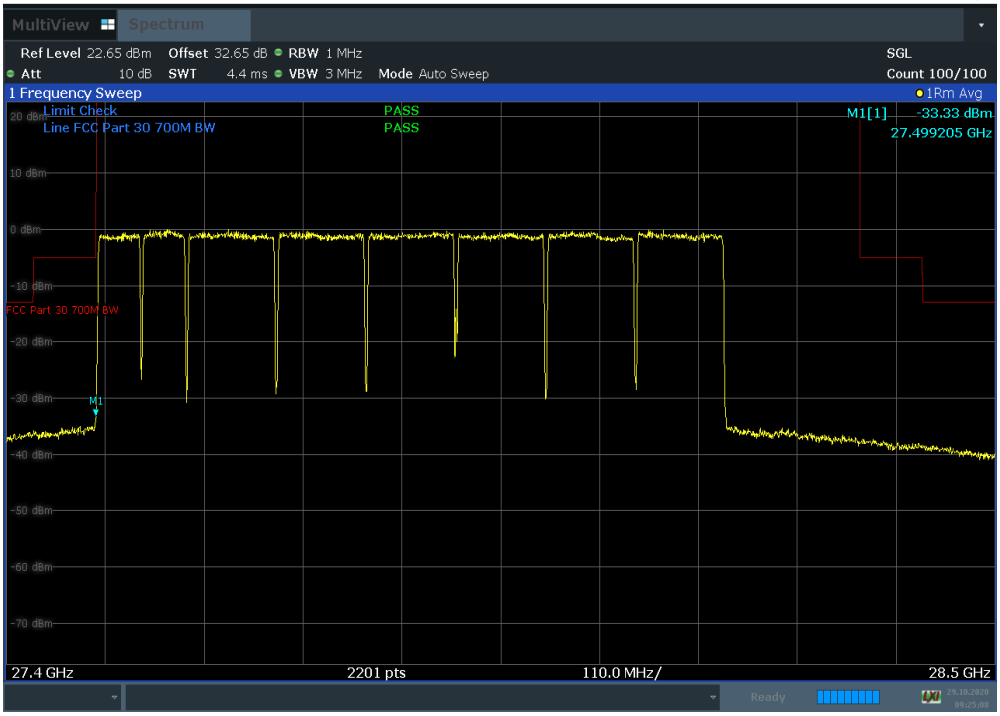
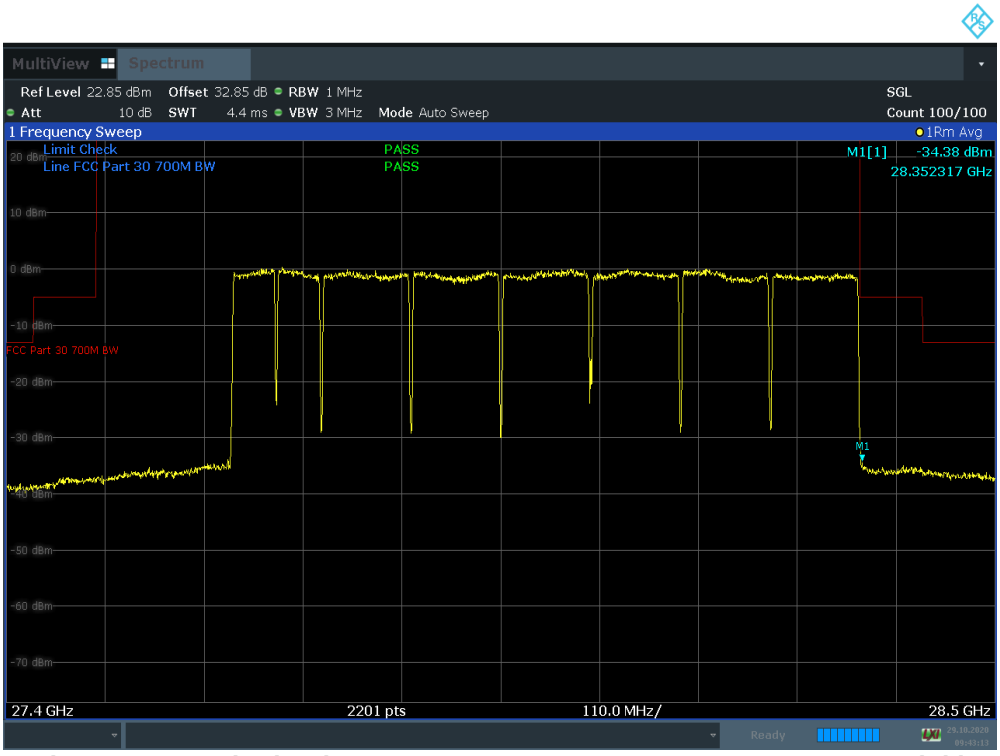
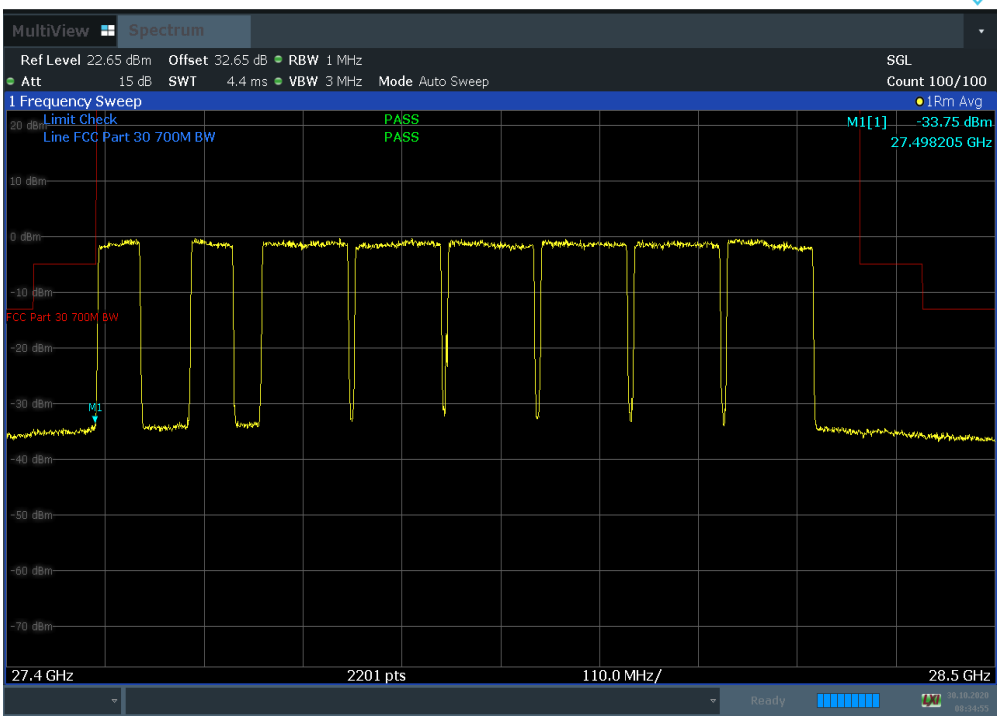


