Certificate #6613.01

FCC TEST REPORT

(PART 27)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland
Product:	Smart Phone
Brand Name:	NOKIA
Model Name:	TA-1584
FCC ID:	2AJOTTA-1584
Date of tests:	May. 04, 2023 ~ Jun. 01, 2023

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 27** ☒ **ANSI/TIA/EIA-603-D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Chao Wu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
Chao Wu Date: Jun. 01, 2023	Sun Peibo Date: Jun. 01, 2023

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSZ-NQN2303280110RF07	Original release	Jun. 01, 2023

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**TEST LAB***
§2.1046	Conducted Output Power	Compliance	A
§27.50(c)(10)	Effective Radiated Power (Band 12) (Band 71)	Compliance	A
§27.50(d)(4)	Equivalent Isotropically Radiated Power (WCMDA Band 4)	Compliance	A
§2.1055 §27.54	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§2.1051 §27.53(g) §27.53(h)	Conducted Band Edge Measurements (WCMDA Band 4) (Band 12) (Band 71)	Compliance	A
§2.1051 §27.53(g) §27.53(h)	Conducted Spurious Emissions (WCMDA Band 4) (Band 12) (Band 71)	Compliance	A
§2.1053 §27.53(g) §27.53(h)	Radiated Spurious Emissions (WCMDA Band 4) (Band 12) (Band 71)	Compliance	A
N/A	Peak to average ratio	Compliance	A

***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASREMENT 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
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	W12.14	N/A	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Oct.27,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Oct.27,23
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

NOTE: 1. The calibration interval of the above test instruments is 6 months or 24 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Smart Phone	
BRAND NAME	NOKIA	
MODEL NAME	TA-1584	
NOMINAL VOLTAGE	5.0Vdc(adapter) 3.85Vdc (Li-ion, battery)	
MODULATION TECHNOLOGY	**WCDMA IV**	HSDPA, HSUPA, DC-HSDPA
	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	**WCDMA IV**	1712.4MHz ~ 1752.6MHz
	LTE Band 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 71 Channel Bandwidth: 5MHz	665.5MHz ~ 695.5MHz
	LTE Band 71 Channel Bandwidth: 10MHz	668MHz ~ 693MHz
	LTE Band 71 Channel Bandwidth: 15MHz	670.5MHz ~ 690.5MHz
	LTE Band 71 Channel Bandwidth: 20MHz	673MHz ~ 688MHz
MAX. EIRP POWER	**WCDMA IV**	246.04mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	56.62mW
	LTE Band 12 Channel Bandwidth: 3MHz	56.89mW
	LTE Band 12 Channel Bandwidth: 5MHz	57.02mW
	LTE Band 12 Channel Bandwidth: 10MHz	57.68mW
	LTE Band 71 Channel Bandwidth: 5MHz	56.36mW
	LTE Band 71 Channel Bandwidth: 10MHz	56.75mW
	LTE Band 71 Channel Bandwidth: 15MHz	56.75mW
	LTE Band 71 Channel Bandwidth: 20MHz	57.28mW

EMISSION DESIGNATOR	**WCDMA IV**	4M15F9W
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M09W7D
		64QAM: 1M10W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 2M74G7D
		16QAM: 2M71W7D
		64QAM: 2M74W7D
	LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 4M50G7D
		16QAM: 4M50W7D
		64QAM: 4M52W7D
	LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 9M06G7D
		16QAM: 9M06W7D
		64QAM: 9M09W7D
	LTE Band 71 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M49W7D
		64QAM: 4M50W7D
	LTE Band 71 Channel Bandwidth: 10MHz	QPSK: 9M06G7D
		16QAM: 9M03W7D
		64QAM: 9M03W7D
	LTE Band 71 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	CLTE Band 71 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D

ANTENNA TYPE	Fixed Internal Antenna with -0.56dBi gain for WCDMA IV Fixed Internal Antenna with -5.5dBi gain for LTE12 Fixed Internal Antenna with -5.6dBi gain for LTE71
HW VERSION	V1.0
SW VERSION	04US_0_023
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: non-shielded cable, with w/o ferrite core, 1.0 meter
EXTREME TEMPERATURE	-20-60 ℃
EXTREME VOLTAGE	3.6V - 4.4V

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
WCDMA	1TX/1RX
LTE	1TX/1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

4. The product of TA-1584(FCC ID: 2AJOTTA-1584) only the following manufacturer of key parts is different between the first and second supply, other parameters are the same:

NO.	Change Description		specificatons	first supplier	specificatons	second supplier
1	PCBA	3GB LPDDR	3GB	Longsys	RAM;DDR4;3GB;4266Mbps;FBGA-200;10*15*0.9	Samsung
2		32GB EMMC	32GB	Longsys	32GB	Biwin
3		PCB	105X131.6MM	Huashen	105X131.6MM	SUNTAK
4	LCM	LCD	6.3"HKC incell，720X1560 FocalTech: FT8006S-AN，GG3	TCL	6.3" HKC incell，720X1560 Chipone: ICNL9911C	Icetron
5	Front camera	Camera	5M;FF	Holitech	5M;FF	TXD
6	Macro CAM	Camera	13M;PDAF;	Sunwin	13M;PDAF;	TXD
7		Camera	2M;FF	Imaging	2M;FF	Holitech

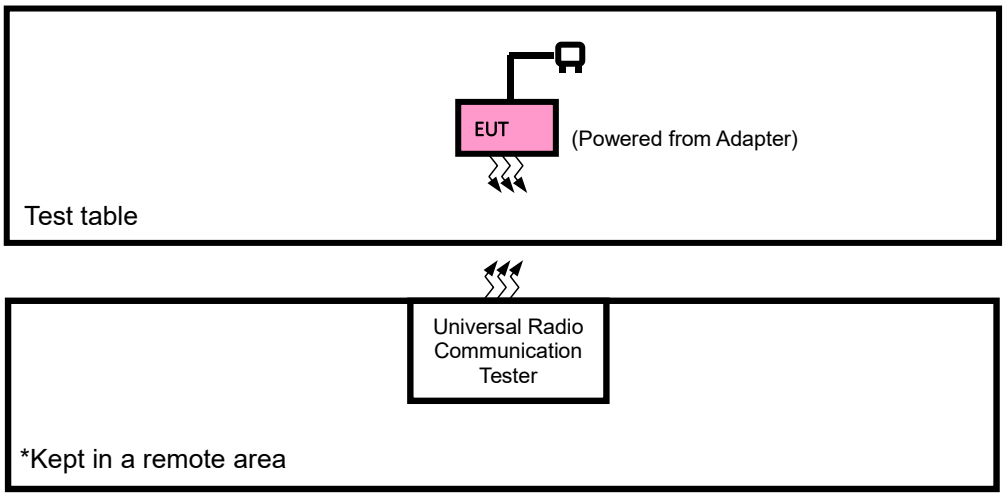
8	Acoustic	Vibrator	Φ8*3mm	ChaoYing	Φ8*3mm	HONGZHIFA
9		FPC	N/A	ZRXD	N/A	XINYE
10	LED		P2016F-W55WM0M2AB5C2-0002	RUNLITE	SJ-FT2016-DHZ 1N5257-01	SUIJING
11	Battery		3000mAh	Highpower	3000mAh	GAOYUAN
12	Glass		30.09X12.02X0.50 mm	Dottone	30.09X12.02X0.50mm	Lesu

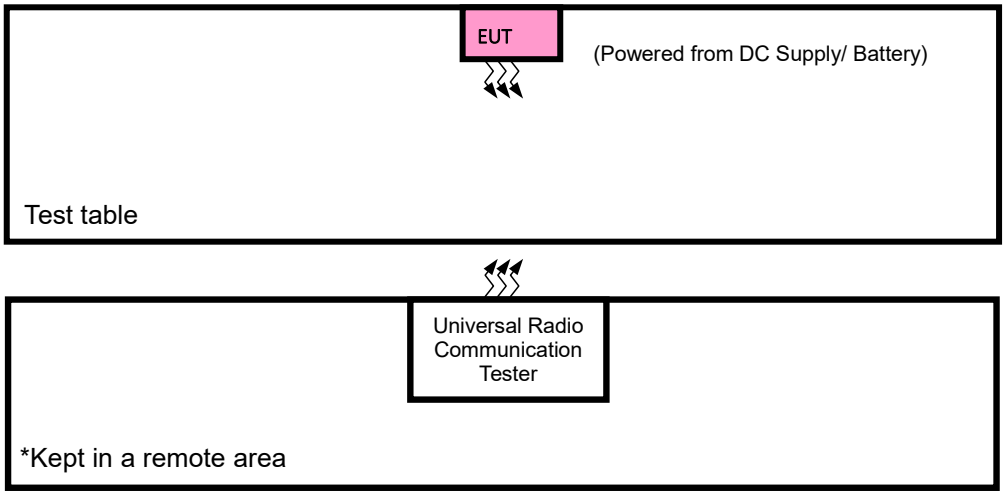
5. **List of Accessory:**

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	Highpower	Huizhou Highpower Technology Co., Ltd.	CH396078	Capacity：3.85 Vdc, 3000mAh
Battery 2	GaoYuan	HUNAN GAOYUAN BATTERY CO.,LTD	CH396078	Capacity：3.85 Vdc, 3000mAh
AC Adapter	Baijunda	Baijunda Group Co., Ltd	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
USB Cable	Saibao	Saibao (Jiangxi) Industrial Co., Ltd	SZN-A018A	Signal Line, 1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST





2.3 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC Source	HYELEC	HY3010B	551016	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

2.4 TEST ITEM AND TEST CONFIGURATION

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 The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with WCDMA or LTE link
B	EUT + DC Supply with WCDMA or LTE link

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
B	FREQUENCY STABILITY	1312 to 1513	1312, 1413, 1513	WCDMA
A	OCCUPIED BANDWIDTH	1312 to 1513	1312, 1413, 1513	WCDMA
A	BAND EDGE	1312 to 1513	1312, 1513	WCDMA
A	PEAK TO AVERAGE RATIO	1312 to 1513	1312, 1413, 1513	WCDMA
A	CONDCUDETED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA

LTE BAND 12 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23025 to 23165	23025	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		23035 to 23155	23035	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		23060 to 23130	23060	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDCUDETED EMISSION	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 ,23095, 23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 71

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	133147 to 133447	133147, 133247, 133447	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		133172 to 133422	133172, 133272 133422	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	133222 to 133372	133222, 133372	20MHz	QPSK	100 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	133147 to 133447	133147, 133247, 133447	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
		133172 to 133422	133172, 133272 133422	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK,16QAM,64QAM	75 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM,64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	133222 to 133372	133222, 133322, 133372	20MHz	QPSK, 16QAM,64QAM	1 RB / 99 RB Offsett 100 RB / 0 RB Offset
A	BAND EDGE	133147 to 133447	133147	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			133447	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		133172 to 133422	133172	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			133422	10MHz	QPSK,16QAM, 64QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		133197 to 133397	133197	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			133397	15MHz	QPSK,16QAM, 64QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		133222 to 133372	133222	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			133372	20MHz	QPSK,16QAM, 64QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDCUDETED EMISSION	133147 to 133447	133147, 133247, 133447	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		133172 to 133422	133172, 133272 133422	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	133147 to 133447	133147,133322, 133447	5MHz	QPSK	1 RB / 0 RB Offset
		133172 to 133422	133272	10MHz	QPSK	1 RB / 0 RB Offset
		133197 to 133397	133297	15MHz	QPSK	1 RB / 0 RB Offset
		133222 to 133372	133322	20MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5V By Adapter	Chao Wu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.85V By DC Supply	Chao Wu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC5V By Adapter	Chao Wu
BAND EDGE	23deg. C, 70%RH	DC 5V By Adapter	Chao Wu
CONDCUDETED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Chao Wu
RADIATED EMISSION	23deg. C, 70%RH	DC5V By Adapter	Chao Wu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC5V By Adapter	Chao Wu

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP

According to the specific rule Part 27.50(b)(10) and 27.50(c)(10) Fixed, mobile, and Portable stations (hand-held devices) transmitting in the 698-746 MHz, 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T – L_C$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

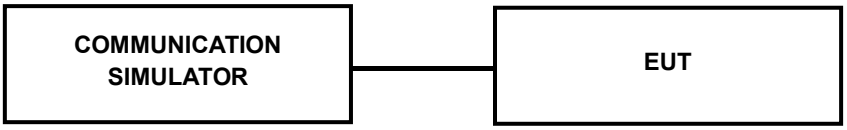
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

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

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



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

3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV		
TX Channel	1312	1413	1513
Rx Channel	4357	4407	4458
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	24.47	24.46	24.44
HSDPA Subtest-1	23.79	23.88	23.86
HSDPA Subtest-2	23.88	23.87	23.85
HSDPA Subtest-3	23.37	23.46	23.42
HSDPA Subtest-4	23.36	23.35	23.33
DC-HSDPA Subtest-1	23.81	23.82	23.78
DC-HSDPA Subtest-2	23.82	23.81	23.77
DC-HSDPA Subtest-3	23.34	23.30	23.33
DC-HSDPA Subtest-4	23.37	23.29	23.27
HSUPA Subtest-1	23.85	23.84	23.82
HSUPA Subtest-2	22.34	22.33	22.31
HSUPA Subtest-3	23.32	23.32	23.30
HSUPA Subtest-4	22.81	22.81	22.79
HSUPA Subtest-5	23.80	23.80	23.78

