	108	27.0	30.0
2	QPSK	3/4	2	108	6	216	162	40.5	45.0
3	16-QAM	1/2	4	108	6	432	216	54.0	60.0
4	16-QAM	3/4	4	108	6	432	324	81.0	90.0
5	64-QAM	2/3	б	108	6	648	432	108.0	120.0
6	64-QAM	3/4	6	108	6	648	486	121.5	135.0
7	64-QAM	5/6	6	108	6	648	540	135.0	150.0

Table 20-34-MCS parameters for optional 40 MHz, N_{SS} = 1, N_{ES} = 1

802.11n_20_MIMO

1.000	1				1			Data r:	ate (Mb/s)
MCS Index	Modulation	R	N _{BPSCS} (iss)	N _{SD}	N _{SP}	N _{CBPS}	N _{DBPS}	800 ns GI	400 ns GI (see NOTE)
8	BPSK	1/2	1	52	4	104	52	13.0	14.4
9	QPSK	1/2	2	52	4	208	104	26.0	28.9
10	QPSK	3/4	2	52	4	208	156	39.0	43.3
11	16-QAM	1/2	4	52	4	416	208	52.0	57.8
12	16-QAM	3/4	4	52	4	416	312	78.0	86.7
13	64-QAM	2/3	6	52	4	624	416	104.0	115.6
14	64-QAM	3/4	6	52	4	624	468	117.0	130.0
15	64-QAM	5/6	6	52	4	624	520	130.0	144.4

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發



802.11n_40_MIMO

MCS	Malalatian	P	N ()	N	N	N	N	Data rat	e (Mb/s)
Index	Modulation	R	N _{BPSCS} (i _{SS})	N _{.SD}	N _{SP}	N _{CBPS}	N _{DBPS}	800 ns GI	400 ns GI
8	BPSK	1/2	1	108	6	216	108	27.0	30.0
9	QPSK	1/2	2	108	6	432	216	54.0	<u>60.0</u>
10	QPSK	3/4	2	108	6	432	324	81.0	90.0
11	16-QAM	1/2	4	108	6	864	432	108.0	120.0
12	16-QAM	3/4	4	108	6	864	648	162.0	180.0
13	64-QAM	2/3	6	108	6	1296	864	216.0	240.0
14	64-QAM	3/4	6	108	6	1296	972	243.0	270.0
15	64-QAM	5/6	6	108	6	1296	1080	270.0	300.0

Note: The test mode to be performed is circle in red as presents above

Measurement Equipment Used: 10.3

Refer to section 7.3 for details.

Remark: as per KDB 662291, MIMO mode is accomplished by the addition of 10 log(N), where N = 2 *as* the simultaneous emission of Peak Excursion.

10.4 Test Set-up:

Refer to section 7.4 for details.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



10.5 Test Results:

Modulation Type: BPSK

Coding Rate: 1/2

802.11a, 5150~5250 MHz

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Mid	5220	7.027	-3.459	10.49	13.00

802.11n HT20, 5150~5250 MHz_MIMO

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Mid	5220	10.785	-0.247	11.03	13.00

802.11n HT40, 5150~5250 MHz_MIMO

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Low	5190	7.312	-5.612	12.92	13.00

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發



Modulation Type: QPSK Coding Rate: 1/2

802.11a, 5150~5250 MHz

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Mid	5220	7.611	-4.597	12.21	13.00

802.11n HT20, 5150~5250 MHz_MIMO

Channel	Frequency (MHz)	Peak Value(dBm)	PPSD (dBm)	Peak Excursion (dB)	Limit (dB)
Mid	5220	10.923	-1.610	12.53	13.00

802.11n HT40, 5150~5250 MHz_MIMO

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Low	5190	6.288	-6.052	12.34	13.00

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 is advised that informatic proval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-tervised the indextervant is ungle under the partice at vector of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Modulation Type: 16-QAM Coding Rate: 1/2

802.11a, 5150~5250 MHz

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Mid	5220	7.85	-5.075	12.93	13.00

802.11n HT20, 5150~5250 MHz_MIMO

Channel	Frequency (MHz)	Peak Value(dBm)	PPSD (dBm)	Peak Excursion (dB)	Limit (dB)
Mid	5220	10.703	-2.139	12.84	13.00

802.11n HT40, 5150~5250 MHz_MIMO

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Low	5190	6.990	-5.355	12.35	13.00

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 is advised that informatic proval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-tervised the indextervant is ungle under the partice at vector of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Modulation Type: 64-QAM Coding Rate: 2/3

802.11a, 5150~5250 MHz

Channel	Frequency (MHz)	Peak Value(dBm)	PPSD (dBm)	Peak Excursion (dB)	Limit (dB)
Mid	5220	7.576	-5.331	12.91	13.00

802.11n HT20, 5150~5250 MHz_MIMO

Channel	Frequency (MHz)	Peak Value(dBm)	PPSD (dBm)	Peak Excursion (dB)	Limit (dB)
Mid	5220	11.118	-1.406	12.52	13.00

802.11n HT40, 5150~5250 MHz_MIMO

Channel	Frequency	Peak	PPSD	Peak Excursion	Limit
	(MHz)	Value(dBm)	(dBm)	(dB)	(dB)
Low	5190	7.013	-4.465	11.48	13.00

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 is advised that informatic proval of the Company. Any unauthorized alteration, forgery or falsification of the content or ap-tervised the indextervant is ungle under the partice at vector of the law. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

Modulation Type: BPSK, Coding Rate: 1/2 802.11a, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11n HT40, 5150~5250 MHz, Peak Value Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



Modulation Type: QPSK, Coding Rate: 1/2 802.11a, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



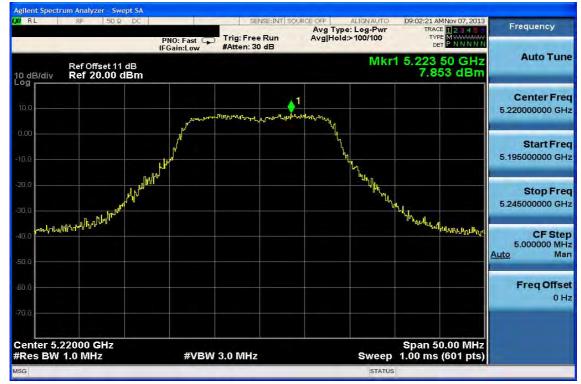
802.11n HT40, 5150~5250 MHz, Peak Value Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



Modulation Type: 16-QAM, Coding Rate: 1/2 802.11a, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



Modulation Type: 64-QAM, Coding Rate: 2/3 802.11a, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, Peak Value Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11n HT40, 5150~5250 MHz, Peak Value Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



Modulation Type: BPSK, Coding Rate: 1/2 PPSD Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, PPSD Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11n HT40, 5150~5250 MHz, PPSD Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Modulation Type: QPSK, Coding Rate: 1/2 PPSD Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, PPSD Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11n HT40, 5150~5250 MHz, PPSD Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Modulation Type: 16-QAM, Coding Rate: 1/2 PPSD Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, PPSD Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



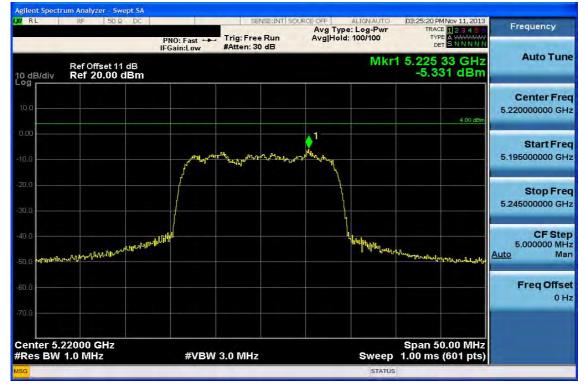
802.11n HT40, 5150~5250 MHz, PPSD Data Plot (CH Low 5190 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Modulation Type: 64-QAM, Coding Rate: 2/3 PPSD Data Plot (CH Mid 5220 MHz)



802.11n HT20, 5150~5250 MHz, PPSD Data Plot (CH Mid 5220 MHz)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



802.11n HT40, 5150~5250 MHz, PPSD Data Plot (CH Low 5190 MHz)

nt Spectrum Analyzer RL MNov 11, 2013 Peak Search Marker 1 5.201600000000 GHz TYPE A WWWWW DET S N N N N N Avg Type: Log-Pwr Avg|Hold: 100/100 Tria: Free Run PNO: Fast +++ IFGain:Low #Atten: 30 dB Next Peak Mkr1 5.201 60 GHz -4.465 dBm Ref Offset 14.01 dB Ref 20.00 dBm 10 dB/div Next Pk Right 4.00 dE Next Pk Left with Marker Delta All the world Markedus and all all Why have a think may be the how Mkr-CF Mkr→RefLvl More Center 5.19000 GHz #Res BW 1.0 MHz Span 80.00 MHz Sweep 1.00 ms (601 pts) 1 of 2 #VBW 3.0 MHz STATUS

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data.

pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. GS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



11. UNDESIRABLE EMISSION - CONDUCTED MEASUREMENT11.1 Standard Applicable

According to §15.407(b),

(b) Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
- (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

According to RSS-210 A9.2

- 1. For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.
- 2. Emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.
- 3. For transmitters operating in the band 5470-5725 MHz, all emissions outside that band shall not exceed -27 dBm/MHz e.i.r.p.

Procedure H2) a) b) c) are adopted, KDB 789033 D01, where the conducted measurement is being used to comply with out of emission requirement as per FCC 15.407 b) 1) 2) 3), and RSS-210 A9.2 1), 2), and 3)

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. 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.



