



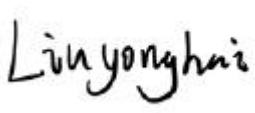
Test Report No.:
FCC2022-0064-RF9

RF Test Report

EUT : SAGA
MODEL : OV1
BRAND NAME : 
APPLICANT : OSOM Products Inc.
Classification Of Test : N/A

CVC Testing Technology Co., Ltd.



Applicant		Name: OSOM Products Inc. Address: 21701 Stevens Creek Blvd #2270, Cupertino, CA 95015, USA	
Manufacturer		Name: OSOM Products Inc. Address: 21701 Stevens Creek Blvd #2270, Cupertino, CA 95015, USA	
Equipment Under Test		Product Name: SAGA Model/Type: OV1 Brand Name:  Serial NO.: N/A Sample NO.:15-1	
Date of Receipt.	2022.09.13	Date of Testing	2022.09.13~2022.10.27
Test Specification		Test Result	
47 CFR Part 2, 22(H), 24(E), 27(L), 27(F), 27(H),90(S),96 ANSI/TIA-603-E, RSS 130 issue 2, RSS 132 issue 3, RSS 133 issue 6 A1, RSS 139 issue 3, RSS-195 issue 2, RSS 199 issue 3, RSS-Gen issue 5 A1+A2, ANSI C63.26-2015		PASS	
Evaluation of Test Result		The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: 2022.10.28	
Tested by:  Xu ZhenFei Name Signature	Reviewed by:  Liu YongHai Name Signature	Approved by:  Chen HuaWen Name Signature	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



TABLE OF CONTENTS

1 SUMMARY OF TEST RESULTS AND LIMIT	6
1.1 NR N2	6
1.2 NR N5	6
1.3 NR N7	7
1.4 NR N12	8
1.5 NR N25	8
1.6 NR N26(824~849MHz)	9
1.7 NR N26(814~824MHz)	9
1.8 NR N38	10
1.9 NR N41	11
1.10 NR N48 FOR FCC (3550-3700MHz)	12
1.11 NR N66	13
1.12 NR N71	13
1.13 NR N77 FOR FCC (3450~3550MHz)	14
1.14 NR N77 FOR FCC (3700~3980MHz)	14
1.15 NR N78 FOR FCC (3450~3550MHz)	15
1.16 NR N78 FOR FCC (3700~3800MHz)	15
2 GENERAL INFORMATION	16
2.1 GENERAL PRODUCT INFORMATION	16
2.2 ANTENNA TYPE	17
2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	17
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	23
2.5 DESCRIPTION OF SUPPORT UNITS	23
2.6 LIST OF TEST AND MEASUREMENT INSTRUMENTS	24
2.7 MEASUREMENT UNCERTAINTY	25
2.8 TEST LOCATION	25
3 TEST TYPES AND DESCRIPTION	26
3.1 RADIATED EMISSION MEASUREMENT	26
3.1.1 TEST PROCEDURES	26
3.1.2 TEST SETUP	27
3.1.3 TEST RESULTS	28
3.2 OUT POWER MEASUREMENT	58
3.2.1 TEST PROCEDURES	58
3.2.2 TEST SETUP	58
3.3 FREQUENCY STABILITY	59
3.3.1 TEST PROCEDURE	59
3.3.2 TEST SETUP	59
3.4 OCCUPIED BANDWIDTH MEASUREMENT	60
3.4.1 TEST PROCEDURES	60
3.4.2 TEST SETUP	60
3.5 BAND EDGE MEASUREMENT	61
3.5.1 TEST PROCEDURES	61
3.5.2 TEST SETUP	61
3.6 CONDUCTED SPURIOUS EMISSIONS	63
3.6.1 TEST PROCEDURE	63
3.6.2 TEST SETUP	63
3.7 PEAK TO AVERAGE RATIO	64
3.7.1 TEST PROCEDURES	64
3.7.2 TEST SETUP	64
3.8 RECEIVER EMISSION MEASUREMENT	65
3.8.1 TEST PROCEDURES	65



3.8.2 TEST SETUP	66
3.8.3 TEST RESULTS	67
4 PHOTOGRAPHS OF TEST SETUP	68
5 PHOTOGRAPHS OF THE EUT	69



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2022-0064-RF9	Original release	2022.10.28



1 SUMMARY OF TEST RESULTS AND LIMIT

1.1 NR N2

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-133(6.3)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A1	Report Only
§24.232(c)	RSS-133(6.3)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	Annex A of FCC2022-0064-RF9-A1	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A1	Report Only
---	RSS-133(6.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A1	PASS
§2.1055 24.235	RSS-133(4.6)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A1	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A1	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1) RSS-133(6.6)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A1	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1) RSS-133(6.6)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.2 NR N5

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-132(5.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A2	Report Only
§22.913(a)(5)	RSS-132(5.4)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	Annex A of FCC2022-0064-RF9-A2	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A2	Report Only
---	RSS-132(5.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A2	PASS
§2.1055 §22.355	RSS-132(5.5)	Frequency Stability	< 2.5 ppm	Annex F of FCC2022-0064-RF9-A2	PASS
§2.1051 §22.917	RSS-132(5.5)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A2	PASS
§2.1051 §22.917	RSS-132(5.5) RSS-132(5.6)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A2	PASS
§2.1051 §22.917	RSS-132(5.5) RSS-132(5.6)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



1.3 NR N7

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-199(4.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A3	Report Only
§27.50(h)(2)	RSS-199(4.4)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	Annex A of FCC2022-0064-RF9-A3	PASS
§2.1049	RSS-199(4.2)	Occupied Bandwidth	>1MHz	Annex C of FCC2022-0064-RF9-A3	Report Only
---	RSS-199(4.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A3	PASS
§2.1055 §27.54	RSS-199(4.3)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A3	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Band Edge Compliance	For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least: (i) 40 + 10 log ₁₀ p from the channel edges to 5 MHz away (ii) 43 + 10 log ₁₀ p between 5 MHz and X MHz from the channel edges, and (iii) 55 + 10 log ₁₀ p at X MHz and beyond from the channel edges In addition, the attenuation shall not be less than 43 + 10 log(p) on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log ₁₀ p at or below 2490.5 MHz	Annex D of FCC2022-0064-RF9-A3	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Conducted Spurious Emission		Annex E of FCC2022-0064-RF9-A3	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Radiates Spurious Emission		See section 3.1 and 3.8	PASS



1.4 NR N12

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-130(4.6.3)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A4	Report Only
§27.50(c)(10)	RSS-130(4.6.3)	Effective Radiated Power	ERP < 3Watt	Annex A of FCC2022-0064-RF9-A4	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A4	Report Only
---	RSS-130(4.6)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A4	PASS
§2.1055 §27.54	RSS-130(4.5)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A4	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A4	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A4	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.5 NR N25

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-133(6.3)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A5	Report Only
§24.232(c)	RSS-133(6.3)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	Annex A of FCC2022-0064-RF9-A5	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A5	Report Only
---	RSS-133(6.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A5	PASS
§2.1055 24.235	RSS-133(4.6)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A5	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A5	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1) RSS-133(6.6)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A5	PASS
§2.1051 §24.238(a)	RSS-133(6.5.1) RSS-133(6.6)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



1.6 NR N26(824~849MHz)

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-139(6.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A6	Report Only
§27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	Annex A of FCC2022-0064-RF9-A6	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A6	Report Only
---	RSS-139(6.5)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A6	PASS
§2.1055 §27.54	RSS-139(6.4)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A6	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A6	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A6	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.7 NR N26(814~824MHz)

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	---	Conducted power output	---	Annex A of FCC2022-0064-RF9-A7	Report Only
§90.635(b)	---	Equivalent Radiated Power	ERP < 100Watt	Annex A of FCC2022-0064-RF9-A7	PASS
§2.1049	---	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A7	Report Only
---	---	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A7	PASS
§2.1055 §90.213	---	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A7	PASS
§2.1051 §90.691	---	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A7	PASS
§2.1051 §90.691	---	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A7	PASS
§2.1051 §90.691	---	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



1.8 NR N38

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-199(4.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A8	Report Only
§27.50(h)(2)	RSS-199(4.4)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	Annex A of FCC2022-0064-RF9-A8	PASS
§2.1049	RSS-199(4.2)	Occupied Bandwidth	>1MHz	Annex C of FCC2022-0064-RF9-A8	Report Only
---	RSS-199(4.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A8	PASS
§2.1055 §27.54	RSS-199(4.3)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A8	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Band Edge Compliance	For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least: (i) 40 + 10 log ₁₀ p from the channel edges to 5 MHz away (ii) 43 + 10 log ₁₀ p between 5 MHz and X MHz from the channel edges, and (iii) 55 + 10 log ₁₀ p at X MHz and beyond from the channel edges In addition, the attenuation shall not be less than 43 + 10 log(p) on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log ₁₀ p at or below 2490.5 MHz	Annex D of FCC2022-0064-RF9-A8	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Conducted Spurious Emission		Annex E of FCC2022-0064-RF9-A8	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Radiates Spurious Emission		See section 3.1 and 3.8	PASS



1.9 NR N41

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-199(4.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A9	Report Only
§27.50(h)(2)	RSS-199(4.4)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	Annex A of FCC2022-0064-RF9-A9	PASS
§2.1049	RSS-199(4.2)	Occupied Bandwidth	>1MHz	Annex C of FCC2022-0064-RF9-A9	Report Only
---	RSS-199(4.4)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A9	PASS
§2.1055 §27.54	RSS-199(4.3)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A9	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Band Edge Compliance	For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least: (i) 40 + 10 log ₁₀ p from the channel edges to 5 MHz away (ii) 43 + 10 log ₁₀ p between 5 MHz and X MHz from the channel edges, and (iii) 55 + 10 log ₁₀ p at X MHz and beyond from the channel edges In addition, the attenuation shall not be less than 43 + 10 log(p) on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log ₁₀ p at or below 2490.5 MHz	Annex D of FCC2022-0064-RF9-A9	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Conducted Spurious Emission		Annex E of FCC2022-0064-RF9-A9	PASS
§2.1051 §27.53(m4)	RSS-199(4.5)	Radiates Spurious Emission		See section 3.1 and 3.8	PASS



1.10 NR N48 for FCC (3550-3700MHz)

FCC PART SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	Conducted power output	---	Annex A of FCC2022-0064-RF9-A10	Report Only
§96.41(b)	Equivalent Isotropic Radiated Power	EIRP < 23dBm/10MHz	Annex A of FCC2022-0064-RF9-A10	PASS
§2.1049 §96.41	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A10	Report Only
§96.41(g)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A10	PASS
§2.1055	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A10	PASS
§2.1051 §96.41(e)	Band Edge Compliance	the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.	Annex D of FCC2022-0064-RF9-A10	PASS
§2.1051 §96.41(e)	Conducted Spurious Emission	Any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.	Annex E of FCC2022-0064-RF9-A10	PASS
§2.1051 §96.41(e)	Radiates Spurious Emission	Any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.	See section 3.1 and 3.8	PASS



1.11 NR N66

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-139(6.4)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A11	Report Only
§27.50(d)(4)	RSS-139(6.5)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	Annex A of FCC2022-0064-RF9-A11	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A11	Report Only
---	RSS-139(6.5)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A11	PASS
§2.1055 §27.54	RSS-139(6.4)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A11	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A11	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A11	PASS
§2.1051 §27.53(h)	RSS-139(6.9)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.12 NR N71

FCC PART SECTION	RSS SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	RSS-130(4.6.2)	Conducted power output	---	Annex A of FCC2022-0064-RF9-A12	Report Only
§27.50(c)(10)	RSS-130(4.6.2)	Equivalent Radiated Power	ERP < 3Watt	Annex A of FCC2022-0064-RF9-A12	PASS
§2.1049	RSS-Gen (6.7)	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A12	Report Only
---	RSS-130(4.6.1)	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A12	PASS
§2.1055 §27.54	RSS-130(4.5)	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A12	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A12	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A12	PASS
§2.1051 §27.53(g)	RSS-130(4.7.1) RSS-130(4.7.2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



1.13 NR N77 for FCC (3450~3550MHz)

FCC PART SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	Conducted power output	---	Annex A of FCC2022-0064-RF9-A13	Report Only
§27.50(k)(3)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	Annex A of FCC2022-0064-RF9-A13	PASS
§2.1049	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A13	Report Only
---	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A13	PASS
§2.1055 §27.54	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A13	PASS
§2.1051 §27.50(n)(2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A13	PASS
§2.1051 §27.50(n)(2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A13	PASS
§2.1051 §27.50(n)(2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.14 NR N77 for FCC (3700~3980MHz)

FCC PART SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	Conducted power output	---	Annex A of FCC2022-0064-RF9-A14	Report Only
§27.50(j)(3)	Equivalent Isotropic Radiated Power	ERP < 1Watt	Annex A of FCC2022-0064-RF9-A14	PASS
§2.1049	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A14	Report Only
---	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A14	PASS
§2.1055 §27.54	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A14	PASS
§2.1051 §27.53(l)(2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A14	PASS
§2.1051 §27.53(l)(2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A14	PASS
§2.1051 §27.53(l)(2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



1.15 NR N78 for FCC (3450~3550MHz)

FCC PART SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	Conducted power output	---	Annex A of FCC2022-0064-RF9-A15	Report Only
§27.50(k)(3)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	Annex A of FCC2022-0064-RF9-A15	PASS
§2.1049	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A15	Report Only
---	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A15	PASS
§2.1055 §27.54	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A15	PASS
§2.1051 §27.50(n)(2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A15	PASS
§2.1051 §27.50(n)(2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A15	PASS
§2.1051 §27.50(n)(2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS

1.16 NR N78 for FCC (3700~3800MHz)

FCC PART SECTION	TEST TYPE AND LIMIT	LIMIT	Report Section	RESULT
§2.1046	Conducted power output	---	Annex A of FCC2022-0064-RF9-A16	Report Only
§27.50(j)(3)	Equivalent Isotropic Radiated Power	ERP < 1Watt	Annex A of FCC2022-0064-RF9-A16	PASS
§2.1049	Occupied Bandwidth	---	Annex C of FCC2022-0064-RF9-A16	Report Only
---	Peak-to-Average Power Ratio	<13 dB	Annex B of FCC2022-0064-RF9-A16	PASS
§2.1055 §27.54	Frequency Stability	Within authorized bands of operation/frequency block.	Annex F of FCC2022-0064-RF9-A16	PASS
§2.1051 §27.53(l)(2)	Band Edge Compliance	< 43+10log10(P[Watts])	Annex D of FCC2022-0064-RF9-A16	PASS
§2.1051 §27.53(l)(2)	Conducted Spurious Emission	< 43+10log10(P[Watts])	Annex E of FCC2022-0064-RF9-A16	PASS
§2.1051 §27.53(l)(2)	Radiates Spurious Emission	< 43+10log10(P[Watts])	See section 3.1 and 3.8	PASS



2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	SAGA			
BRAND				
TEST MODEL	OV1			
ADDITIONAL MODEL	N/A			
FCC ID	2AW49200731A			
IC ID	26394-200731A			
POWER SUPPLY	DC 3.89 from Battery or USB host unit			
MODULATION TYPE	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM			
OPERATING FREQUENCY And MAXIMUM OUTPUT POWER	Band	TX(MHz)	RX(MHz)	Maximum Output Power to Antenna (dBm)
	NR N2	1850 ~ 1910	1930 ~ 1990	23.37
	NR N5	824 ~ 849	869 ~ 894	23.12
	NR N7	2500 ~ 2570	2620 ~ 2690	22.91
	NR N12	699 ~ 716	729 ~ 746	23.02
	NR N25	1850 ~ 1915	1930 ~ 1995	23.71
		814~ 824	859 ~ 869	22.92
	NR N26	824~ 849	869 ~ 894	23.18
		2570 ~ 2620	2570 ~ 2620	23.22
	NR N38	2496 ~ 2690	2496 ~ 2690	23.97
	NR N41	3550 ~ 3700	3550 ~ 3700	23.53
	NR N48	1710 ~ 1780	2110 ~ 2180	23.18
	NR N66	665.5 ~ 695.5	619.5 ~ 649.5	23.40
	NR N71	3450 ~ 3550	3450 ~ 3550	23.92
		3700 ~ 3980	3700 ~ 3980	23.38
	NR N77	3450 ~ 3550	3450 ~ 3550	23.83
		3700 ~ 3800	3700 ~ 3800	23.26
ANTENNA TYPE(Note 4)	See section 2.2			
HARDWARE REVISION	MP			
SOFTWARE REVISION	SQ3A.220705.126			
I/O PORTS	Refer to user's manual			
CABLE SUPPLIED	USB line, 1.2Meter, Shielded without ferrite			

Note:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: FCC2022-0064-E) for detailed product photo.
4. Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



2.2 ANTENNA TYPE

ANTENNA TYPE	Band	TX(MHz)	RX(MHz)	Antenna Type	Antenna Port	Antenna Gain
	NR N2	1850 ~ 1910	1930 ~ 1990	PIFA Antenna	0	0.3
	NR N5	824 ~ 849	869 ~ 894	PIFA Antenna	0	-3.5
	NR N7	2500 ~ 2570	2620 ~ 2690	PIFA Antenna	0	0.6
	NR N12	699 ~ 716	729 ~ 746	PIFA Antenna	0	-2.1
	NR N25	1850 ~ 1915	1930 ~ 1995	PIFA Antenna	0	0.3
	NR N26	814~ 824	859 ~ 869	PIFA Antenna	0	-3.5
		824~ 849	869 ~ 894	PIFA Antenna	0	-3.5
	NR N38	2570 ~ 2620	2570 ~ 2620	PIFA Antenna	0	0.6
	NR N41	2496 ~ 2690	2496 ~ 2690	PIFA Antenna	4	-1.6
	NR N48	3550 ~ 3700	3550 ~ 3700	PIFA Antenna	6	-2.3
	NR N66	1710 ~ 1780	2110 ~ 2180	PIFA Antenna	0	0.5
	NR N71	665.5 ~ 695.5	619.5 ~ 649.5	PIFA Antenna	0	-2.4
	NR N77	3450 ~ 3550	3450 ~ 3550	PIFA Antenna	6	-2.3
		3700 ~ 3980	3700 ~ 3980	PIFA Antenna	6	-2.3
	NR N78	3450 ~ 3550	3450 ~ 3550	PIFA Antenna	6	-2.3
		3700 ~ 3800	3700 ~ 3800	PIFA Antenna	6	-2.3

2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

EUT CONFIGURE MODE	DESCRIPTION
-	EUT + Adapter + with LTE link



Test modes are chosen as the worst case configuration below for NR

Test items	5G NR	Bandwidth (MHz)									Modulation					RB		Test Channel		
		5	10	15	20	25	30	40	50 to 90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1%	100%	L	M	H
RF Output Power	2	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	5	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	7	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	12	O	O	O	-	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	25	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	26	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	38	O	O	O	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	41	-	-	-	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	48	-	O	-	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	66	O	O	O	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	71	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	77	-	O	O	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	78	-	O	O	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O
ERP/ EIRP	2	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	5	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	7	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	12	O	O	O	-	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	25	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	26	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	38	O	O	O	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	41	-	-	-	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	48	-	O	-	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	66	O	O	O	O	-	O	O	-	-	O	O	O	O	O	O	O	O	O	O
	71	O	O	O	O	-	-	-	-	-	O	O	O	O	O	O	O	O	O	O
	77	-	O	O	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	78	-	O	O	O	-	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Note1: The mark "O" means that this configuration is chosen for testing.

Note2: The mark "-" means that this configuration is not testing.