LTE Band 12

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017 Frequency 699.7 MHz	Mid CH 23095 Frequency 707.5 MHz	High CH 23173 Frequency 715.3 MHz
12/ 1.4	QPSK	1	0	25.18	24.97	25.14
		1	2	24.98	24.88	24.89
		1	5	25.03	24.91	24.92
		3	0	24.86	24.78	24.89
		3	1	24.75	24.79	24.79
		3	3	24.80	24.76	24.75
		6	0	23.85	23.78	23.77
	16QAM	1	0	24.13	24.01	24.11
		1	2	23.80	23.84	23.92
		1	5	24.01	23.86	23.97
		3	0	23.90	23.80	23.84
		3	1	23.73	23.82	23.83
		3	3	23.82	23.82	23.80
		6	0	22.69	22.83	22.88
	64QAM	1	0	23.09	22.96	23.37
		1	2	22.74	23.00	22.78
		1	5	23.02	23.09	23.18
		3	0	22.83	22.75	22.91
		3	1	22.73	22.81	22.90
		3	3	22.73	22.75	22.88
		6	0	21.76	21.67	21.82

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025 Frequency 700.5 MHz	Mid CH 23095 Frequency 707.5 MHz	High CH 23165 Frequency 714.5 MHz
12/ 3	QPSK	1	0	25.20	24.99	25.13
		1	7	24.94	24.89	24.89
		1	14	24.99	24.91	24.92
		8	0	23.85	23.81	23.89
		8	3	23.68	23.79	23.81
		8	7	23.77	23.83	23.79
		15	0	23.82	23.79	23.71
	16QAM	1	0	24.10	24.07	24.14
		1	7	23.77	23.87	23.90
		1	14	24.04	23.86	23.97
		8	0	22.86	22.81	22.84
		8	3	22.78	22.77	22.86
		8	7	22.84	22.80	22.76
		15	0	22.69	22.77	22.91
	64QAM	1	0	23.15	22.99	23.31
		1	7	22.77	22.94	22.77
		1	14	23.03	23.11	23.18
		8	0	21.86	21.79	21.92
		8	3	21.77	21.75	21.95
		8	7	21.70	21.79	21.84
		15	0	21.78	21.64	21.86

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035 Frequency 701.5 MHz	Mid CH 23095 Frequency 707.5 MHz	High CH 23155 Frequency 713.5 MHz
12/ 5	QPSK	1	0	25.21	24.94	25.14
		1	12	24.99	24.86	24.89
		1	24	25.00	24.90	24.96
		12	0	23.88	23.81	23.86
		12	6	23.68	23.80	23.82
		12	13	23.81	23.79	23.80
		25	0	23.80	23.82	23.74
	16QAM	1	0	24.11	24.03	24.14
		1	12	23.74	23.90	23.89
		1	24	24.04	23.86	23.96
		12	0	22.86	22.79	22.81
		12	6	22.75	22.81	22.82
		12	13	22.79	22.82	22.79
		25	0	22.69	22.78	22.88
	64QAM	1	0	23.09	22.96	23.37
		1	12	22.74	23.00	22.77
		1	24	22.96	23.16	23.18
		12	0	21.87	21.76	21.91
		12	6	21.71	21.82	21.94
		12	13	21.74	21.78	21.81
		25	0	21.74	21.70	21.84

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060 Frequency 704 MHz	Mid CH 23095 Frequency 707.5 MHz	High CH 23130 Frequency 711 MHz
12/ 10	QPSK	1	0	**25.26**	25.01	25.19
		1	24	25.01	24.94	24.91
		1	49	25.05	24.98	24.97
		25	0	23.92	23.86	23.91
		25	12	23.76	23.81	23.87
		25	25	23.85	23.84	23.81
		50	0	23.86	23.84	23.79
	16QAM	1	0	24.18	24.08	24.16
		1	24	23.82	23.92	23.94
		1	49	24.06	23.94	23.98
		25	0	22.94	22.85	22.89
		25	12	22.81	22.83	22.88
		25	25	22.86	22.87	22.81
		50	0	22.75	22.85	22.93
	64QAM	1	0	23.16	23.01	**23.39**
		1	24	22.82	23.02	22.83
		1	49	23.04	23.17	23.20
		25	0	21.91	21.81	21.99
		25	12	21.79	21.83	21.96
		25	25	21.78	21.83	21.89
		50	0	21.80	21.72	21.87

LTE Band 71

Band/BW	Modulation	RB Size	RB Offset	Low CH 133147 Frequency 665.5MHz	Mid CH 133247 Frequency 675.5MHz	High CH 133447 Frequency 695.5MHz
71/ 5	QPSK	1	0	25.22	25.26	25.11
		1	12	24.76	24.73	24.79
		1	24	24.74	24.74	24.78
		12	0	23.93	23.93	23.90
		12	6	23.77	23.88	23.79
		12	13	23.75	23.76	23.71
		25	0	23.79	23.87	23.82
	16QAM	1	0	24.45	24.37	24.21
		1	12	23.88	23.97	24.02
		1	24	24.09	23.94	24.04
		12	0	22.96	23.00	22.81
		12	6	22.86	22.80	22.80
		12	13	22.78	22.76	22.73
		25	0	22.89	22.81	22.86
	64QAM	1	0	23.36	23.32	23.15
		1	12	22.82	22.99	22.62
		1	24	22.94	23.10	22.75
		12	0	21.98	21.88	21.77
		12	6	21.82	21.83	21.75
		12	13	21.71	21.71	21.68
		25	0	21.88	21.85	21.90

Band/BW	Modulation	RB Size	RB Offset	Low CH 133172 Frequency 668MHz	Mid CH 133272 Frequency 678MHz	High CH 133172 Frequency 693MHz
71/ 10	QPSK	1	0	25.19	25.29	25.11
		1	24	24.76	24.73	24.80
		1	49	24.71	24.78	24.74
		25	0	23.94	23.92	23.93
		25	12	23.83	23.82	23.79
		25	25	23.73	23.73	23.70
		50	0	23.84	23.87	23.79
	16QAM	1	0	24.45	24.34	24.17
		1	24	23.93	23.93	24.05
		1	49	24.09	23.95	24.01
		25	0	22.98	22.98	22.87
		25	12	22.90	22.74	22.85
		25	25	22.77	22.77	22.70
		50	0	22.93	22.80	22.90
	64QAM	1	0	23.35	23.33	23.12
		1	24	22.87	22.95	22.66
		1	49	23.00	23.04	22.72
		25	0	21.96	21.85	21.83
		25	12	21.89	21.82	21.69
		25	25	21.70	21.68	21.70
		50	0	21.93	21.81	21.91

Band/BW	Modulation	RB Size	RB Offset	Low CH 133197 Frequency 670.5MHz	Mid CH 133297 Frequency 680.5MHz	High CH 133397 Frequency 690.5MHz
71/ 15	QPSK	1	0	25.26	25.29	25.08
		1	37	24.74	24.78	24.75
		1	74	24.77	24.81	24.75
		36	0	23.91	23.93	23.94
		36	19	23.84	23.87	23.79
		36	39	23.71	23.74	23.70
		75	0	23.84	23.85	23.84
	16QAM	1	0	24.49	24.41	24.17
		1	37	23.92	23.94	24.05
		1	74	24.05	24.00	24.03
		36	0	23.02	22.98	22.88
		36	19	22.84	22.78	22.81
		36	39	22.82	22.75	22.73
		75	0	22.94	22.83	22.83
	64QAM	1	0	23.37	23.34	23.13
		1	37	22.88	22.94	22.63
		1	74	22.96	23.03	22.75
		36	0	22.01	21.91	21.77
		36	19	21.83	21.76	21.71
		36	39	21.73	21.75	21.72
		75	0	21.92	21.79	21.92

Band/BW	Modulation	RB Size	RB Offset	Low CH 133222 Frequency 673MHz	Mid CH 133322 Frequency 683MHz	High CH 133372 Frequency 688MHz
71/ 20	QPSK	1	0	25.27	**25.33**	25.16
		1	50	24.78	24.81	24.81
		1	99	24.79	24.82	24.79
		50	0	23.97	23.98	23.95
		50	25	23.85	23.89	23.84
		50	50	23.79	23.81	23.72
		100	0	23.85	23.89	23.87
	16QAM	1	0	24.52	24.42	24.23
		1	50	23.96	23.99	24.07
		1	99	24.11	24.02	24.06
		50	0	23.04	23.06	22.89
		50	25	22.92	22.82	22.86
		50	50	22.85	22.81	22.75
		100	0	22.95	22.88	22.91
	64QAM	1	0	23.43	23.37	23.17
		1	50	22.90	23.01	22.68
		1	99	23.02	23.11	22.77
		50	0	22.02	21.93	21.85
		50	25	21.90	21.84	21.77
		50	50	21.75	21.76	21.76
		100	0	21.94	21.87	21.93

EIRP

WCDMA IV

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	24.47	-0.56	23.91	246.04	1
1413	1732.6	24.46	-0.56	23.9	245.47	1
1513	1752.6	24.44	-0.56	23.88	244.34	1

LTE BAND 12
CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	25.18	-5.5	17.53	56.62	3
23095	707.5	24.97	-5.5	17.32	53.95	3
23173	715.3	25.14	-5.5	17.49	56.1	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	24.13	-5.5	16.48	44.46	3
23095	707.5	24.01	-5.5	16.36	43.25	3
23173	715.3	24.11	-5.5	16.46	44.26	3

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	23.09	-5.5	15.44	34.99	3
23095	707.5	23.09	-5.5	15.44	34.99	3
23173	715.3	23.37	-5.5	15.72	37.33	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	25.2	-5.5	17.55	56.89	3
23095	707.5	24.99	-5.5	17.34	54.2	3
23165	714.5	25.13	-5.5	17.48	55.98	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	24.1	-5.5	16.45	44.16	3
23095	707.5	24.07	-5.5	16.42	43.85	3
23165	714.5	24.14	-5.5	16.49	44.57	3

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	23.15	-5.5	15.5	35.48	3
23095	707.5	23.11	-5.5	15.46	35.16	3
23165	714.5	23.31	-5.5	15.66	36.81	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	25.21	-5.5	17.56	57.02	3
23095	707.5	24.94	-5.5	17.29	53.58	3
23155	713.5	25.14	-5.5	17.49	56.1	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	24.11	-5.5	16.46	44.26	3
23095	707.5	24.03	-5.5	16.38	43.45	3
23155	713.5	24.14	-5.5	16.49	44.57	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	23.09	-5.5	15.44	34.99	3
23095	707.5	23.16	-5.5	15.51	35.56	3
23155	713.5	23.37	-5.5	15.72	37.33	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	25.26	-5.5	17.61	57.68	3
23095	707.5	25.01	-5.5	17.36	54.45	3
23130	711	25.19	-5.5	17.54	56.75	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	24.18	-5.5	16.53	44.98	3
23095	707.5	24.08	-5.5	16.43	43.95	3
23130	711	24.16	-5.5	16.51	44.77	3

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	23.16	-5.5	15.51	35.56	3
23095	707.5	23.17	-5.5	15.52	35.65	3
23130	711	23.39	-5.5	15.74	37.5	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 71

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	25.22	-5.6	17.47	25.22	3
133247	675.5	25.26	-5.6	17.51	25.26	3
133447	695.5	25.11	-5.6	17.36	25.11	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	24.45	-5.6	16.7	46.77	3
133247	675.5	24.37	-5.6	16.62	45.92	3
133447	695.5	24.21	-5.6	16.46	44.26	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133147	665.5	23.36	-5.6	15.61	36.39	3
133247	675.5	23.32	-5.6	15.57	36.06	3
133447	695.5	23.15	-5.6	15.4	34.67	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133172	25.19	-5.6	17.44	55.46	25.19	3
133272	25.29	-5.6	17.54	56.75	25.29	3
133422	25.11	-5.6	17.36	54.45	25.11	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133172	668	24.45	-5.6	16.7	46.77	3
133272	678	24.34	-5.6	16.59	45.6	3
133422	693	24.17	-5.6	16.42	43.85	3

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133172	668	23.35	-5.6	15.6	36.31	3
133272	678	23.33	-5.6	15.58	36.14	3
133422	693	23.12	-5.6	15.37	34.43	3

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	25.26	-5.6	17.51	56.36	3
133297	680.5	25.29	-5.6	17.54	56.75	3
133397	690.5	25.08	-5.6	17.33	54.08	3

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	24.49	-5.6	16.74	47.21	3
133297	680.5	24.41	-5.6	16.66	46.34	3
133397	690.5	24.17	-5.6	16.42	43.85	3

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133197	670.5	23.37	-5.6	15.62	36.48	3
133297	680.5	23.34	-5.6	15.59	36.22	3
133397	690.5	23.13	-5.6	15.38	34.51	3

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	25.27	-5.6	17.52	56.49	3
133322	683	25.33	-5.6	17.58	57.28	3
133372	688	25.16	-5.6	17.41	55.08	3

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	24.52	-5.6	16.77	47.53	3
133322	683	24.42	-5.6	16.67	46.45	3
133372	688	24.23	-5.6	16.48	44.46	3

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
133222	673	23.43	-5.6	15.68	36.98	3
133322	683	23.37	-5.6	15.62	36.48	3
133372	688	23.17	-5.6	15.42	34.83	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