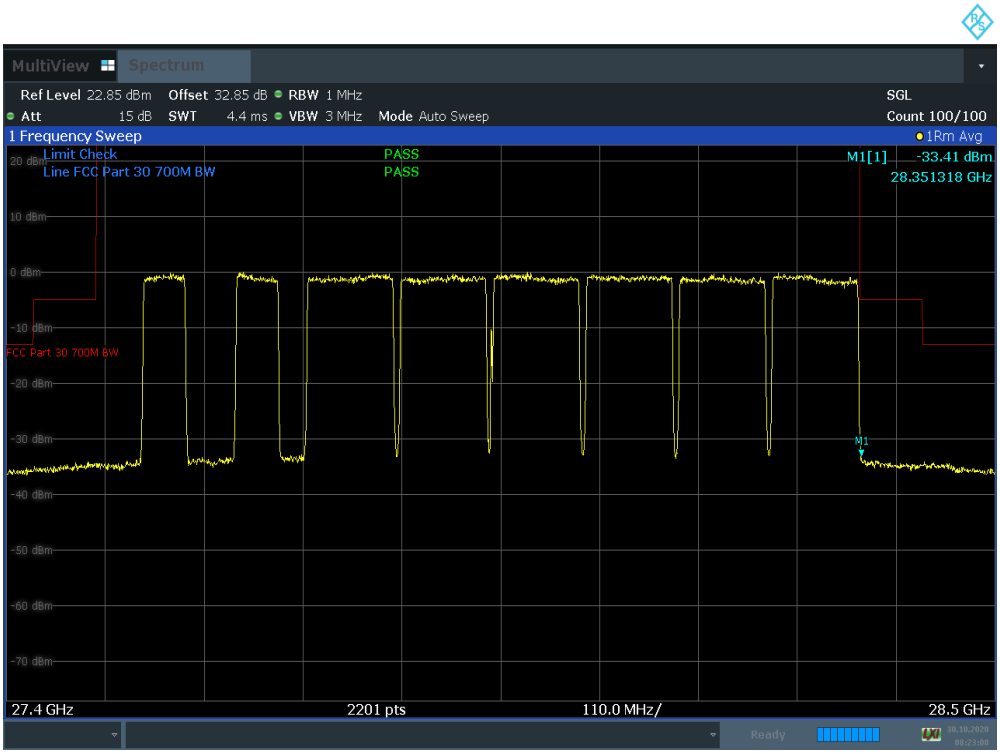
Plot 7-530. Band Edge (Ant D 50 MHz 2CC + 100 MHz 6CC BW QPSK Low)



Plot 7-531. Band Edge (Ant D 50 MHz 2CC + 100 MHz 6CC BW QPSK High)

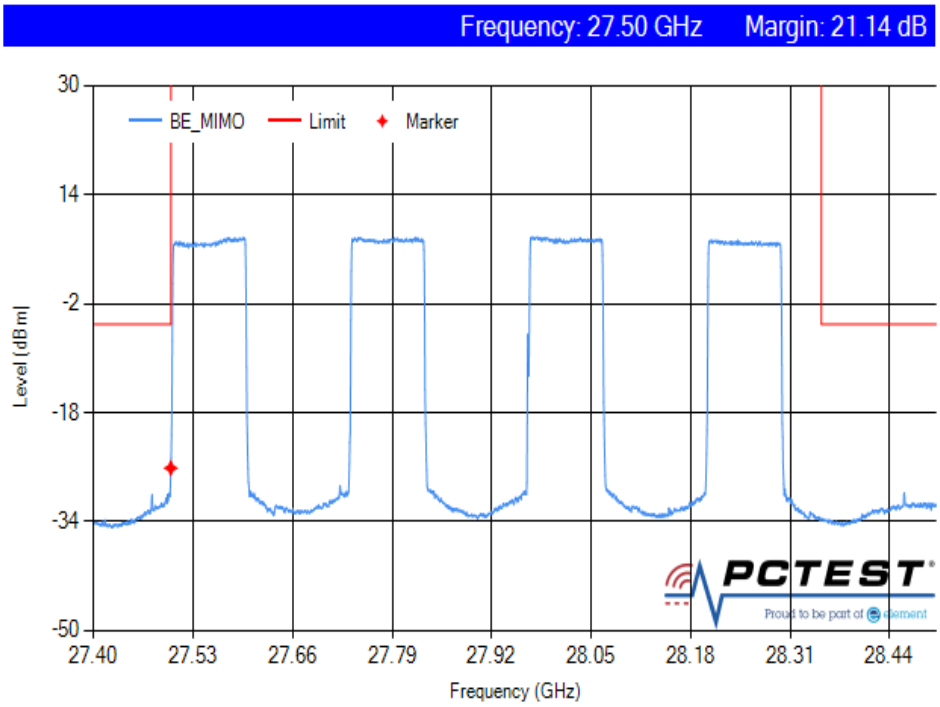


Plot 7-532. Band Edge (Ant D 50 MHz 2CC + 100 MHz 6CC NC BW QPSK Low)

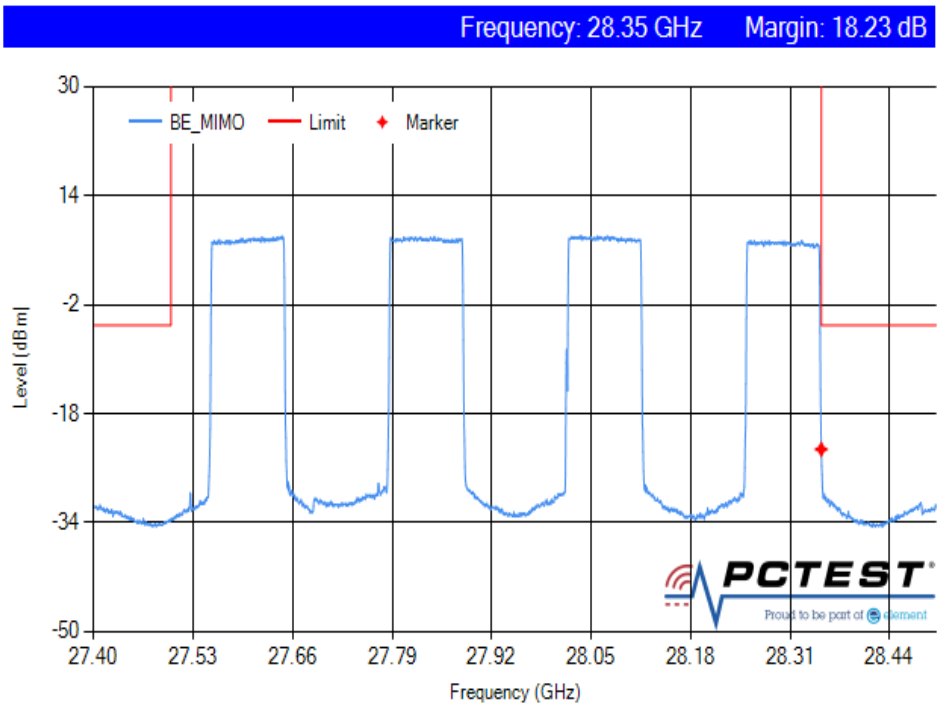


Plot 7-533. Band Edge (Ant D 50 MHz 2CC + 100 MHz 6CC NC BW QPSK High)