11.2 Measurement Procedure Conducted Emission:

- 1. To connect Antenna Port of EUT to Spectrum.
- Set RBW = 100 kHz, VBW = 300 kHz while frequency of the measurement is swept below 1GHz, RBW = 1MHz & VBW = 3MHz while frequency of the measurement is swept above 1GHz on Spectrum. Detector = Peak, set DL as the limit line to -27dBm, add the offset = 4.7dB for frequency below 1GHz, and 2dB for frequency above 1GHz.
- 3. Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 1G, 1G to 3G, 3G to 6G, 6G to 13G, 13G to 18G, 18G to 26.5G and 26.5G to 40GHz
- 4. Via Software, combine 6 spans of frequency range into one plot

Conducted RF measurements of the transmitter output were made at the band edges and the adjacent restricted bands.

Also, conducted RF measurements of the transmitter output over the 30 MHz to 40 GHz band were made in order to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

Note: the spike on the spectrum is the fundamental emission that does not account for the test outside the frequency band as required by associative regulatory provision.

11.3 Measurement Equipment Used:

Refer to section 7.3 for details.

11.4 Test Set-up:

Refer to section 7.4 for details.

11.5 Measurement Result:

Refer to next page for plots.

Remark: as per KDB 662291, MIMO mode is accomplished by the addition of 10 log(N), where N = 2, and appropriate array gain (4.7dBi below 1GHz, and 2dBi above 1GHz, or gain with the nominal if higher than 4.7dBi, and 2dBi, respectively) as the simultaneous emission of spurious emission, and bandedge for conducted compliance test items.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.

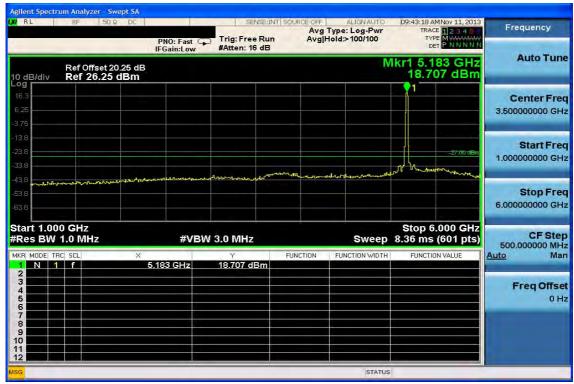
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



802.11a, 5150~5250 MHz Ch Low 30MHz - 1GHz (5180 MHz)

		PNO: Fast C	Trig: Free Run #Atten: 30 dB	Avg Type Avg Hold	e: Log-Pwr >100/100	TRACE 12345 TYPE M WWWWWW DET P N N N N N	Frequency
	Ref Offset 15.7 dE Ref 30.00 dBm				M	kr1 907.9 MHz -44.103 dBm	Auto Tune
20.0 10.0).00							Center Fred 515.000000 MH:
10.0 20.0						-27.00 dBm	Start Free 30.000000 MH
10.0 50.0 hr 50.0	And we all a second	r	the-mpfront-magnet not related	n the second s	مرا <i>سم ال</i> م	hewarene algebilder all	Stop Fre 1.000000000 GH
tart 30.0 N Res BW 1	00 kHz	#VB	W 300 kHz		Sweep	Stop 1.0000 GHz 92.7 ms (601 pts)	CF Ster 97.000000 MH
IKR MODE TRC		907.9 MHz	Y -44.103 dBm	FUNCTION FU	NCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4							Freq Offse 0 H
11 12 12 12 12 12 12 12 12 12 12 12 12 1					STATUS		

Ch Low 1GHz - 6GHz



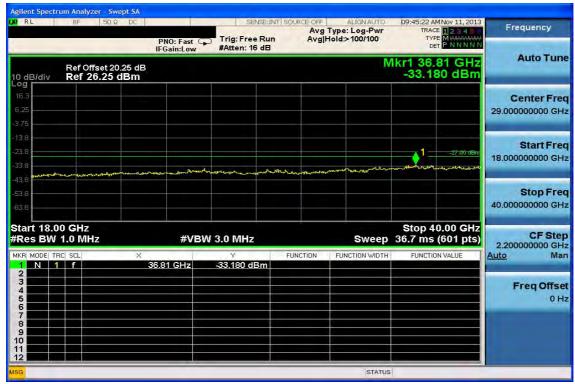
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch Low 6GHz – 18GHz

Frequency	09:44:17 AMNov 11, 2013 TRACE 1 2 3 4 5 5 TYPE MWWWWWW DET P N N N N N	ALIGNAUTO Type: Log-Pwr Iold:>100/100			PNO: Fast C	50 Ω DC	R
Auto Tur	kr1 14.26 GHz -40.012 dBm	Μ				Offset 20.25 dB 26.25 dBm	
Center Fre 12.000000000 GH							
Start Fre 6.000000000 GH	27.00 dBm	1					
Stop Fre 18.00000000 GH	annenn bruge stannen b	mark home man getter	here al arabit and a start front	- I - I - I - I - I - I - I - I - I - I	™rgathetatorde−-Je-g	Lannaya an	~ ¹ 2 ⁷⁴ 5 ₁₀ ~~/411 ⁴ 47
CF Ste	Stop 18.000 GHz 20.0 ms (601 pts)	Sweep	÷.	W 3.0 MHz	#VB		6.000 G BW 1.0
<u>Auto</u> Ma	FUNCTION VALUE	FUNCTION WIDTH	FUNCTION	∀ -40.012 dBm	14.26 GHz	X	IDE TRC SC
Freq Offs 0 F							
<u></u>		STATUS					

Ch Low 18GHz - 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 GS Taiwan Ltd.



Ch Mid 30MHz – 1GHz (5220 MHz)

RL RF	50 Ω DC	PNO: Fast C IFGain:Low			ALIGNAUTO Type: Log-Pwr Iold:>100/100	TRAC	MNOV 11, 2013 CE 1 2 3 4 5 5 PE MWWWWW ET P N N N N N	Frequency
	set 15.7 dB 0.00 dBm				N	lkr1 86* -44.6	1.0 MHz 56 dBm	Auto Tun
9,0 ,0 00								Center Fre 515.000000 MH
1.0 1.0 1.0						_	-27.00 dBm	Start Fre 30.000000 MH
).0).0	reubicherry	Maranalamanakapt	~~\5 <mark>-~^^~.0]9{5</mark> ~~	᠇ᢩᠯᠬ᠋ᢪᢇᢧᡨᠬ᠊ᠾᠧᢛᠬᡅ	∱ _e a _c l _a n, and an	www.orweak.ork.ll	and the second of the second o	Stop Fre 1.000000000 GH
art 30.0 MHz Res BW 100 kH	z	#VB	W 300 kHz		Sweep		0000 GHz (601 pts)	CF Ste 97.000000 MH
R MODE TRC SCL	×	861.0 MHz	ץ -44.656 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Ma
								Freq Offse 0 H
3					STATUS	i		

Ch Mid 1GHz - 6GHz

		NO: Fast C		n Avg	ALIGNAUTO Type: Log-Pwr Hold:>100/100	09:53:47 AMNov 11 TRACE 1 2 3 TYPE MAM DET P N N	455 Frequency
dB/div Ref 2	ffset 20.25 dB 26.25 dBm	Gain:Low	WAtten. 10 ub		N	1kr1 5.225 G 18.462 dl	Hz Auto Tune Bm
3 3 5							Center Fred 3.500000000 GH
3 3 3						W Westernater -	Start Free 1.000000000 GH2
3 3 3	and a for the second of the	դյաստունես ուսու ք _ա րադ	and manager and an and a second s		~98-e19		Stop Fred 6.000000000 GH:
rt 1.000 GHz s BW 1.0 MH	łz	#VB	W 3.0 MHz		Sweep	Stop 6.000 (8.36 ms (601	GHz pts) CF Step 500.000000 MH
MODE TRC SCL	× 5.2	25 GHz	۲ 18.462 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
							Freq Offset
							0 Hz
							0 H2

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發

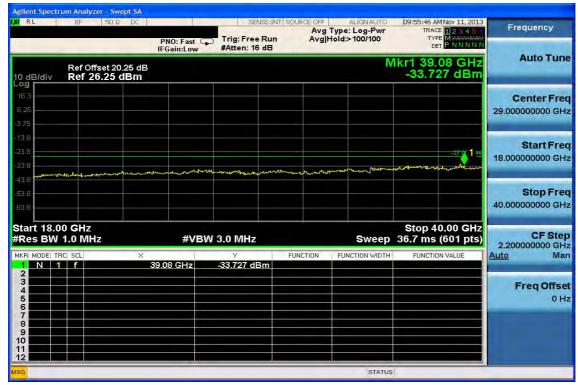
No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



Ch Mid 6GHz – 18GHz

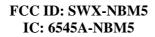
RL RF 50Ω DC	PNO: Fast C			ALIGN AUTO ype: Log-Pwr old:>100/100	09:54:40 AMNov 11, 201: TRACE 1 2 3 4 5 TYPE MWWWWW DET P N N N N	Frequency
Ref Offset 20.25 dB dB/div Ref 26.25 dBm				N	lkr1 16.20 GHz -39.832 dBm	Auto Tune
						Center Fred 12.000000000 GH
3.8 3.8 3.8						Start Free 6.000000000 GH
3.8	an a	۲۰۰۳ (ای در ۲۰ ۰۳) و بالد میرا ^{ند را مر² به مردم}	month and the second	A John Market Processor	urenen Ausprichtigen vormen	Stop Fre 18.000000000 GH
tart 6.000 GHz Res BW 1.0 MHz	#VB	W 3.0 MHz			Stop 18.000 GHz 20.0 ms (601 pts	1.200000000 GH
MODE TRC SCL X 1 N 1 f 2 2 1 F 1 f	16.20 GHz	∀ -39.832 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
3 4 5 6 6						Freq Offse 0 H
7 8 9 0 1				_		

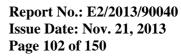
Ch Mid 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 GS Taiwan Ltd.