Note3: Only the worst case was shown in test report



Test items	5G NR	Bandwidth (MHz)										Modulation					RB		Test Channel		
		5	10	15	20	25	30	40	50 to 90	100		PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1%	100%	L	M	H
Occupied Bandwidth	2	O	O	O	O	-	-	-	-	-		O	O	O	O	O	-	O	O	O	O
	5	O	O	O	O	-	-	-	-	-		O	O	O	O	O	-	O	O	O	O
	7	O	O	O	O	O	O	O	-	-		O	O	O	O	O	-	O	O	O	O
	12	O	O	O	-	-	-	-	-	-		O	O	O	O	O	-	O	O	O	O
	25	O	O	O	O	O	O	O	-	-		O	O	O	O	O	-	O	O	O	O
	26	O	O	O	O	-	-	-	-	-		O	O	O	O	O	-	O	O	O	O
	38	O	O	O	O	-	O	O	-	-		O	O	O	O	O	-	O	O	O	O
	41	-	-	-	O	-	O	O	O	O		O	O	O	O	O	-	O	O	O	O
	48	-	O	-	O	-	O	O	-	-		O	O	O	O	O	-	O	O	O	O
	66	O	O	O	O	-	O	O	-	-		O	O	O	O	O	-	O	O	O	O
	71	O	O	O	O	-	-	-	-	-		O	O	O	O	O	-	O	O	O	O
Band Edge Compliance	2	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	O	O	-	O
	5	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	O	O	-	O
	7	O	-	O	-	-	-	O	-	-		O	O	-	-	-	O	O	O	-	O
	12	O	O	O	-	-	-	-	-	-		O	O	-	-	-	O	O	O	-	O
	25	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	O	O	-	O
	26	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	O	O	-	O
	38	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	O	O	-	O
	41	-	-	-	O	-	-	-	O	O		O	O	-	-	-	O	O	O	-	O
	48	-	O	-	O	-	-	O	-	-		O	O	-	-	-	O	O	O	-	O
	66	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	O	O	-	O
	71	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	O	O	-	O
	77	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	O	O	-	O
	78	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	O	O	-	O
Note1: The mark "O" means that this configuration is chosen for testing. Note2: The mark "-" means that this configuration is not testing. Note3: Only the worst case was shown in test report																					



Test items	5G NR	Bandwidth (MHz)									Modulation					RB		Test Channel		
		5	10	15	20	25	30	40	50 to 90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1%	100%	L	M	H
Peak-to-Average Power Ratio	2	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	5	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	7	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	12	-	-	O	-	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	25	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	26	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	38	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	41	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
	48	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	66	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	71	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	77	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
	78	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
Frequency Stability	2	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	5	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	7	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	12	-	-	O	-	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	25	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	26	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	38	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	41	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
	48	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	66	-	-	-	-	-	-	O	-	-	O	O	-	-	-	-	O	O	O	O
	71	-	-	-	O	-	-	-	-	-	O	O	-	-	-	-	O	O	O	O
	77	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
	78	-	-	-	-	-	-	-	-	O	O	O	-	-	-	-	O	O	O	O
Note1: The mark "O" means that this configuration is chosen for testing. Note2: The mark "-" means that this configuration is not testing. Note3: Only the worst case was shown in test report																				



Test items	5G NR	Bandwidth (MHz)										Modulation					RB		Test Channel		
		5	10	15	20	25	30	40	50 to 90	100		PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1%	100%	L	M	H
Conducted Spurious Emission	2	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	5	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	7	O	-	O	-	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	12	O	O	O	-	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	25	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	26	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	38	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	41	-	-	-	O	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
	48	-	O	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	66	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	71	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	77	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
	78	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
Radiates Spurious Emission	2	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	5	O	-	O	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	7	O	-	O	-	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	12	O	O	O	-	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	25	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	26	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	38	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	41	-	-	-	O	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
	48	-	O	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	66	O	-	-	O	-	-	O	-	-		O	O	-	-	-	O	-	O	O	O
	71	O	O	-	O	-	-	-	-	-		O	O	-	-	-	O	-	O	O	O
	77	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
	78	-	O	-	-	-	-	-	O	O		O	O	-	-	-	O	-	O	O	O
Note1: The mark "O" means that this configuration is chosen for testing. Note2: The mark "-" means that this configuration is not testing. Note3: Only the worst case was shown in test report																					



Test CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RF power output	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Effective Radiated Power	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Equivalent Isotropic Radiated Power	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Frequency Stability	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Occupied Bandwidth	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Band Edge Compliance	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Conducted Spurious Emission	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei
Radiates Spurious Emission	23deg. C, 63%RH	DC 3.89V from battery	Liu Shiwei
Peak-to-Average Power Ratio	22deg. C, 65%RH	DC 3.89V from battery	Liu Shiwei



2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR PART 2

FCC 47 CFR PART 22

FCC 47 CFR PART 24

FCC 47 CFR PART 27

FCC 47 CFR PART 90

FCC 47 CFR PART 96

RSS-130 ISSUE 2 (2019-02)

RSS-132 ISSUE 3 (2013-01)

RSS-133 ISSUE 6 (2018-01)

RSS-139 ISSUE 3 (2015-07)

RSS-195 ISSUE 2 (2014-04)

RSS-199 ISSUE 3 (2014-12)

RSS-GEN ISSUE 5 (2018-04) + A1(2019-04) + A2(2021-02)

KDB 971168 D01 POWER MEAS LICENSE DIGITAL SYSTEMS V03R01

ANSI/TIA-603-E

ANSI C63.26-2015

ANSI C63.4-2014

Note: All test items have been performed and recorded as per the above standards

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment							
NO	Description	Brand	Model No.	Serial Number	Supplied by		
N/A	N/A	N/A	N/A	N/A	N/A		
Support Cable							
NO	Description	Quantity (Number)	Length (cm)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



2.6 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
GSM/WCDMA/LTE/NB-IOT/NR Test System					/
Communication Shielded Room 1	4m*3m*3m	CRTDSWKS44301	VGDS-0699	CRT	2024/04/24
Spectrum Analyzer	FSV40	101579	DZ-000239-3	R&S	2023/06/05
Comprehensive Test Instrument	MT8000A	6262208352	DZ-000310-1	Anritsu	2023/03/02
Comprehensive Test Instrument	MT8821C	6262226543	DZ-000310-2	Anritsu	2023/03/02
Analog Signal Generator	MG3692C	210507	DZ-000310-4	Anritsu	2023/03/02
Vector Signal Generator	MG3710E	6262251230	DZ-000310-3	Anritsu	2023/03/02
Communication Shielded Room 1	4m*3m*3m	CRTDSWKS44301	VGDS-0699	CRT	2024/04/24
Spectrum Analyzer	FSV30	104337	DZ-000235	R&S	2022/11/03
Comprehensive Test Instrument	CMW500	137779	DZ-000220	R&S	2023/07/10
Comprehensive Test Instrument	CMW500	169888	DZ-000342	R&S	2022/12/01
LTE Comprehensive Test Instrument	E7515A	MY58010639	DZ-000173	KEYSIGHT	2023/04/07
Analog Signal Generator	SMA100B	103663	DZ-000239-2	R&S	2023/07/10
Vector Signal Generator	SMBV100B	101757	DZ-000239-1	R&S	2023/06/22
Programmable DC Power Supply	E3642A	MY59108106	DZ-000242-2	KEYSIGHT	2022/08/05
Radiation Spurious Test System					/
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	2024/12/12
Loop Antenna	FMZB1513	1513-170	EM-000384	SCHWARZBECK	2023-03-04
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2023/03/02
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2023/03/02
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	2023/06/25
Waveguide Horn Antenna	HF906	360306/008	WKNA-0024-8	R&S	2023/03/04
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	2023/07/31
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2023/06/05
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	1	DZ-000186	WI	2022/12/20
Comprehensive tester	CMW500	159000	DZ-000240-2	R&S	2022/12/20



2.7 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Maximum Peak Output Power	$\pm 0.9\text{dB}$
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (30MHz~1GHz)	$\pm 5.0\text{dB}$
Radiated emissions (1GHz ~18GHz)	$\pm 4.8\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 5.1\text{dB}$
Conducted emissions	$\pm 2.7\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Band Edge Measurements	$\pm 2.7\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

2.8 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
Post Code: 510663 Tel: 020-32293888
FAX: 020-32293889 E-mail
Test Firm Registration Number: 937273



3 TEST TYPES AND DESCRIPTION

3.1 RADIATED EMISSION MEASUREMENT

3.1.1 TEST PROCEDURES

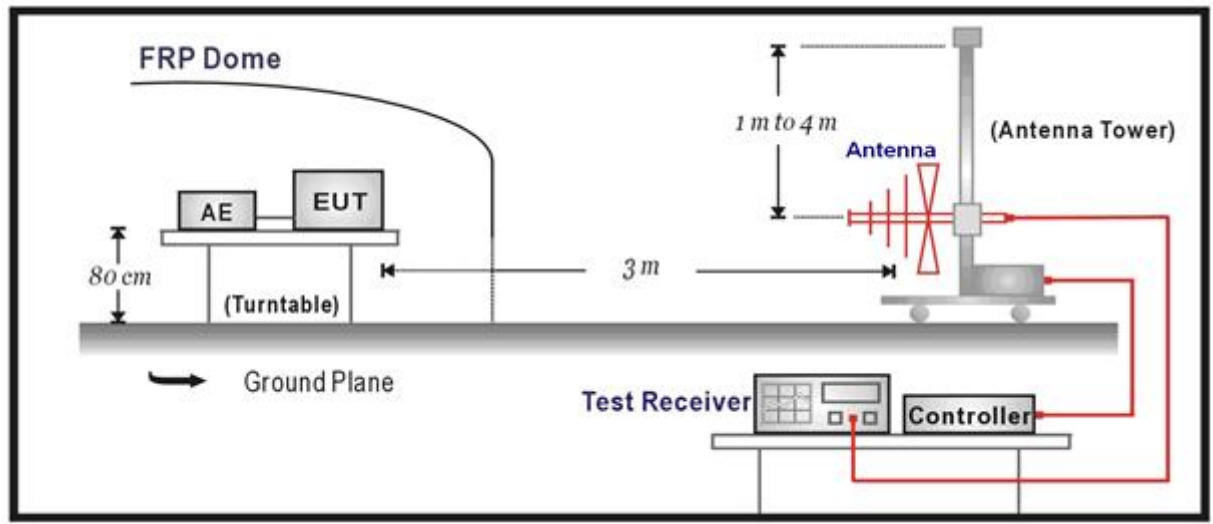
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
- c. $EIRP(dBm) = S.G.POWER - TX \text{ cable loss} + \text{Antenna gain.}$
- d. $E.R.P(dBm) = E.I.P.R - 2.15dBi.$

NOTE:

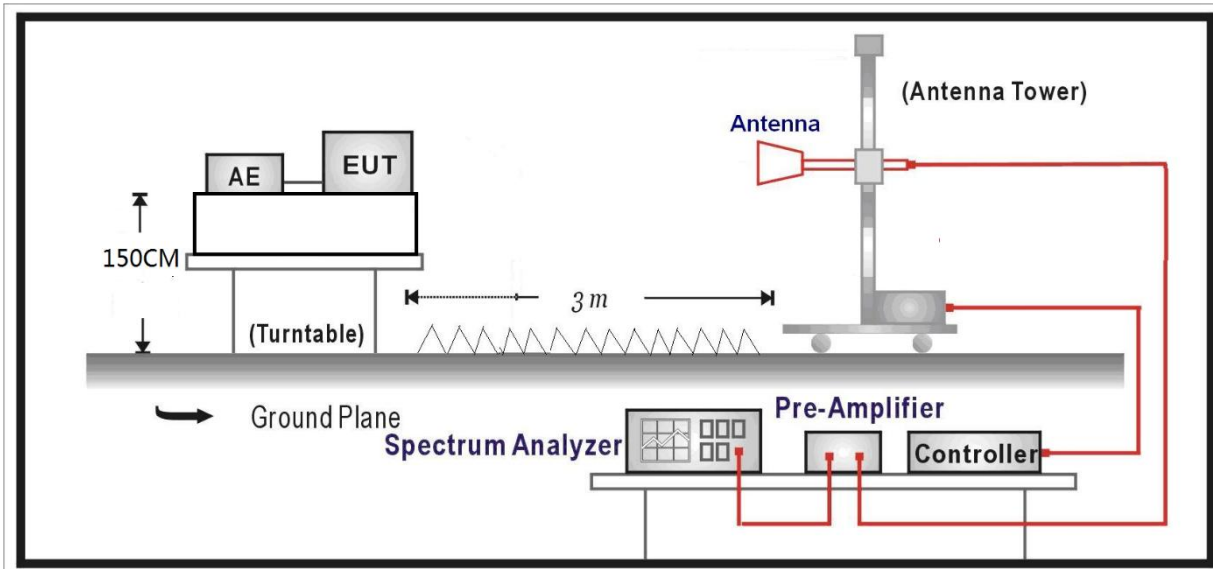
- 1.The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
- 2.Only the worst case was shown in test report

3.1.2 TEST SETUP

Below 1GHz Test Setup:



Above 1GHz Test Setup:

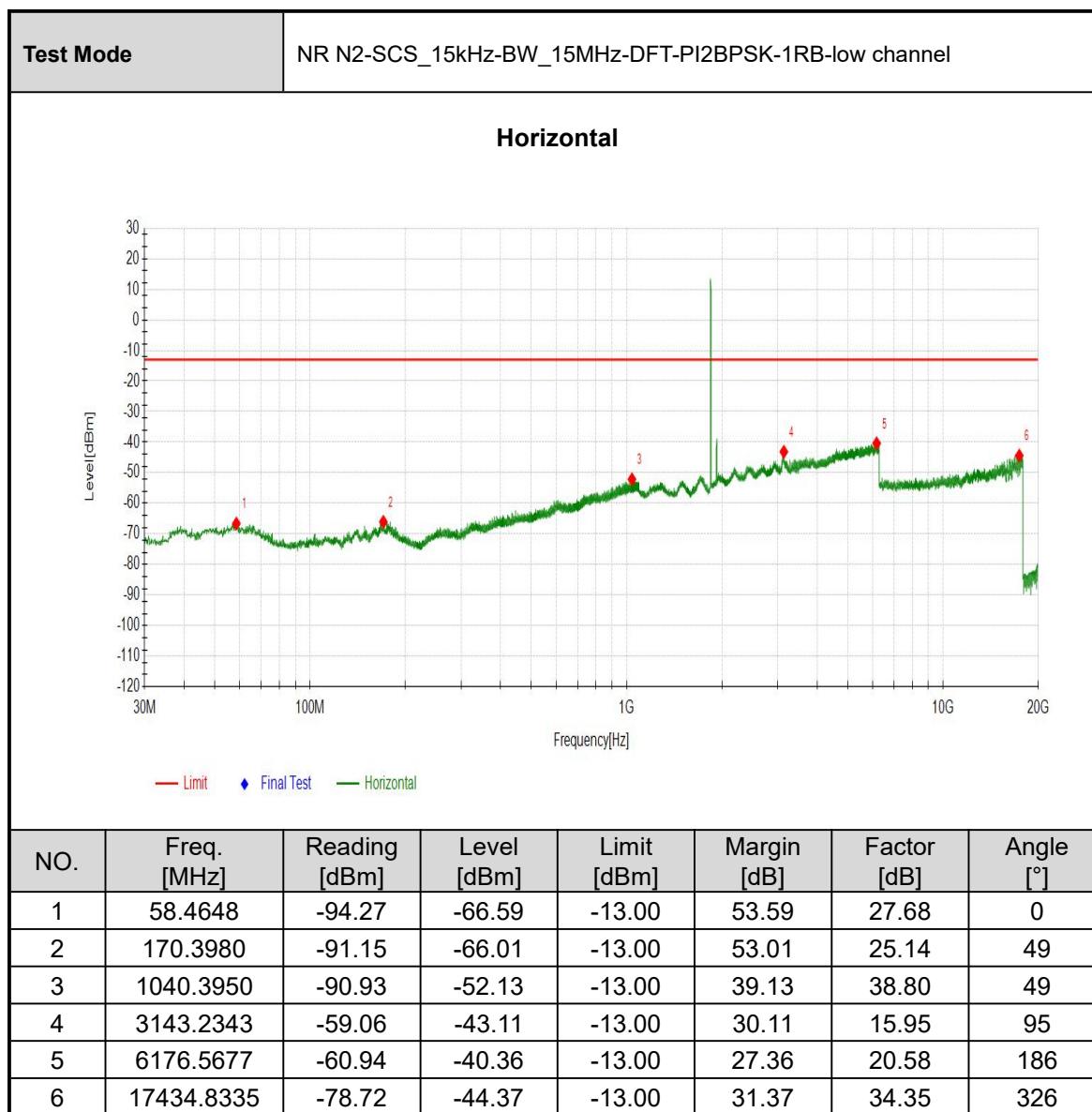


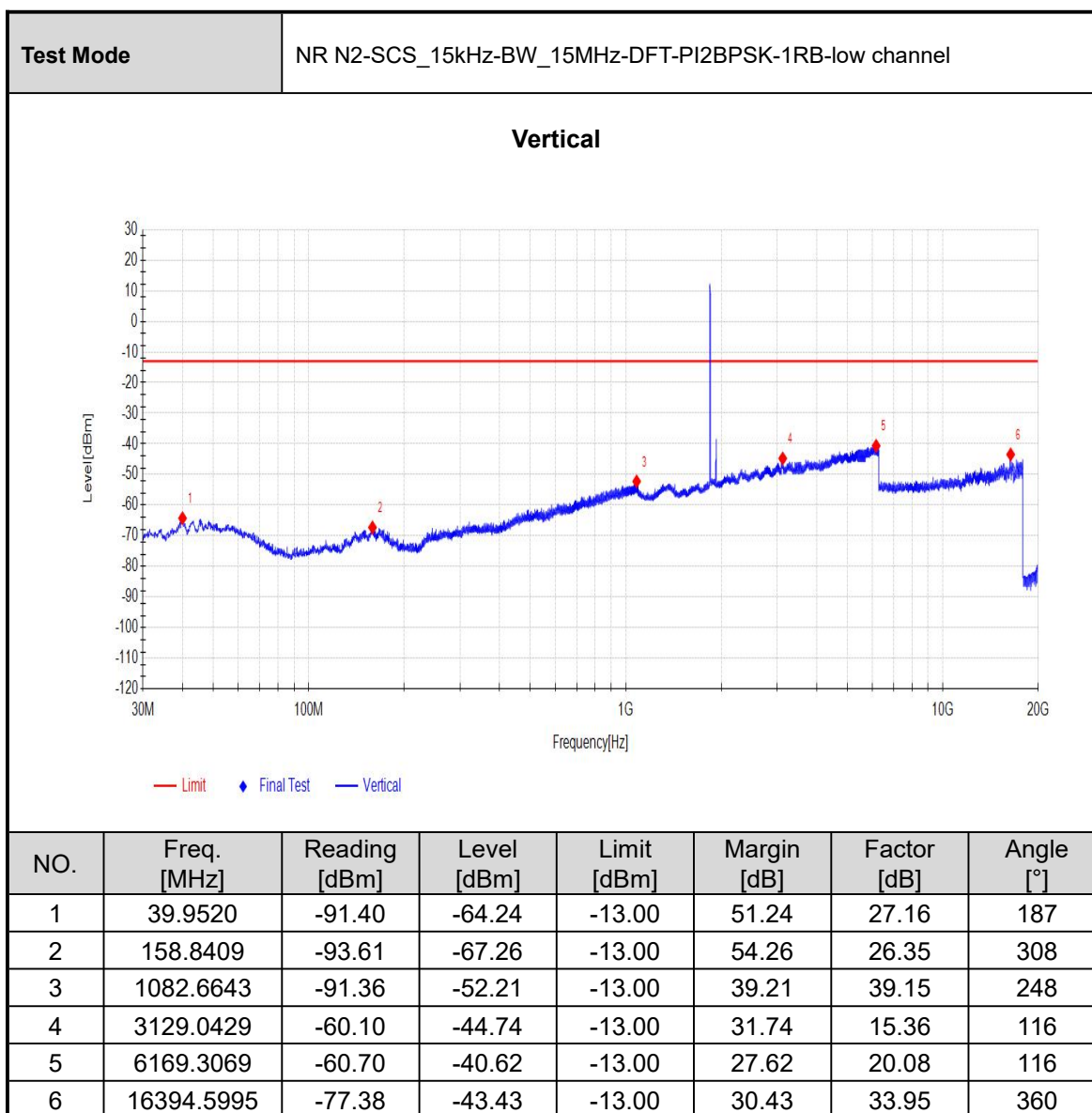
Note: Above 1G is a directional antenna

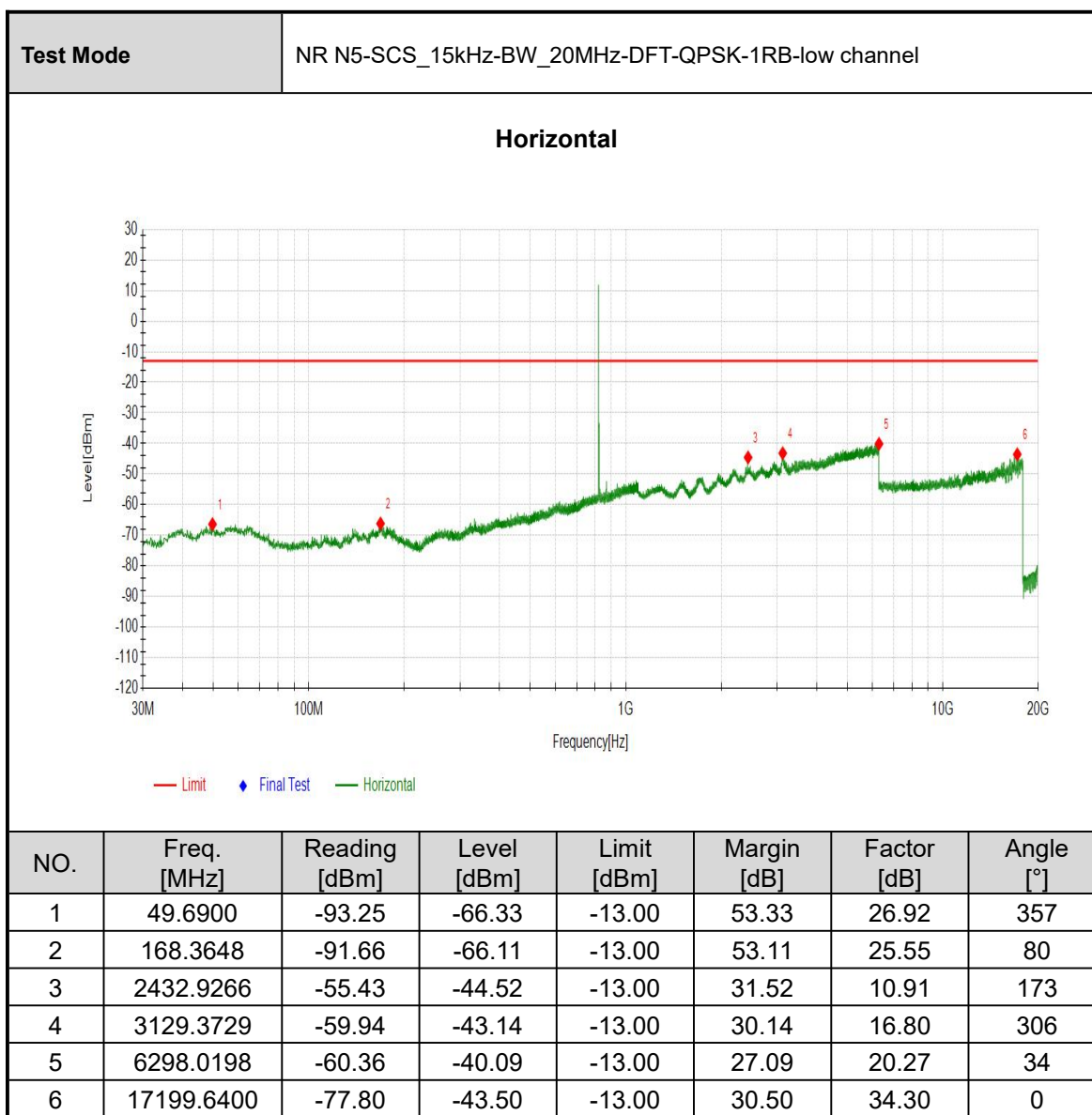
Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

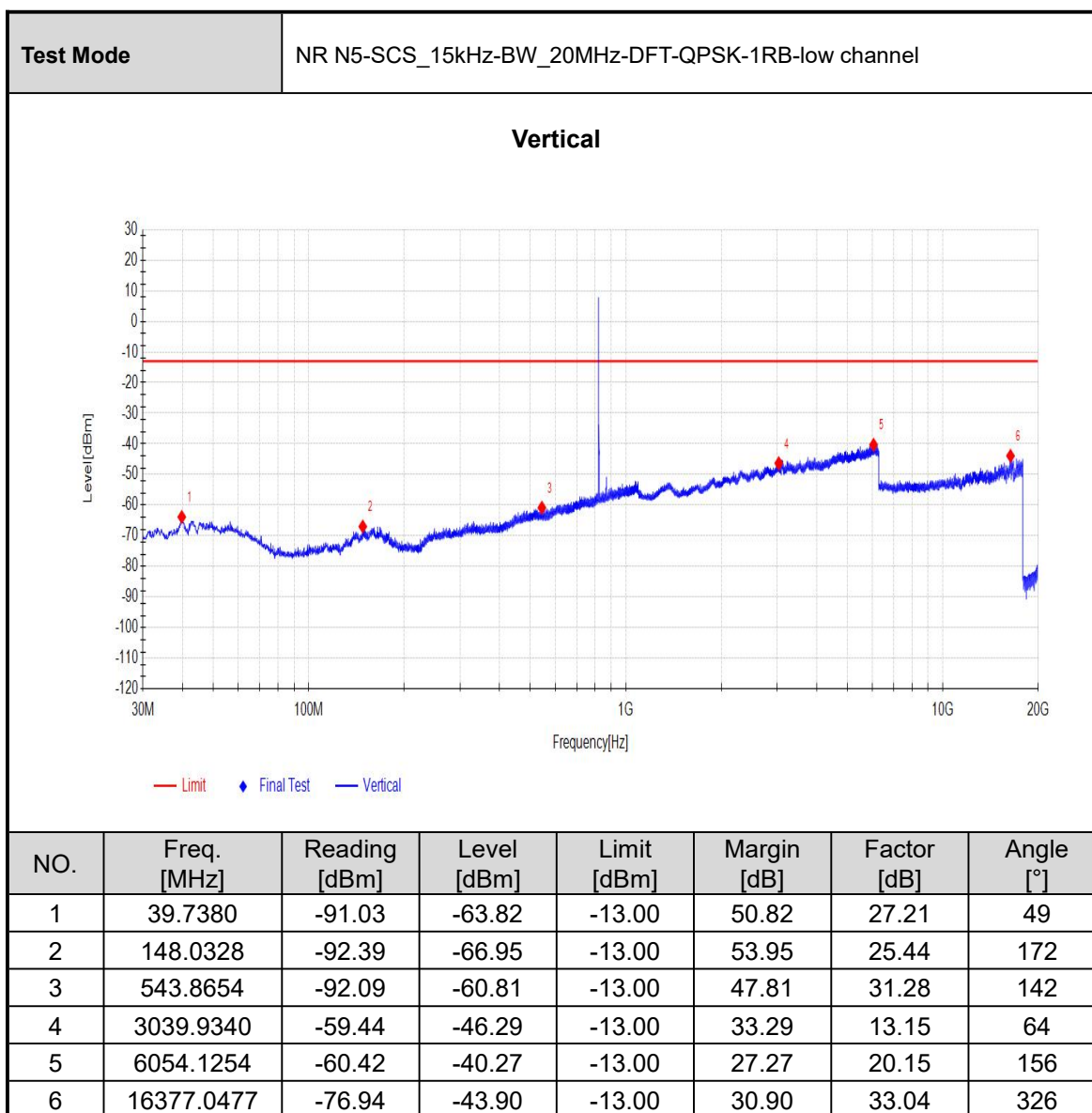
For the actual test configuration, please refer to the attached file (Test Setup Photo).