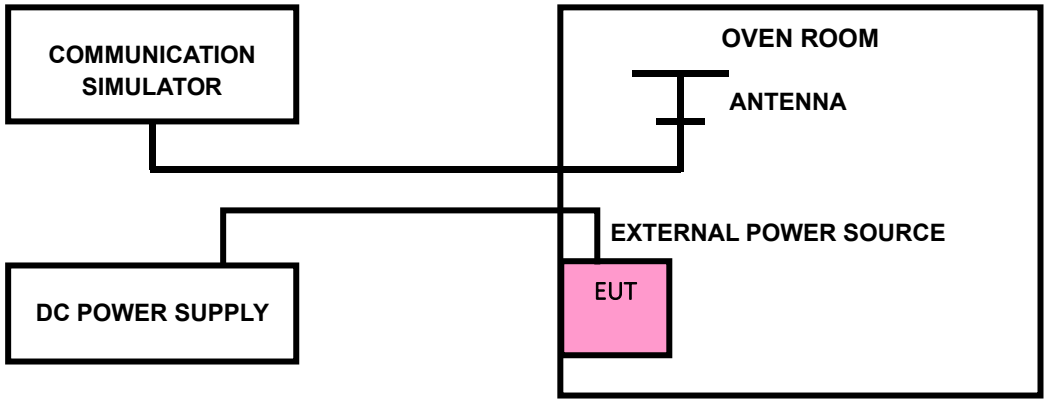
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

a. 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.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ 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.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

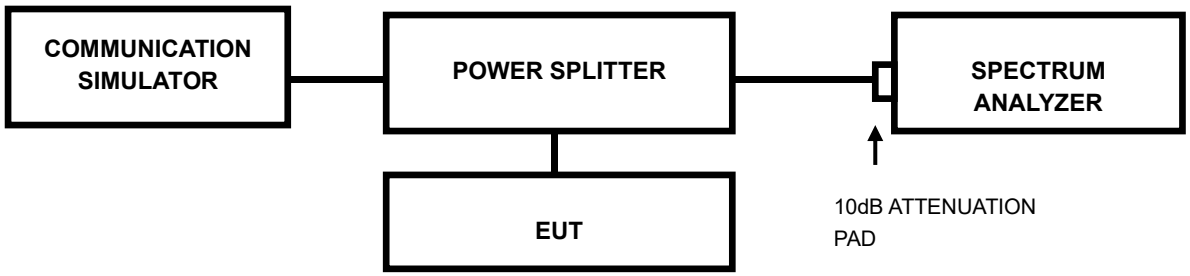
Note: VL = Low voltage(3.6V); VN/NV = Normal voltage(3.85V); VH = High voltage(4.4V);
NT = Normal temperature (25℃)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(c) specified that For operations in the 746-758 MHz band and the 776-788 MHz band , the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.In addition, the power of any unwanted emission in an 6.25kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power,P(dBW),by at least 65 +10log10p(P),dB,for mobile and portable equipment.

According to FCC 27.53(g) specified that For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

According to FCC 27.53(h) specified that For operations in the 1710-1755 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(m)(4) specified that For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

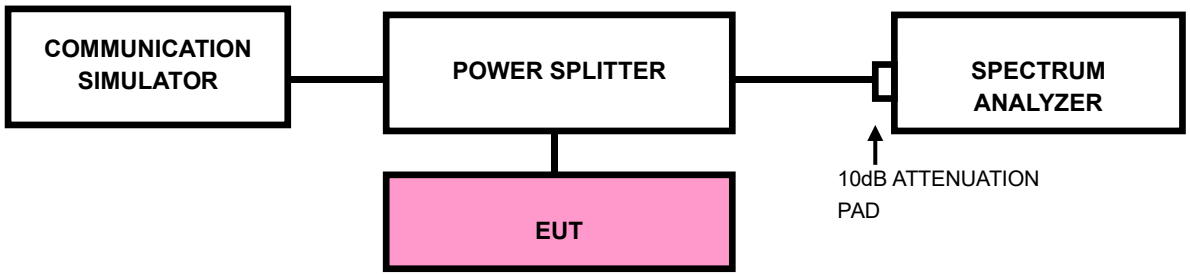
According to FCC 27.53(a)(4) specified that For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

a) All measurements were done at low and high operational frequency range

b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.

c) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW)

d) .Set the resolution bandwidth (RBW) ≧ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.

f) Set the video bandwidth (VBW) to ≧3 x RBW.

g) Select the average power (RMS) display detector.

h) Set the number of measurement points to ≧ 1001.

i) Use auto-coupled sweep time.

j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.

k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.

l) Record the max trace plot into the test report.

3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

For: LTE Band7

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

For: LTE Band30

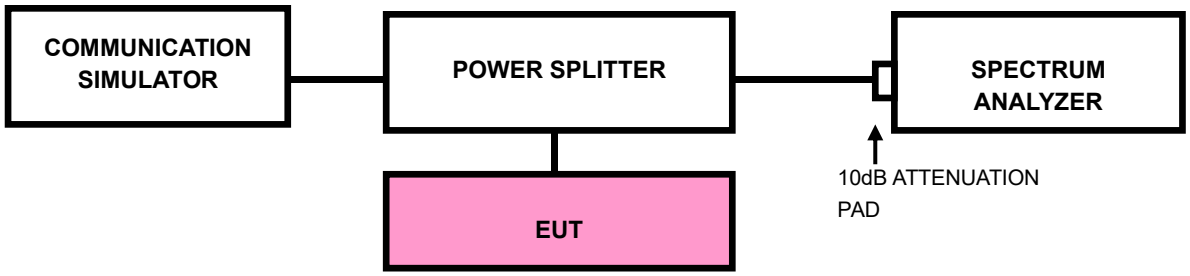
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 70 +10 log10(P) dB. The limit of emission is equal to -40dBm.

3.5.2 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 9kHz 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.

3.5.3 TEST SETUP



3.5.4 TEST RESULTS

NOTE：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix Of this test report.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

For: LTE Band7/ Band41

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

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3.6.2 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

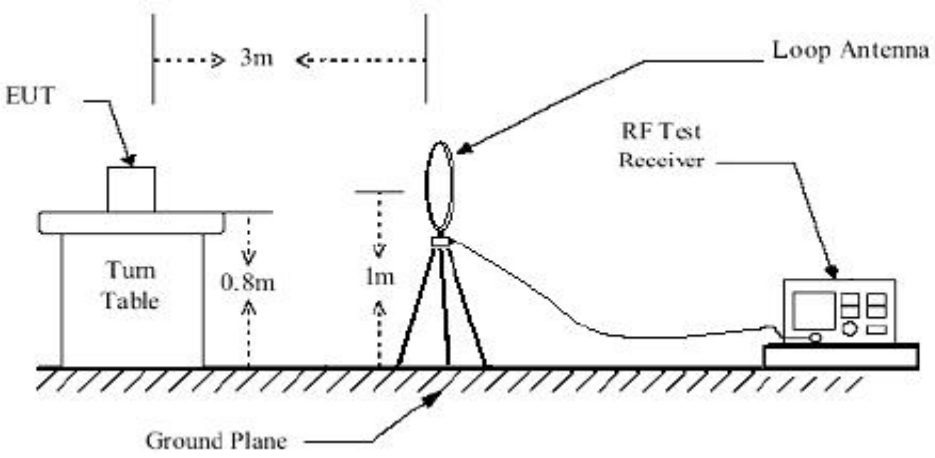
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

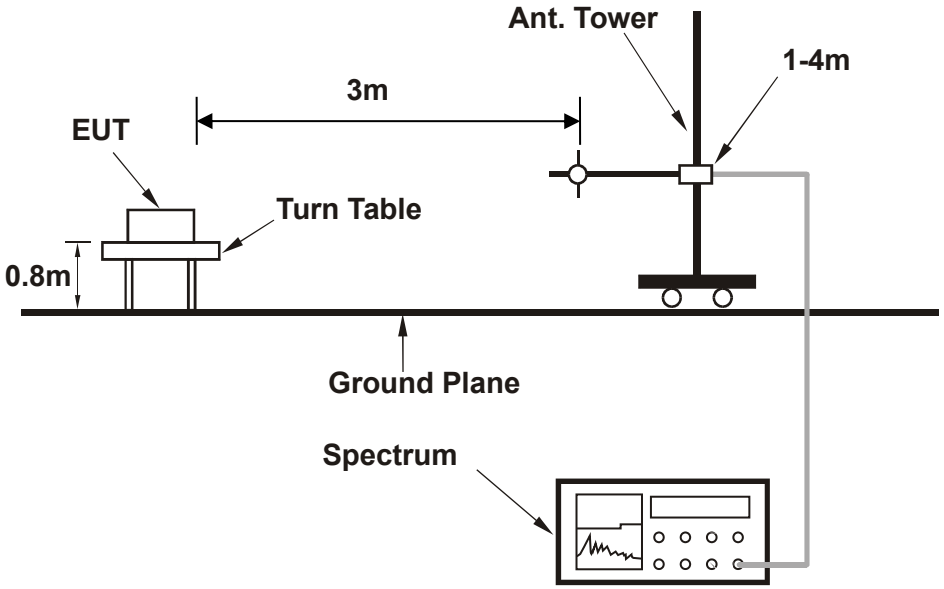
No deviation

3.6.4 TEST SETUP

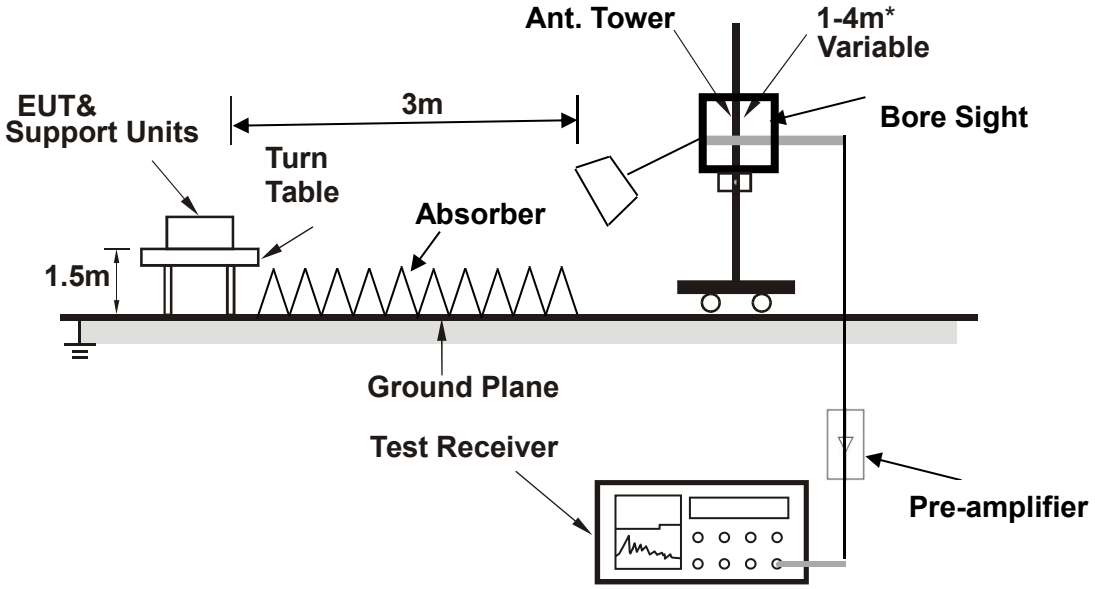
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



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).

3.6.5 TEST RESULTS

NOTE： The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

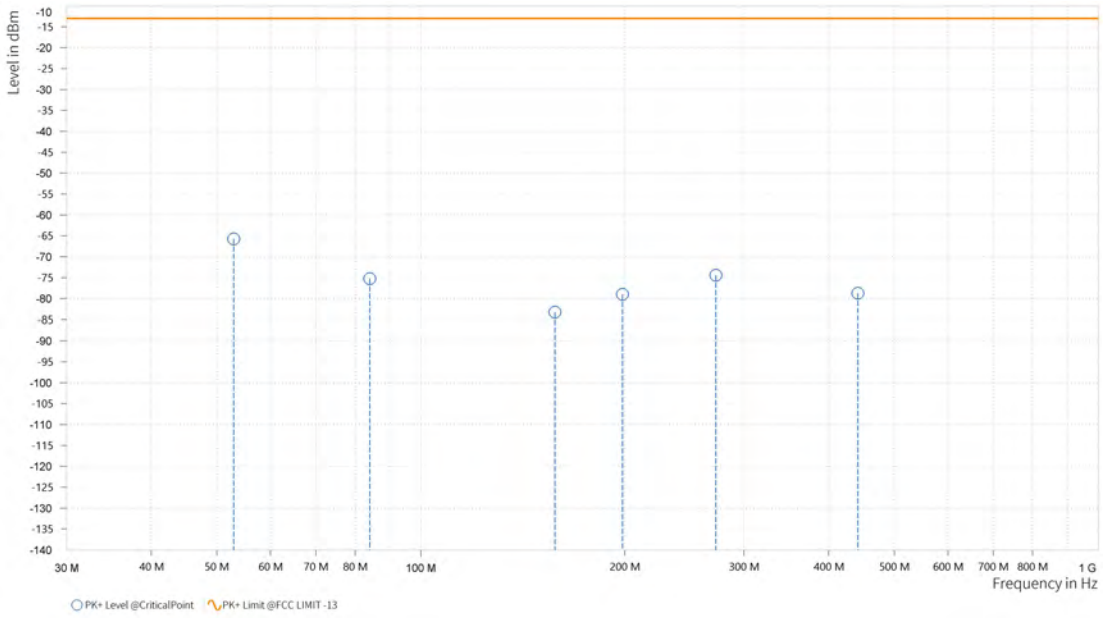
BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