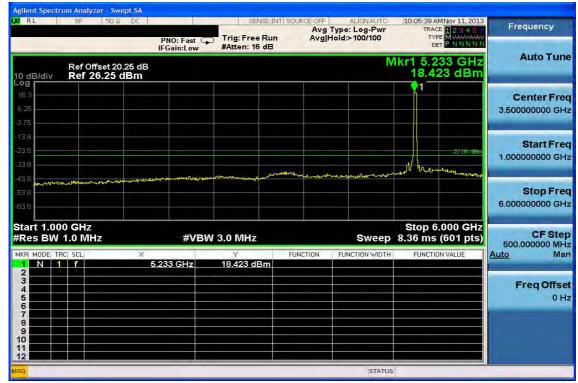




Ch High 30MHz – 1GHz (5240 MHz)

gilent Spectrum Analyzer - Swept SA				
RL RF 50Ω DC	PNO: Fast FGain:Low #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	08:56:18 AMNov 11, 2013 TRACE 1 2 3 4 5 TYPE MWWWWWW DET P N N N N N	Frequency
Ref Offset 15.7 dB dB/div Ref 30.00 dBm		N	1kr1 875.5 MHz -44.523 dBm	Auto Tune
9 				Center Freq 515.000000 MHz
0			-27.00 dBm	Start Freq 30.000000 MHz
0	and and a second of the second	une for an and the second s	-ender ligerarin manuser	Stop Freq 1.000000000 GHz
art 30.0 MHz tes BW 100 kHz	#VBW 300 kHz	Sweep	Stop 1.0000 GHz 92.7 ms (601 pts)	CF Step 97.000000 MHz
R MODE TRC SCL ×	Y 875.5 MHz -44.523 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
				Freq Offset 0 Hz
9 0 1 2 2				
G		STATUS	1	

Ch High 1GHz – 6GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch High 6GHz – 18GHz

Frequency	10:08:24 AMNov 11, 2013 TRACE 1 2 3 4 5 5 TYPE MWWWWWW DET P N N N N N	ALIGNAUTO ype: Log-Pwr old:>100/100			PNO: Fast	RF 50 Ω DC	RL
Auto Tun	kr1 13.64 GHz -39.924 dBm	M				ef Offset 20.25 dB ef 26.25 dBm	dB/div
Center Fre 12.000000000 GH							25 75
Start Fre 6.000000000 GH	27.00 dBm		1				3.8 3.8 3.8
Stop Fre 18.000000000 GH		w-lefran - levralan	antre and the specific states	and Mangaget and a start of the	<u></u>	hi Lime II de con an incean anna an	1.8 1.8
CF Ste 1.20000000 GH	Stop 18.000 GHz 20.0 ms (601 pts)	Sweep		N 3.0 MHz	#VB		art 6.00 Res BW
Auto Ma	FUNCTION VALUE	FUNCTION WIDTH	FUNCTION	∀ -39.924 dBm	13.64 GHz		R MODE TR
Freq Offse 0 H							
		STATUS					2

Ch High 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



802.11a 5150~5350 MHz **Band Edges Test Data CH 5150**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

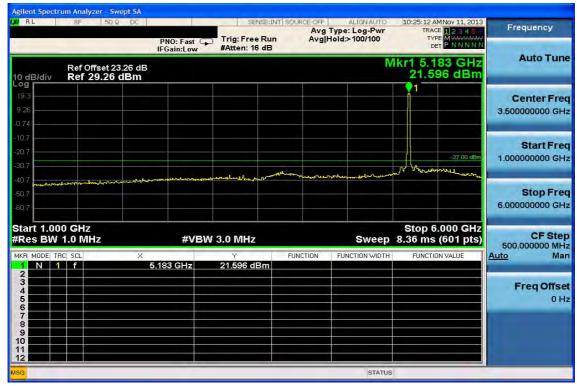


802.11n HT20, 5150~5250 MHz

Ch Low 30MHz - 1GHz (5180 MHz)

RL RF 50 Ω DC	PNO: Fast G			ALIGN AUTO Type: Log-Pwr Hold:>100/100	10:19:16 AMNov 11, 20 TRACE 1 2 3 4 TYPE M WANNA DET P N N N	Frequency			
Ref Offset 18.71 dB Mkr1 949.9 MHz dB/div Ref 30.00 dBm -41.412 dBm									
						Center Fre 515.000000 MH			
o o o					-27.00 d	Start Fre 30.000000 MH			
0 4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	polytinggeographic and the second s	Y		dft-hunzertakon-urnak	morrishing	Stop Fre 1.000000000 GH			
art 30.0 MHz es BW 100 kHz	#VBV	/ 300 kHz		Sweep	Stop 1.0000 GH 92.7 ms (601 pt				
	949.9 MHz	ץ -41.412 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Ma			
						Freq Offse 0 H			
				STATUS	1				

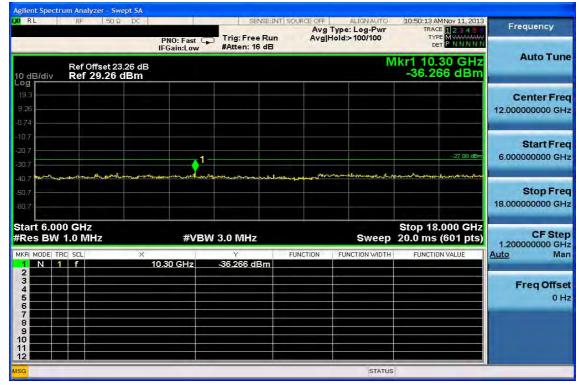
Ch Low 1GHz – 6GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch Low 6GHz – 18GHz



Ch Low 18GHz - 40GHz



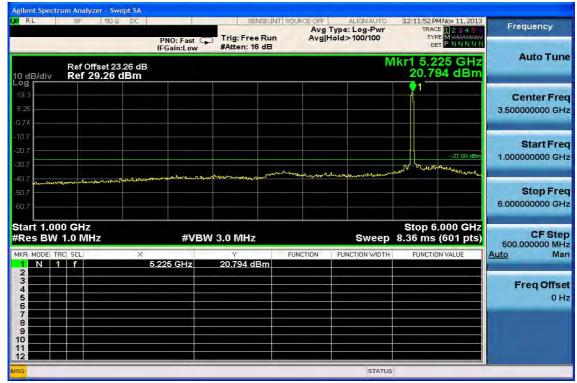
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch Mid 30MHz – 1GHz (5220 MHz)

RL	RF 50 Ω	DC	SENSE:IN	SOURCE OFF	ALIGN AUTO		MNov 11, 2013	Frequency	
		PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB		Type: Log-Pwr Hold:>100/100	TRAC TYI DI		Frequency	
dB/div	Auto Tune								
g .0 .0 10								Center Freq 515.000000 MHz	
NO						1	-27.00 dBm	Start Freq 30.000000 MHz	
).0 	all to a construction of the construction of t	n-sergeten open algregen og der a Afroni	Later any of a set	موسوعه الاستحد العرامي الأرواب مع المراجع المراجع	alle for a second s	potenen the flatter	n maardila	Stop Freq 1.000000000 GHz	
art 30.0 Res BW	MHz 100 kHz	#VB	W 300 kHz		Sweep		0000 GHz (601 pts)	CF Step 97.000000 MHz	
R MODE TR		× 864.2 MHz	∨ -41.426 dBm	FUNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE	<u>Auto</u> Man	
2 2 3 3 4 5 6 7								Freq Offset 0 Hz	
8									
G					STATUS				

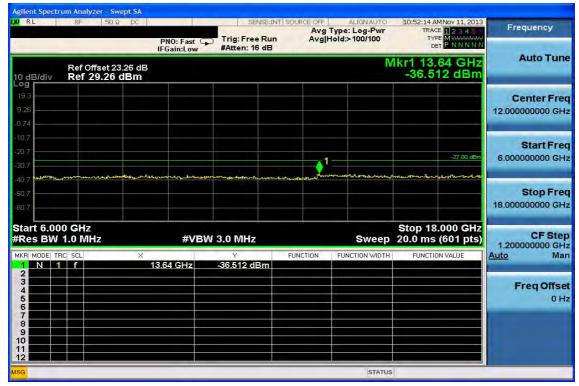
Ch Mid 1GHz – 6GHz



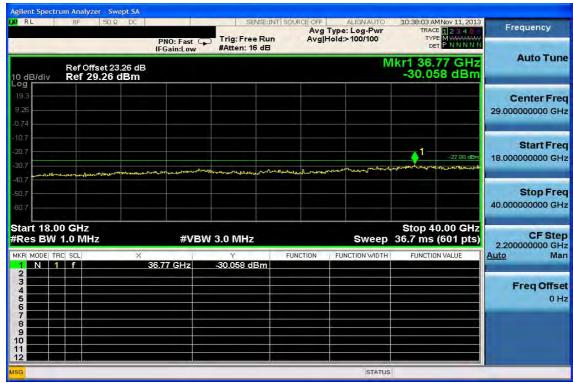
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch Mid 6GHz – 18GHz



Ch Mid 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch High 30MHz – 1GHz (5240 MHz)

RL RF 50Ω DC		SENSE: IN	T SOURCE OFF	ALIGN AUTO		MNov 11, 2013	E CONTRACTOR OF
	PNO: Fast G	Trig: Free Run #Atten: 30 dB		Type: Log-Pwr Hold:>100/100	TYP	E 123455 PE MWWWW ET P NNNNN	Frequency
Ref Offset 18.71 dB IB/div Ref 30.00 dBm				N	lkr1 856 -41.1	8.1 MHz 97 dBm	Auto Tune
							Center Freq 515.000000 MHz
					1	-27.00 dBm	Start Freq 30.000000 MHz
gallen for a for a second second for the second	L-Distonether Tableria	un martin har an an de la constante	no n	رور بودور میروند. مراجع میروند می مراجع میروند م	mannelline	abratan fangutan	Stop Freq 1.000000000 GHz
rt 30.0 MHz s BW 100 kHz	#VBV	/ 300 kHz		Sweep		0000 GHz (601 pts)	CF Step 97.000000 MHz
MODE TRC SCL X	56.1 MHz	y -41.197 dBm	FUNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE	<u>Auto</u> Man
							Freq Offset 0 Hz
				STATUS			-