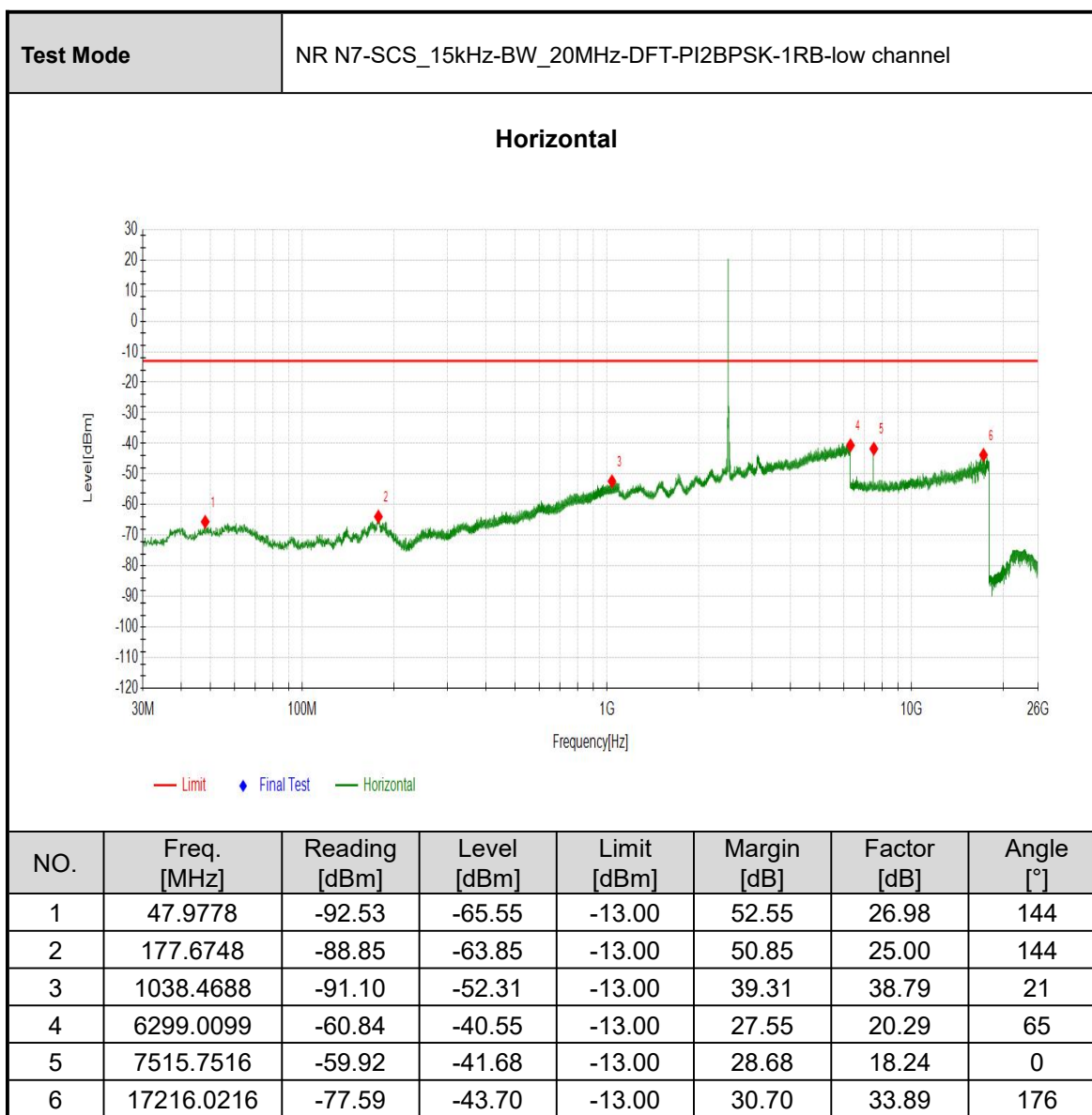
3.1.3 TEST RESULTS

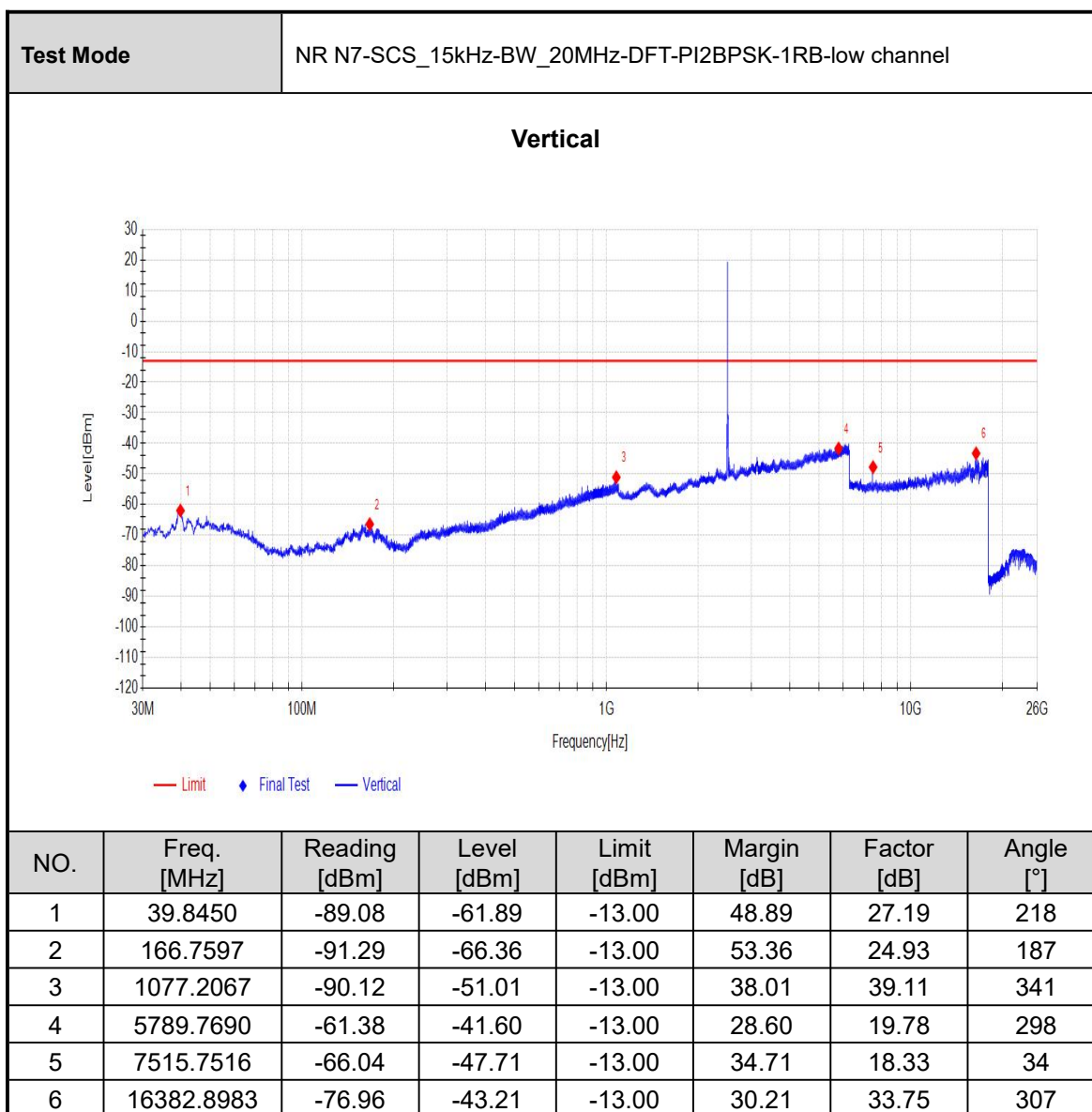


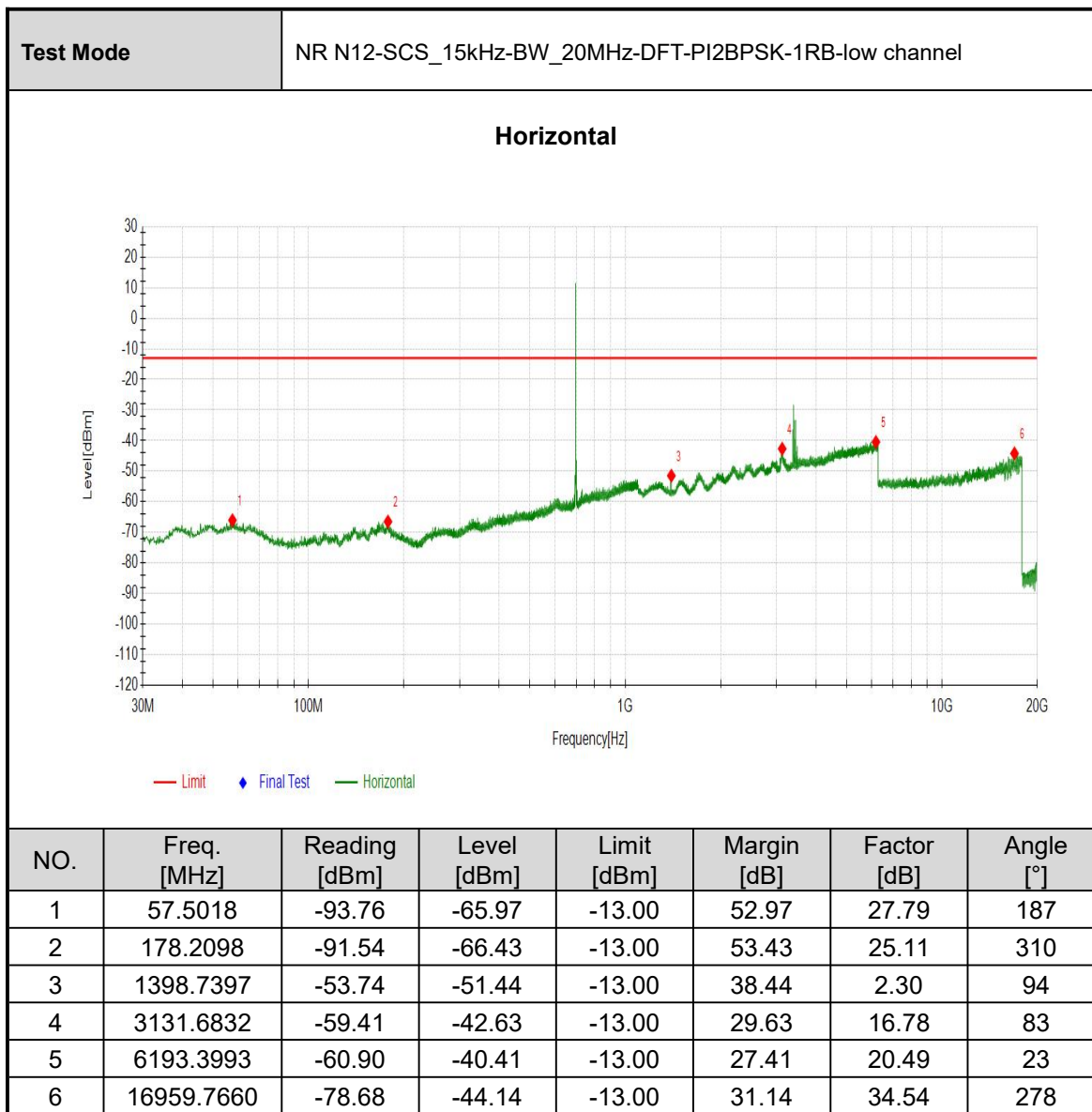


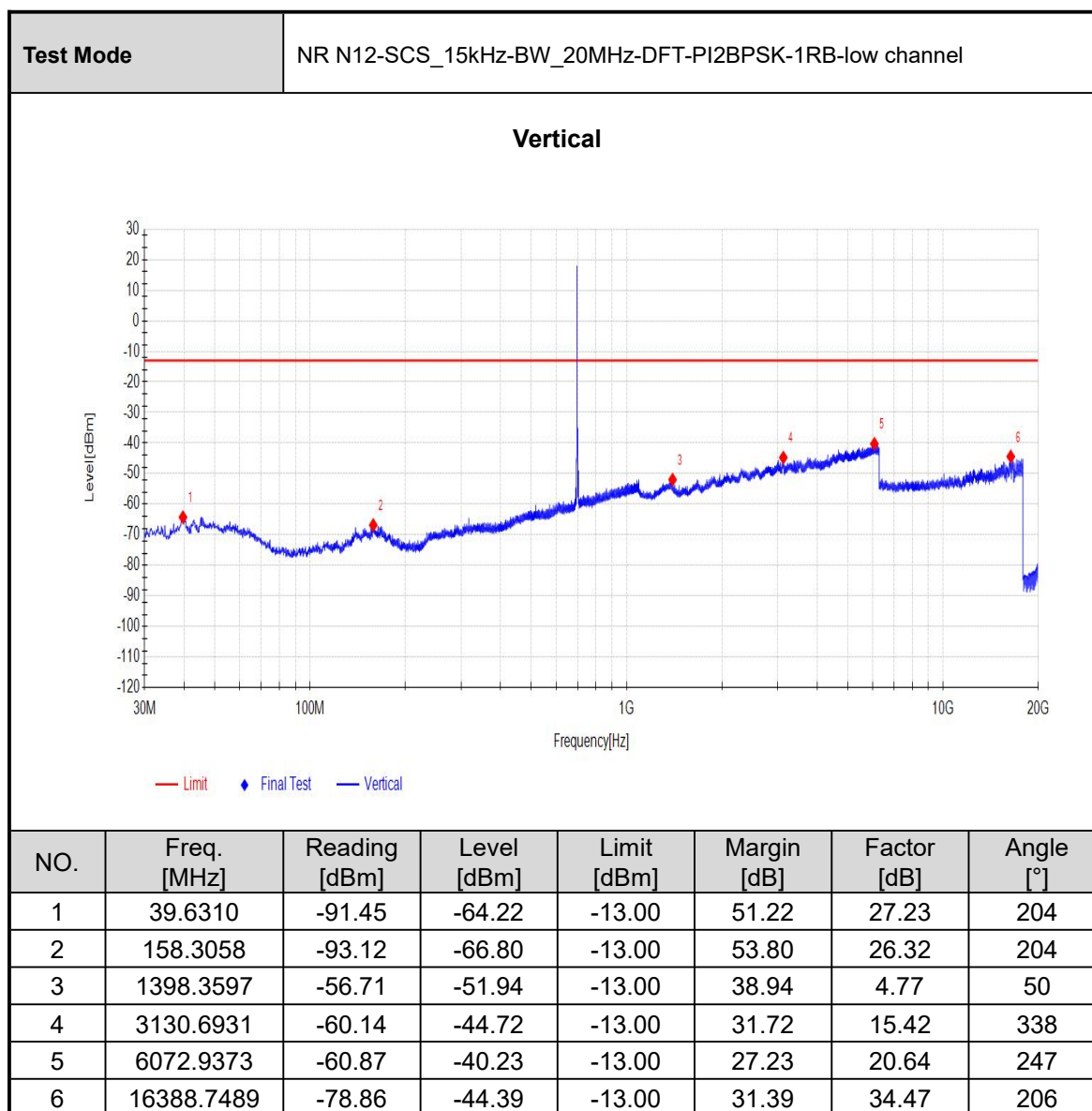


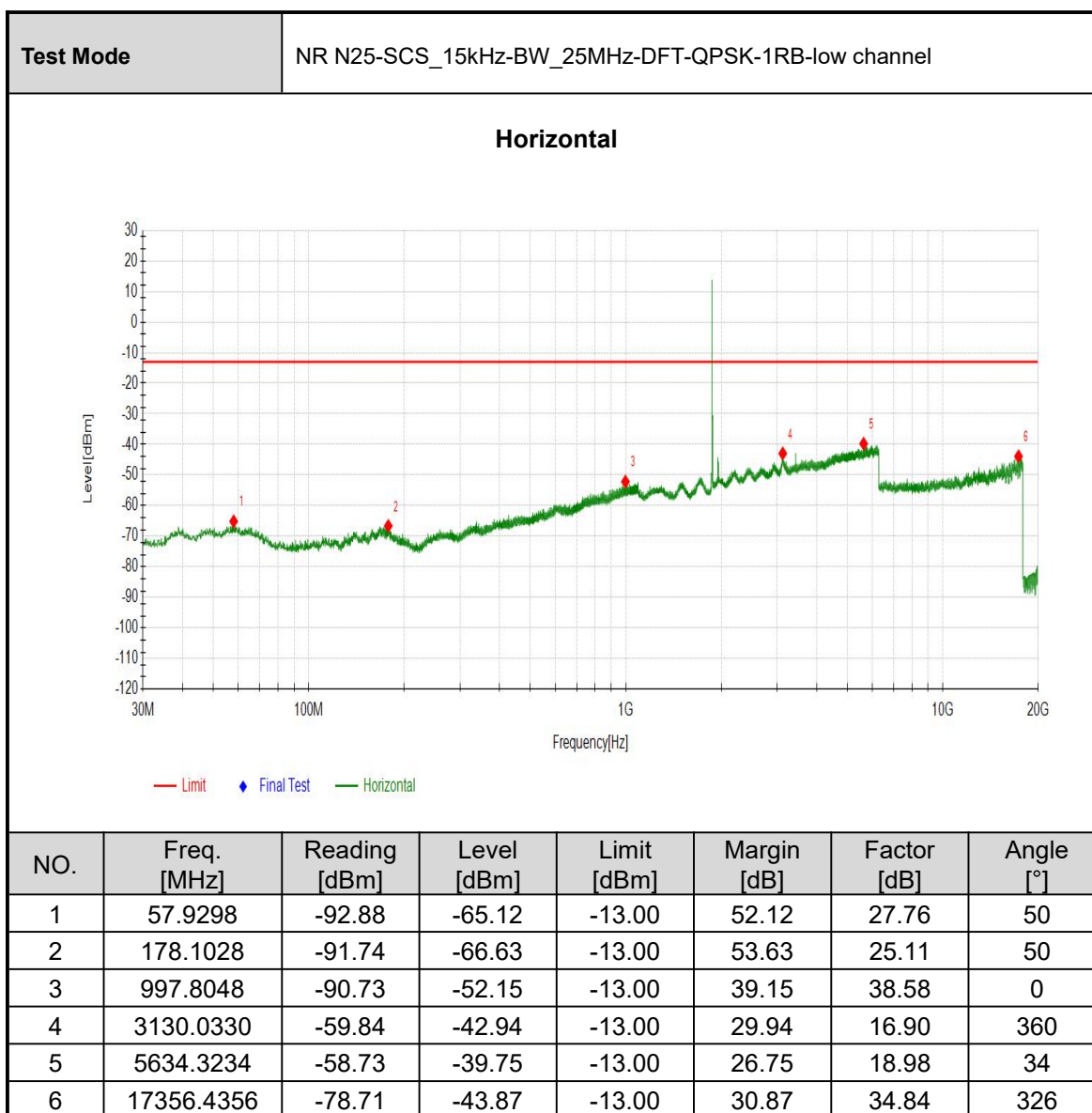


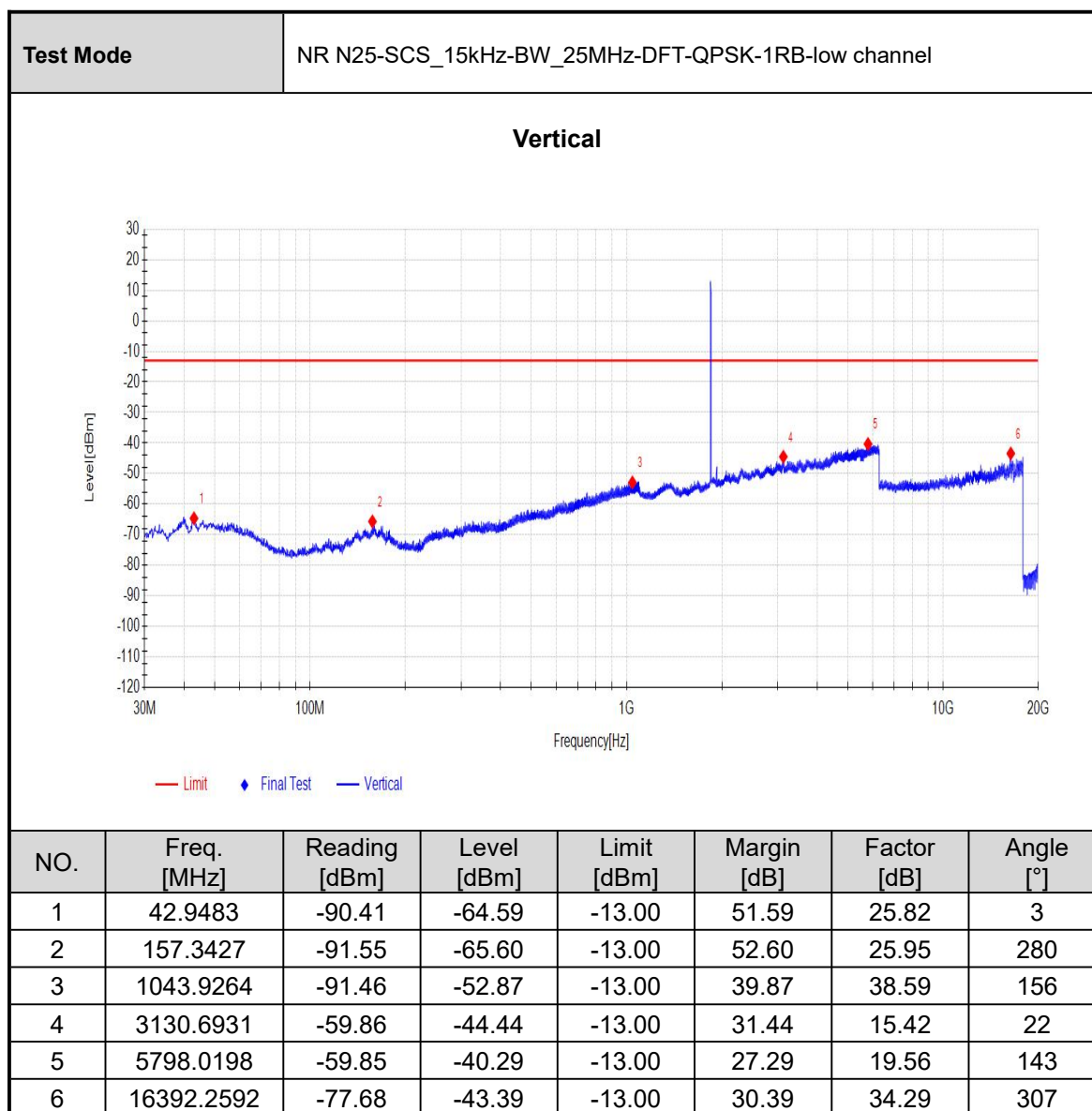


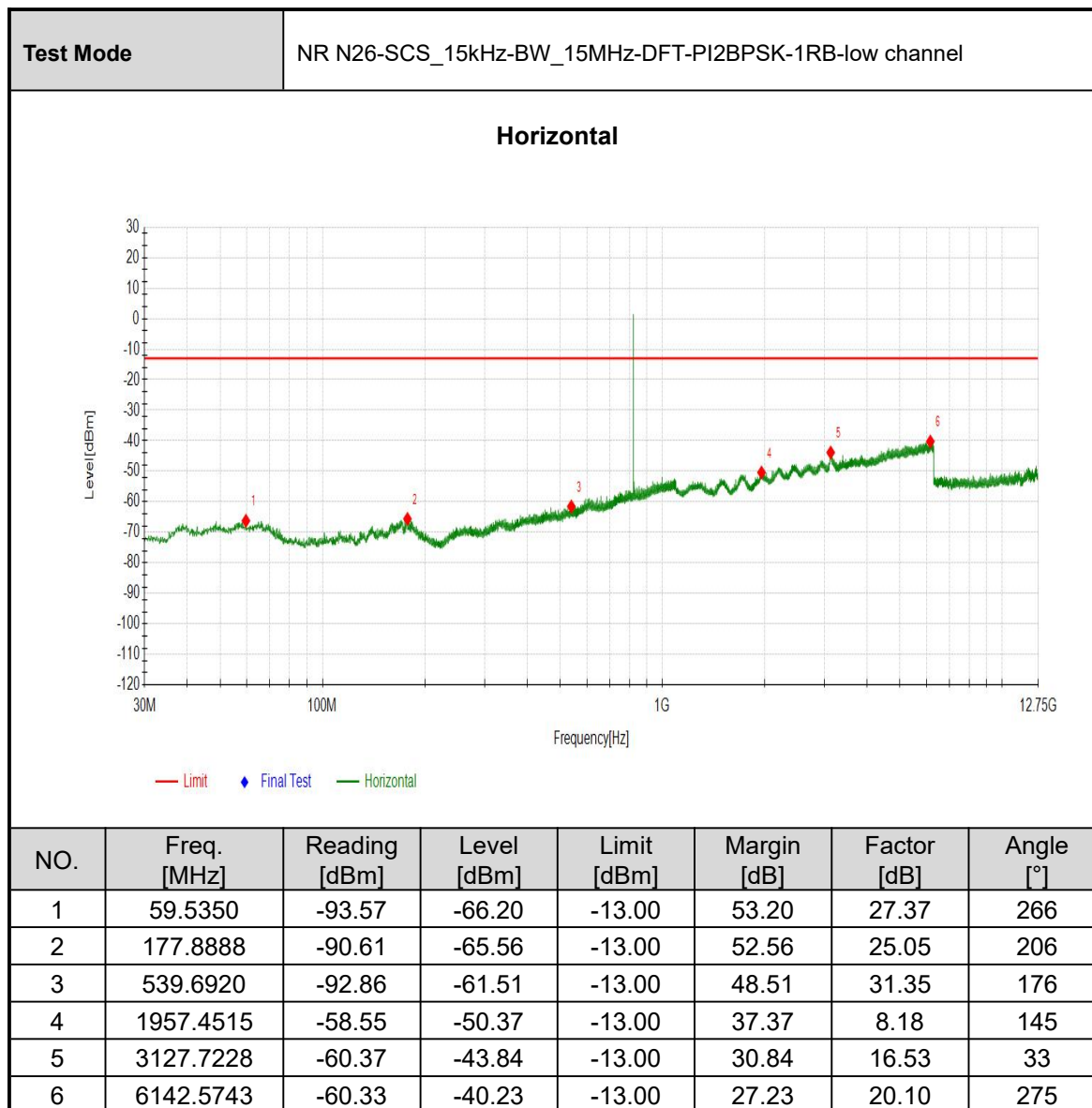


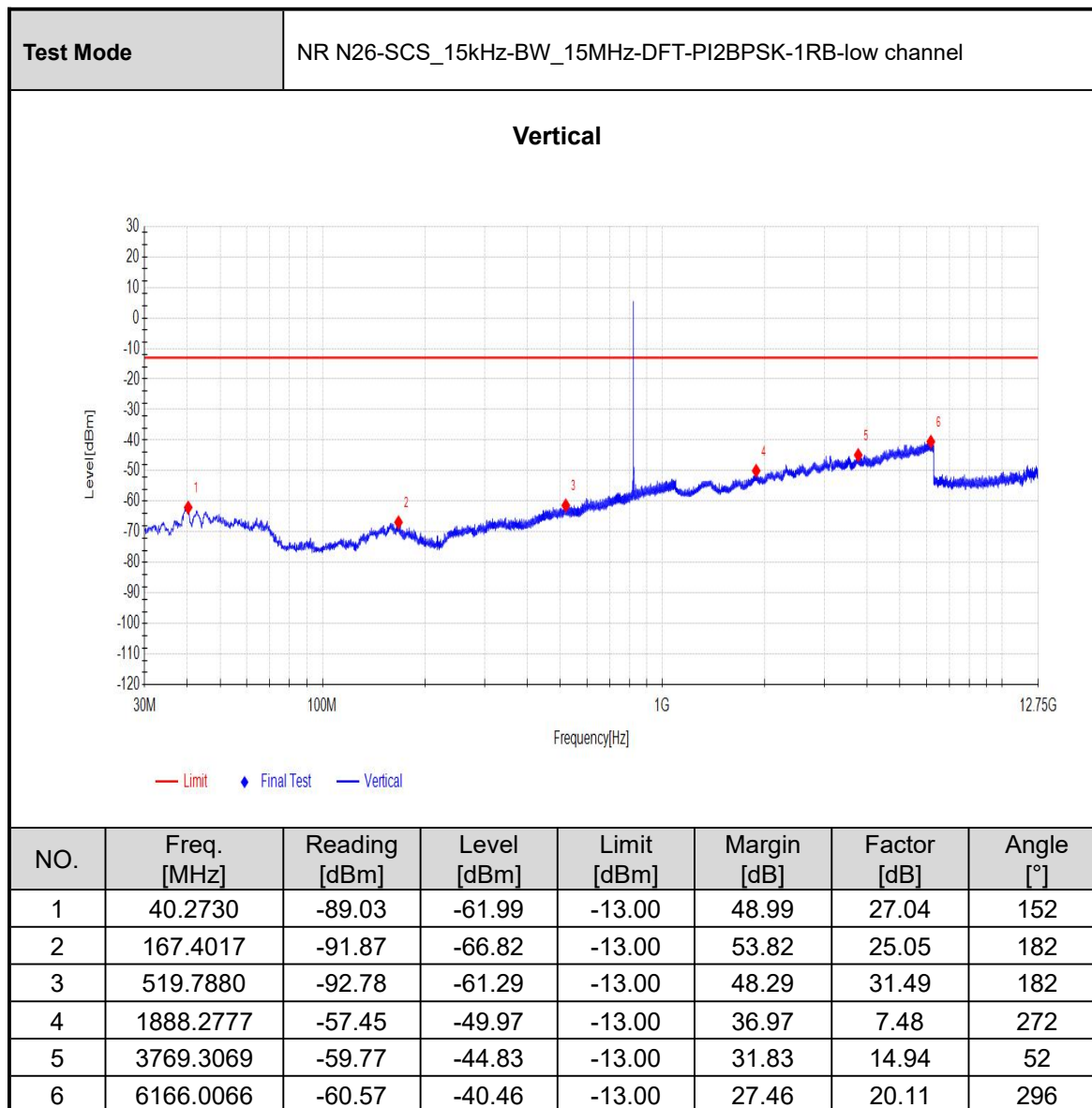


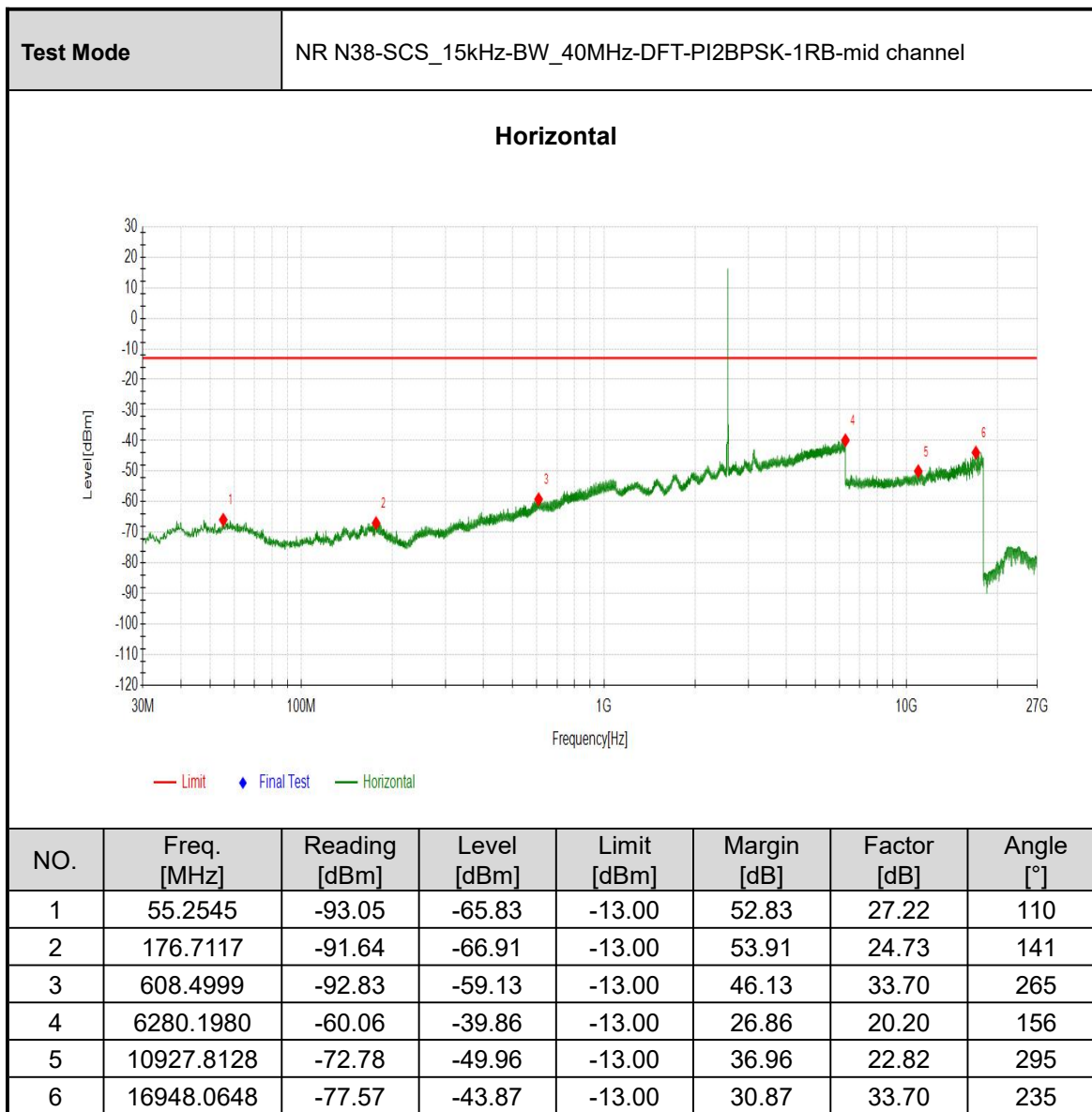


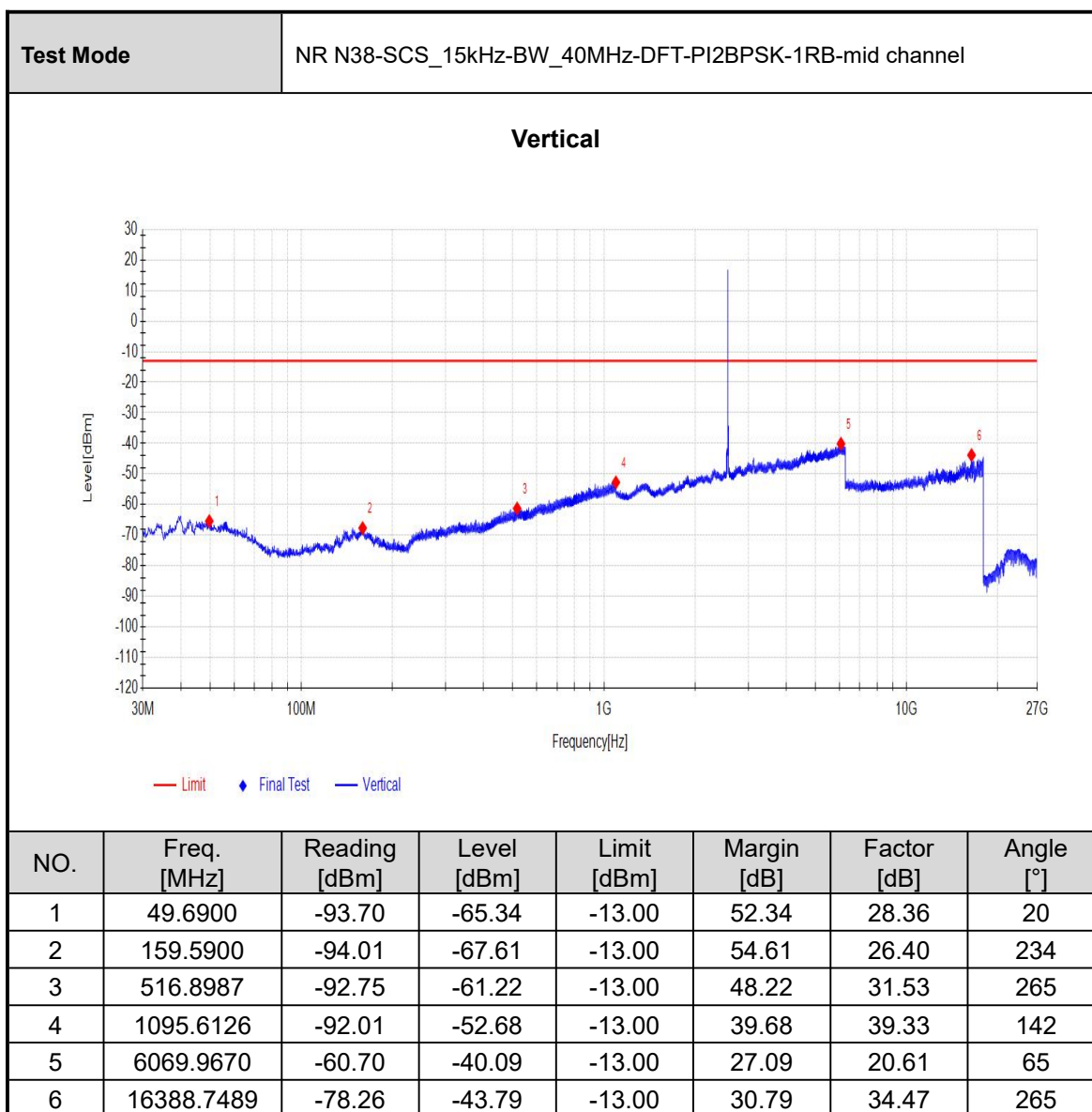


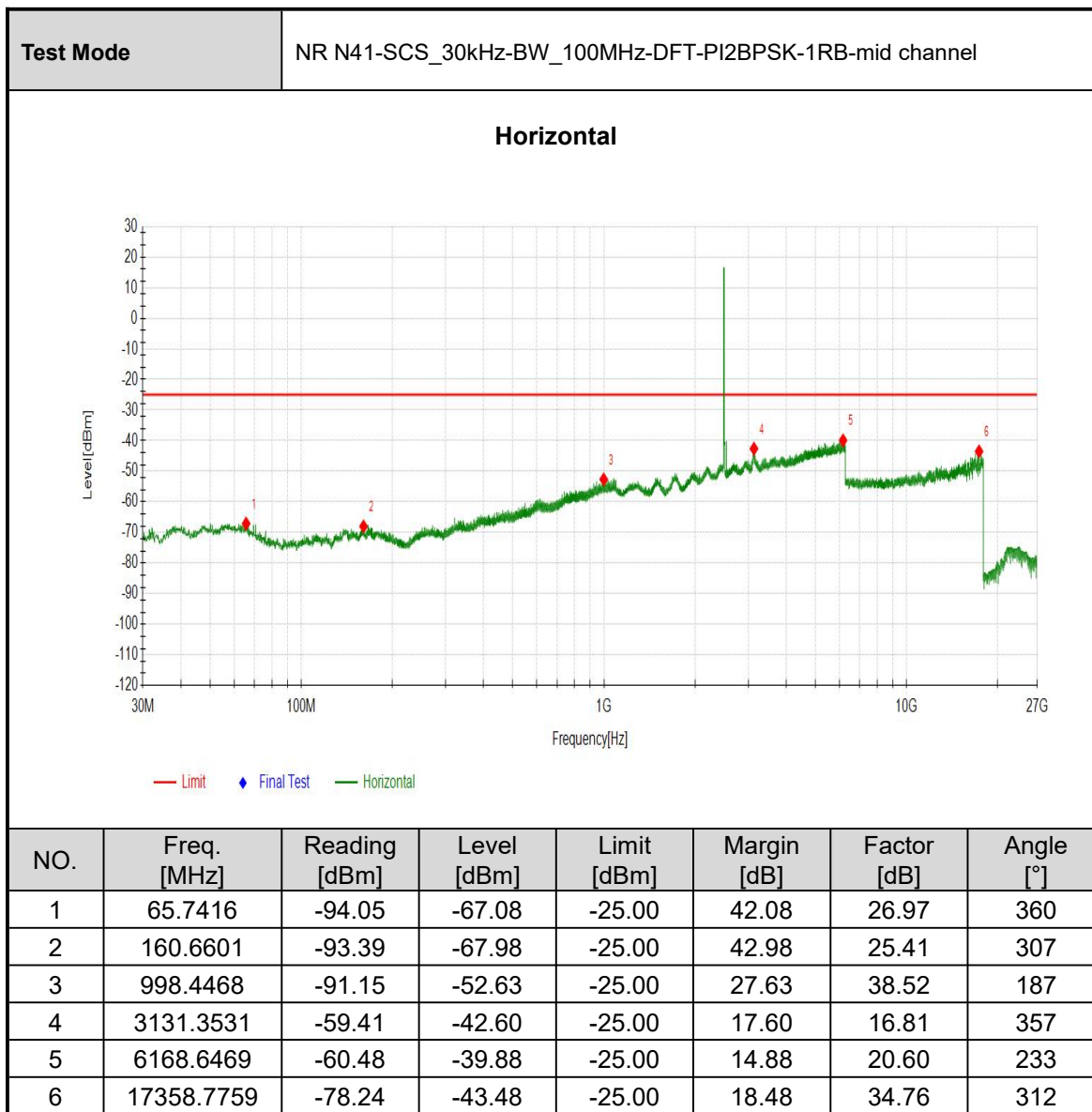


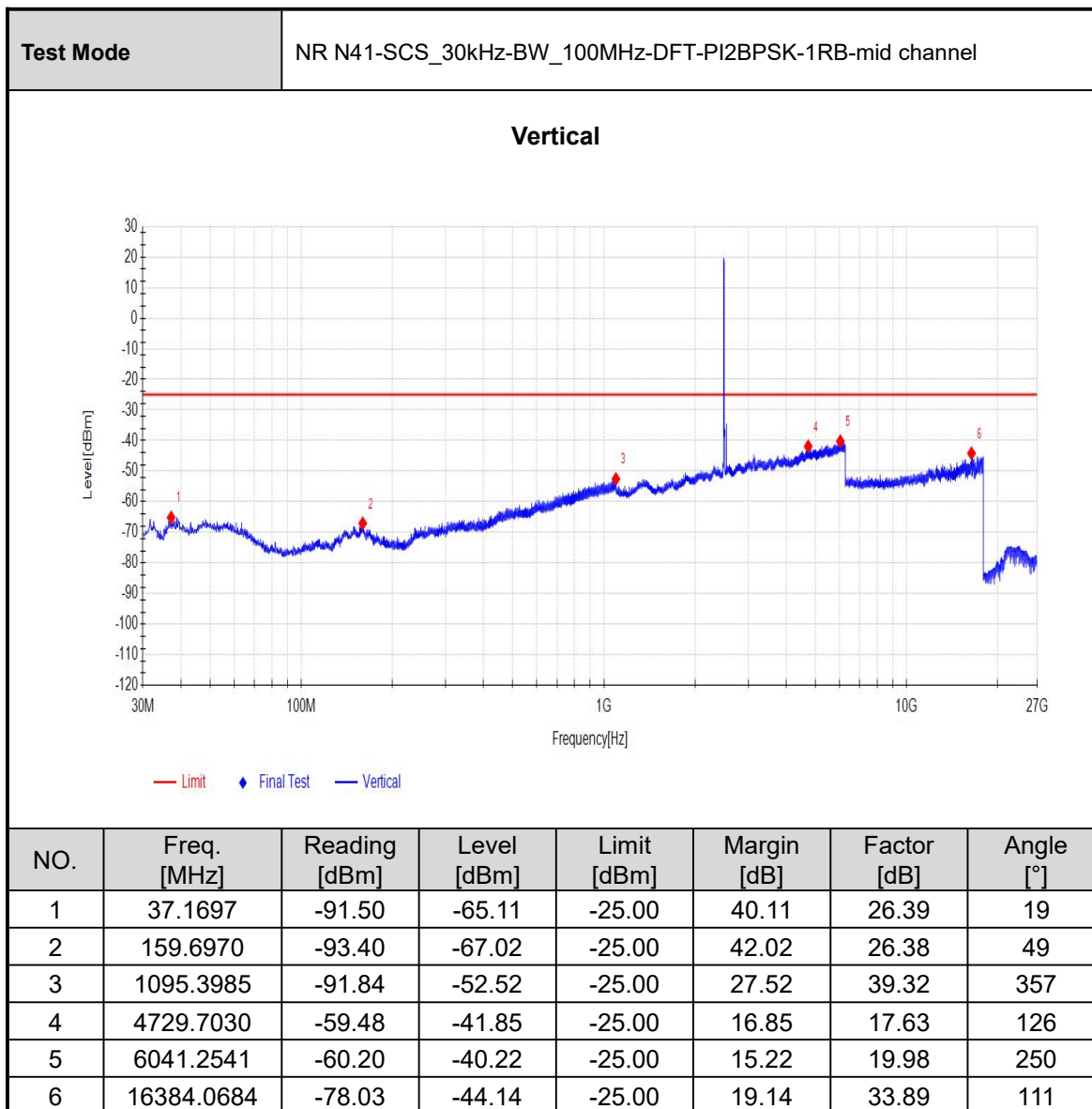


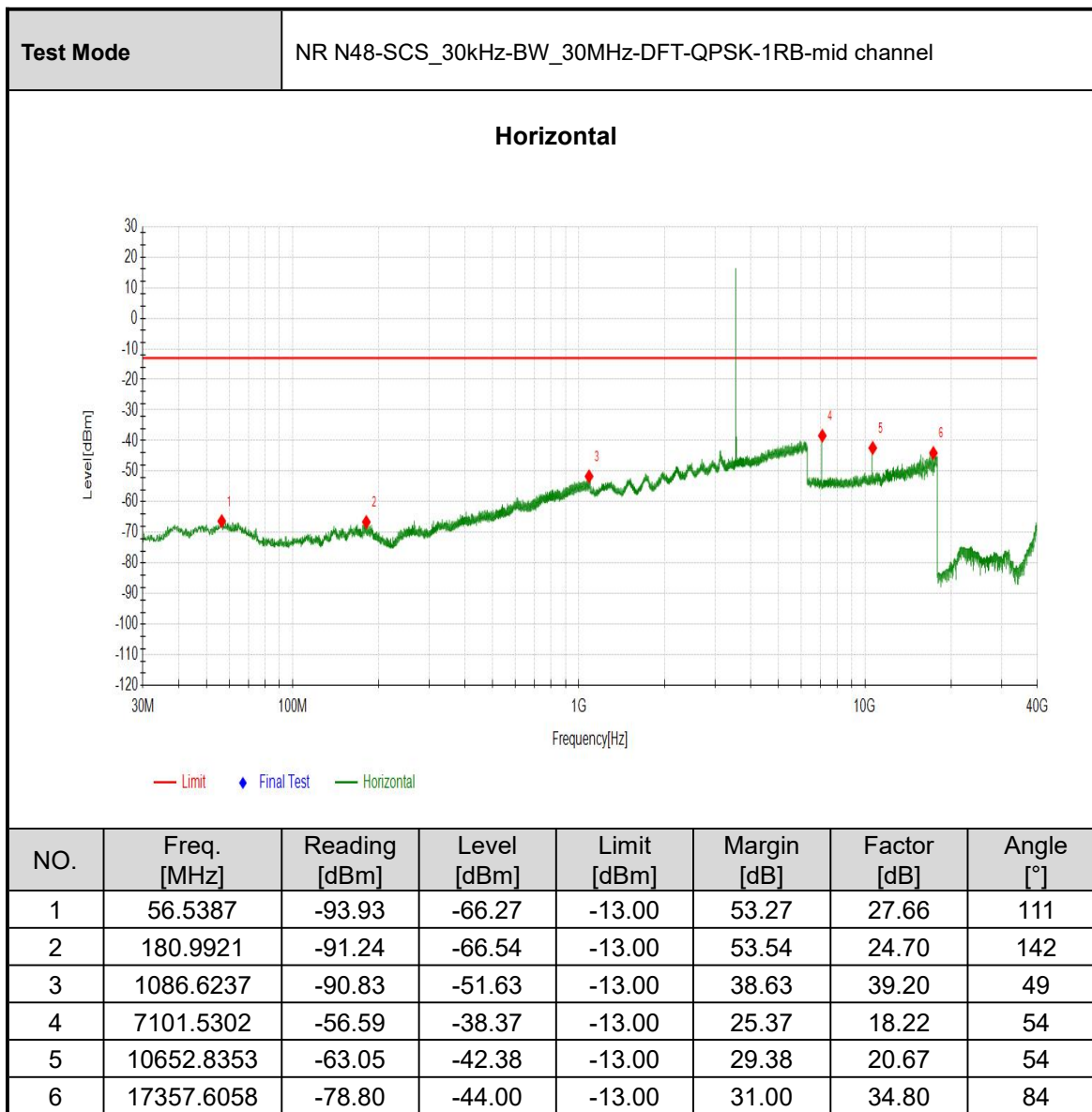


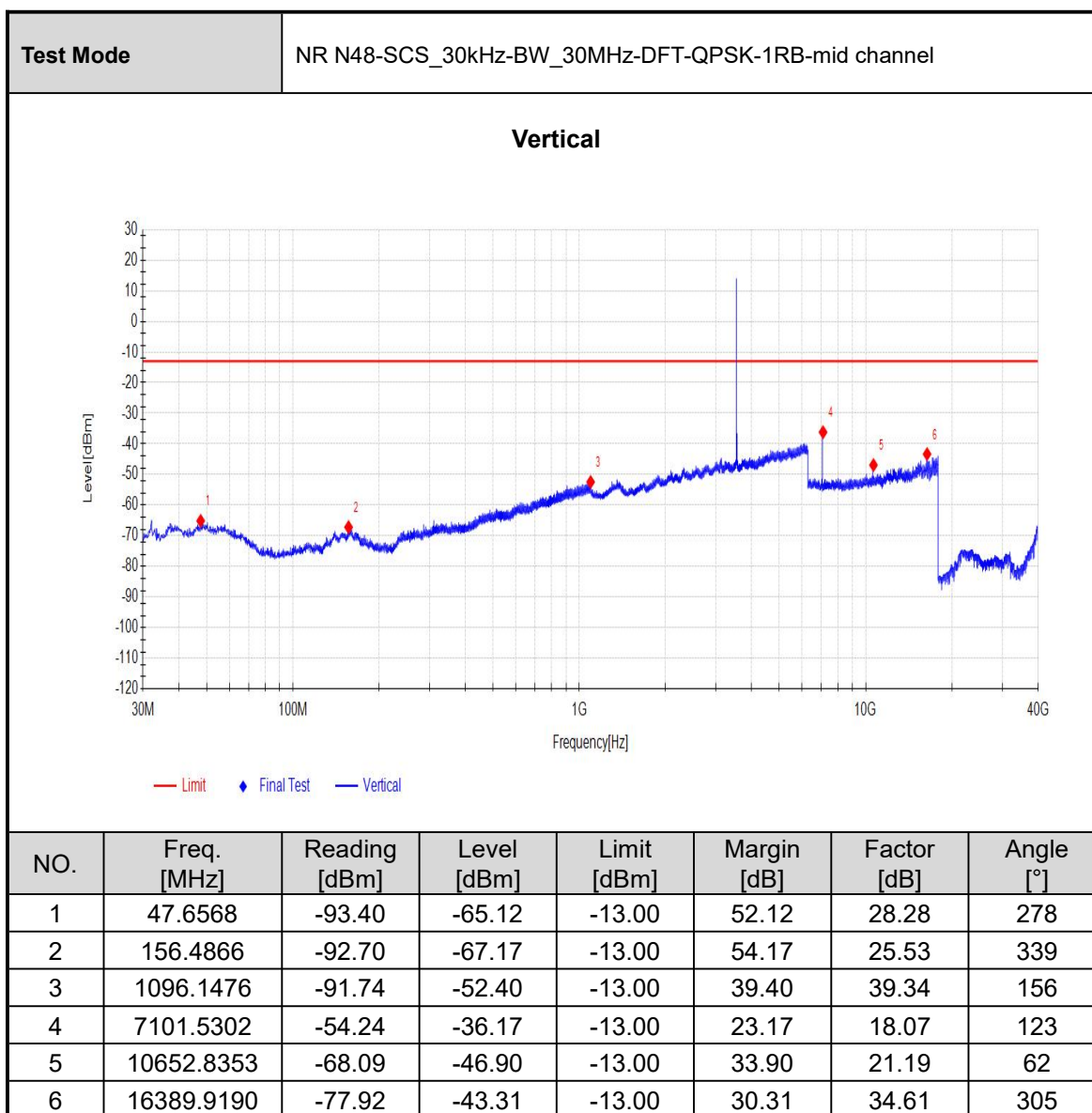


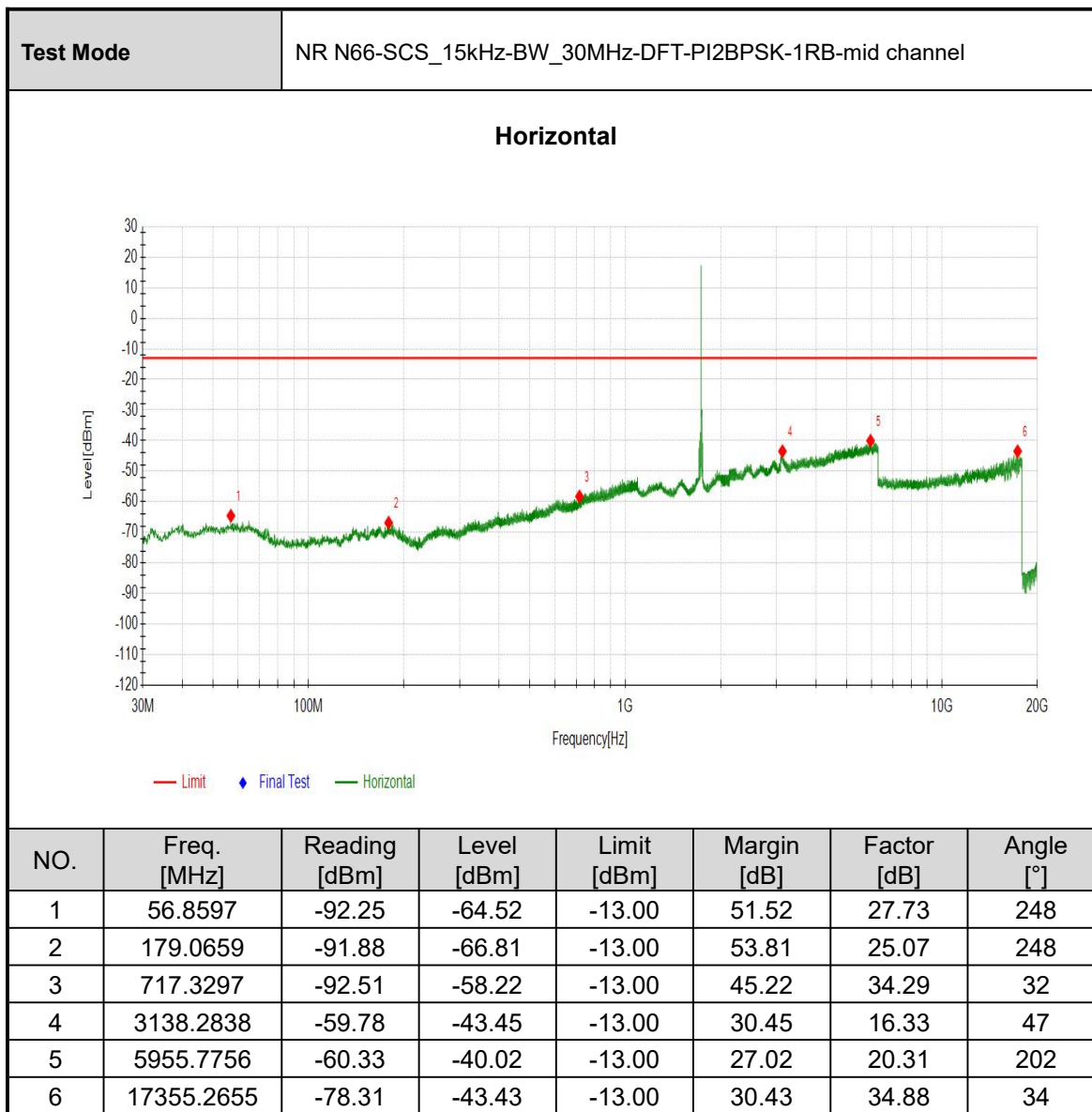


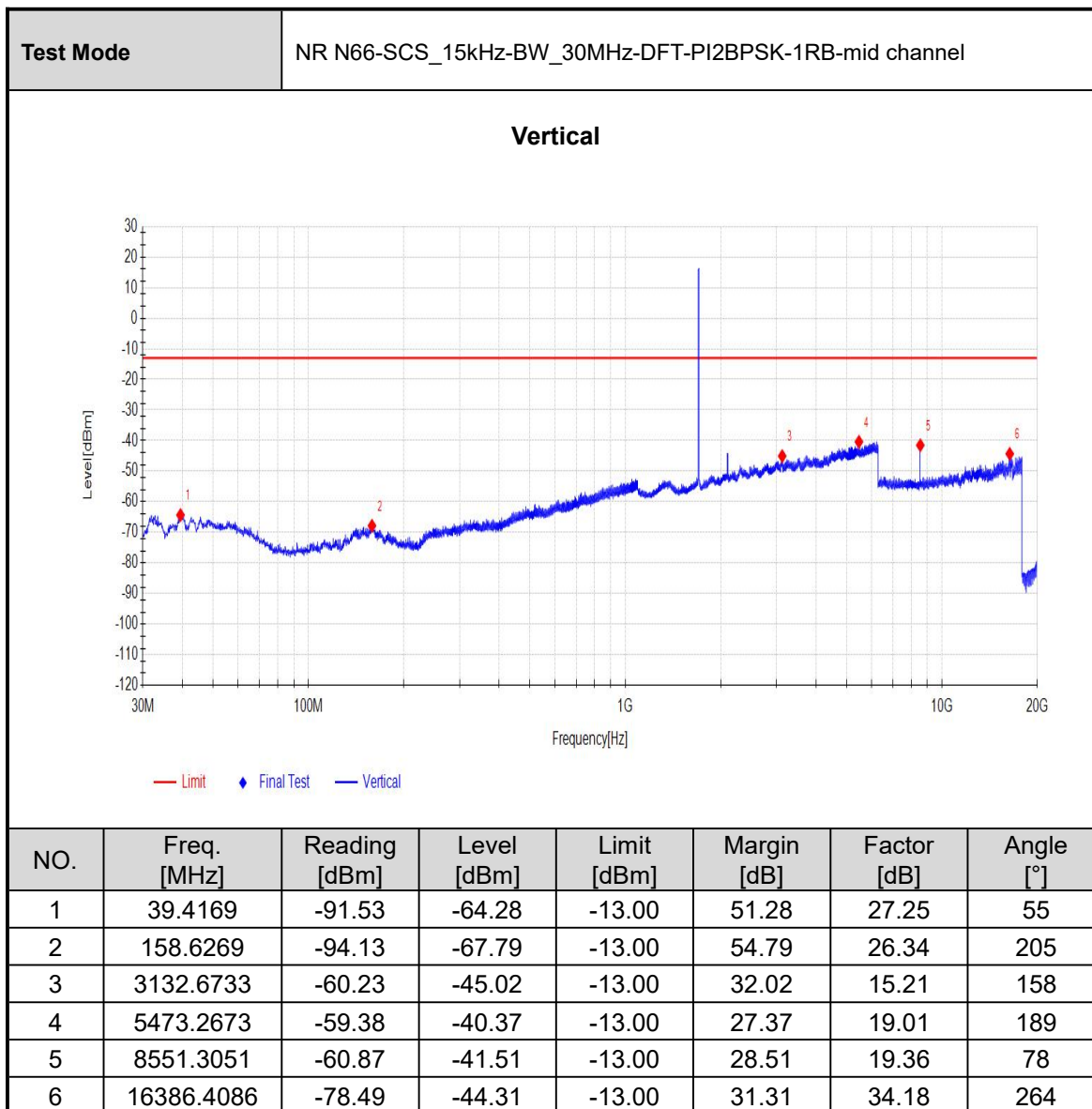


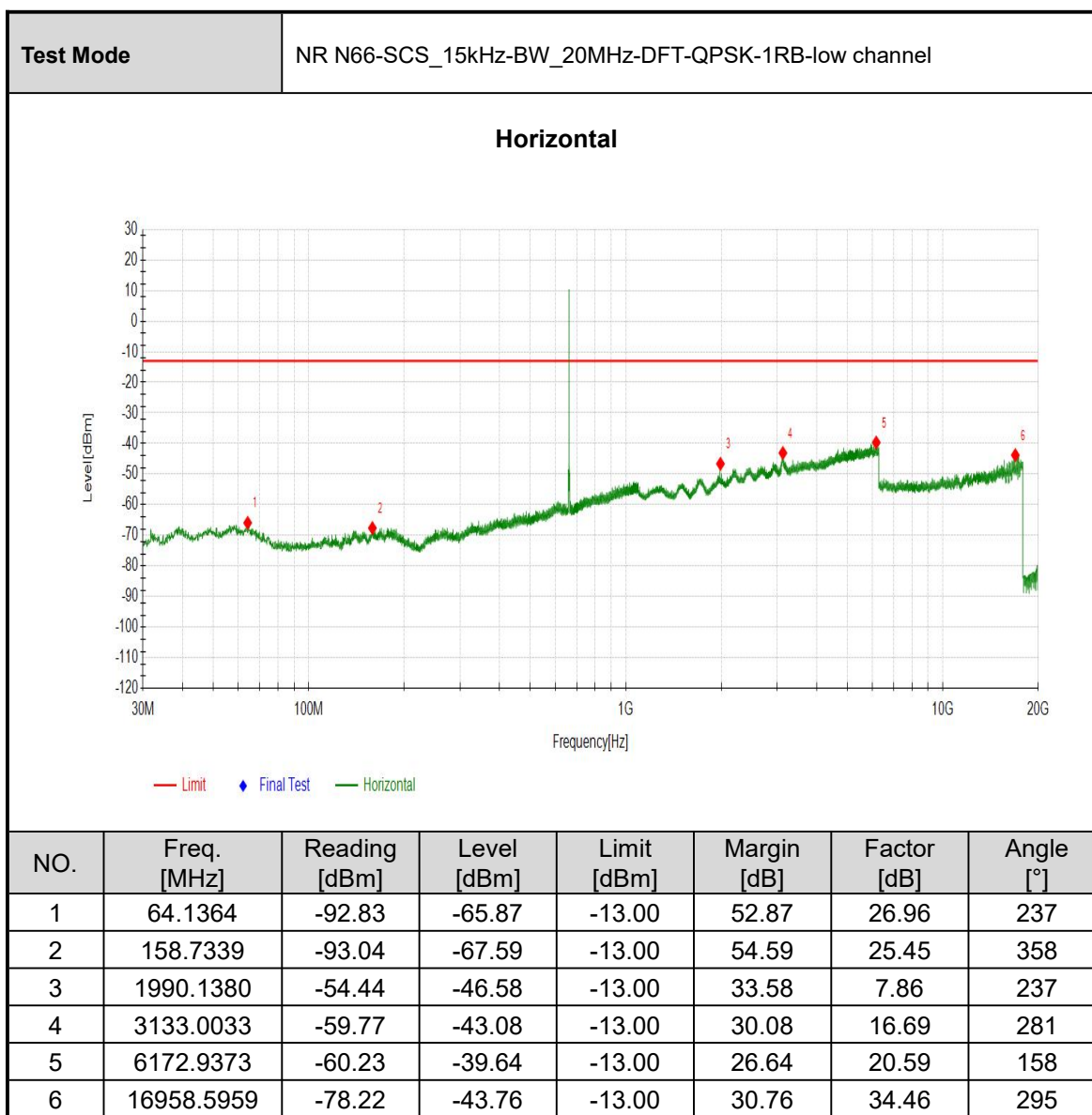


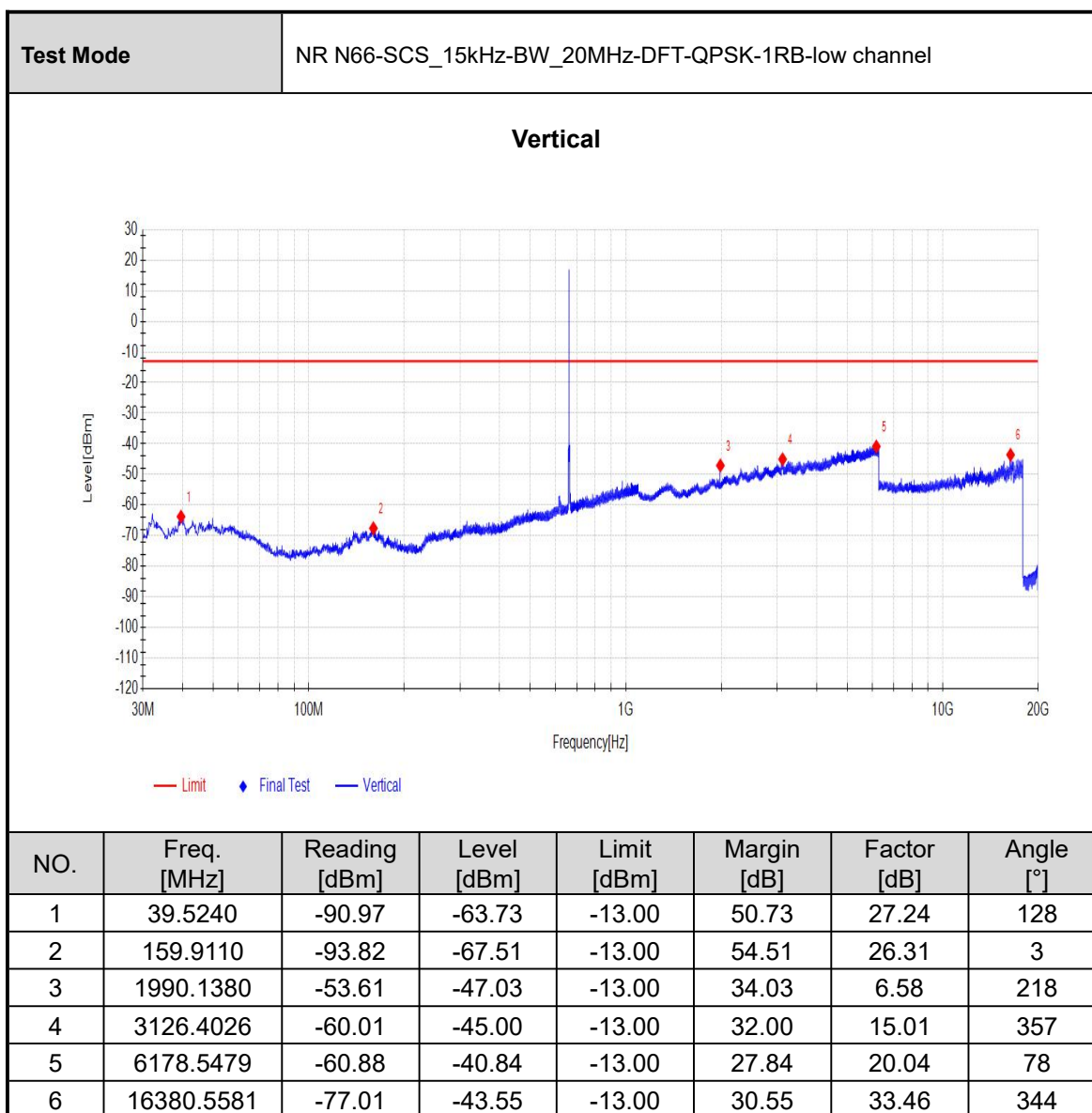


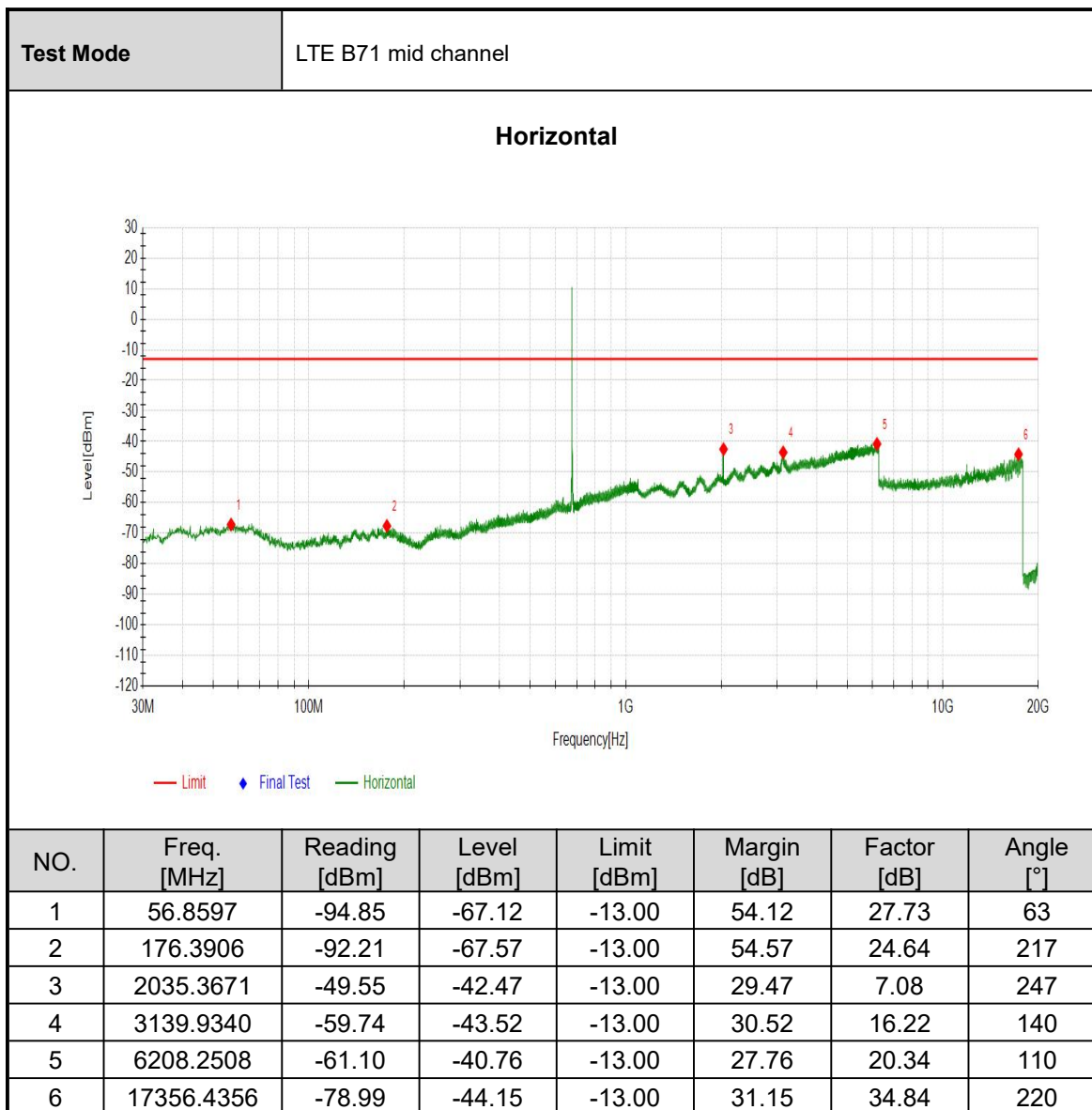