LTE Band 12
CHANNEL BANDWIDTH: 3MHz / QPSK

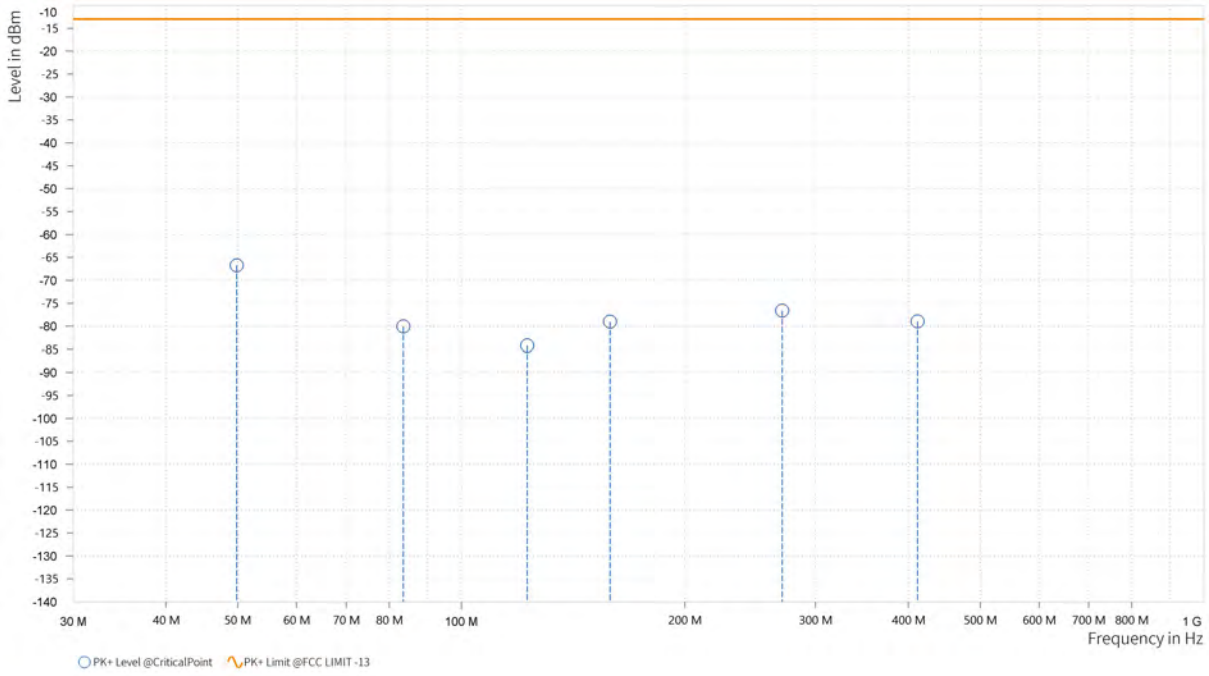
MODE	TX channel 23095	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	52.950	-65.76	-13.00	52.76	-5.39	H	1	2
1	84.050	-75.23	-13.00	62.23	-12.88	H	113	2
1	157.750	-83.27	-13.00	70.27	-13.89	H	113	2
1	198.400	-79.01	-13.00	66.01	-9.53	H	1	2
1	272.500	-74.42	-13.00	61.42	-6.69	H	113	2
1	441.550	-78.72	-13.00	65.72	-0.62	H	305.5	1



MODE	TX channel 23095	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	49.850	-66.71	-13.00	53.71	-6.07	V	253	1
1	83.550	-80.07	-13.00	67.07	-11.67	V	1.9	2
1	122.650	-84.21	-13.00	71.21	-9.54	V	1.9	2
1	158.650	-79.00	-13.00	66.00	-11.15	V	356.1	2
1	270.400	-76.60	-13.00	63.60	-6.17	V	6.6	1
1	411.550	-78.95	-13.00	65.95	-3.89	V	1	1



ABOVE 1GHz

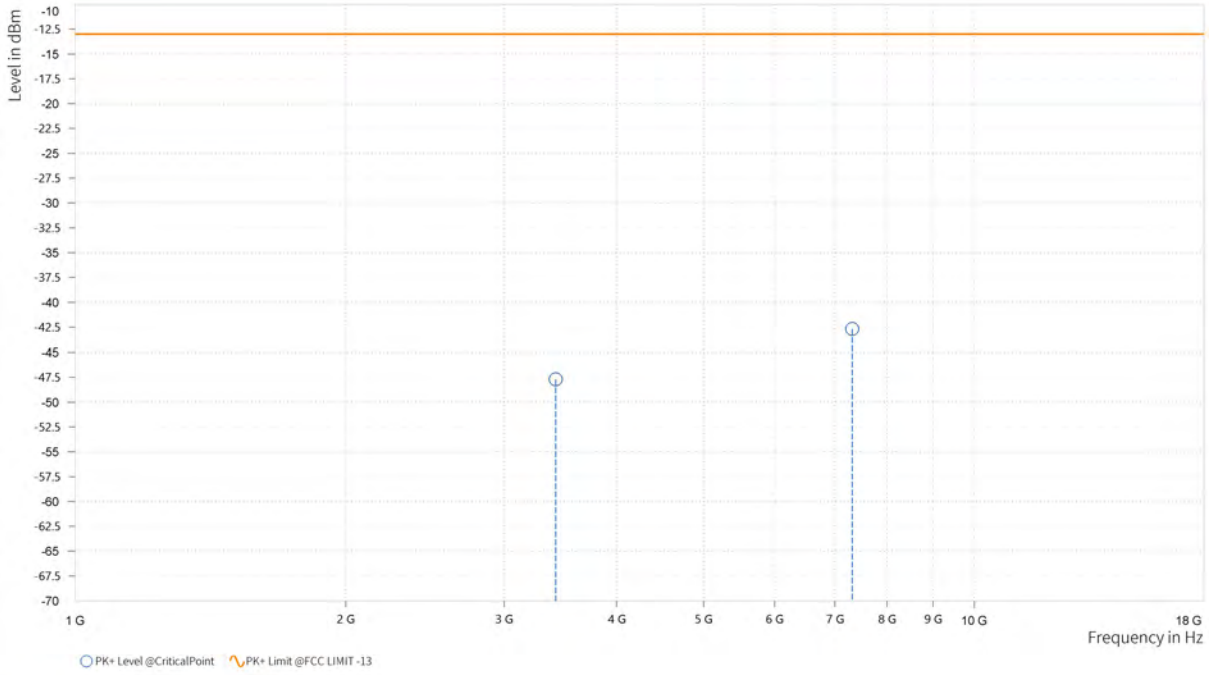
Note: For higher frequency, the emission is too low to be detected.

WCDMA Band IV:

CH 1312

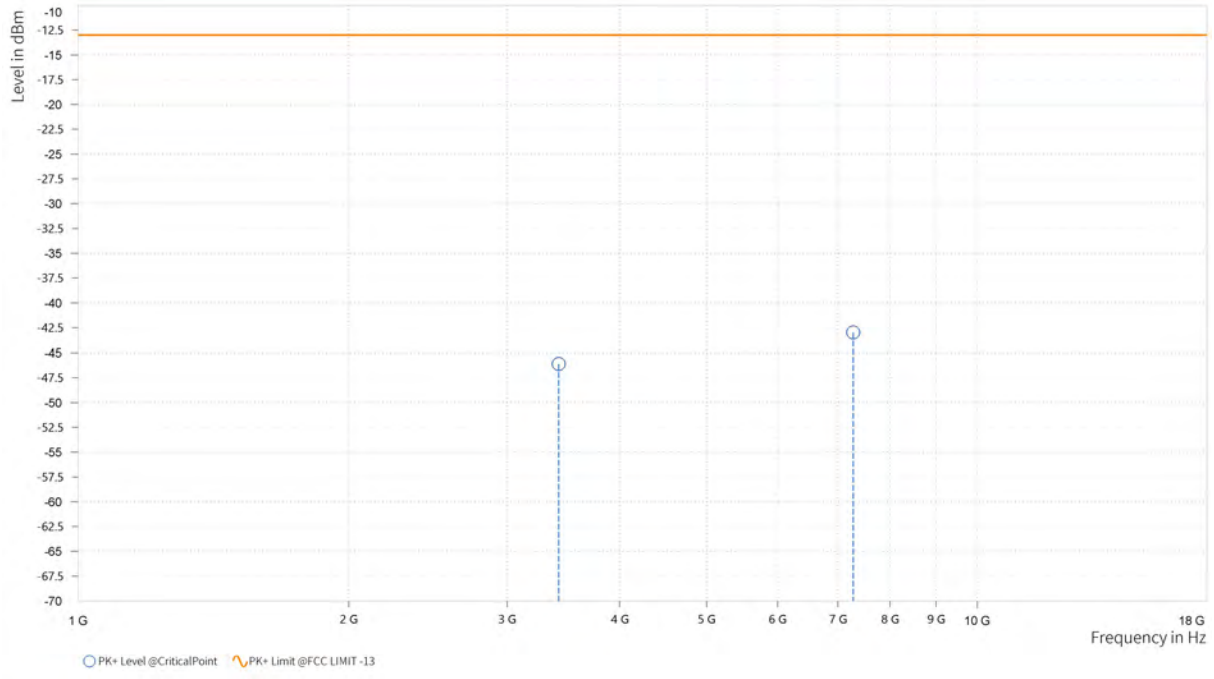
MODE	TX channel 1312	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,425.000	-47.69	-13.00	34.69	24.44	H	196.9	1
5	7,315.621	-42.67	-13.00	29.67	29.50	H	359	2



MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

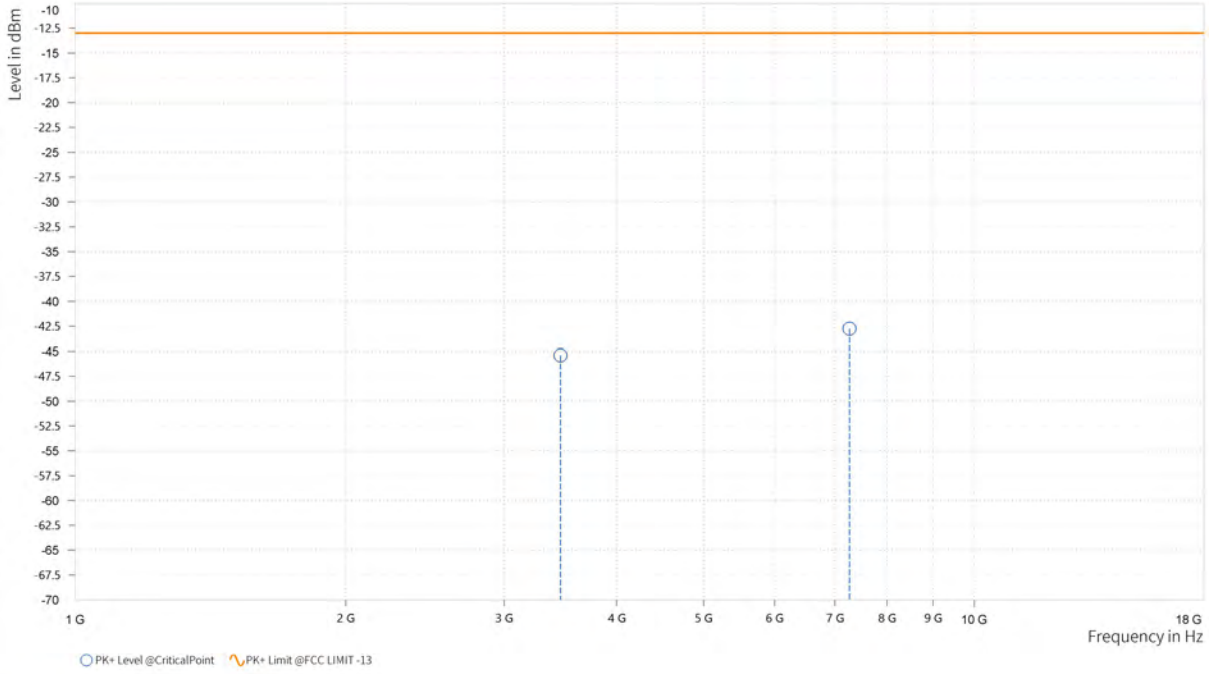
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,424.000	-46.10	-13.00	33.10	25.02	V	0.9	2
5	7,277.242	-42.99	-13.00	29.99	29.76	V	359	2