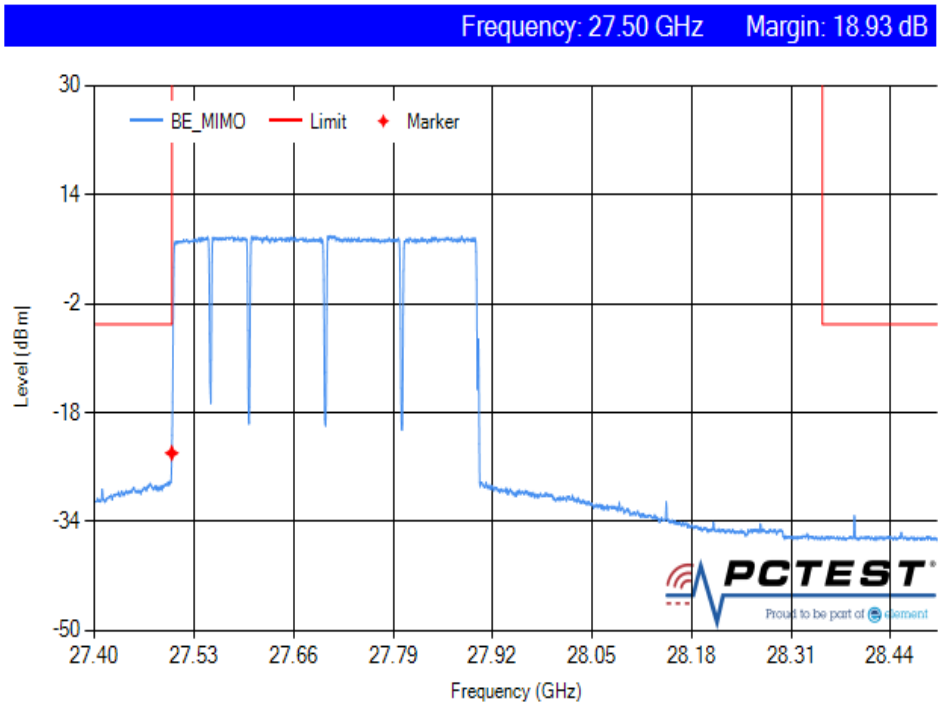
7.6.6 MIMO Band Edge Maximized on Antenna A/B/C/D



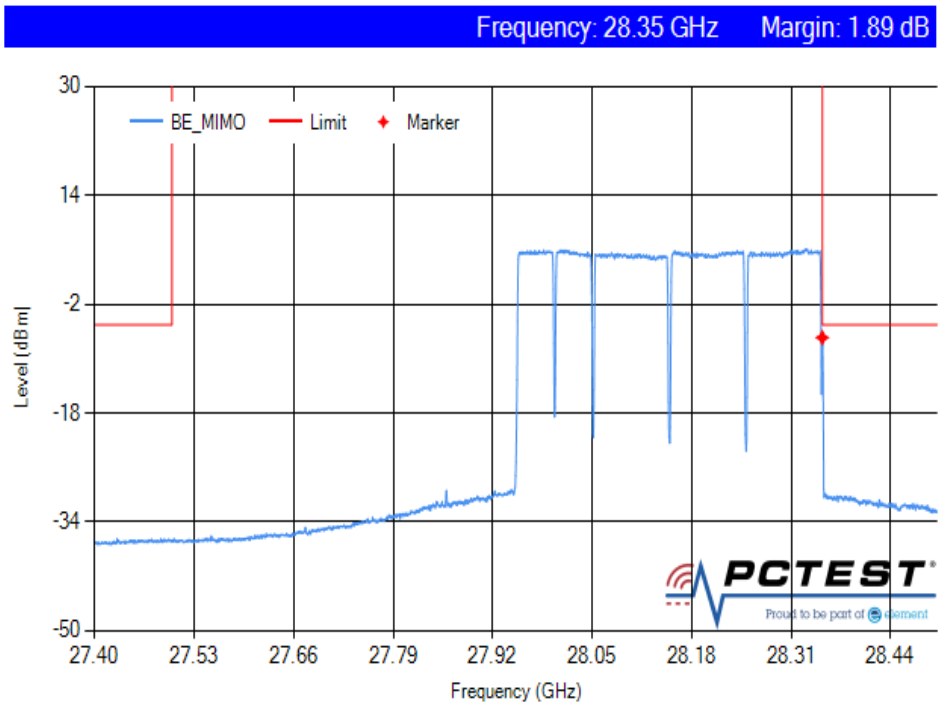
Plot 7-534. Band Edge MIMO (100 MHz 4CC NC BW QPSK Low)



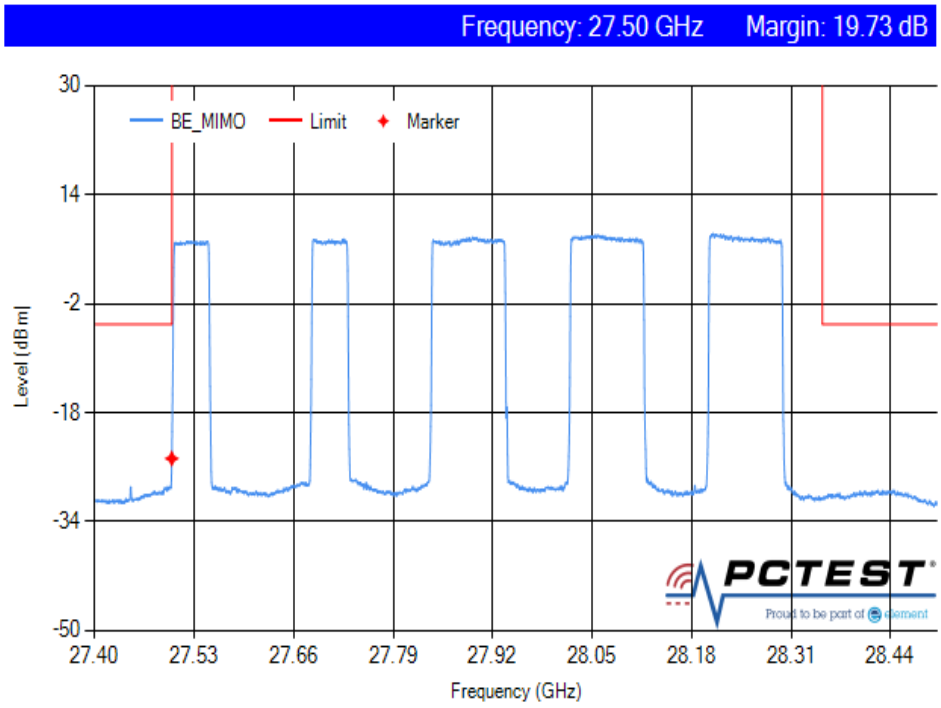
Plot 7-535. Band Edge MIMO (100 MHz 4CC NC BW QPSK High)