Ch High 1GHz – 6GHz

RL	RF 50 s	Ω DC			ALIGNAUTO Type: Log-Pwr Hold:>100/100	TRA	MNov 11, 2013 CE 1 2 3 4 5 5 PE M MANANAN	Frequency
		PNO: Fast IFGain:Low	#Atten: 16 dB			E	ET P N N N N N	Auto Tune
dB/div							Auto Tune	
3						1		Center Freq
								3.500000000 GHz
							-27.00 dBm	Start Freq 1.00000000 GHz
7	مىمالىمى يات مايىرى مى	and the second water for any and the second	now the state of the owned to and	-Ann Margarent	Katang ang ang ang ang ang ang ang ang ang	mon have	mar hur hal	
								Stop Freq
0								6.00000000 GHz
	0 GHz 1.0 MHz	#VE	W 3.0 MHz		Sweep		6.000 GHz 601 pts)	CF Step 500.000000 MHz
MODE TF		× 5.242 GHz	۲ 21.707 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto Man
		0.242 0112	21.FOF GDII					Ener Officer
د (دها) د (دها								Freq Offset 0 Hz
					STATUS	1		

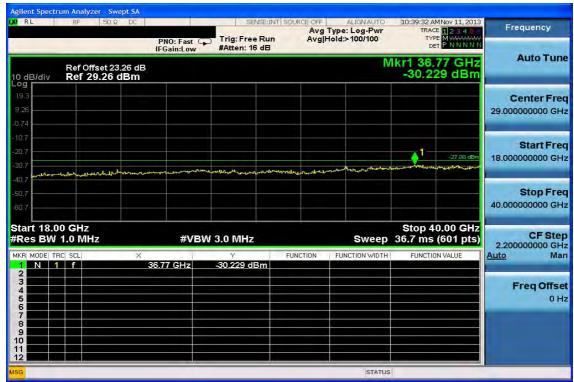
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發



Ch High 6GHz – 18GHz

RL R	F 50Ω DC	PNO: Fast C			ALIGNAUTO Type: Log-Pwr Hold:>100/100	TRAC TY	MNov 11, 2013 PE 1 2 3 4 5 5 PE M WWWWWW ET P N N N N N	Frequency
dB/div Re	f Offset 23.26 dB f 29.26 dBm		Printerin 10 wB			Mkr1 7. -36.8	.98 GHz 66 dBm	Auto Tune
9 3								Center Freq 12.000000000 GHz
7	1						-27.00 dBm	Start Freq 6.000000000 GHz
7	a general from general and	ien, , , lloureeth y boo, , rann y gev	<u> </u>	Mr	¹ 1-1.10 مرد	nan lo-inarat		Stop Freq 18.00000000 GHz
rt 6.000 G es BW 1.0		#VB	W 3.0 MHz	-	Sweep		.000 GHz (601 pts)	CF Step 1.200000000 GHz
MODE TRC SC	L X	7.98 GHz	∀ -36.866 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u> Man
								Freq Offset 0 Hz
					STATUS			

Ch High 18GHz – 40GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



802.11n HT20 5150~5350 MHz **Band Edges Test Data CH 5150**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 GS Taiwan Ltd.



802.11n HT40, 5150~5250 MHz

Ch Low 30MHz - 1GHz (5190 MHz)

RL RF 50 Ω D	PNO: Fast C IFGain:Low			ALIGN AUTO Type: Log-Pwr Hold:>100/100	TRA	MNov 11, 2013 CE 1 2 3 4 5 5 PE M M M M M M ET P N N N N N	Frequency
Ref Offset 18.71 dB/div Ref 30.00 dBr	dB n			Μ	kr1 85: -41.9	2.9 MHz 87 dBm	Auto Tune
9 1.0 1.0 00							Center Fre 515.000000 MH
0					1	-27.00 dBm	Start Fre 30.000000 MF
0 0 0	ม _{ัก} เป็นแห่งเป็นหาว	and from the stand and st	were diver a partial of the	allanger Delever and a second and	jerendener kingert verg	and an	Stop Fre 1.000000000 GF
art 30.0 MHz les BW 100 kHz	#VB	W 300 kHz		Sweep		0000 GHz (601 pts)	CF Ste
R MODE TRC SCL	× 852.9 MHz	∨ -41.987 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto Ma
							Freq Offs 0 H
				STATUS	1		

Ch Low 1GHz – 6GHz



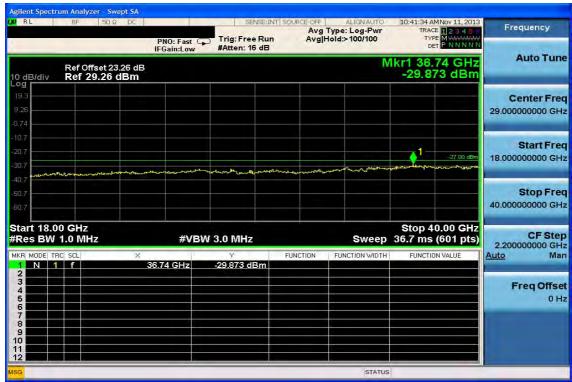
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch Low 6GHz – 18GHz

RL	RF 50 Ω D0		SENSE:IN	IT SOURCE OFF		10:54:28 AMNov 11	
		PNO: Fast C IFGain:Low	Trig: Free Rur #Atten: 16 dB		Type: Log-Pwr Hold:>100/100	TRACE 1 2 3 TYPE MWW DET P N N	ALALA
3/div	Ref Offset 23.26 Ref 29.26 dBr	dB				Mkr1 7.30 G -36.522 dl	Hz Auto Tune Sm
							Center Freq 12.000000000 GHz
	1					-27.0	
			er Thennin of a particul affer a grane on	wert yn strong two	and the second	at work work on the Alexandree	Stop Freq 18.000000000 GHz
	0 GHz 1.0 MHz	#VB	W 3.0 MHz		Sweep	Stop 18.000 (20.0 ms (601	CF Step
MODE TF		× 7.30 GHz	∀ -36.522 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Man
							Freq Offset 0 Hz
کو روهها							

Ch Low 18GHz - 40GHz



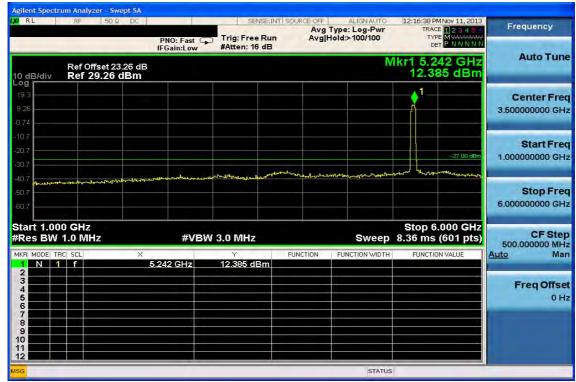
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch High 30MHz – 1GHz (5230 MHz)

RL RF 50 Ω	DC	SENSE:INT S	OURCE OFF ALIGN AUTO	10:22:14 AMNov 11, 2013	
	PNO: Fast (IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 12345 TYPE MWWWW DET PNNNNN	Frequency
Ref Offset 18 dB/div Ref 30.00 (Ν	/kr1 755.9 MHz -41.807 dBm	Auto Tune
g),a 					Center Freq 515.000000 MHz
				-27.00 dBm	Start Freq 30.000000 MHz
).0 1.0 1.0	glust-timesternetign - was also and	ĸſĹĨĿᡊᡊᠣᡮ᠑ᡄᠰ᠆ᡯᠧᡍᡘᢕᠴᢇᢩᢌᡘᠥ᠆ᠱᢧ᠆ᠯᡏ	international and marker	ernmentertate weath	Stop Freq 1.000000000 GHz
art 30.0 MHz Res BW 100 kHz	#VB	W 300 kHz	Sweep	Stop 1.0000 GHz 92.7 ms (601 pts)	CF Step 97.000000 MHz
R MODE TRC SCL	× 755.9 MHz	∨ -41.807 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
					Freq Offset 0 Hz
7					
			STATUS		

Ch High 1GHz – 6GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Ch High 6GHz – 18GHz