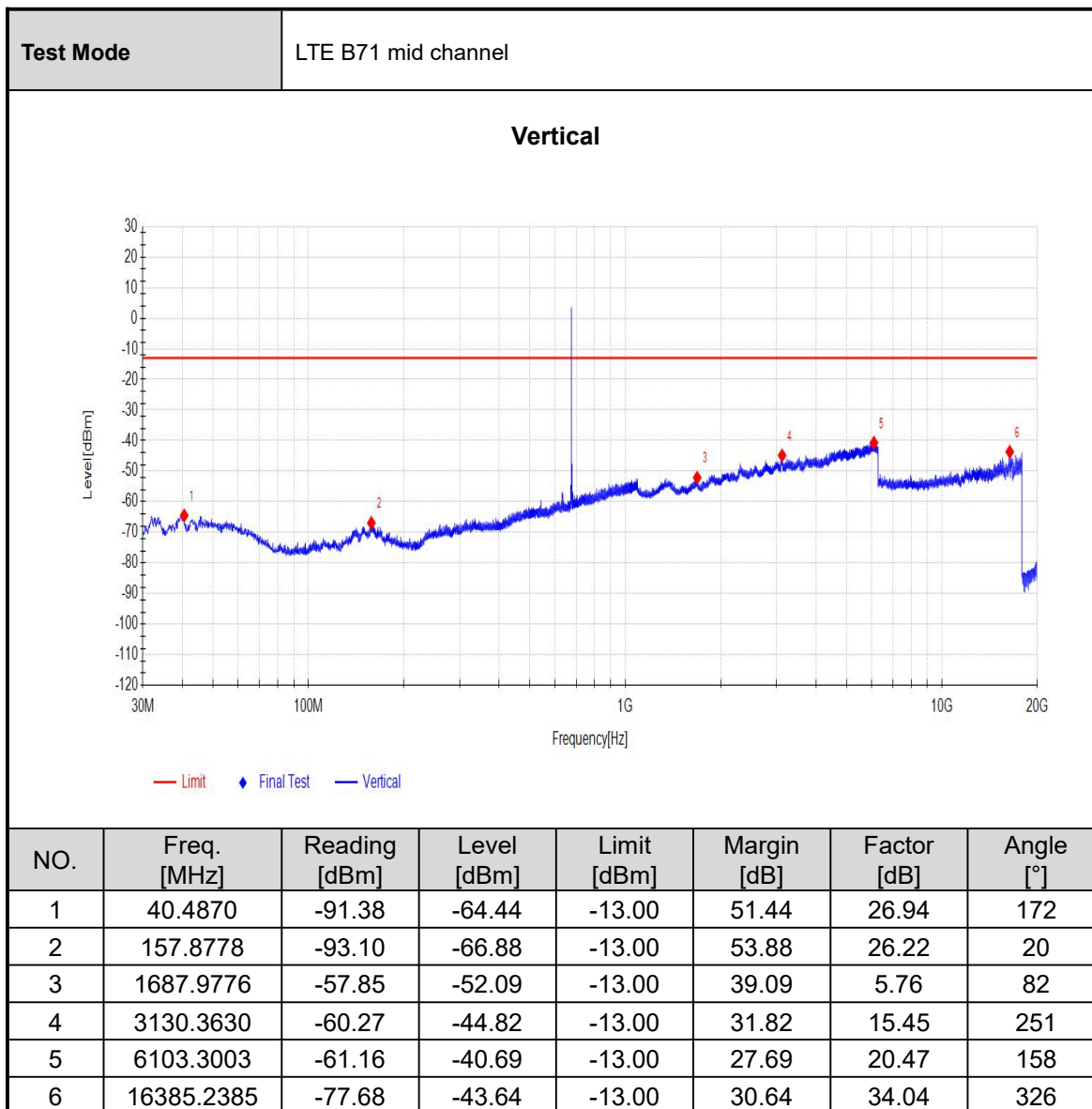


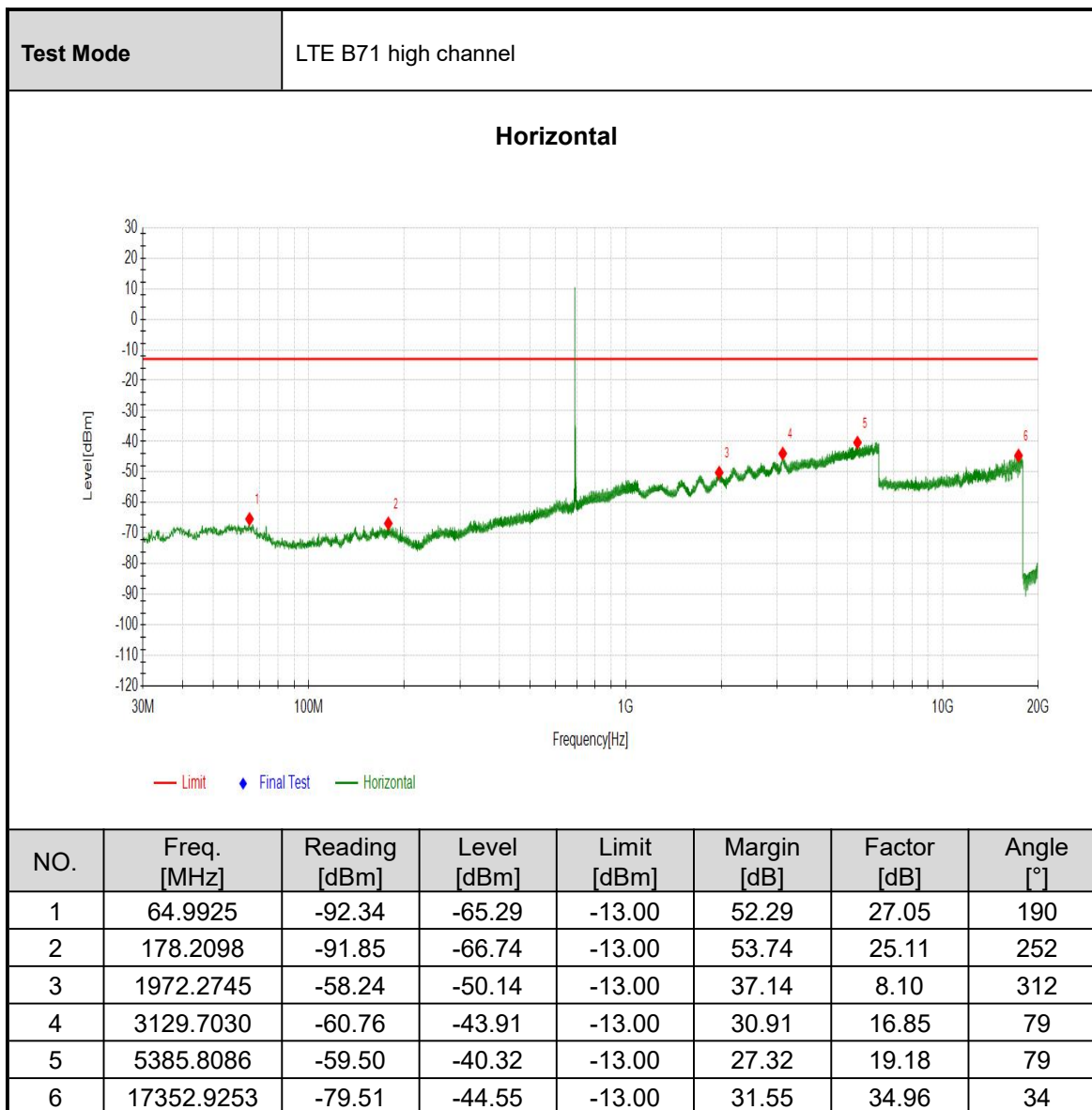


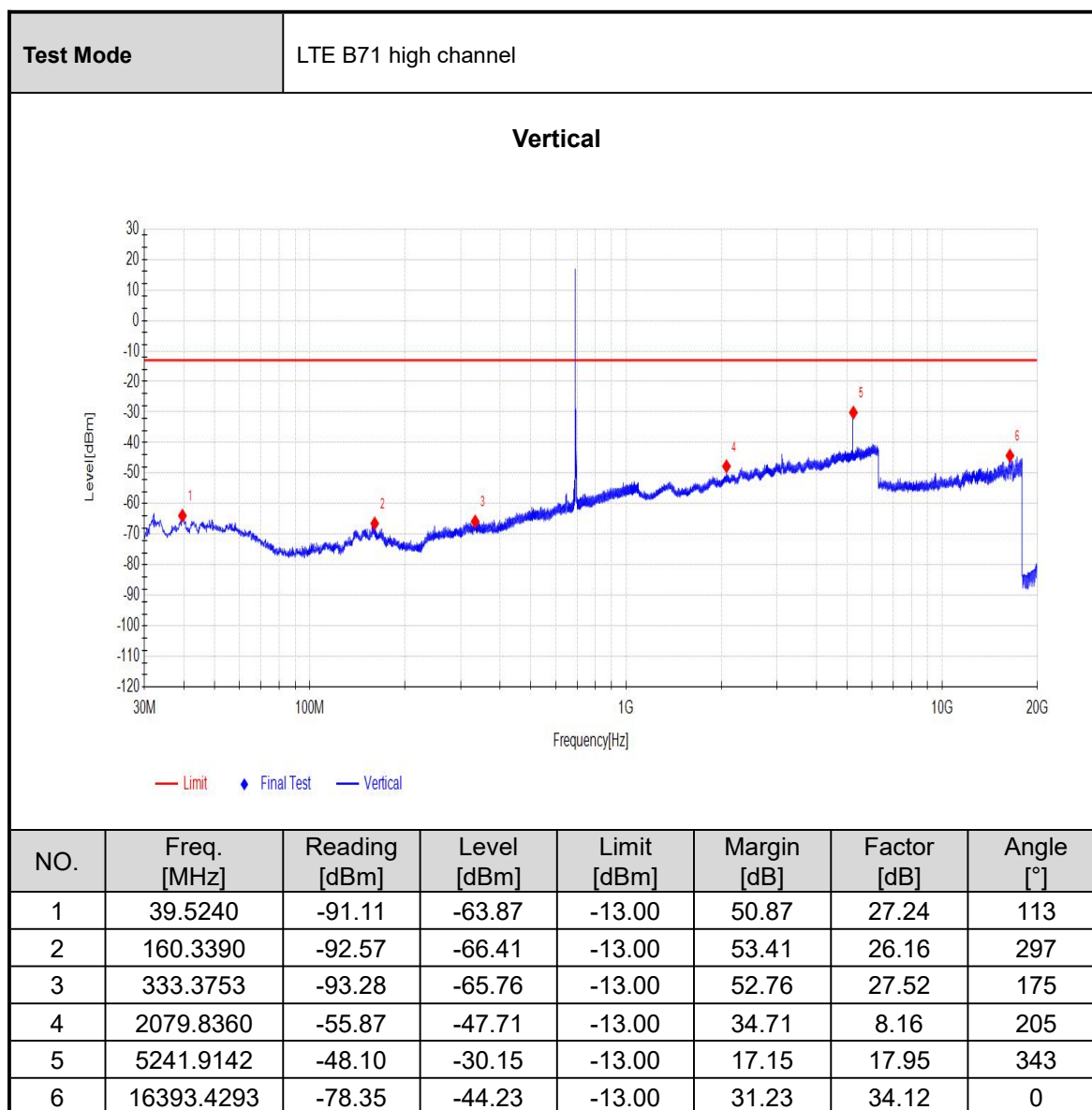


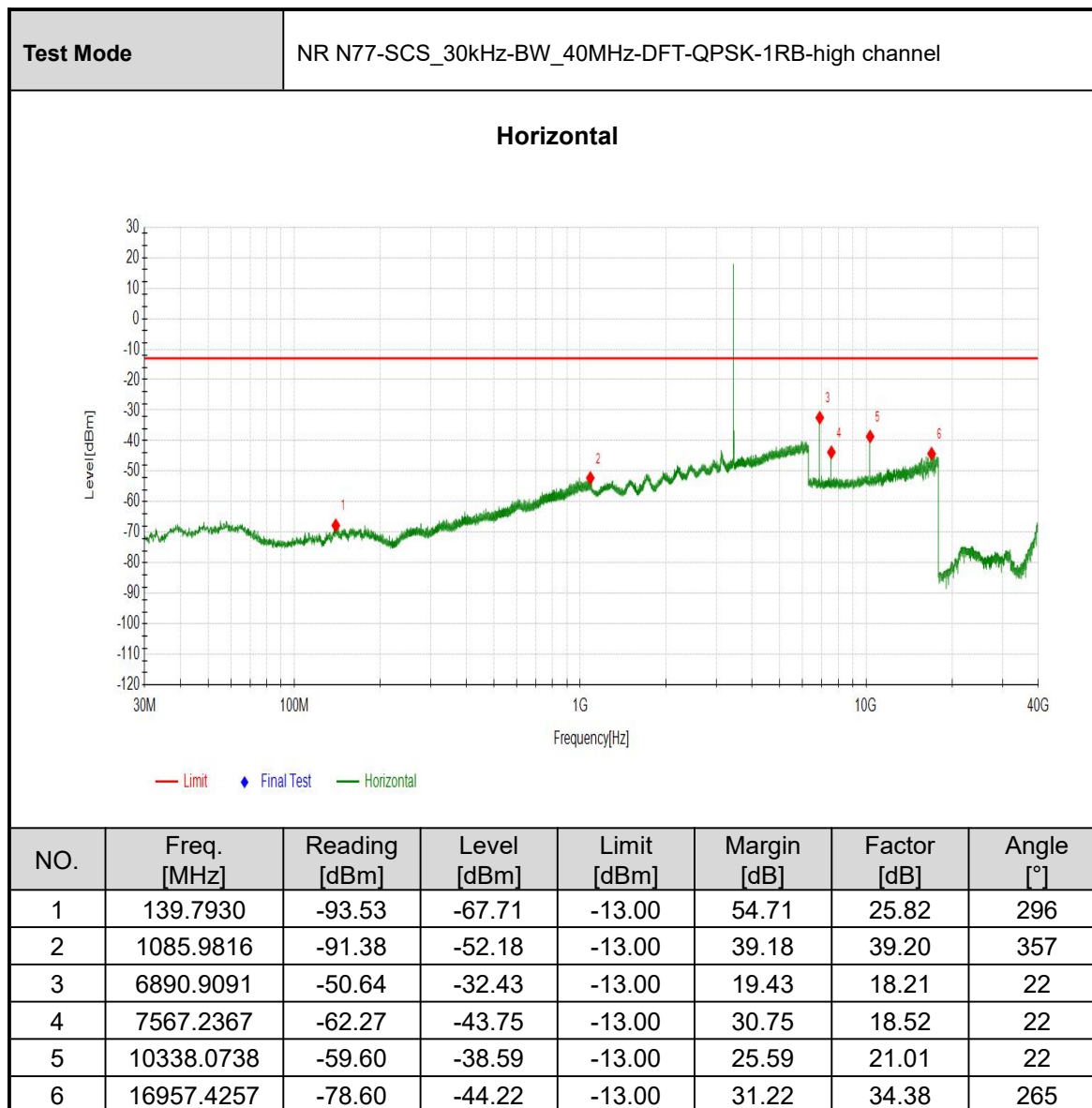


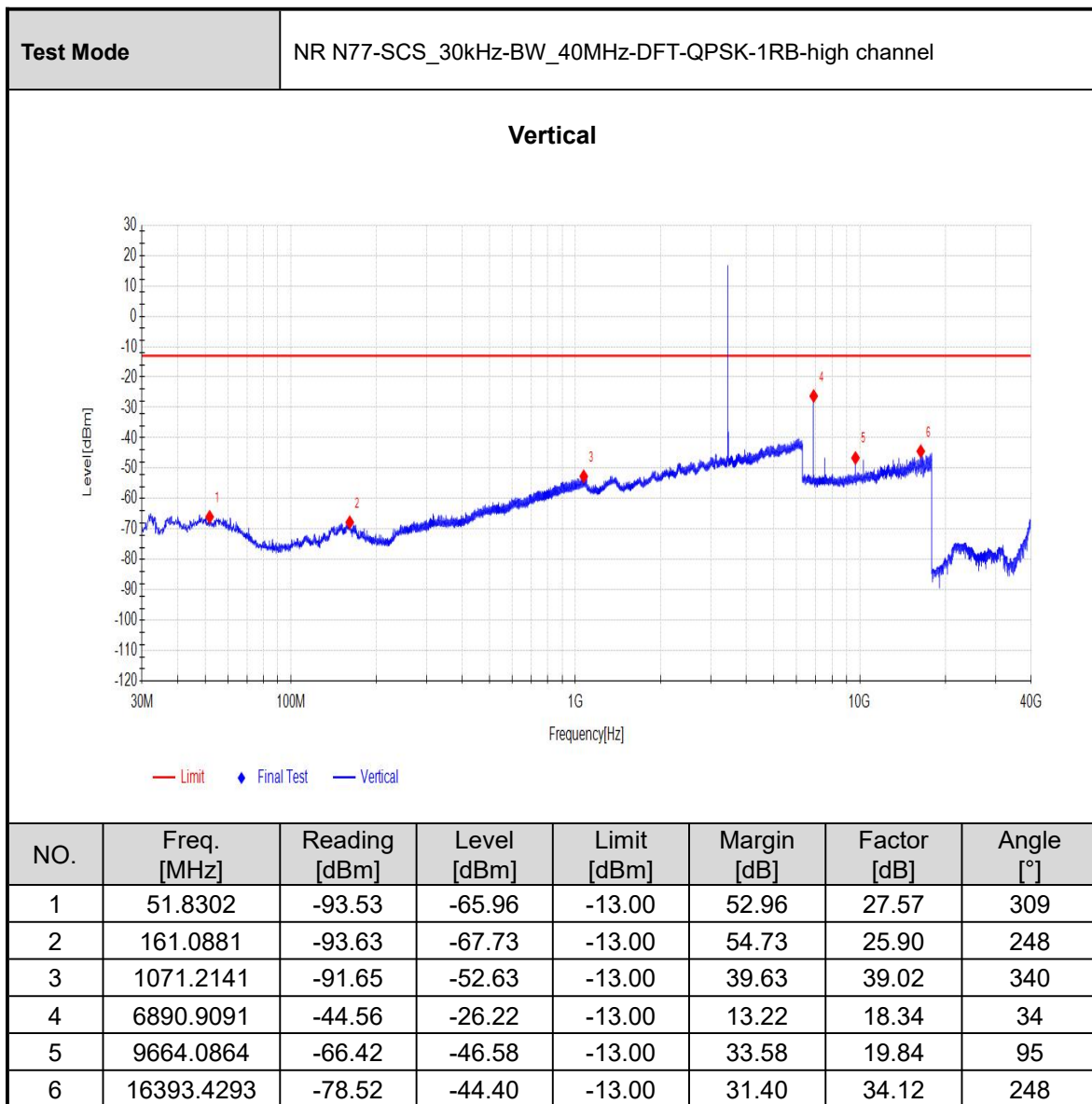


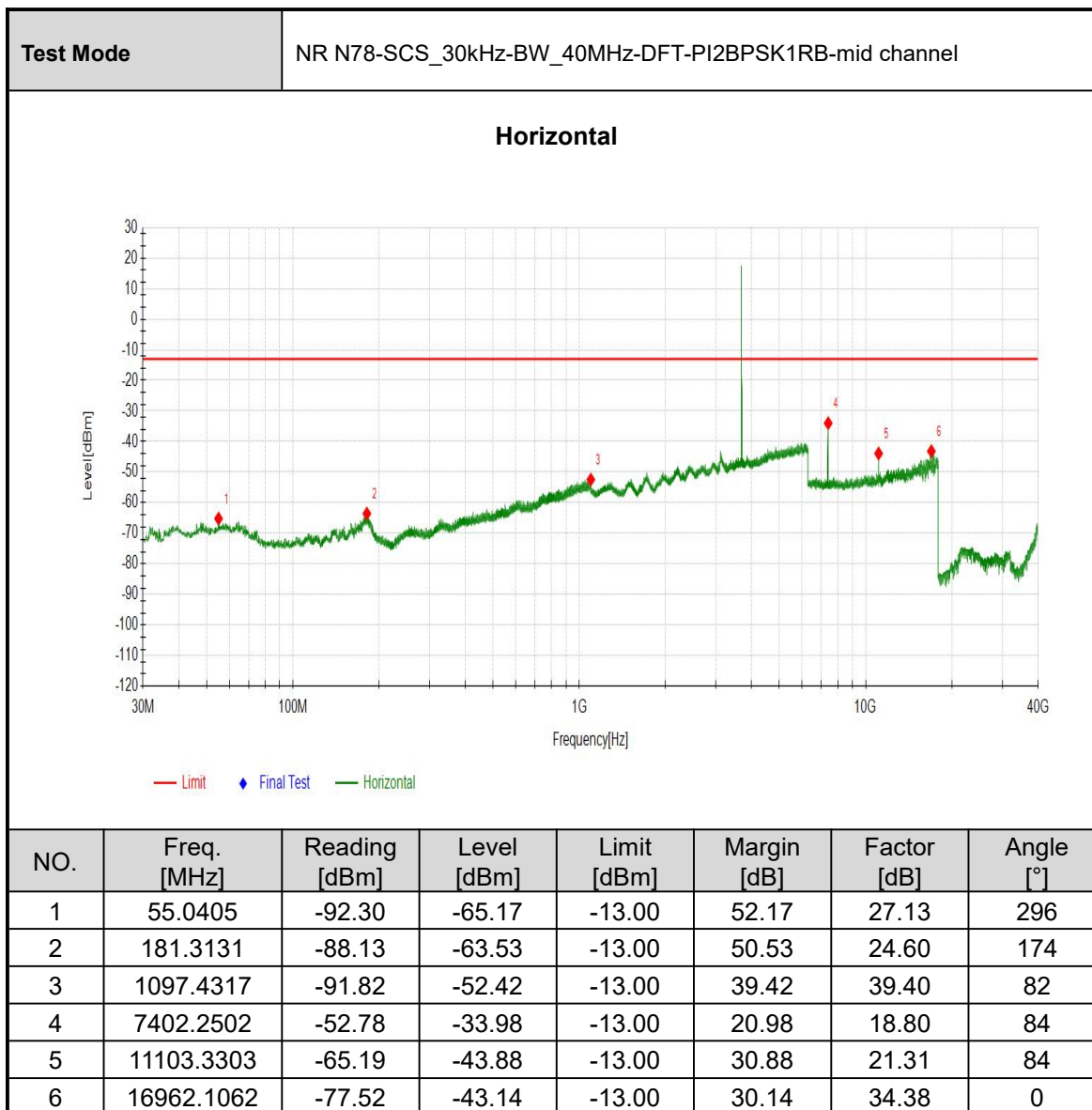


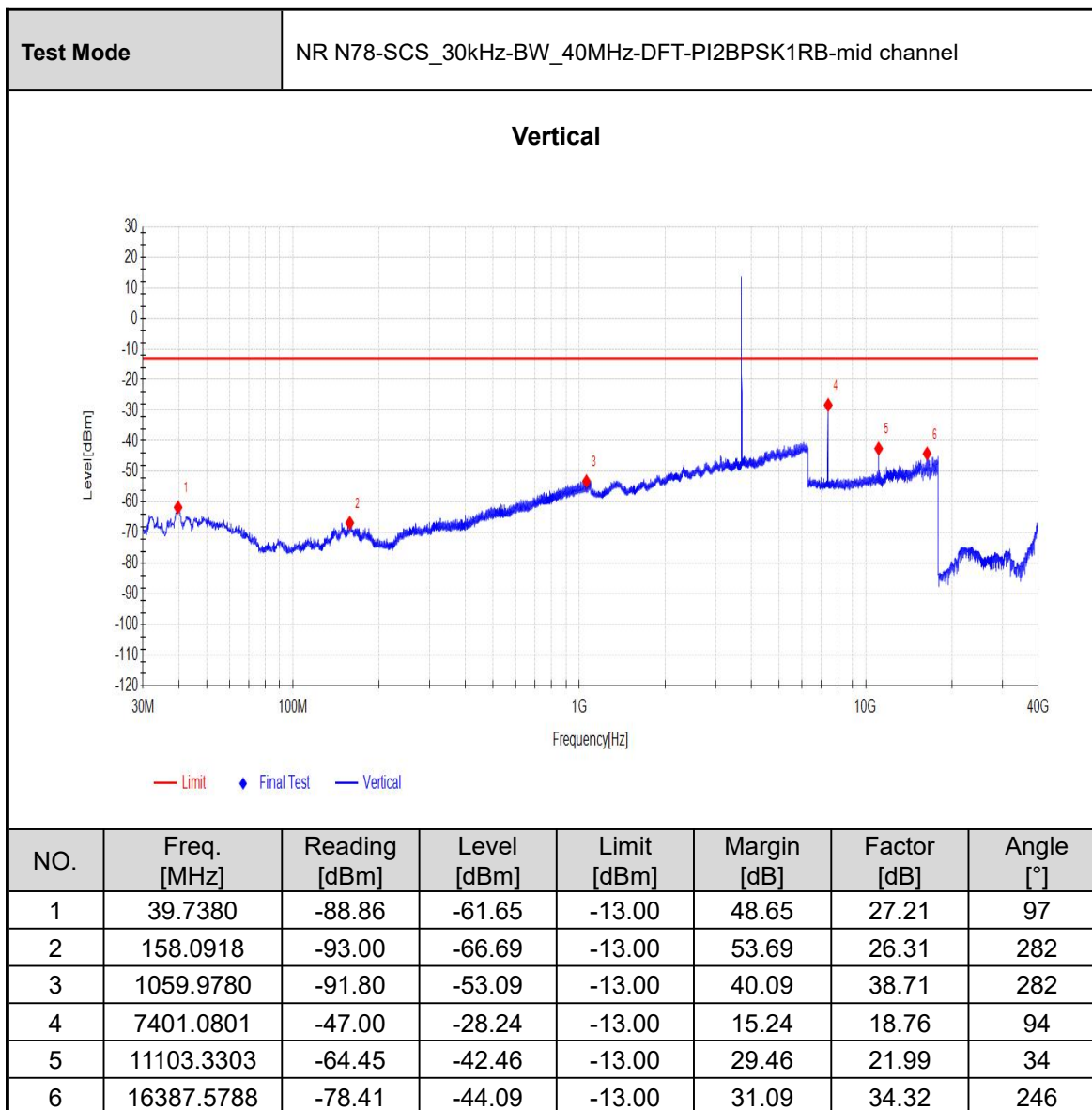












3.2 OUT POWER MEASUREMENT

3.2.1 TEST PROCEDURES

Subclause 5.6 of Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$EIRP = PT + GT - LC$, $ERP = EIRP - 2.15dB$, where

PT = transmitter output power dBm;

GT = gain of the transmitting antenna dBi;

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.2.2 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



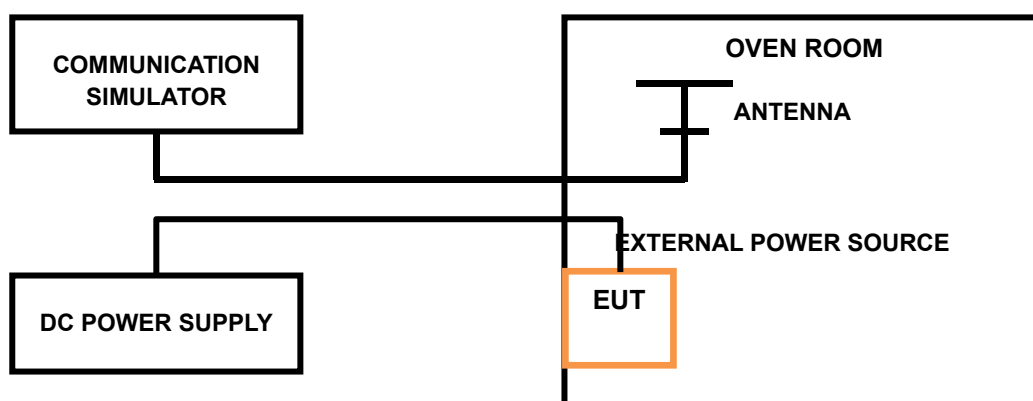
3.3 FREQUENCY STABILITY

3.3.1 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.3.2 TEST SETUP

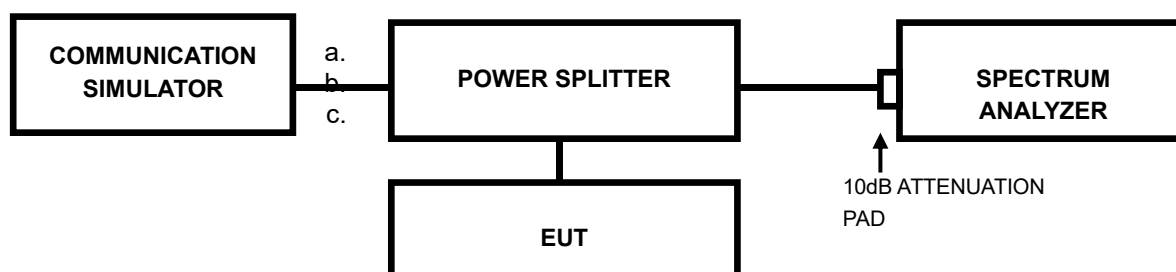