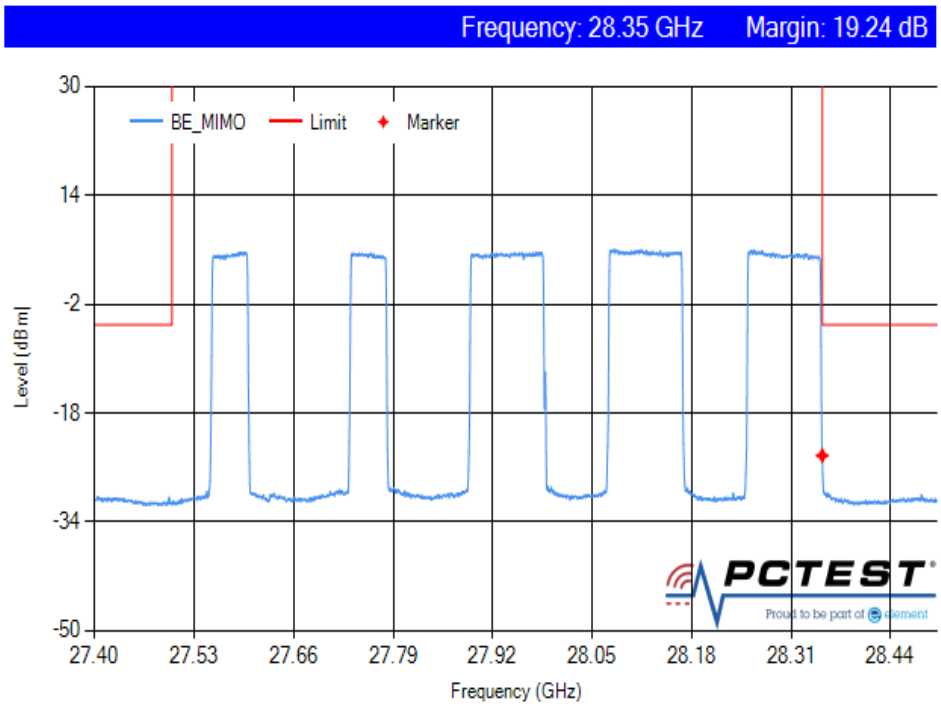
Plot 7-536. Band Edge MIMO (50 MHz 2CC + 100 MHz 3CC BW QPSK Low)



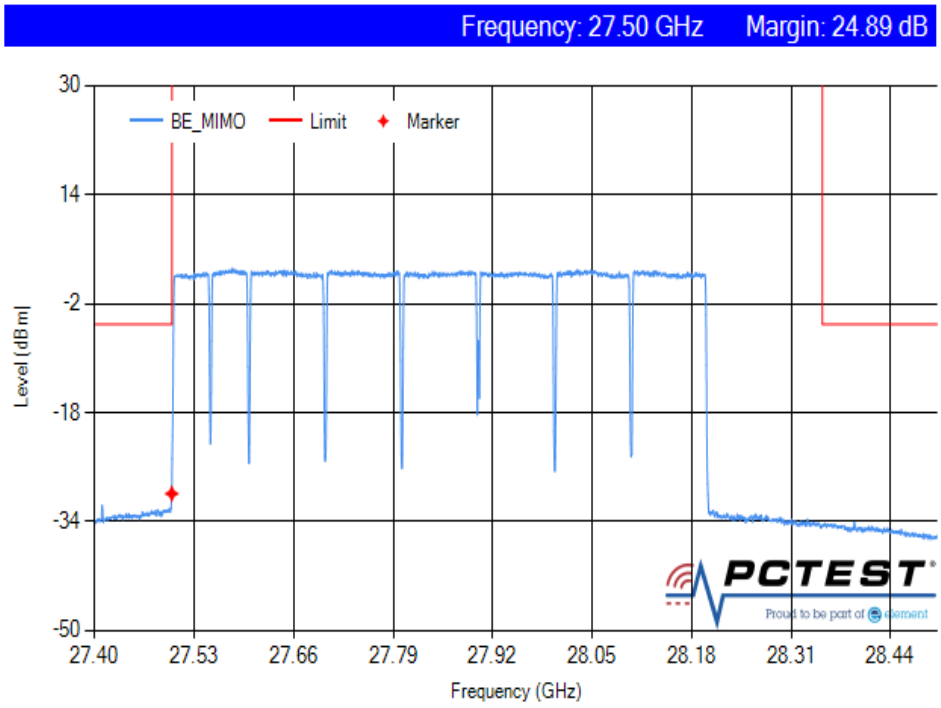
Plot 7-537. Band Edge MIMO (50 MHz 2CC + 100 MHz 3CC BW QPSK High)



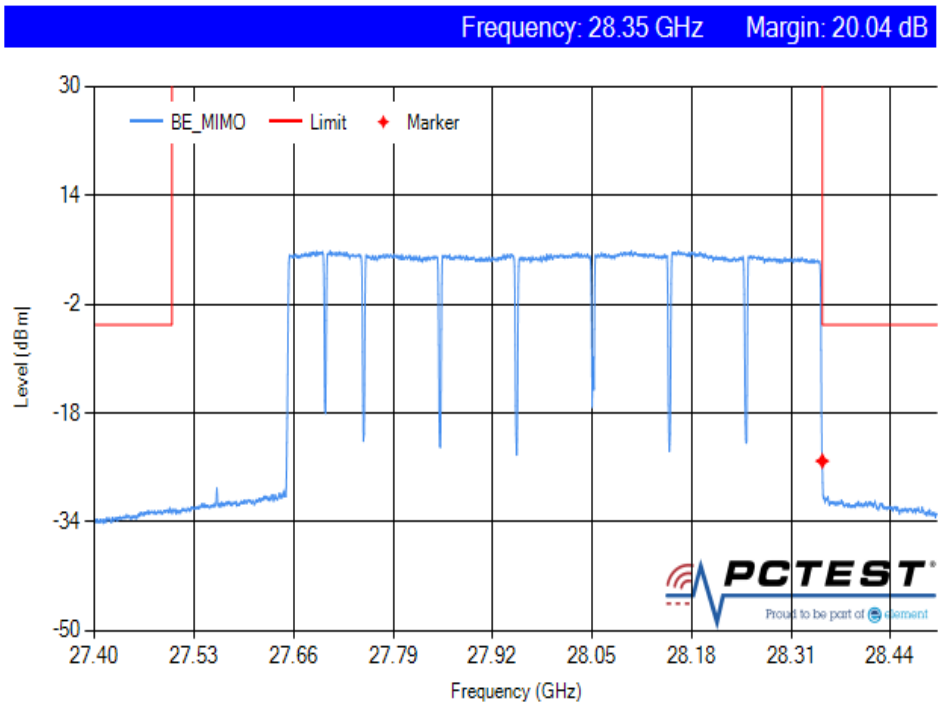
Plot 7-538. Band Edge MIMO (50 MHz 2CC + 100 MHz 3CC NC BW QPSK Low)