CH 1413

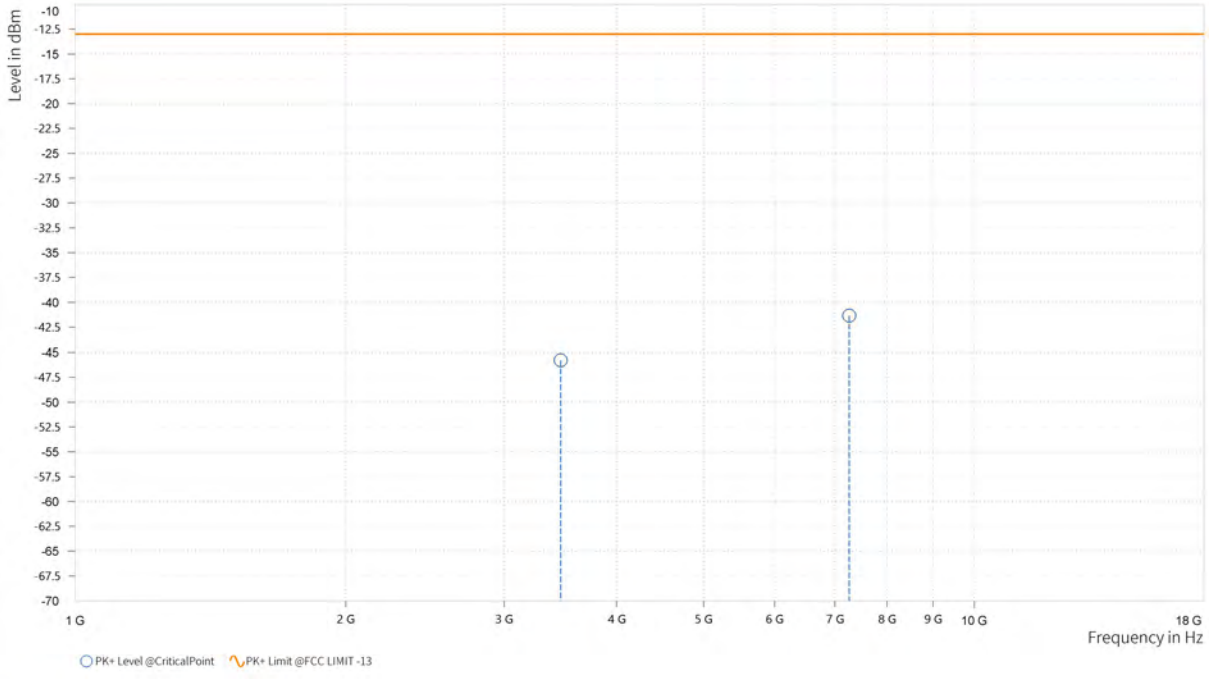
MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,466.000	-45.40	-13.00	32.40	23.84	H	198	1
5	7,264.621	-42.75	-13.00	29.75	29.94	H	282.9	1



MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

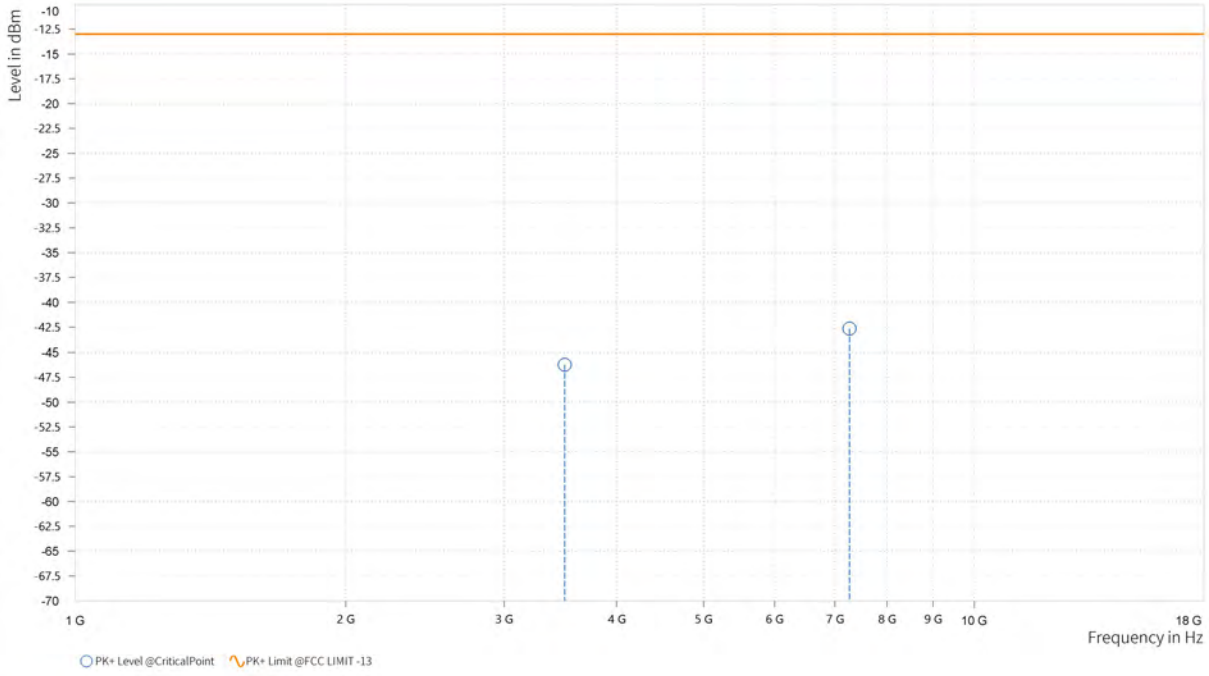
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,467.500	-45.79	-13.00	32.79	24.41	V	187.3	1
5	7,261.273	-41.35	-13.00	28.35	29.89	V	359	2



CH 1513

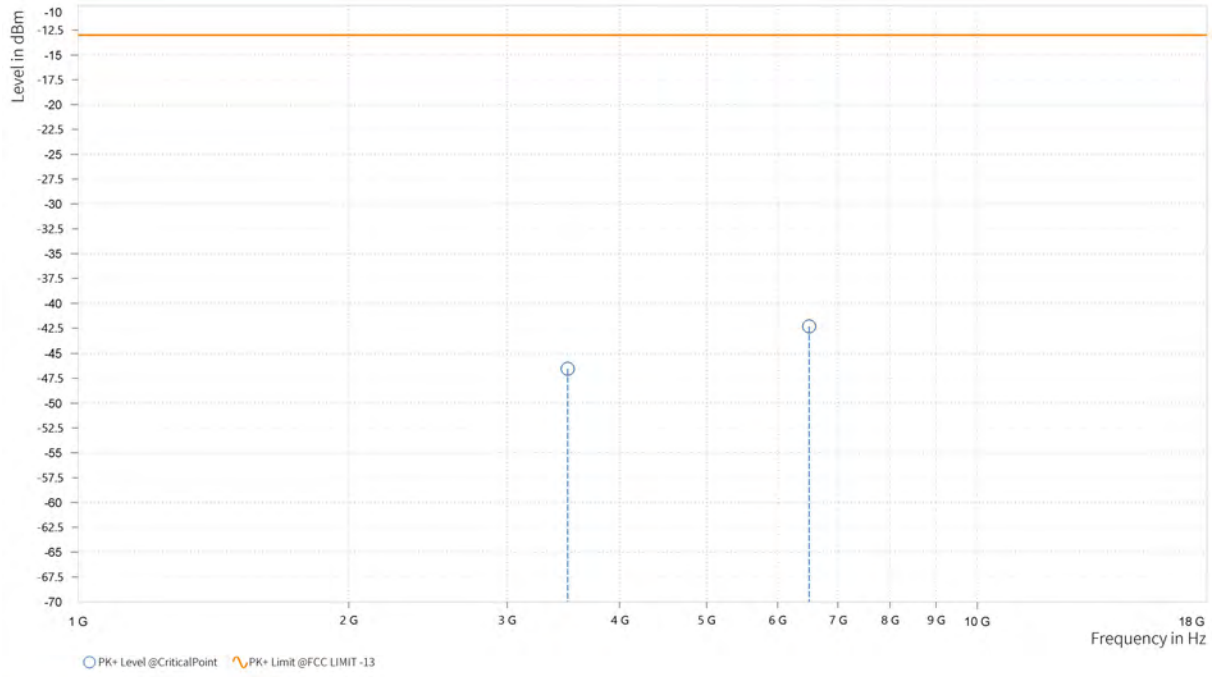
MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,504.500	-46.23	-13.00	33.23	25.09	H	196.8	1
5	7,264.364	-42.66	-13.00	29.66	29.94	H	75.9	2



MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,503.000	-46.53	-13.00	33.53	25.75	V	359	2
5	6,503.742	-42.34	-13.00	29.34	28.83	V	359	2

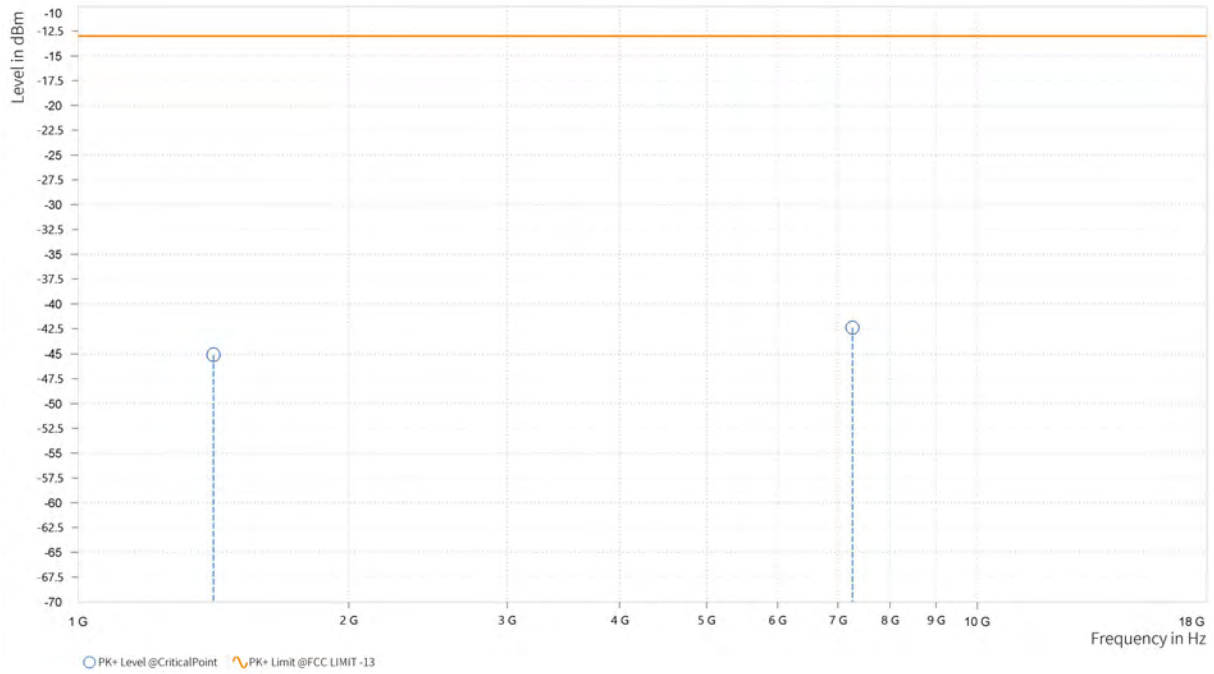


LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

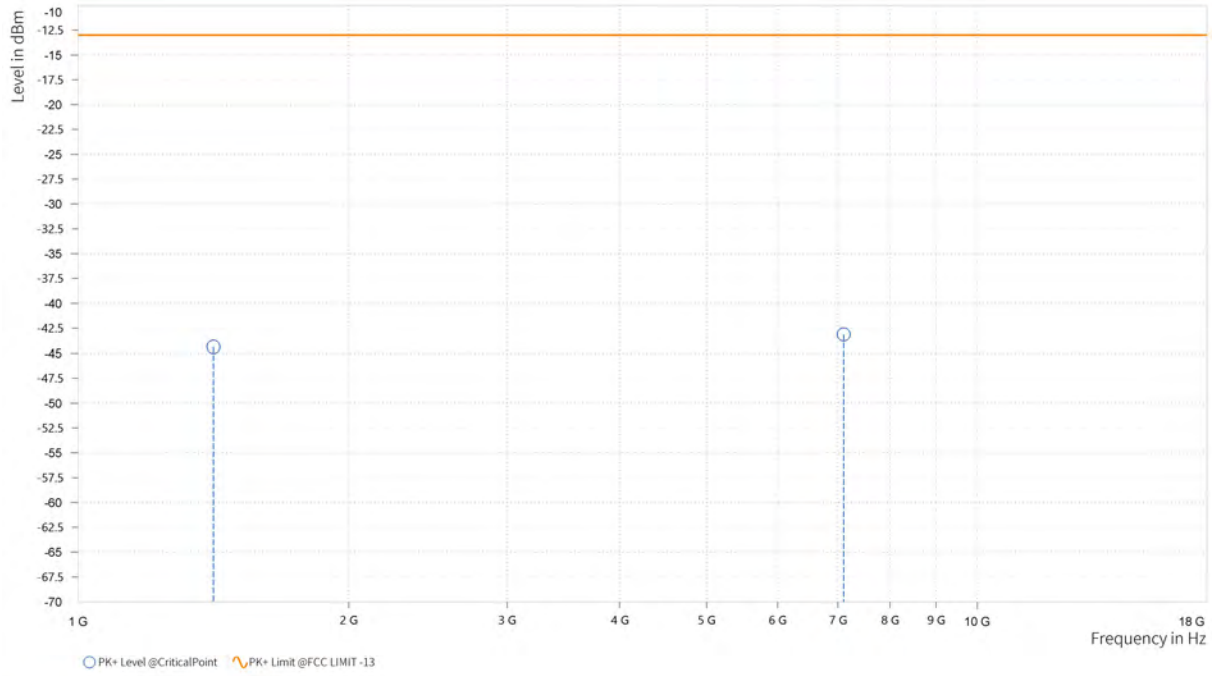
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,414.000	-45.09	-13.00	32.09	21.71	H	297	2
5	7,266.939	-42.40	-13.00	29.40	29.92	H	93.8	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,414.000	-44.36	-13.00	31.36	21.87	V	61.8	1
5	7,101.833	-43.13	-13.00	30.13	29.07	V	1	1