RE 50 Q DC		SENSE;INT	SOURCE OFF	ALIGN AUTO	10:55:48 AMN		Frequency
		Trig: Free Run #Atten: 16 dB		Type: Log-Pwr Hold:>100/100	TYPE	123455 MWWWWW PNNNNN	Frequency
Ref Offset 23.26 dB Mkr1 17.38 GHz -35.615 dBm -35.615 dBm						Auto Tune	
							Center Freq 12.000000000 GHz
						-27.1 IBm	Start Freq 6.000000000 GHz
	~~~~~		allelle general to any of the second	fflere before en	affenentiatettenen aufenen		<b>Stop Freq</b> 18.000000000 GHz
rt 6.000 GHz es BW 1.0 MHz	#VBW 3	3.0 MHz		Sweep	Stop 18.0 20.0 ms (6		CF Step 1.20000000 GHz
MODE TRC SCL X	17.38 GHz	∀ 35.615 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION '	VALUE	<u>Auto</u> Man
							Freq Offset 0 Hz

# Ch High 18GHz – 40GHz

	PNO: Fast	SENSE:IN	Avg	ALIGNAUTO Type: Log-Pwr Hold:>100/100	10:42:58 AMNov 11, 20 TRACE 1 2 3 4 E TYPE M WANNAM	Frequency
	IFGain:Low	#Atten: 16 dB			DET P N N N N	-
B/div Ref 29.26 dB				N	lkr1 39.89 GH -29.708 dBr	Z
						Center Freq 29.000000000 GHz
					-27.00 va	Start Freq
genelister and an and the second of the second second	MALINE - INDUSTION	our the the second sould be	العقدروماليفروعابتساله	porgraphil ( ^{Angene} ner ^{Angene} ner Andrea)	an a	Stop Freq
t 18.00 GHz s BW 1.0 MHz	#VBV	V 3.0 MHz		Sweep	Stop 40.00 GH 36.7 ms (601 pt	CF Step
		Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	2.200000000 GHz Auto Man
	39.89 GHz	-29.708 dBm				
	39.89 GHz	-29.708 dBm				Freq Offset 0 Hz
	39.89 GHz	-29.708 dBm				

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發



# 802.11n HT40 5150~5350 MHz **Band Edges Test Data CH 5150**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



# 12. UNDESIRABLE EMISSION - RADIATED MEASUREMENT12.1 Standard Applicable

According to §15.407(b) (6) (7),

(b) Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.
- (2) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (3) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Procedure H1) a) b) c) are adopted, KDB 789033 D01, where the conducted measurement is being used to comply with out of emission requirement as per FCC 15.407 b) 6) 7), and RSS-Gen 7.2.2.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 can 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.



#### **§15.205- RESTRICTED BANDS OF OPERATIONS**

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( ² )
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. 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.

MEASURING DISTANCE OF 3 METER						
FREQUENCY RANGE	FIELD STRENGTH	FIELD STRENGTH				
(MHz)	(Microvolts/m)	(dBuV/m)				
30-88	100	40				
88-216	150	43.5				
216-960	200	46				
Above 960	500	54				

**FCC PART 15 209** 

#### §15.209- RADIATED EMISSION LIMITS: GENERAL REQUIREMENTS

#### According to RSS-Gen section 4.9 Transmitter Unwanted Emissions

The measurement method shall be described in the test report. When the applicable unwanted emissions limits are defined in relative terms, the same parameter, peak power or average power, used for the transmitter output power measurement, shall be used for unwanted emission measurements.

In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given in (a) and (b):

(a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

Particular attention should be paid to harmonics and sub-harmonics of the carrier frequency, as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked.

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value need not be reported.

When limits are expressed in absolute terms, compliance with the emission limits shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth for emissions below1000MHz. As an alternative to CISPR quasi-peak measurement, compliance with the emission limits can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.

Above 1000 MHz, compliance with the emission limits shall be demonstrated using an average detector with a minimum resolution bandwidth of 1 MHz.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. 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 exenerate 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.



## According to RSS-Gen section 7.2.2 Emissions Falling Within Restricted Frequency Bands

Restricted bands, identified in Table 1, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following restrictions apply:

(a) Fundamental components of modulation of licence-exempt radio apparatus shall not fall within the restricted bands of Table 1;

(b) Unwanted emissions falling into restricted bands of Table 1 shall comply with the limits specified in RSS-Gen;

(c) Unwanted emissions not falling within restricted frequency bands shall either comply with the limits specified in the applicable RSS, or with those specified in RSS-Gen.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



## Table 3: Restricted Frequency Bands (Note)

MHz
0.090-0.110
2.1735-2.1905
3.020-3.026
4.125-4.128
4.17725-4.17775
4.20725-4.20775
5.677-5.683
6.215-6.218
6.26775-6.26825
6.31175-6.31225
8.291-8.294
8.362-8.366
8.37625-8.38675
8.41425-8.41475
12.29-12.293
12.51975-12.52025
12.57675-12.57725
13.36-13.41
16.42-16.423
16.69475-16.69525
16.80425-16.80475
25.5-25.67
37.5-38.25
73-74.6
74.8-75.2
108-138
156.52475-156.52525
156.7-156.9

GHz
9.0-9.2
9.3-9.5
10.6-12.7
13.25-13.4
14.47-14.5
15.35-16.2
17.7-21.4
22.01-23.12
23.6-24.0
31.2-31.8
36.43-36.5
Above 38.6

Note: Certain frequency bands listed in Table 1 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300- series RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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



#### **12.1.1 Transmitter Spurious Emission Limits**

Spurious emissions from licence-exempt transmitters shall comply with the field strength limits shown below. Additionally, the level of any transmitter spurious emission shall not exceed the level of the transmitter's fundamental emission.

Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

## Table 5: General Field Strength Limits for Transmitters at Frequencies Above 30 MHz

**Note:** Transmitting devices are not permitted in Table 1 bands or, unless stated otherwise, in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz).

12.1.2 Unwanted Emission that complies with the undesirable emission ruling by 15.407 (b) (1) (2) (3), RSS-210 A9.2 (1) (2) (3)

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at
		3m (dBuV/m)
5150 - 5250	-27	68.3
5250 - 5350	-27	68.3
5470 - 5725	-27	68.3

Limit derivation in terms of Field Strength:

 $EIRP = ((E*d)^2) / 30$ , where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

E = 1000000* (30*EIRP)^(1/2) / 3 uV/m = 68.3dBuV/m

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. 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.



# 12.2 EUT Setup

- The radiated emission tests were performed in the 3 meter open-test site, using the setup in ac-1. cordance with the ANSI C63.4:2009.
- The EUT was put in the front of the test table. The host PC system was placed on the center of the 2. back edge on the test table. The peripherals like modem, monitor printer, K/B, and mouse were placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- The keyboard was placed directly in the front of the monitor, flushed with the front tabletop. The 3. mouse was placed next to the Keyboard, flushed with the back of keyboard.
- 4. The spacing between the peripherals was 10 centimeters.
- 5. External I/O cables were draped along the edge of the test table and bundle when necessary.
- 6. The host PC system was connected with 120Vac/60Hz power source.

#### 12.3 Measurement Procedure

- The EUT was placed on a turn table which is 0.8m above ground plane. 1.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the high-3. est emissions.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance. 4.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until all frequency measured were complete.

For measurements below 1GHz, follow the KDB 789033 D01 requirements in section H)3), "General Requirements for Unwanted Emissions Measurements" Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

For Measurement above 1GHz, for peak unwanted emission measurements follow the KDB 789033 D01 requirements in section H)5) b), for average unwanted emission measurements follow the KDB 789033 D01 requirements in section H)6) c) or d).

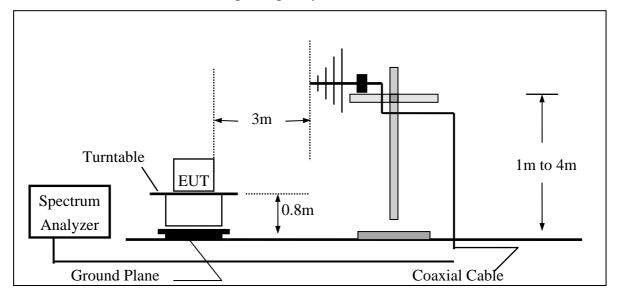
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

で解非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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

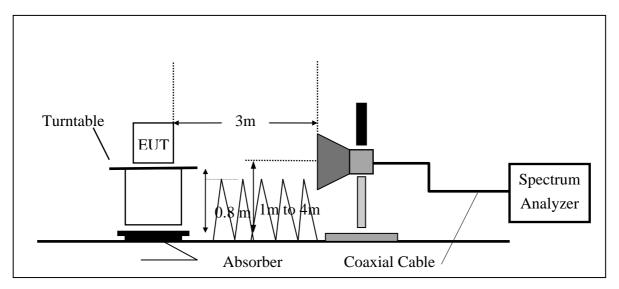


#### 12.4 **Test SET-UP (Block Diagram of Configuration)**

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



#### (B) Radiated Emission Test Set-UP Frequency Over 1 GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### **Measurement Equipment Used:** 12.5

SGS SAC Chamber No.C							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