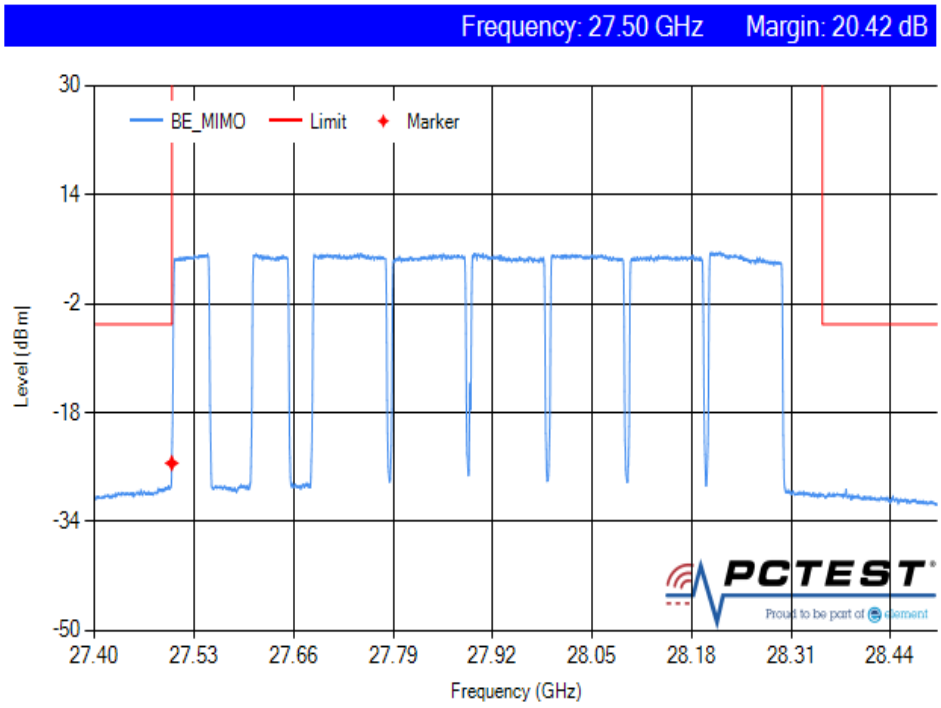
Plot 7-539. Band Edge MIMO (50 MHz 2CC + 100 MHz 3CC NC BW QPSK High)



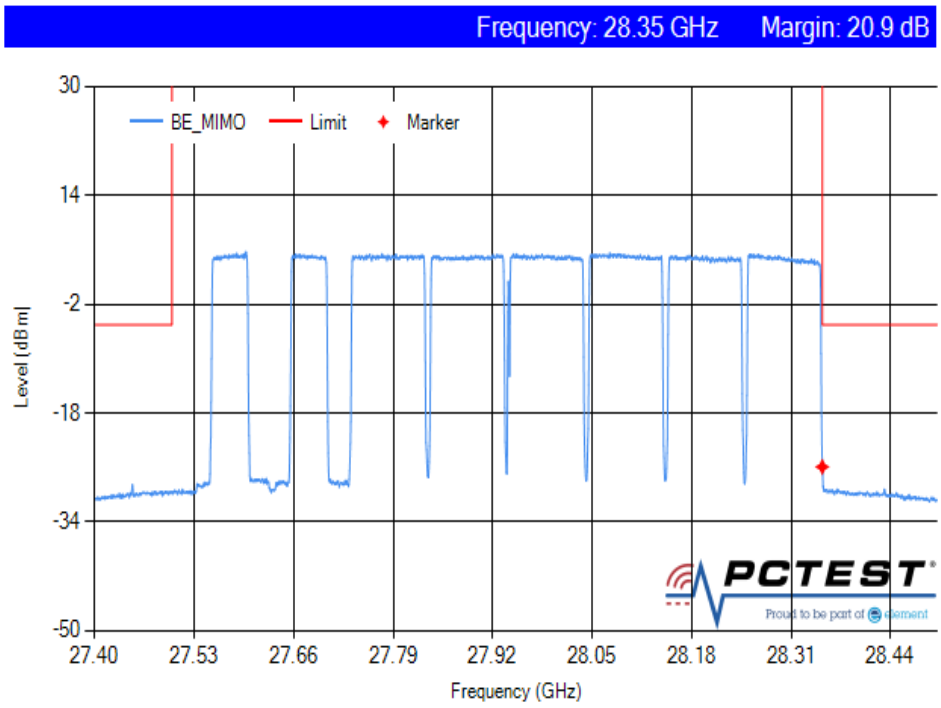
Plot 7-540. Band Edge MIMO (50 MHz 2CC + 100 MHz 6CC BW QPSK Low)



Plot 7-541. Band Edge MIMO (50 MHz 2CC + 100 MHz 6CC BW QPSK High)



Plot 7-542. Band Edge MIMO (50 MHz 2CC + 100 MHz 6CC NC BW QPSK Low)



Plot 7-543. Band Edge MIMO (50 MHz 2CC + 100 MHz 6CC NC BW QPSK High)

7.7 Frequency Stability / Temperature Variation

§2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI C63.26-2015 Section 5.6
KDB 842590 D01 v01r01 Section 4.5

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

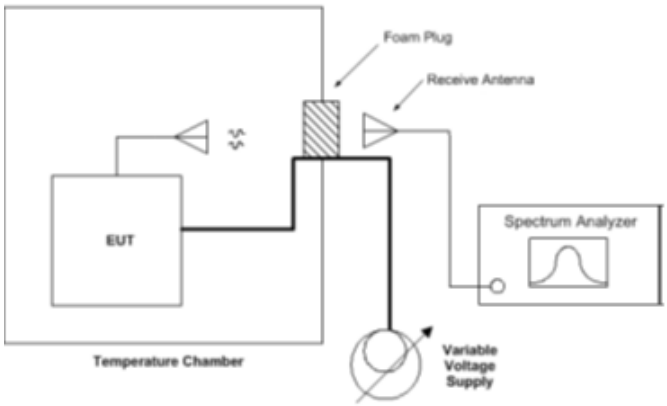


Figure 7-1. Test Instrument & Measurement Setup

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber.