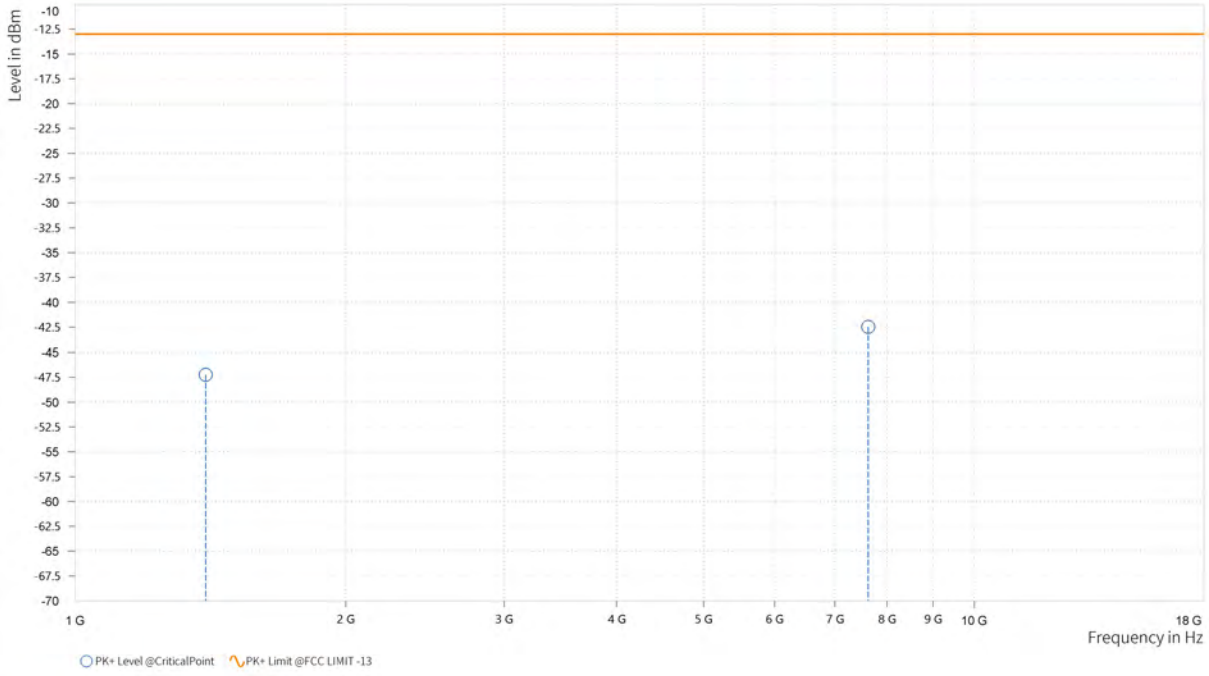


CHANNEL BANDWIDTH: 3MHz / QPSK

CH 23025

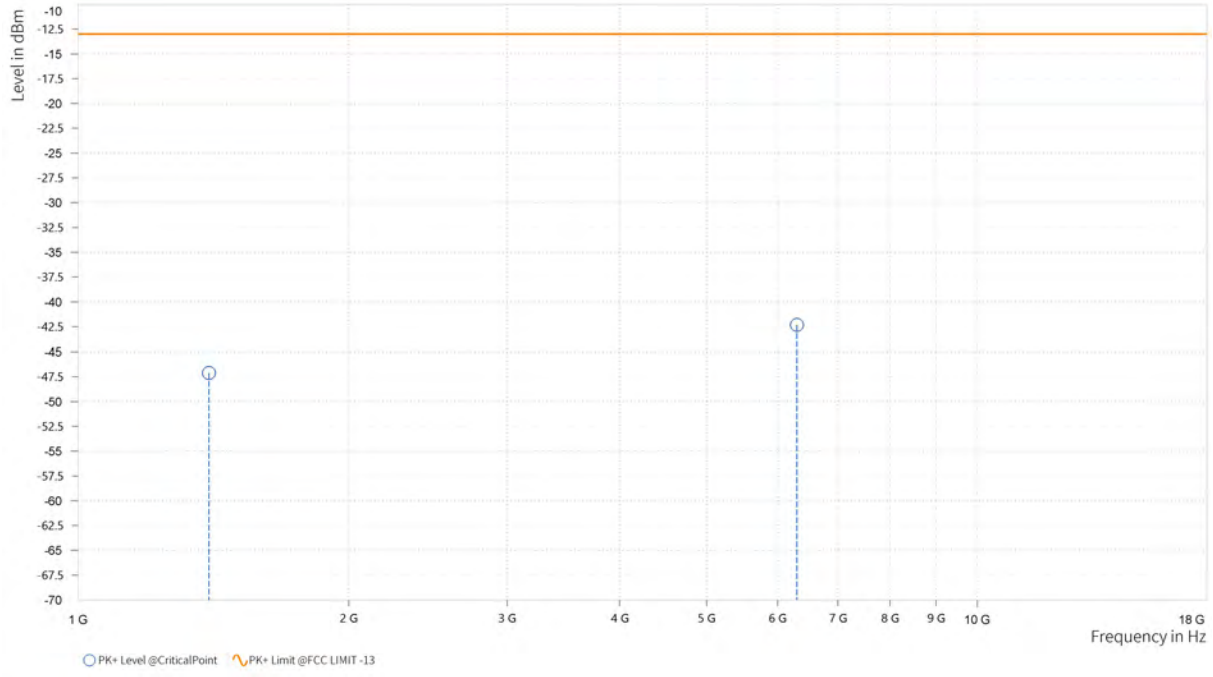
MODE	TX channel 23025	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,397.000	-47.23	-13.00	34.23	22.84	H	63	1
5	7,624.197	-42.47	-13.00	29.47	29.74	H	1	2



MODE	TX channel 23025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

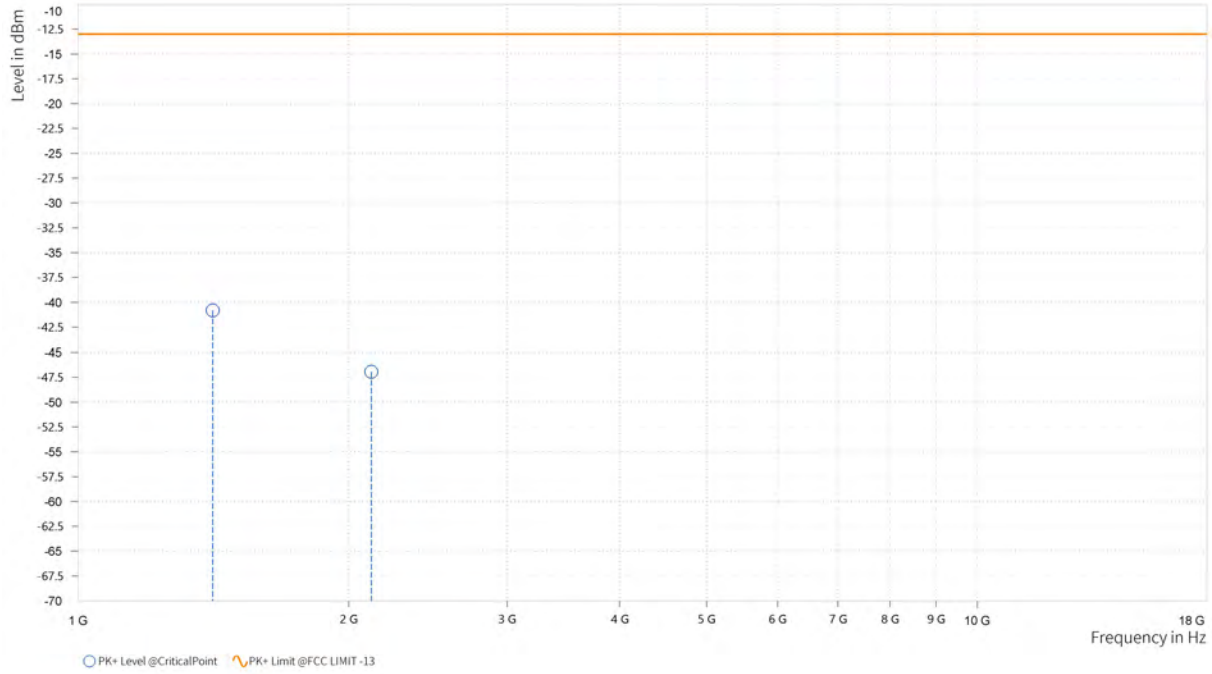
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,398.500	-47.10	-13.00	34.10	23.48	V	1	1
5	6,303.606	-42.32	-13.00	29.32	29.48	V	274.5	2



CH 23095

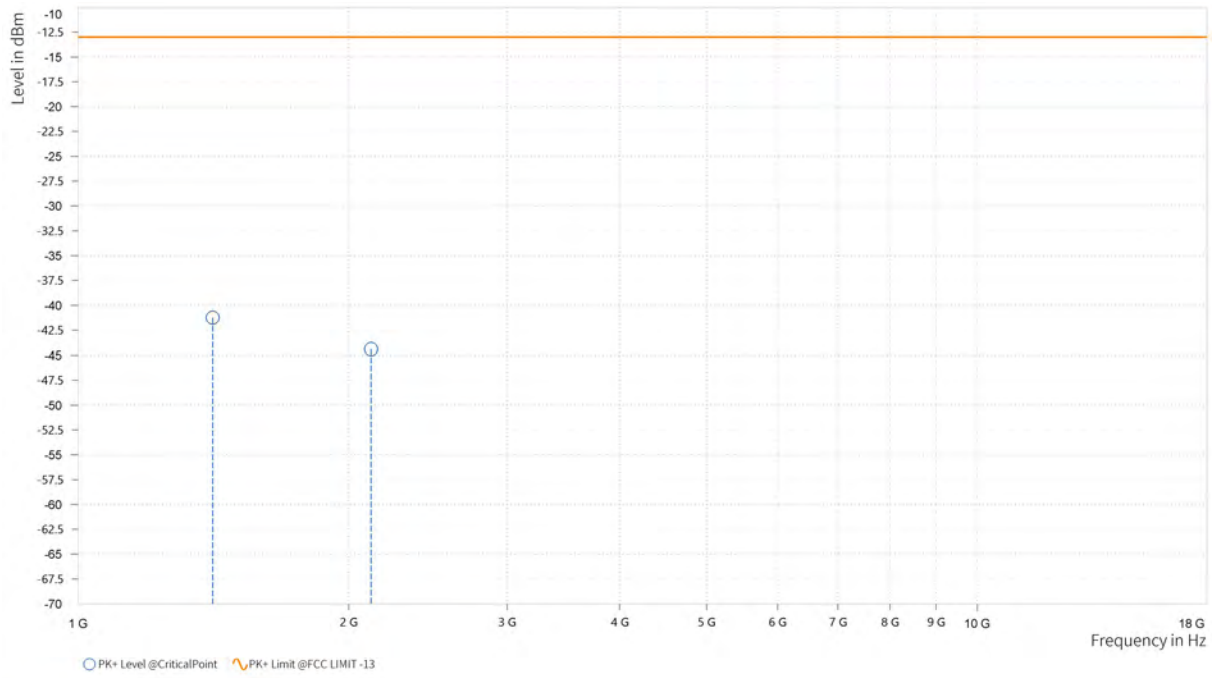
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,412.000	-40.81	-13.00	27.81	21.86	H	359	1
2	2,119.000	-46.95	-13.00	33.95	24.23	H	359	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

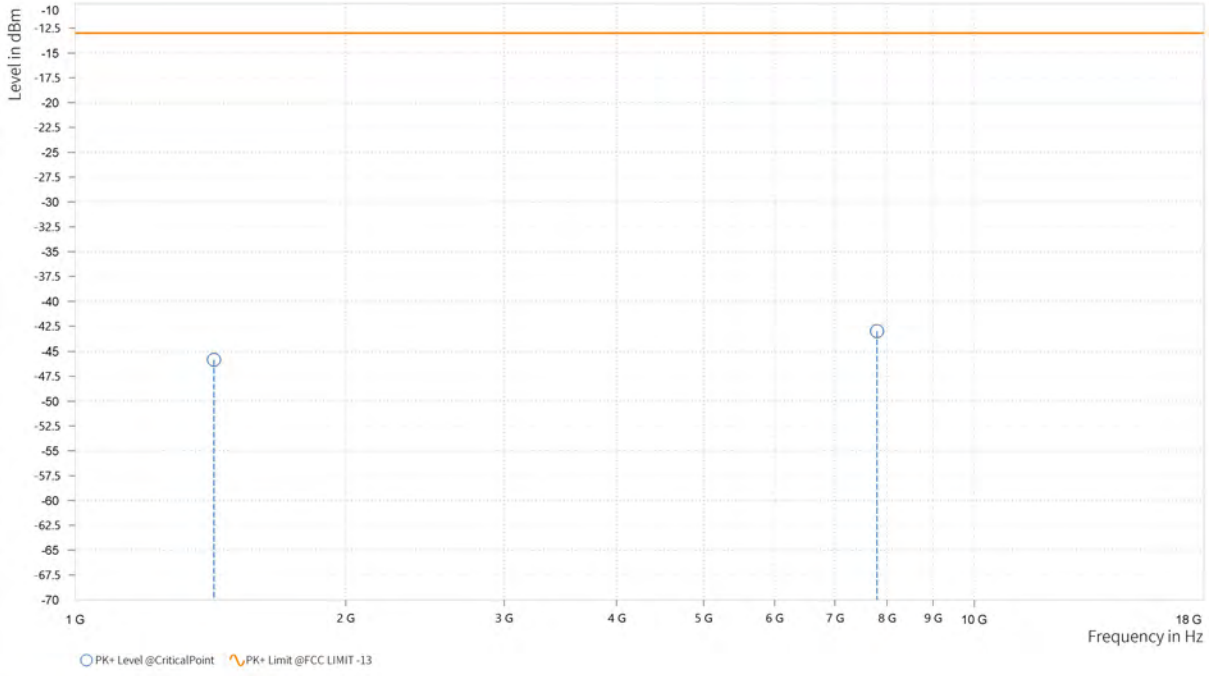
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,412.000	-41.24	-13.00	28.24	22.11	V	72.5	1
2	2,117.500	-44.39	-13.00	31.39	24.92	V	1	1