ТҮРЕ		NUMBER	NUMBER	CAL.			
EMI Test Receiver	R&S	ESU 40	100363	01/30/2013	01/29/2014		
Broadband Antenna	TESEQ	CBL 6112D	35240	02/04/2013	02/03/2014		
Horn Antenna	ETS-Lindgren	3117	00143272	01/16/2013	01/15/2014		
Horn Antenna	ETS-Lindgren	3160-09	00117911	02/14/2013	02/13/2014		
Pre-Amplifier	R&S	SCU-18	10203	01/21/2013	01/20/2014		
Pre-Amplifier	EMC Instruments	EMC012645	980119	01/24/2013	01/23/2014		
Pre-Amplifier	EM Electronics Corp.	EM26400	971576	01/29/2013	01/28/2014		
Coaxial Cable	Huber+Suhner	SAC-C TX-30M-1GHz	TX1	04/22/2013	04/21/2014		
Coaxial Cable	Huber+Suhner	SAC-C TX-1-26.5GHz	TX2	04/22/2013	04/21/2014		
Coaxial Cable	Huber+Suhner	SAC-C RX-150k-30MH z	RX1	04/22/2013	04/21/2014		
Coaxial Cable	Huber+Suhner	SAC-C RX-30M-1GHz	RX2	04/22/2013	04/21/2014		
Coaxial Cable	Huber+Suhner	SAC-C RX-1-26.5GHz	RX3	04/22/2013	04/21/2014		
Controller	Chance Most	886	N/A	N.C.R.	N.C.R.		
Antenna Master	Chance Most	N/A	N/A	N.C.R.	N.C.R.		
Turn Table	Chance Most	N/A	N/A	N.C.R.	N.C.R.		
Filter Bank	R&S	TS8996	SCIN.EMC.1023.12	04/22/2013	04/21/2014		
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134. WuKungRoad NewTaipeiIndustrialPark WukuDistrict NewTaipeiCity. Taiwan24803/新 th. 市 充 股區 新 th. 產業 取 區 充 工 路 134 發

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



## 12.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows: na DA · AE · CI

FS = RA + AF + CL - AG	
FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	
	FS = Field Strength RA = Reading Amplitude

#### 12.7 **Measurement Result**

Refer to attach tabular data sheets.

#### NOTE:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

で解非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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



#### Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz

Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5180 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	56.64	-20.40	36.24	40.00	-3.76
47.46	S	Peak	60.76	-25.34	35.42	40.00	-4.58
93.05	S	Peak	63.97	-24.20	39.77	43.50	-3.73
100.81	S	Peak	60.72	-23.05	37.67	43.50	-5.83
304.51	S	Peak	47.98	-18.76	29.21	46.00	-16.79
400.54	S	Peak	45.79	-15.56	30.23	46.00	-15.77
1119.00	S	Peak	54.92	-10.19	44.73	68.30	-23.57
5578.00	S	Peak	50.00	1.76	51.76	68.30	-16.54
10360.00	Н	Peak	43.97	8.09	52.06	68.30	-16.24
15540.00	Н	Peak	-	-	-	-	-
20720.00	Н	Peak	-	-	-	-	-
25900.00	Н	Peak	-	-	-	-	-
31080.00	Н	Peak	-	-	-	-	-
36260.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5180 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	57.31	-24.20	33.11	43.50	-10.39
100.81	S	Peak	58.48	-23.05	35.43	43.50	-8.07
125.06	S	Peak	52.48	-21.59	30.89	43.50	-12.61
149.31	S	Peak	51.87	-22.75	29.12	43.50	-14.38
297.72	S	Peak	54.98	-19.14	35.84	46.00	-10.16
308.39	S	Peak	55.42	-18.64	36.78	46.00	-9.22
1126.00	S	Peak	56.92	-7.17	49.74	68.30	-18.56
5557.00	S	Peak	59.47	1.67	61.15	68.30	-7.15
6908.00	S	Peak	49.58	4.41	53.99	68.30	-14.31
10360.00	Н	Peak	52.00	8.09	60.09	68.30	-8.21
15540.00	Н	Peak	-	-	-	-	-
20720.00	Н	Peak	-	-	-	-	-
25900.00	Н	Peak	-	-	-	-	-
31080.00	Н	Peak	-	-	-	-	-
36260.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 129 of 150

Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5220 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	57.03	-20.40	36.63	40.00	-3.37
47.46	S	Peak	59.98	-25.34	34.64	40.00	-5.36
93.05	S	Peak	64.36	-24.20	40.16	43.50	-3.34
101.78	S	Peak	60.29	-22.93	37.36	43.50	-6.14
306.45	S	Peak	48.84	-18.75	30.09	46.00	-15.91
400.54	S	Peak	47.06	-15.56	31.50	46.00	-14.50
1119.00	S	Peak	56.48	-10.19	46.29	68.30	-22.01
1399.00	S	Peak	55.24	-9.80	45.44	68.30	-22.86
4976.00	S	Peak	50.28	0.66	50.94	68.30	-17.36
10440.00	Н	Peak	42.47	8.48	50.95	68.30	-17.35
15660.00	Н	Peak	-	-	-	-	-
20880.00	Н	Peak	-	-	-	-	-
26100.00	Н	Peak	-	-	-	-	-
31320.00	Н	Peak	-	-	-	-	-
36540.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5220 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

		_	~	_			
Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	61.27	-24.20	37.07	43.50	-6.43
100.81	S	Peak	58.44	-23.05	35.39	43.50	-8.11
194.90	S	Peak	54.23	-23.84	30.40	43.50	-13.10
296.75	S	Peak	55.28	-19.19	36.09	46.00	-9.91
307.42	S	Peak	56.10	-18.70	37.40	46.00	-8.60
750.71	S	Peak	43.19	-10.71	32.48	46.00	-13.52
1119.00	S	Peak	57.52	-7.19	50.33	68.30	-17.97
1399.00	S	Peak	55.25	-6.80	48.45	68.30	-19.85
4983.00	S	Peak	58.47	0.69	59.16	68.30	-9.14
5627.00	S	Peak	59.39	1.87	61.26	68.30	-7.04
10440.00	Н	Peak	49.46	8.48	57.94	68.30	-10.36
15660.00	Н	Peak	-	-	-	-	-
20880.00	Н	Peak	-	-	-	-	-
26100.00	Н	Peak	-	-	-	-	-
31320.00	Н	Peak	-	-	-	-	-
36540.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 131 of 150

Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5240 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Note	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
S	Peak	56.78	-20.40	36.38	40.00	-3.62
S	Peak	60.50	-25.34	35.16	40.00	-4.84
S	Peak	64.67	-24.20	40.47	43.50	-3.03
S	Peak	59.65	-22.93	36.72	43.50	-6.78
S	Peak	48.65	-18.76	29.89	46.00	-16.11
S	Peak	46.50	-15.56	30.94	46.00	-15.06
S	Peak	55.77	-10.19	45.58	68.30	-22.72
S	Peak	54.42	-9.80	44.62	68.30	-23.68
S	Peak	50.78	0.69	51.46	68.30	-16.84
Н	Peak	42.75	8.74	51.49	68.30	-16.81
Н	Peak	-	-	-	-	-
Н	Peak	-	-	-	-	-
Н	Peak	-	-	-	-	-
Н	Peak	-	-	-	-	-
Н	Peak	-	-	-	-	-
	F/H/E/S  S S S S S S S H H H H H H	ModeF/H/E/SModeF/H/E/SPK/QP/AVSPeakSPeakSPeakSPeakSPeakSPeakSPeakSPeakSPeakSPeakIPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeakAPeak	Mode         Reading Level           F/H/E/S         PK/QP/AV         dBμV           S         Peak         56.78           S         Peak         60.50           S         Peak         64.67           S         Peak         59.65           S         Peak         48.65           S         Peak         48.65           S         Peak         55.77           S         Peak         50.78           H         Peak         -           H         Peak         -	Mode         Reading Level           F/H/E/S         PK/QP/AV         dBµV         dB           S         Peak         56.78         -20.40           S         Peak         60.50         -25.34           S         Peak         64.67         -24.20           S         Peak         59.65         -22.93           S         Peak         59.65         -22.93           S         Peak         48.65         -18.76           S         Peak         46.50         -15.56           S         Peak         55.77         -10.19           S         Peak         50.78         0.69           H         Peak         50.78         0.69           H         Peak         42.75         8.74           H         Peak         -         -           H         Peak         -         -	Mode         Reading Level         FS           F/H/E/S         PK/QP/AV         dBμV         dB         dBμV/m           S         Peak         56.78         -20.40         36.38           S         Peak         60.50         -25.34         35.16           S         Peak         64.67         -24.20         40.47           S         Peak         59.65         -22.93         36.72           S         Peak         59.65         -22.93         36.72           S         Peak         48.65         -18.76         29.89           S         Peak         45.50         -15.56         30.94           S         Peak         55.77         -10.19         45.58           S         Peak         55.77         -10.19         45.58           S         Peak         50.78         0.69         51.46           H         Peak         42.75         8.74         51.49           H         Peak         -         -         -           H         Peak         -         -         -           H         Peak         -         -         -           H <t< td=""><td>ModeReading LevelFS@3mF/H/E/SPK/QP/AVdBµVdBdBµV/mdBµV/mSPeak56.78-20.4036.3840.00SPeak60.50-25.3435.1640.00SPeak64.67-24.2040.4743.50SPeak59.65-22.9336.7243.50SPeak59.65-22.9336.7243.50SPeak48.65-18.7629.8946.00SPeak46.50-15.5630.9446.00SPeak55.77-10.1945.5868.30SPeak50.780.6951.4668.30SPeak50.780.6951.4668.30HPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeak</td></t<>	ModeReading LevelFS@3mF/H/E/SPK/QP/AVdBµVdBdBµV/mdBµV/mSPeak56.78-20.4036.3840.00SPeak60.50-25.3435.1640.00SPeak64.67-24.2040.4743.50SPeak59.65-22.9336.7243.50SPeak59.65-22.9336.7243.50SPeak48.65-18.7629.8946.00SPeak46.50-15.5630.9446.00SPeak55.77-10.1945.5868.30SPeak50.780.6951.4668.30SPeak50.780.6951.4668.30HPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeakHPeak

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Operation Band	:802.11 a	Test Date	:2013-11-17
Fundamental Frequency	:5240 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	$dB\mu V/m$	$dB\mu V/m$	dB
93.05	S	Peak	60.78	-24.20	36.58	43.50	-6.92
100.81	S	Peak	57.84	-23.05	34.78	43.50	-8.72
125.06	S	Peak	51.42	-21.59	29.84	43.50	-13.66