Test Notes

The Frequency Deviation column in the table below is the amount of deviation measured from the center frequency of the Reference measurement (first row).

Frequency Stability Measurements

§2.1055

OPERATING FREQUENCY:	27,925,020,000	Hz
CHANNEL:	2077917	
REFERENCE VOLTAGE:	-48.00	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	-48.00	+ 20 (Ref)	27,925,020,000	0	0.0000000
100 %		- 30	27,925,027,918	7,918	0.0000284
100 %		- 20	27,925,028,599	8,599	0.0000308
100 %		- 10	27,925,028,775	8,775	0.0000314
100 %		0	27,925,027,348	7,348	0.0000263
100 %		+ 10	27,925,027,069	7,069	0.0000253
100 %		+ 30	27,925,026,702	6,702	0.0000240
100 %		+ 40	27,925,026,946	6,946	0.0000249
100 %		+ 50	27,925,026,493	6,493	0.0000233
85 %	-40.80	+ 20	27,925,024,817	4,817	0.0000172
115 %	-55.20	+ 20	27,925,024,878	4,878	0.0000175

Table 7-26. Frequency Stability Data

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore, the device is determined to remain operating in band over the temperature and voltage range as tested.

Frequency Stability Measurements
§2.1055

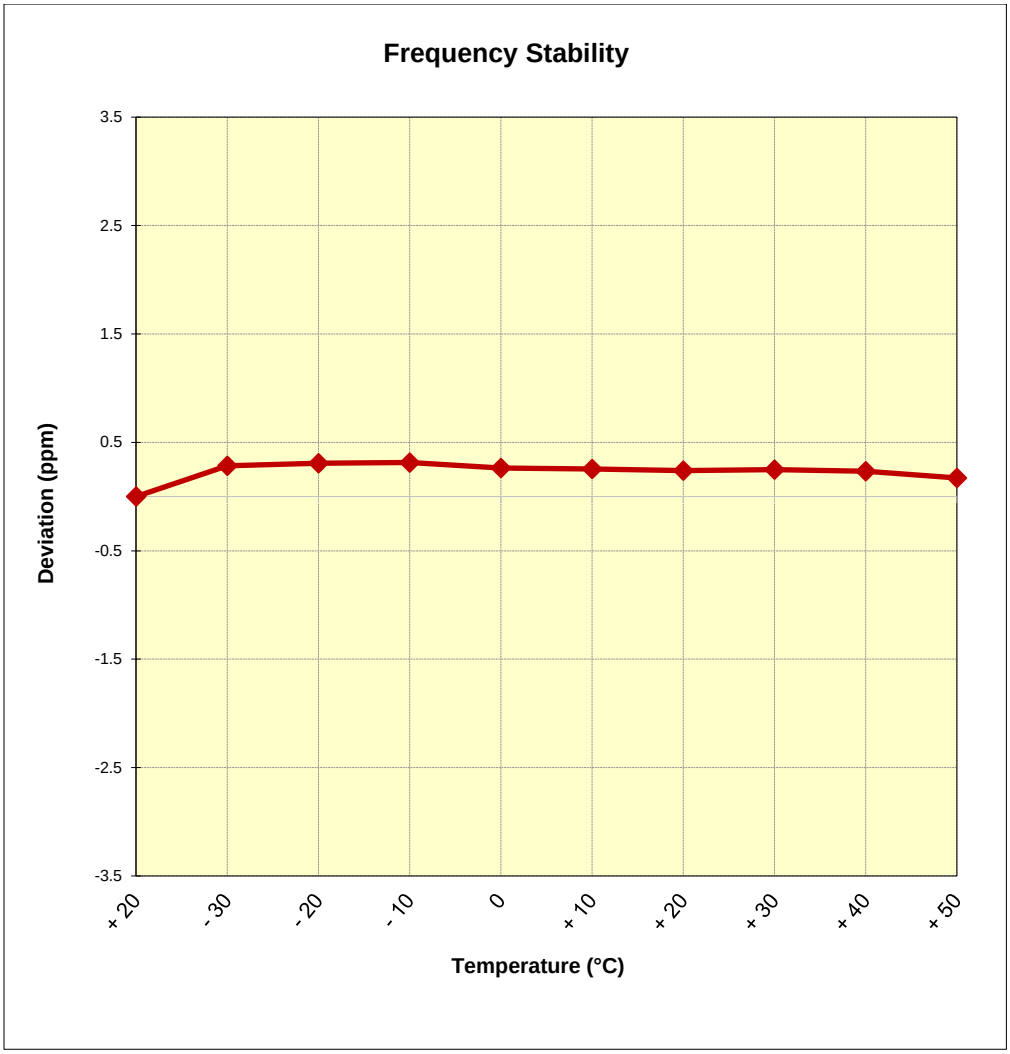


Figure 7-2. Frequency Stability Graph

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung 5G Access Unit Model: AT1K01-A10** complies with all the requirements of Part 30.

9.0 APPENDIX A

9.1 HARMONIC MIXER Verification Certificate

HCT

교 정 성 적 서

CALIBRATION CERTIFICATE

경기도 이천시 마장면 서이천로 578번길 74
TEL : 031-645-6900, FAX : 031-645-6969

KOLAS — KOREA LABORATORY ACCREDITATION SCHEME — CALIBRATION NO. KC01-171

성적서발급번호(Certificate No) : IC-2020-16953
교 정 번 호(Calibration No) : C-2020-020404

1. 의뢰자 (Client)
- 기관명 (Name) : 피씨테스트코리아 주식회사
- 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)

2. 측정기 (Calibration Subject) ◇ 등록번호 : 380383
- 기기명 (Description) : HARMONIC MIXER
- 제작회사 및 형식(Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z60
- 기기번호 (Serial Number) : 100981

3. 교정일자 (Date of Calibration) : 2020.03.13

4. 교정환경 (Environment)
- 온도(Temperature) : (22.4 ± 0.4) ℃ - 습도(Humidity) : (46 ± 4) % R.H.
- 교정장소 (Location) : 고정표준실(Permanent Calibration Lab) (주소: 경기도 이천시 마장면 서이천로 578번길 74)

5. 측정표준의 소급성 (Traceability) ◇Field code : 40641(RF SPECTRUM ANALYZER)

교정방법 및 소급성 서술 (Calibration method and/or brief description)

상기 기기는 고주파 스펙트럼 분석기의 교정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.