CH 23165

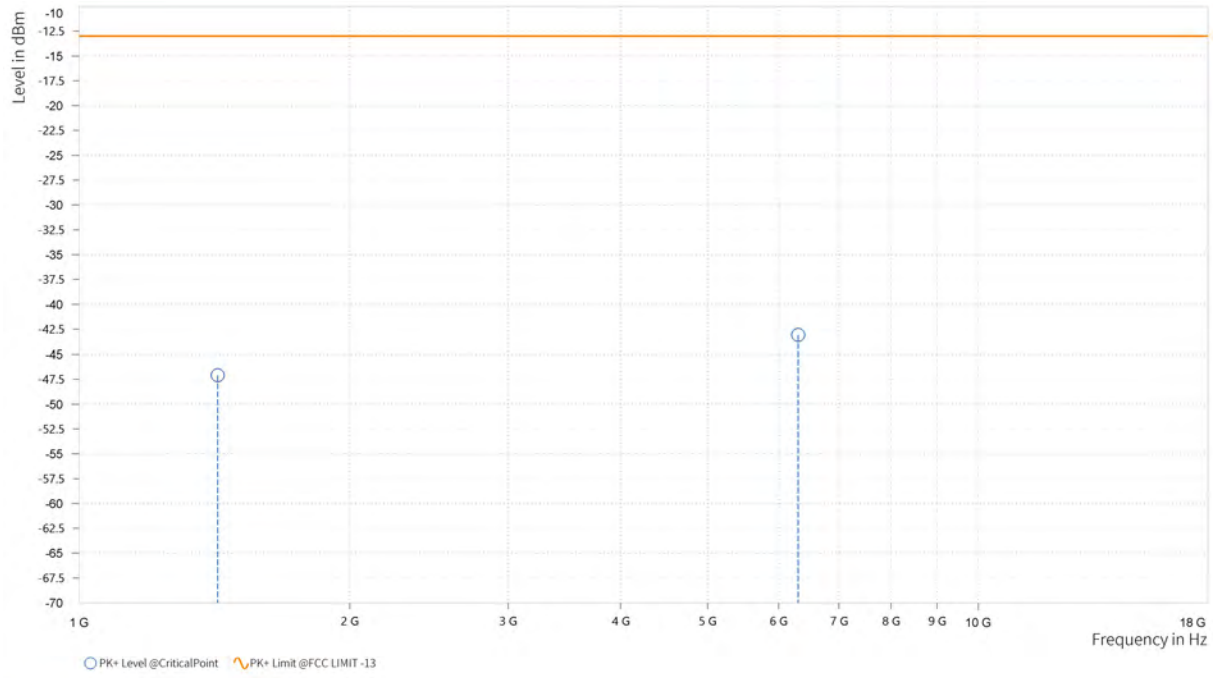
MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,427.000	-45.83	-13.00	32.83	20.33	H	1	1
5	7,794.197	-43.00	-13.00	30.00	29.88	H	1	1



MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 53%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

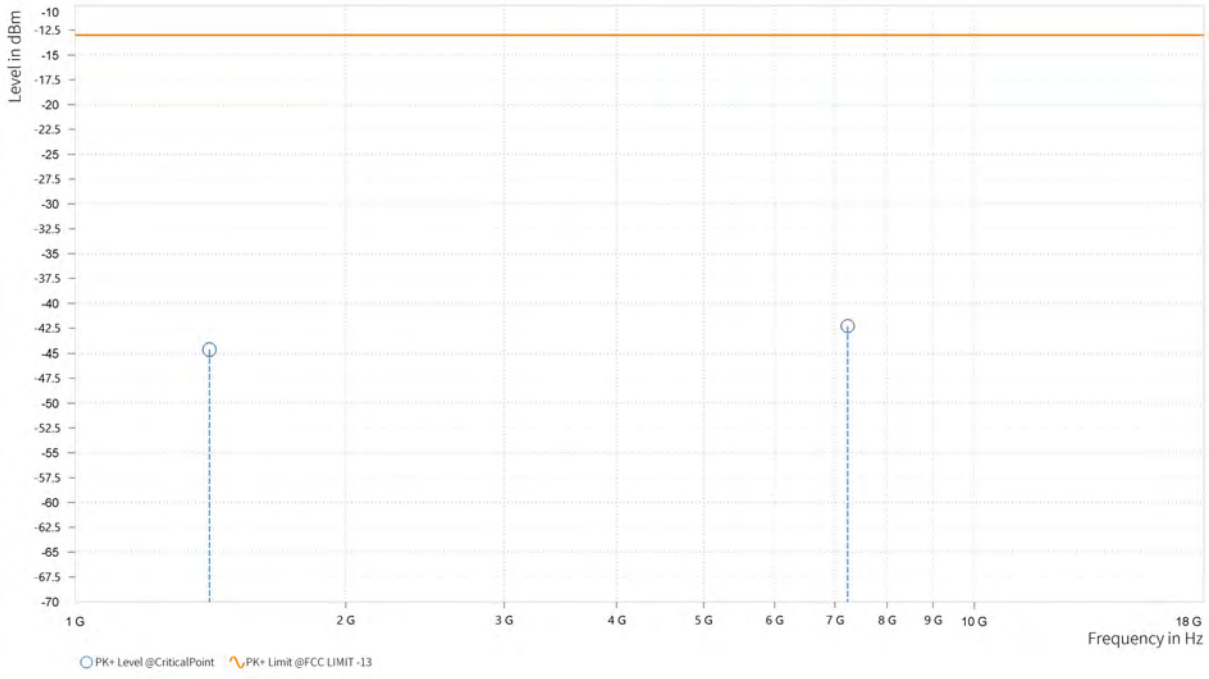
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,426.500	-47.08	-13.00	34.08	21.32	V	63	1
5	6,305.409	-43.09	-13.00	30.09	29.47	V	1	1



CHANNEL BANDWIDTH: 5MHz / QPSK

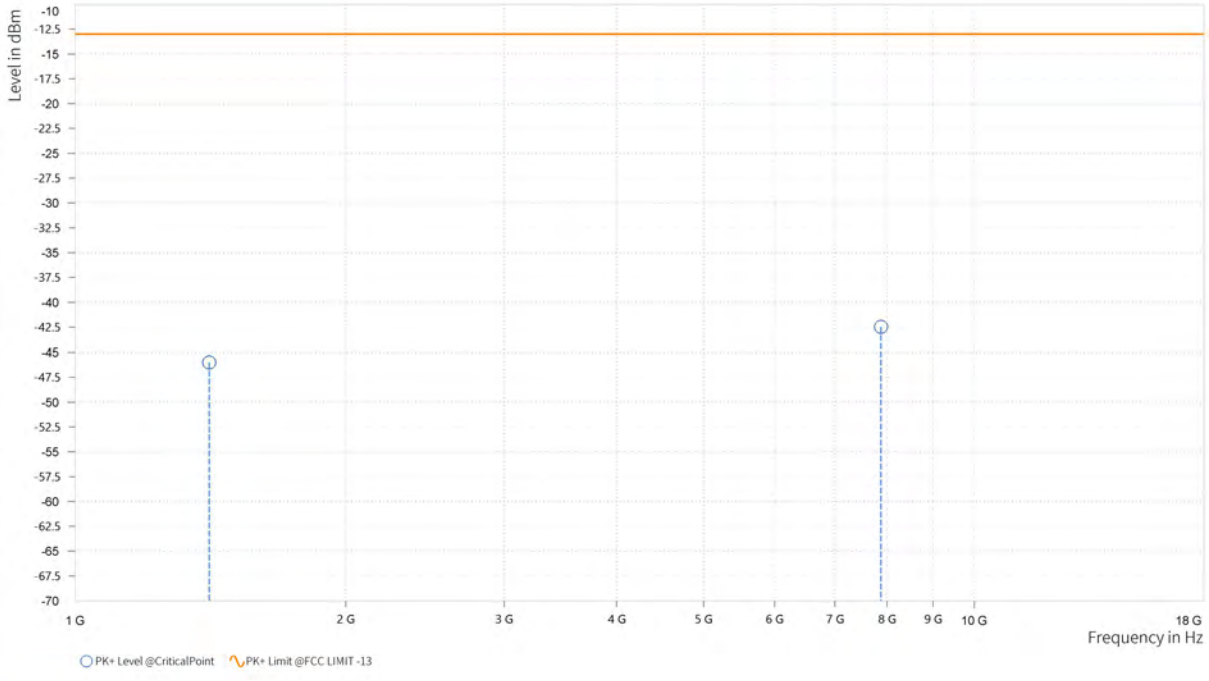
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,410.500	-44.65	-13.00	31.65	21.96	H	359	2
5	7,233.970	-42.32	-13.00	29.32	30.02	H	268.6	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

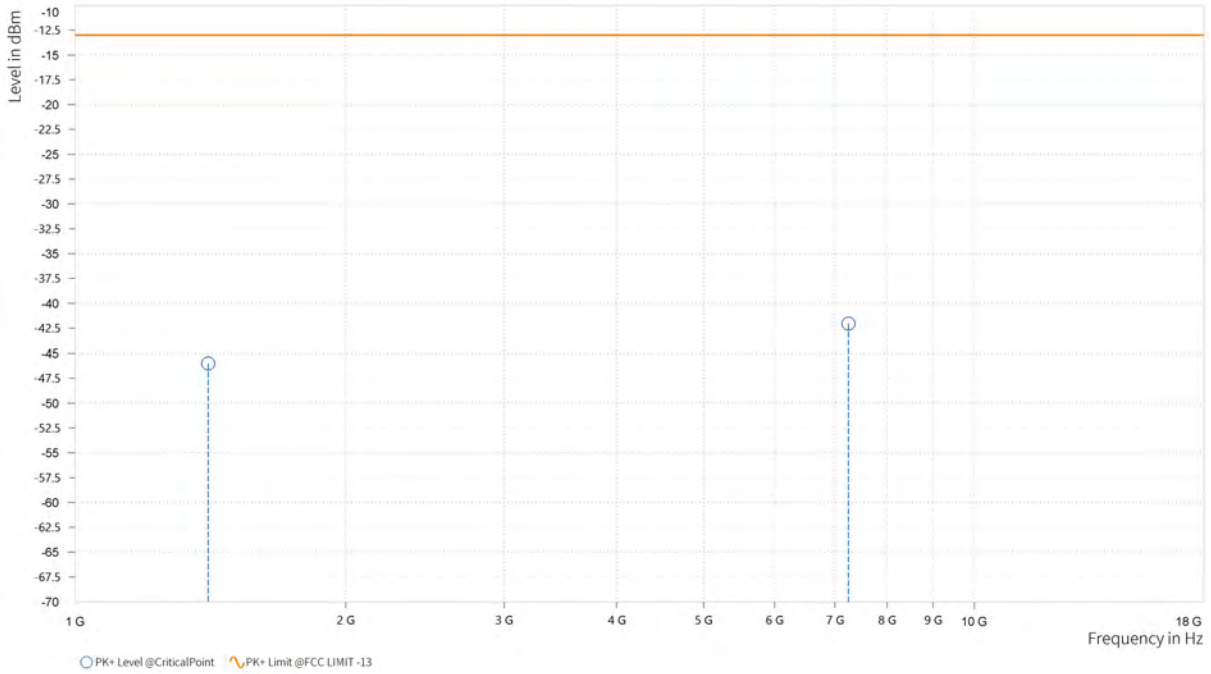
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,410.000	-46.02	-13.00	33.02	22.35	V	70.1	1
5	7,877.136	-42.49	-13.00	29.49	29.87	V	277	1