149.31	S	Peak	52.28	-22.75	29.53	43.50	-13.97
297.72	S	Peak	55.45	-19.14	36.31	46.00	-9.69
306.45	S	Peak	55.32	-18.75	36.57	46.00	-9.43
1119.00	S	Peak	57.89	-7.19	50.70	68.30	-17.60
1399.00	S	Peak	55.67	-6.80	48.87	68.30	-19.43
5599.00	S	Peak	59.15	1.85	61.00	68.30	-7.30
6992.00	S	Peak	49.23	4.64	53.87	68.30	-14.43
10480.00	Н	Peak	47.78	8.74	56.52	68.30	-11.78
15720.00	Н	Peak	-	-	-	-	-
20960.00	Н	Peak	-	-	-	-	-
26200.00	Н	Peak	-	-	-	-	-
31440.00	Н	Peak	-	-	-	-	-
36680.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 133 of 150

Operation Band	:802.11 a	Test Date	:2013-11-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:27 deg_C / 66 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5093.80	Е	Average	45.76	7.59	53.35	54.00	-0.65
5093.80	Е	Peak	62.41	7.59	70.00	74.00	-4.00
5150.00	Е	Peak	56.53	7.69	64.22	74.00	-9.78
5150.00	Е	Peak	43.58	7.69	51.27	74.00	-22.73
Operation Band Fundamental Free Operation Mode EUT Pol.	quency	:802.11 a :5180 MHz :Bandedge LOW :E1 Plan	Test Date Temp./Hum Engineer Measuremer	i. nt Antenna Po	:Vito	11-11 g_C / 66 RH ZONTAL	

Actual  $FS(dB\mu V/m) = SPA$ . Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	E	Average	45.15	7.69	52.84	54.00	-1.16
5150.00	Е	Peak	59.49	7.69	67.18	74.00	-6.82

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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 pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



#### Radiated Spurious Emission Measurement Result 802.11n HT20, 5150~5250 MHz (MIMO) **Operation Band** :802.11 n20M Test Date :2013-11-17 **Fundamental Frequency** :5180 MHz Temp./Humi. :24.7 deg_C / 56 RH **Operation Mode** :TX LOW Engineer :Vito EUT Pol. :E1 Plan Measurement Antenna Pol. :VERTICAL Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB) $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency. "E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency. "---": denotes Noise Floor. Freq. Note Detector Spectrum Factor Actual Limit Margin FS Mode Reading Level @3m dBµV dBµV/m dBµV/m MHz F/H/E/S PK/QP/AV dB dB 38.73 S Peak 57.42 -20.4037.02 40.00 -2.9847.46 S -25.34 35.22 40.00 Peak 60.56 -4.7893.05 S Peak 65.11 -24.2040.91 43.50 -2.59S 59.37 101.78 Peak -22.93 36.44 43.50 -7.06 S 400.54 -15.56 Peak 46.11 30.54 46.00 -15.46 625.58 S Peak 46.02 -11.93 34.09 46.00 -11.91 S 1119.00 55.40 -10.19 45.21 68.30 Peak -23.09 1399.00 S Peak 55.59 -9.80 45.79 68.30 -22.514962.00 S Peak 53.15 0.62 53.77 68.30 -14.53 S 57.35 1.92 59.27 68.30 -9.03 5683.00 Peak 10360.00 Peak 55.19 63.32 68.30 Η 8.12 -4.9815540.00 Η Peak . _ _ 20720.00 Η Peak 25900.00 Η Peak _ _ 31080.00 Η Peak Peak 36260.00 Η

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless otherwise stated the results shown in this test report refer only to the sample(s) lested and such sample(s) are retained for 50 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms and Conditions for Electronic Documents at information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of a subject to the sample(s) and within the limits of the limit at the subject to the sample(s) and within the limits of the limit at the sample(s) are reflects the Company's findings at the time of its intervention only and within the limits of the limit at the limit of the limit at the sample(s) and within the limits of the limit at the limit of the limit of the limit of the limit at the limit of the li</u> 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



Operation Band	:802.11 n20M	Test Date	:2013-11-17
Fundamental Frequency	:5180 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	58.93	-24.20	34.72	43.50	-8.78
101.78	S	Peak	58.71	-22.93	35.78	43.50	-7.72
115.36	S	Peak	53.50	-21.90	31.60	43.50	-11.90
306.45	S	Peak	55.58	-18.75	36.83	46.00	-9.17
625.58	S	Peak	44.70	-11.93	32.77	46.00	-13.23
750.71	S	Peak	46.69	-10.71	35.98	46.00	-10.02
1119.00	S	Peak	56.63	-7.19	49.43	68.30	-18.87
1399.00	S	Peak	53.52	-6.80	46.72	68.30	-21.58
4990.00	S	Peak	56.56	0.71	57.27	68.30	-11.03
5627.00	S	Peak	59.00	1.87	60.87	68.30	-7.43
10440.00	Н	Peak	54.23	8.48	62.71	68.30	-5.59
15660.00	Н	Peak	-	-	-	-	-
20880.00	Н	Peak	-	-	-	-	-
26100.00	Н	Peak	-	-	-	-	-
31320.00	Н	Peak	-	-	-	-	-
36540.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 136 of 150

Operation Band	:802.11 n20M	Test Date	:2013-11-17
Fundamental Frequency	:5220 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX MID	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Errog	Note	Dataatar	Speatrum	Factor	A atual	Limit	Morgin
Freq.	note	Detector	Spectrum	Factor	Actual		Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	56.97	-20.40	36.57	40.00	-3.43
47.46	S	Peak	60.92	-25.34	35.58	40.00	-4.42
93.05	S	Peak	64.68	-24.20	40.48	43.50	-3.02
102.75	S	Peak	59.93	-22.79	37.13	43.50	-6.37
575.14	S	Peak	47.58	-12.36	35.22	46.00	-10.78
750.71	S	Peak	48.94	-10.71	38.23	46.00	-7.77
1119.00	S	Peak	55.86	-10.19	45.67	68.30	-22.63
1399.00	S	Peak	54.55	-9.80	44.75	68.30	-23.55
4976.00	S	Peak	53.15	0.66	53.82	68.30	-14.48
5641.00	S	Peak	57.04	1.89	58.93	68.30	-9.37
10440.00	Н	Peak	52.61	8.48	61.09	68.30	-7.21
15660.00	Н	Peak	-	-	-	-	-
20880.00	Н	Peak	-	-	-	-	-
26100.00	Н	Peak	-	-	-	-	-
31320.00	Н	Peak	-	-	-	-	-
36540.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



:2013-11-17
:24.7 deg_C / 56 RH
:Vito
ol. :HORIZONTAL
)

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	58.93	-24.20	34.72	43.50	-8.78
101.78	S	Peak	58.71	-22.93	35.78	43.50	-7.72
115.36	S	Peak	53.50	-21.90	31.60	43.50	-11.90
306.45	S	Peak	55.58	-18.75	36.83	46.00	-9.17
625.58	S	Peak	44.70	-11.93	32.77	46.00	-13.23
750.71	S	Peak	46.69	-10.71	35.98	46.00	-10.02
1119.00	S	Peak	56.63	-7.19	49.43	68.30	-18.87
1399.00	S	Peak	53.52	-6.80	46.72	68.30	-21.58
4990.00	S	Peak	56.56	0.71	57.27	68.30	-11.03
5627.00	S	Peak	59.00	1.87	60.87	68.30	-7.43
10440.00	Н	Peak	54.23	8.48	62.71	68.30	-5.59
15660.00	Н	Peak	-	-	-	-	-
20880.00	Н	Peak	-	-	-	-	-
26100.00	Н	Peak	-	-	-	-	-
31320.00	Н	Peak	-	-	-	-	-
36540.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 138 of 150

Operation Band	:802.11 n20M	Test Date	:2013-11-17
Fundamental Frequency	:5240 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	56.98	-20.40	36.58	40.00	-3.42
47.46	S	Peak	60.25	-25.34	34.91	40.00	-5.09
93.05	S	Peak	64.11	-24.20	39.91	43.50	-3.59
101.78	S	Peak	59.05	-22.93	36.12	43.50	-7.38
600.36	S	Peak	46.41	-12.32	34.09	46.00	-11.91
750.71	S	Peak	47.69	-10.71	36.98	46.00	-9.02
1119.00	S	Peak	55.34	-10.19	45.14	68.30	-23.16
1399.00	S	Peak	55.31	-9.80	45.51	68.30	-22.79
5683.00	S	Peak	57.42	1.92	59.34	68.30	-8.96
10480.00	Н	Peak	52.13	8.74	60.87	68.30	-7.43
15720.00	Н	Peak	-	-	-	-	-
20960.00	Н	Peak	-	-	-	-	-
26200.00	Н	Peak	-	-	-	-	-
31440.00	Н	Peak	-	-	-	-	-
36680.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Operation Band	:802.11 n20M	Test Date	:2013-11-17
Fundamental Frequency	:5240 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	52.24	-20.40	31.84	40.00	-8.16
93.05	S	Peak	60.60	-24.20	36.40	43.50	-7.10
101.78	S	Peak	58.33	-22.93	35.40	43.50	-8.10
308.39	S	Peak	55.82	-18.64	37.18	46.00	-8.82
625.58	S	Peak	45.26	-11.93	33.32	46.00	-12.68
750.71	S	Peak	47.24	-10.71	36.53	46.00	-9.47
1119.00	S	Peak	57.56	-7.19	50.36	68.30	-17.94
4976.00	S	Peak	57.71	0.66	58.38	68.30	-9.92
5634.00	S	Peak	60.07	1.88	61.95	68.30	-6.35
10480.00	Н	Peak	52.59	8.74	61.33	68.30	-6.97
15720.00	Н	Peak	-	-	-	-	-
20960.00	Н	Peak	-	-	-	-	-
26200.00	Н	Peak	-	-	-	-	-
31440.00	Н	Peak	-	-	-	-	-
36680.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 140 of 150

Operation Band	:802.11 n20M	Test Date	:2013-11-11
Fundamental Frequency	:5180 MHz	Temp./Humi.	:27 deg_C / 66 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5096.60	Е	Average	46.03	7.59	53.62	54.00	-0.38
5096.60	Е	Peak	61.52	7.59	69.11	74.00	-4.89
5150.00	Е	Average	43.04	7.69	50.73	54.00	-3.27
5150.00	Е	Peak	57.19	7.69	64.88	74.00	-9.12
Fundamental Frequency :5180 M Operation Mode :Banded		:802.11 n20M :5180 MHz :Bandedge LOW :E1 Plan	Test Date Temp./Hum Engineer Measuremer	i. nt Antenna Po	:Vito	11-11 g_C / 66 RH ZONTAL	

Actual  $FS(dB\mu V/m) = SPA$ . Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	E	Average	44.51	7.69	52.20	54.00	-1.80
5150.00	Е	Peak	58.14	7.69	65.83	74.00	-8.17

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



#### Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz (MIMO) **Operation Band** :802.11 n40M Test Date :2013-11-17 **Fundamental Frequency** :5190 MHz Temp./Humi. :24.7 deg_C / 56 RH **Operation Mode** :TX LOW Engineer :Vito EUT Pol. :E1 Plan Measurement Antenna Pol. :VERTICAL Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB) $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency. "E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency. "---": denotes Noise Floor. Freq. Note Detector Spectrum Factor Actual Limit Margin FS Mode Reading Level @3m dBµV dBµV/m dBµV/m MHz F/H/E/S PK/QP/AV dB dB 39.70 S Peak 57.73 -21.0836.65 40.00 -3.35 47.46 S -25.34 40.00 Peak 60.67 35.33 -4.67 93.05 S Peak 64.37 -24.2040.17 43.50 -3.33 S 100.81 Peak 60.29 -23.05 37.24 43.50 -6.26 S 600.36 Peak 49.14 -12.3236.83 46.00 -9.17750.71 S Peak 47.09 -10.71 36.38 46.00 -9.62 S 1119.00 58.50 -10.19 48.31 68.30 -19.99 Peak 1399.00 S Peak 54.55 -9.80 44.75 68.30 -23.55 4990.00 S Peak 59.67 0.71 60.38 68.30 -7.92 S 1.88 68.30 -6.80 5634.00 Peak 59.62 61.50 10380.00 Peak 50.93 59.09 68.30 Η 8.16 -9.21 15570.00 Η Peak . _ _ 20760.00 Η Peak Η Peak 25950.00 _ _ 31140.00 Η Peak Peak 36330.00 Η