교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2020/10/02	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	AGILENT 8487A	MY41092450	2021/01/15	Keysight Technologies
POWER SENSOR	KEYSIGHT V8486A	MY56330017	2020/12/30	Keysight Technologies
WR-19 MULTIPLIER SOURCE MODULE	OML S19MS-A	160516-1	2020/09/09	(주)에이치시티

6. 교정결과 (Calibration result) : 교정결과 참조 (Refer to attachment)

7. 측정불확도 (Measurement uncertainty) : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, k = 2 (Confidence level about 95 %, k = 2)

확 인 (affirmation)	작성자 (Measurements performed by)	승인자 (Approved by)
	성명 (Name) 박 민 지	직위 (Title) 기술책임자(Technical Cal. Manager) (정) 성명 (Name) 이 승 찬

위 성적서는 국제시험기관인정협력체(International Laboratory Accreditation Cooperation) 상호인정협정(Mutual Recognition Arrangement)에 서명한 한국인정기구(KOLAS)로부터 공인 받은 분야의 교정결과입니다.

2020. 03. 16

한국인정기구 인정
Accredited by KOLAS, Republic of KOREA

㈜에이치시티 대표이사
President, HCT Co., Ltd.

※ 이 성적서는 측정기의 정밀정확도에 영향을 미치는 요소(과부하, 온도, 습도 등)의 급격한 변화가 발생한 경우에는 무효가 됩니다.
※ 고객전용사이트(http://www.callab.co.kr)에서 성적서의 진위여부 확인이 가능합니다.
※ 성적서의 원본은 상단에 HCT로고그램이 들어간 위변조 방지 용지에 인쇄되어 발급되며, 원본 복사시에는 복사본이라는 표시가 처리됩니다.

F-02P-02-008 (Rev.02)

열 람 용

this certificate may not be reproduced other than in full except with permission of the issuing laboratory.

교 정 성 적 서

CALIBRATION CERTIFICATE

경기도 이천시 마장면 서이천로 578번길 74
TEL : 031-645-6900, FAX : 031-645-6969

KOREA LABORATORY ACCREDITATION SCHEME KOLAS CALIBRATION NO KC01-01

성적서발급번호(Certificate No) : IC-2020-77176
교 정 번 호(Calibration No) : C-2020-089965

1. 의뢰자 (Client)
- 기관명 (Name) : 피씨테스트코리아 주식회사
- 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)

2. 측정기 (Calibration Subject) ◇ 등록번호 : 369548
- 기기명 (Description) : HARMONIC MIXER
- 제작회사 및 형식 (Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z90
- 기기번호 (Serial Number) : 101860

3. 교정일자 (Date of Calibration) : 2020.10.21

4. 교정환경 (Environment)
- 온도(Temperature) : (23.1 ± 0.3) ℃ - 습도(Humidity) : (46 ± 3) % R.H.
- 교정장소 (Location) : 고정표준실(Permanent Calibration Lab)
(주소: 경기도 이천시 마장면 서이천로 578번길 74)

5. 측정표준의 소급성 (Traceability) ◇Field code : 40641(RF SPECTRUM ANALYZER)

교정방법 및 소급성 서술 (Calibration method and/or brief description)

상기 기기는 고주파 스펙트럼 분석기의 교정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.

교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2021/06/23	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	KEYSIGHT V8486A	MY56330017	2021/01/03	Keysight Technologies
POWER SENSOR	KEYSIGHT W8486A	MY56370005	2020/12/30	Keysight Technologies
WR-12 MULTIPLIER SOURCE MODULE	OML S12MS-A	160419-1	2021/09/09	(주)에이치시티

6. 교정결과 (Calibration result) : 교정결과 참조 (Refer to attachment)

7. 측정불확도 (Measurement uncertainty) : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, k = 2 (Confidence level about 95 %, k = 2)

확 인 (affirmation)	작성자 (Measurements performed by)	승인자 (Approved by)
	성명 (Name) 박 민 지	직위 (Title) 기술책임자(Technical Cal. Manager) (정) 성명 (Name) 이 승 찬 (서명)

위 성적서는 국제시험기관인정협력체(International Laboratory Accreditation Cooperation) 상호인정협정(Mutual Recognition Arrangement)에 서명한 한국인정기구(KOLAS)로부터 공인 받은 분야의 교정결과입니다.

2020. 10. 21

한국인정기구 인정
Accredited by KOLAS, Republic of KOREA

㈜에이치시티 대표이사
President, HCT Co., Ltd.

※ 이 성적서는 측정기의 정밀정확도에 영향을 미치는 요소(과부하, 온도, 습도 등)의 급격한 변화가 발생한 경우에는 무효가 됩니다.
※ 고객전용사이트(http://www.callab.co.kr)에서 성적서의 진위여부 확인이 가능합니다.
※ 성적서의 원본은 상단에 HCT홀로그램이 들어간 위변조 방지 용지에 인쇄되어 발급되며, 원본 복사시에는 복사본이라는 표시가 처리됩니다.

F-02P-02-008 (Rev.02)

HCT

교 정 성 적 서

CALIBRATION CERTIFICATE

경기도 이천시 마장면 서이천로 578번길 74
TEL : 031-645-6900, FAX : 031-645-6969

KOREA LABORATORY ACCREDITATION SCHEME KOLAS CALIBRATION NO. KC03101

성적서발급번호(Certificate No) : IC-2020-16950
교 정 번 호(Calibration No) : C-2020-020401

1. 의뢰자 (Client)
- 기관명 (Name) : 피씨테스트코리아 주식회사
- 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)

2. 측정기 (Calibration Subject) ◇ 등록번호 : 380381
- 기기명 (Description) : HARMONIC MIXER
- 제작회사 및 형식(Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z140
- 기기번호 (Serial Number) : 101135

3. 교정일자 (Date of Calibration) : 2020.03.13

4. 교정환경 (Environment)
- 온도(Temperature) : (22.4 ± 0.4)℃ 습도(Humidity) : (46 ± 4) % R.H.
- 교정장소 (Location) : 고정표준실(Permanent Calibration Lab)
(주소: 경기도 이천시 마장면 서이천로 578번길 74)

5. 측정표준의 소급성 (Traceability) ◇Field code : 40641(RF SPECTRUM ANALYZER)

교정방법 및 소급성 서술 (Calibration method and/or brief description)

상기 기기는 고주파 스펙트럼 분석기의 교정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.

교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2020/10/02	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	KEYSIGHT W8486A	MY56370005	2020/12/30	Keysight Technologies
WR-08 MULTIPLIER SOURCE MODULE	OML S08MS-A	164019-1	2020/09/09	(주)에이치시티

6. 교정결과 (Calibration result) : 교정결과 참조 (Refer to attachment)

7. 측정불확도 (Measurement uncertainty) : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, k = 2 (Confidence level about 95 %, k = 2)

확 인 (affirmation)	작성자 (Measurements performed by)	승인자 (Approved by)
	성명 (Name) 박 민 지	직위 (Title) 기술책임자(Technical Cal. Manager) (정) 성명 (Name) 이 승 찬

위 성적서는 국제시험기관인정협력체(International Laboratory Accreditation Cooperation) 상호인정협정(Mutual Recognition Arrangement)에 서명한 한국인정기구(KOLAS)로부터 공인 받은 분야의 교정결과입니다.