3.4 OCCUPIED BANDWIDTH MEASUREMENT

3.4.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.4.2 TEST SETUP

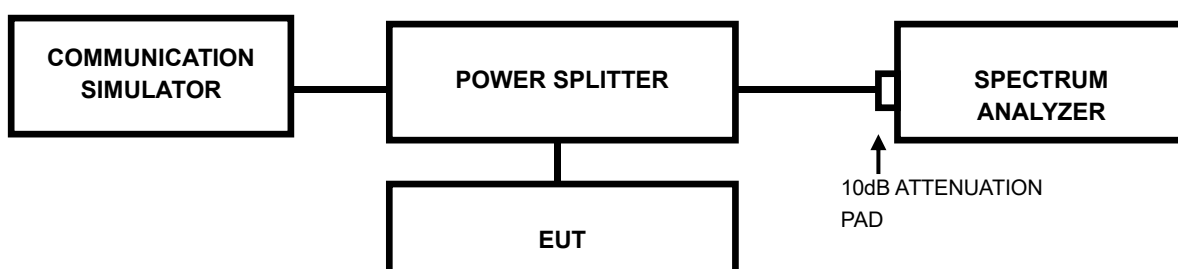


3.5 BAND EDGE MEASUREMENT

3.5.1 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 1.4MHz).
- c. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 5MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 600kHz. (LTE bandwidth 15MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 300kHz and VBW of the spectrum is 1000kHz. (LTE bandwidth 20MHz).
- h. Set the spectrum with RMS detector.
- i. Record the AVG trace plot into the test report.

3.5.2 TEST SETUP



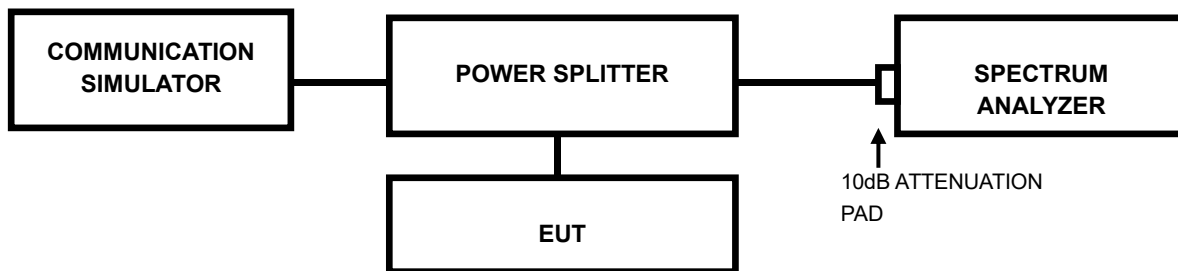


3.6 CONDUCTED SPURIOUS EMISSIONS

3.6.1 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 30 MHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.6.2 TEST SETUP