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless otherwise stated the results shown in this test report refer only to the sample(s) lested and such sample(s) are retained for 50 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms and Conditions for Electronic Documents at information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of a subject to the sample(s) and within the limits of the limit at the subject to the sample(s) and within the limits of the limit at the sample(s) are reflects the Company's findings at the time of its intervention only and within the limits of the limit at the limit of the limit at the sample(s) and within the limits of the limit at the limit of the limit of the limit of the limit at the limit of the li</u> 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



Operation Band	:802.11 n40M	Test Date	:2013-11-17
Fundamental Frequency	:5190 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
rieq.	TYOLE	Mode		ractor	FS	@3m	iviai gili
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	61.99	-24.20	37.79	43.50	-5.71
101.78	S	Peak	60.18	-22.93	37.25	43.50	-6.25
308.39	S	Peak	54.85	-18.64	36.21	46.00	-9.79
575.14	S	Peak	49.22	-12.36	36.86	46.00	-9.14
600.36	S	Peak	52.73	-12.32	40.41	46.00	-5.59
750.71	S	Peak	52.35	-10.71	41.64	46.00	-4.36
1119.00	S	Peak	57.40	-7.19	50.21	68.30	-18.09
1399.00	S	Peak	54.45	-6.80	47.65	68.30	-20.65
4990.00	S	Peak	58.77	0.71	59.48	68.30	-8.82
5592.00	S	Peak	60.00	1.82	61.82	68.30	-6.48
10380.00	Н	Peak	51.84	8.16	60.00	68.30	-8.30
15570.00	Н	Peak	-	-	-	-	-
20760.00	Н	Peak	-	-	-	-	-
25950.00	Н	Peak	-	-	-	-	-
31140.00	Н	Peak	-	-	-	-	-
36330.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 143 of 150

Operation Band	:802.11 n40M	Test Date	:2013-11-17
Fundamental Frequency	:5230 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
38.73	S	Peak	57.10	-20.40	36.70	40.00	-3.30
47.46	S	Peak	60.60	-25.34	35.26	40.00	-4.74
93.05	S	Peak	64.34	-24.20	40.14	43.50	-3.36
100.81	S	Peak	60.83	-23.05	37.78	43.50	-5.72
600.36	S	Peak	48.61	-12.32	36.29	46.00	-9.71
750.71	S	Peak	48.92	-10.71	38.21	46.00	-7.79
1119.00	S	Peak	57.39	-10.19	47.20	68.30	-21.10
1399.00	S	Peak	54.53	-9.80	44.73	68.30	-23.57
4969.00	S	Peak	56.79	0.64	57.43	68.30	-10.87
5578.00	S	Peak	58.78	1.76	60.54	68.30	-7.76
10460.00	Н	Peak	47.39	8.41	55.80	68.30	-12.50
15690.00	Н	Peak	-	-	-	-	-
20920.00	Н	Peak	-	-	-	-	-
26150.00	Н	Peak	-	-	-	-	-
31380.00	Н	Peak	-	-	-	-	-
36610.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Operation Band	:802.11 n40M	Test Date	:2013-11-17
Fundamental Frequency	:5230 MHz	Temp./Humi.	:24.7 deg_C / 56 RH
Operation Mode	:TX HIGH	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:HORIZONTAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
93.05	S	Peak	61.19	-24.20	36.99	43.50	-6.51
101.78	S	Peak	59.21	-22.93	36.28	43.50	-7.22
307.42	S	Peak	54.89	-18.70	36.19	46.00	-9.81
575.14	S	Peak	49.35	-12.36	36.99	46.00	-9.01
600.36	S	Peak	51.70	-12.32	39.38	46.00	-6.62
750.71	S	Peak	52.16	-10.71	41.45	46.00	-4.55
1119.00	S	Peak	57.29	-7.19	50.09	68.30	-18.21
1399.00	S	Peak	54.82	-6.80	48.02	68.30	-20.28
4976.00	S	Peak	58.08	0.66	58.74	68.30	-9.56
5620.00	S	Peak	59.47	1.87	61.34	68.30	-6.96
10460.00	Н	Peak	48.39	8.41	56.80	68.30	-11.50
15690.00	Н	Peak	-	-	-	-	-
20920.00	Н	Peak	-	-	-	-	-
26150.00	Н	Peak	-	-	-	-	-
31380.00	Н	Peak	-	-	-	-	-
36610.00	Н	Peak	-	-	-	-	-

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Report No.: E2/2013/90040 Issue Date: Nov. 21, 2013 Page 145 of 150

Operation Band Fundamental Frequency	:802.11 n40M :5190 MHz	Test Date Temp./Humi.	:2013-11-11 :27 deg_C / 66 RH
Operation Mode	:Bandedge LOW	Engineer	:Vito
EUT Pol.	:E1 Plan	Measurement Antenna Pol.	:VERTICAL

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

Note : "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency.

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	Е	Average	43.28	7.69	50.97	54.00	-3.03
5150.00	Е	Peak	57.74	7.69	65.43	74.00	-8.57
Fundamental Frequency :51 Operation Mode :Ba		:802.11 n40M :5190 MHz :Bandedge LOW :E1 Plan	Test Date Temp./Hum Engineer Measuremer		:Vito	11-11 g_C / 66 RH ZONTAL	

Actual FS( $dB\mu V/m$ ) = SPA. Reading level( $dB\mu V$ ) + Factor(dB)

 $Factor(dB) = Antenna Factor(dB\mu V/m) + Cable Loss(dB) - Pre_Amplifier Gain(dB)$ 

"F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency. Note :

"E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

The trace on RE(radiation emission) plot is as colored blue, and the detection manner we've employed is peak detector.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
5150.00	E	Average	45.57	7.69	53.26	54.00	-0.74
5150.00	Е	Peak	63.05	7.69	70.74	74.00	-3.26

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and interior different the size of this dependence in the transmission of the transmission of the transmission and the transmission of the transmission and the transmission of transmission of transmission of transmission of the transmission of transmission of transmission of the transmission of transmission of the transmission of transmiss 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



# **13. TRANSMISSION IN THE ABSENCE OF DATA**

# 13.1 Standard Applicable

## According to §15.407(c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

## According to RSS-210 A9.4(4)

The device shall automatically discontinue transmission in case of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

## 13.2 Result:

No non-compliance noted: Refer to the theory of operation.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms e-document.htm</u>. 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.



# **14. FREQUENCY STABILITY**

#### **Standard Applicable** 14.1

According to §15.407 (g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

#### 14.2 **Result:**

Refer to next page for plots.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-processore of this indervention to the during the particular to the full data. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Operation Mode	802.11 a	Test Date	2013/11/11
Temperature	25 °C	Test By	A-Ken
Humidity	62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
		36	5180.0000	5,179.931500	0.0685
25 °C	24V	44	5220.0000	5,219.929240	0.0708
		48	5240.0000	5,239.927033	0.0730
		36	5180.0000	5,179.928067	0.0719
0 °C	24V	44	5220.0000	5,219.928617	0.0714
		48	5240.0000	5,239.924783	0.0752
		36	5180.0000	5,179.927750	0.0723
40 °C	24V	44	5220.0000	5,219.927500	0.0725
		48	5240.0000	5,239.924683	0.0753

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134 WuKunRoad NewTaipelindustrialPark WukuDistrict NewTaipeliCity. Taiwan24803/新 th. 市 5 股區 新 th. 走 業 跟區 东 工 路 134 號

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



Operation Mode	802.11n_HT40	Test Date	2013/11/11
Temperature	25 °C	Test By	A-Ken
Humidity	62 %		

Test Temp.	Test Voltage	Channel	Measured Frequency (MHz)	Spectrum Frequency (MHz)	ΔFrequency (MHz)
25 °C	24V	38	5190.0000	5,189.938650	0.0613
25 0	24 V	46	5230.0000	5,229.938433	0.0616
0 °C	24M	38	5190.0000	5,189.938383	0.0616
0 0	24V	46	5230.0000	5,229.938133	0.0619
40 °C	24V	38	5190.0000	5,189.958783	0.0412
40 0	∠4 V	46	5230.0000	5,229.960483	0.0395

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for elec-tronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. 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 ap-pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. <u>SGS Taiwan Ltd.</u> No 134 WuKunRoad NewTaipelindustrialPark WukuDistrict NewTaipeliCity. Taiwan24803/新 th. 市 5 股區 新 th. 走 業 跟區 东 工 路 134 號

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.



# **15. ANTENNA REQUIREMENT**

# 15.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

According to RSS-GEN 7.1.2, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

# 15.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is 5.31dBi (Main), 5.36dBi (Aux) for frequency band of 5150~5250MHz, 9.26dBi for 802.11 a/n20/n40 (5150~5250MHz_MIMO gain) and the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

~ End of Report ~

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sqs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sqs.com/terms e-document.htm</u>. 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.