2020. 03. 16

한국인정기구 인정
Accredited by KOLAS, Republic of KOREA

㈜에이치시티 대표이사
President, HCT Co., Ltd.

㈜ 이 성적서는 측정기의 정밀정확도에 영향을 미치는 요소(과부하, 온도, 습도 등)의 급격한 변화가 발생한 경우에는 무효가 됩니다.
※ 고객전용사이트(http://www.callab.co.kr)에서 성적서의 진위여부 확인이 가능합니다.
※ 성적서의 원본은 상단에 HCT홀로그램이 들어간 워터존 방지 용지에 인쇄되어 발급되며, 원본 복사시에는 복사본이라는 표시가 처리됩니다.

F-02P-02-008 (Rev.02)

10.0 APPENDIX B

10.1 Introduction (KDB 484596 Section 3 a)

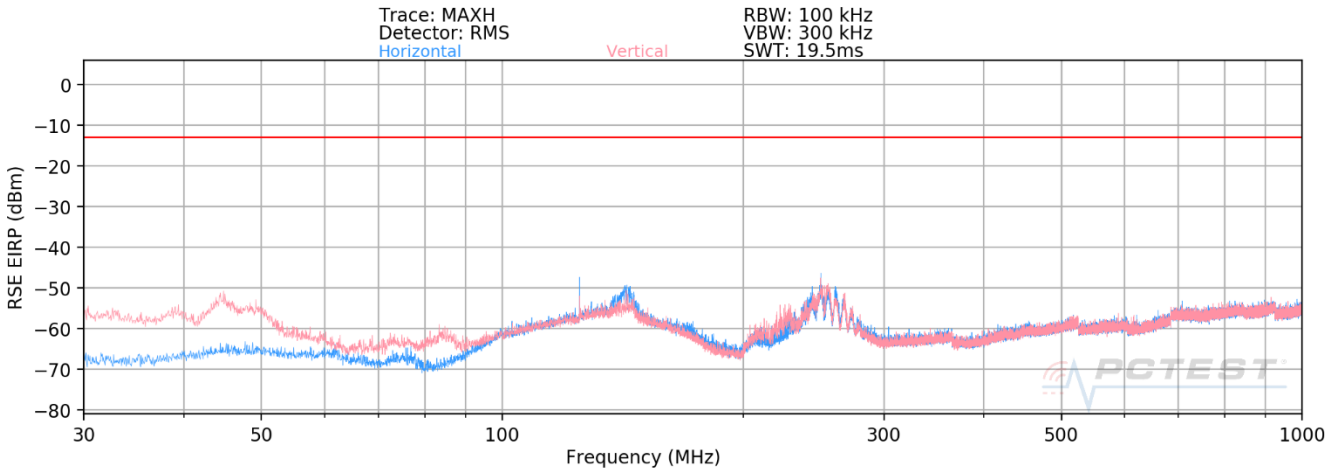
The applicant takes full responsibility that the test data as referenced FCC ID: A3LAT1K01-A00 represents compliance for FCC ID: A3LAT1K01-A10.

10.2 Explain the Differences (KDB 484596 Section 3 b)

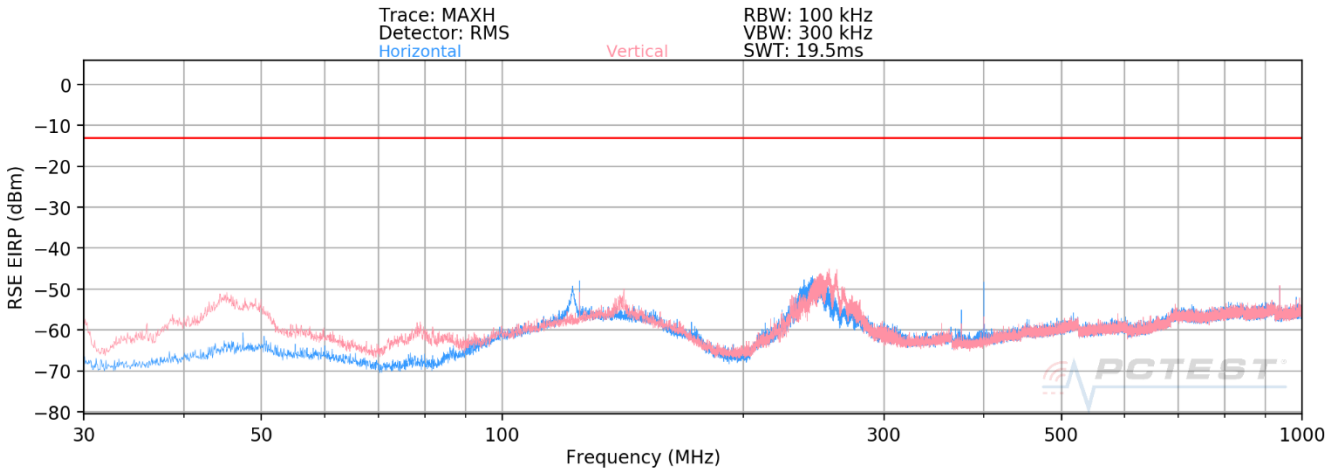
FCC ID A3LAT1K01-A00 is powered by AC voltage source. For A3LAT1K01-A10 is powered by DC voltage source which only different of power supply source condition is not affected to declared RF parameters because other components are identical except.

10.3 Spot Check Verification Data (KDB 484596 Section 3 c)

Spot check verification is adopted to below 1 GHz Radiated emission test case which only affect to emission changing due to power supply difference. However, there is no emission detected. Thus, FCC ID A3LAT1K01-A00 and FCC ID A3LAT1K01-A10 test result can be identical because both are using same RF components.



Plot 10-1. A3LAT1K01-A00 Radiated Spurious Plot 30 MHz-1 GHz (4CC NC QPSK Mid Ch. Ant. Pol. H)



Plot 10-2. A3LAT1K01-A10 Radiated Spurious Plot 30 MHz-1 GHz (4CC NC QPSK Ch. Ant. Pol. V)

10.4 Reference Section (KDB 484596 Section 3 d)

A matrix has been provided the source data for rule part, frequency range, and emission designator as required by KDB 484596:

Rule Part	Frequency Range(MHz)	Emission Designator	Source Data FCC ID	Exhibit Name(s)
30	27500 - 28350	46M5G7D 46M7W7D 95M6G7D 95M6W7D	A3LAT1K01-A00	06. FCC RF Test Report 07. MPE Test Report