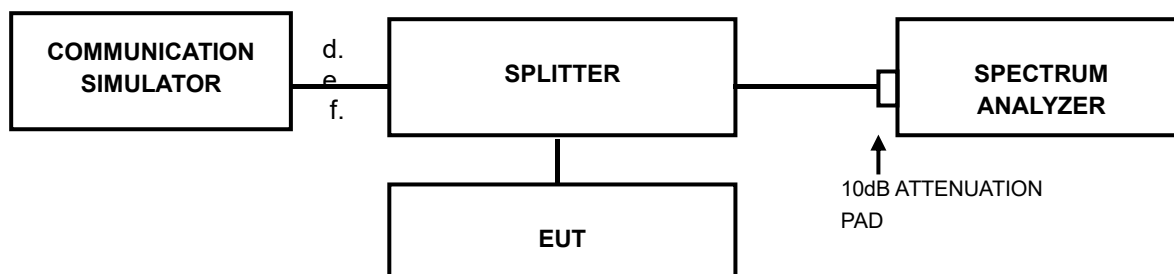


3.7 PEAK TO AVERAGE RATIO

3.7.1 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.2 TEST SETUP





3.8 RECEIVER EMISSION MEASUREMENT

3.8.1 TEST PROCEDURES

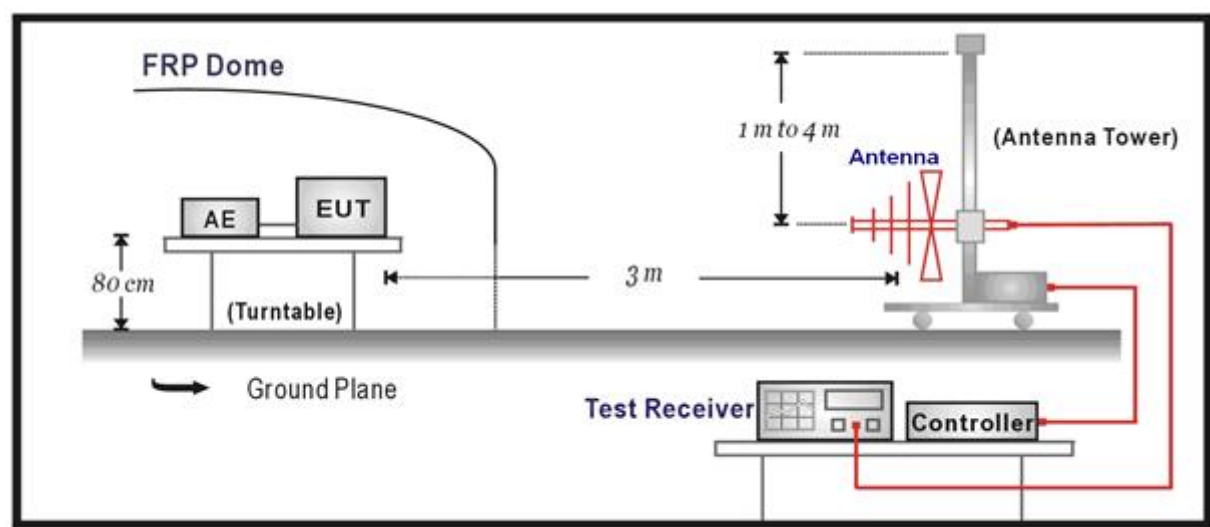
- e. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- f. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
- g. $EIRP(dBm) = S.G.POWER - TX \text{ cable loss} + \text{Antenna gain.}$
- h. $E.R.P(dBm) = E.I.P.R - 2.15dBi.$

NOTE:

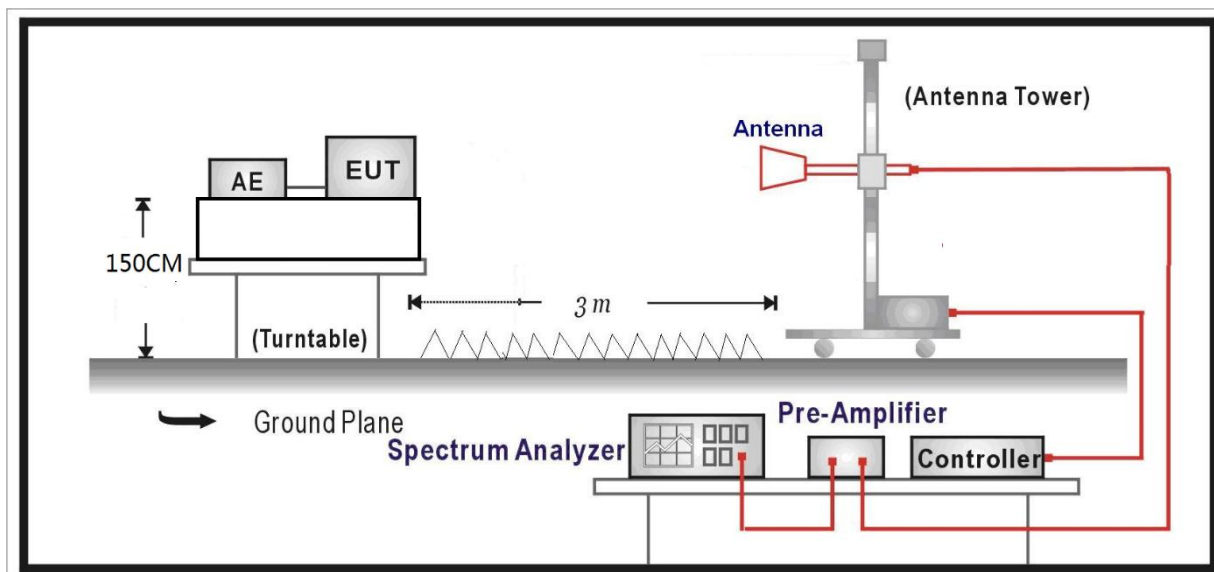
- 1.The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
- 2.Only the worst case was shown in test report

3.8.2 TEST SETUP

Below 1GHz Test Setup:



Above 1GHz Test Setup:



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.



3.8.3 TEST RESULTS

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.



4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Setup Photo).



5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).

,

Important

- (1) The test report is valid with the official seal of the laboratory and the signatures of Test engineer, Author and Reviewer simultaneously.
- (2) The test report is invalid if altered.
- (3) Any photocopies or part photocopies in the test report are forbidden without the written permission from the laboratory.
- (4) Objections to the test report must be submitted to the laboratory within 15 days.
- (5) Generally, commission test is responsible for the tested samples only.

Address of the laboratory:

CVC Testing Technology Co., Ltd.

Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China

Post Code: 510663

Tel: 020-32293888

FAX: 020-32293889

E-mail: office@cvc.org.cn