CHANNEL BANDWIDTH: 10MHz / QPSK

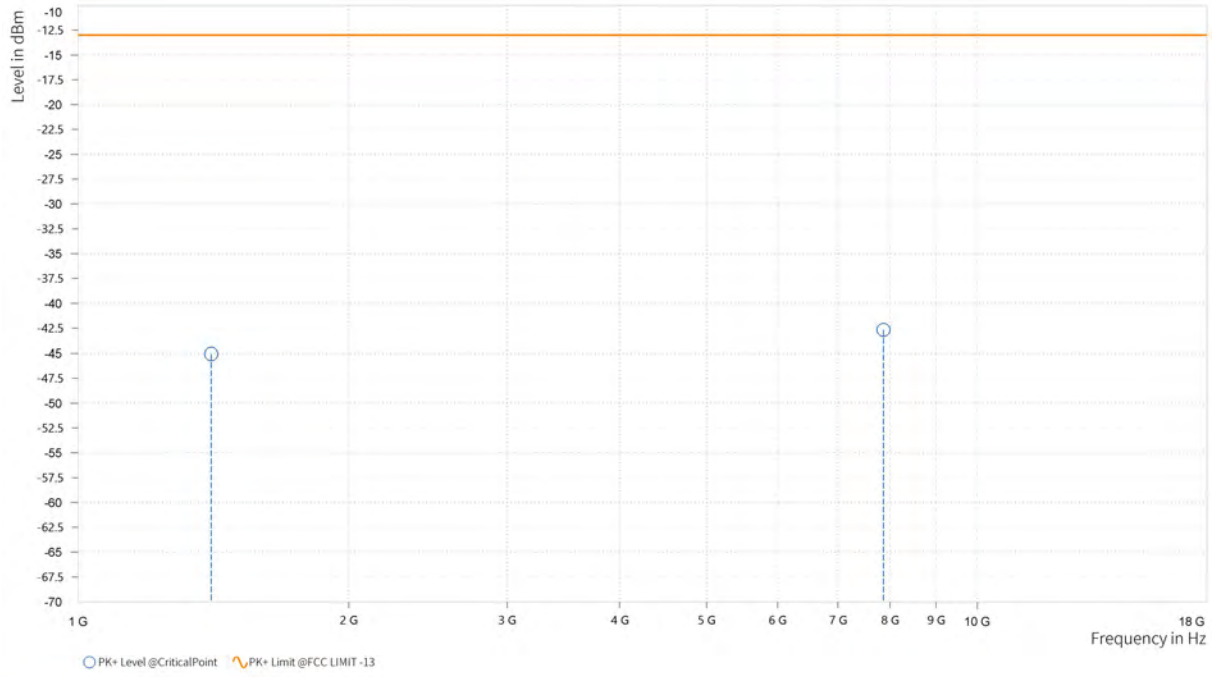
MODE	TX channel 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,406.000	-46.00	-13.00	33.00	22.29	H	359.1	1
5	7,246.848	-42.05	-13.00	29.05	30.08	H	1	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,406.000	-45.08	-13.00	32.08	22.29	V	359.1	1
5	7,864.515	-42.68	-13.00	29.68	29.97	V	0.9	2



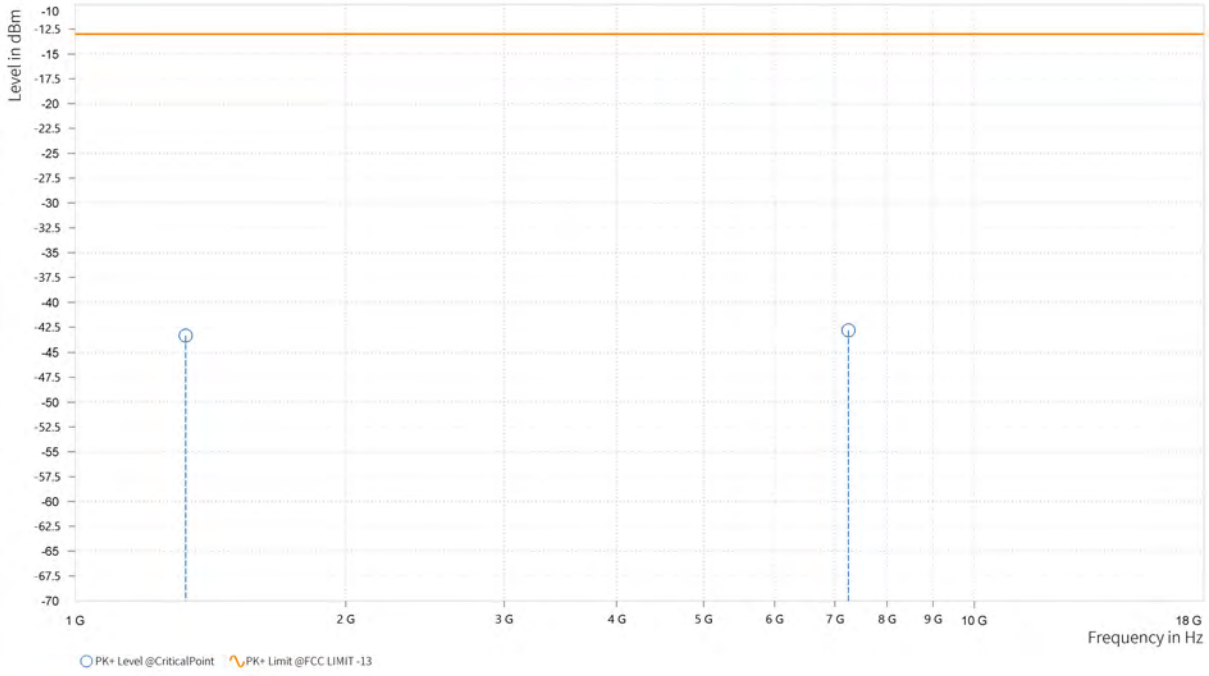
LTE Band 71

CHANNEL BANDWIDTH: 5MHz / QPSK

CH133147

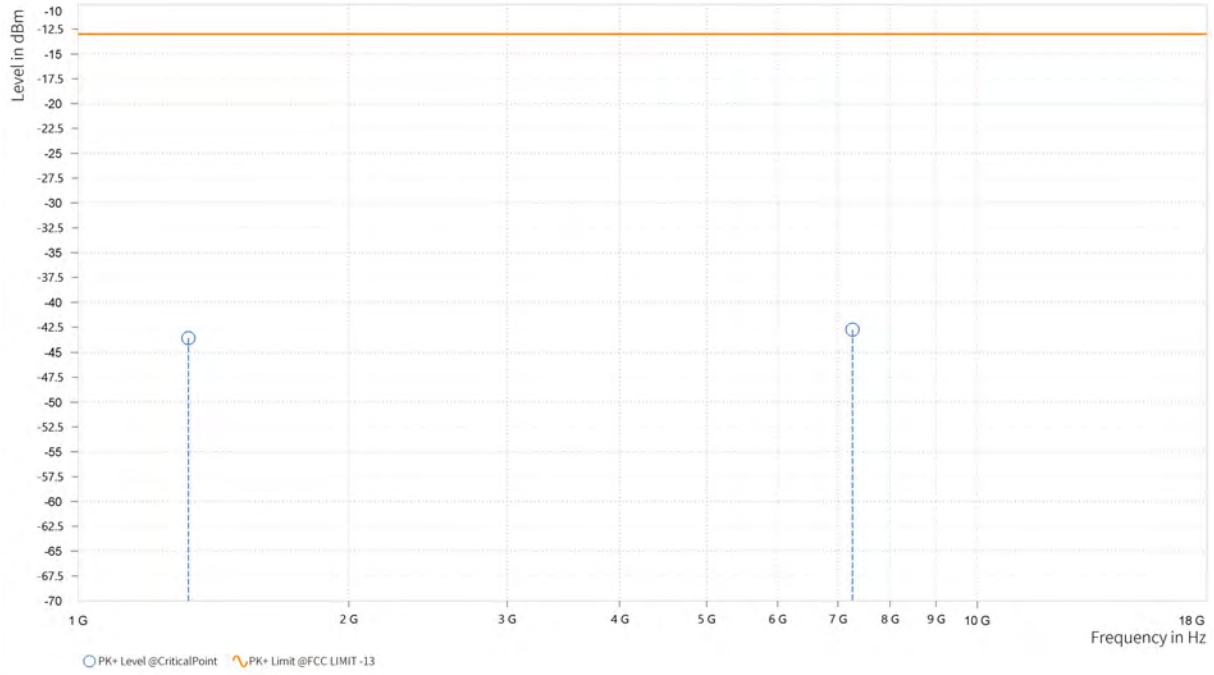
MODE	TX channel 133147	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,327.000	-43.35	-13.00	30.35	25.10	H	295.9	2
5	7,245.818	-42.82	-13.00	29.82	30.09	H	0.9	2



MODE	TX channel 133147	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

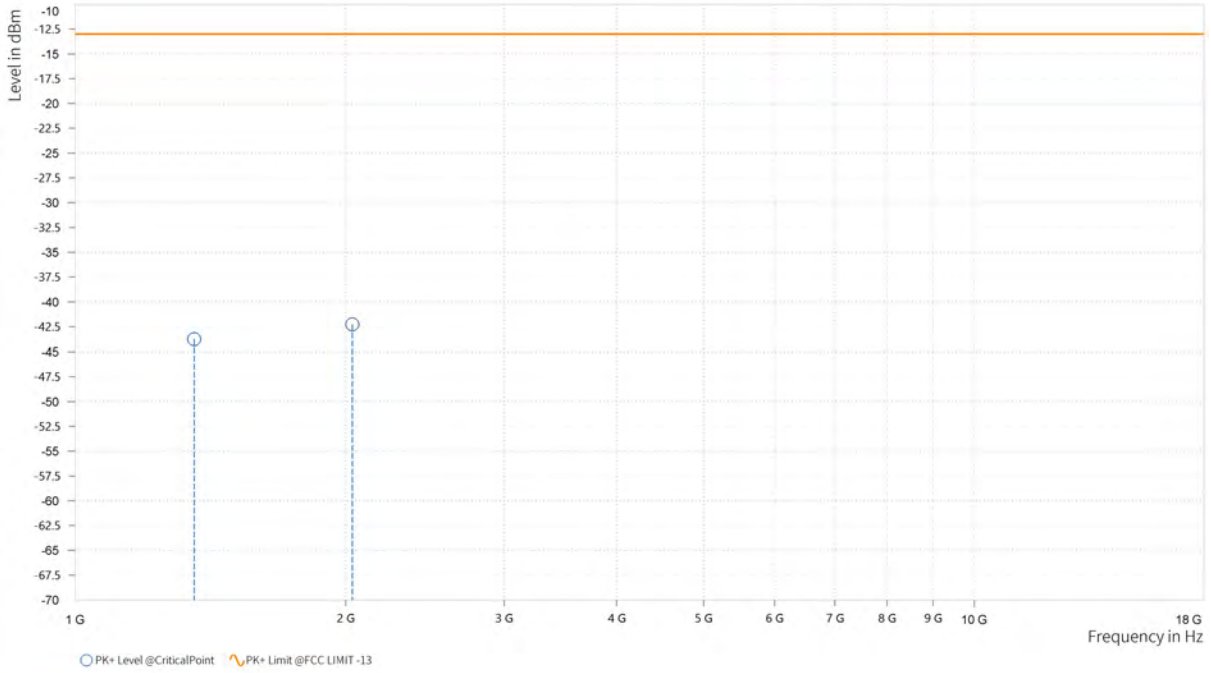
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,326.500	-43.61	-13.00	30.61	24.66	V	359.1	1
5	7,264.106	-42.76	-13.00	29.76	29.86	V	1	1



CH133322

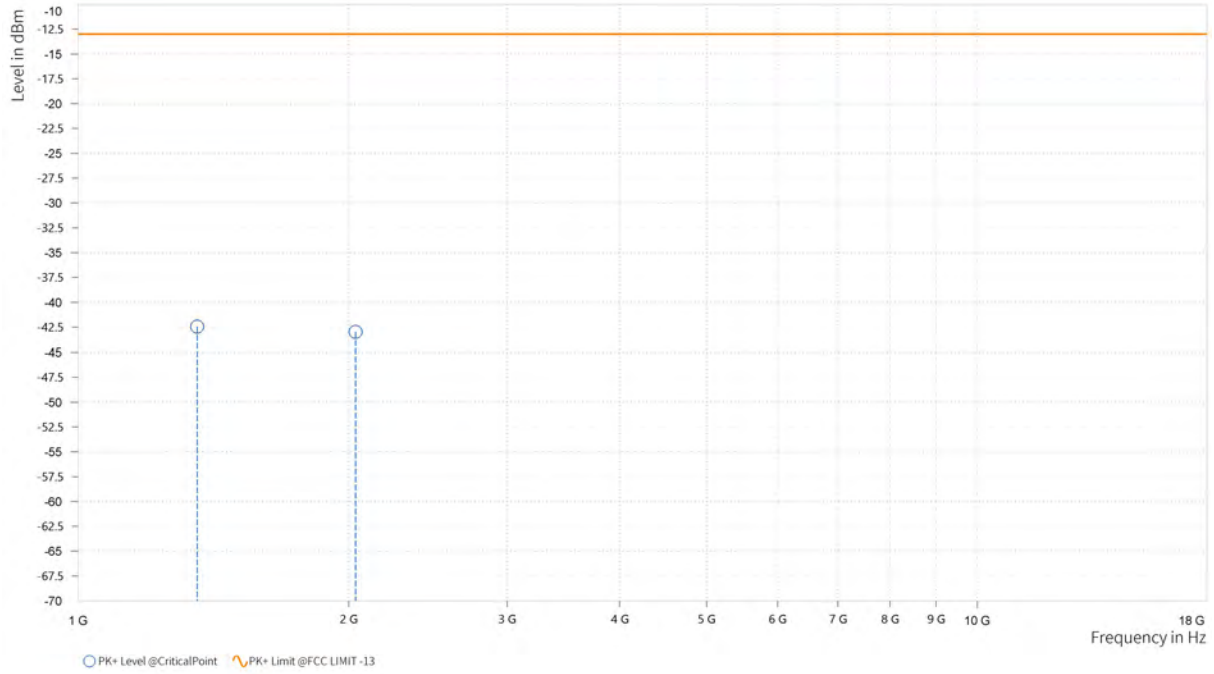
MODE	TX channel 133322	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,356.500	-43.78	-13.00	30.78	23.80	H	1	1
3	2,034.000	-42.28	-13.00	29.28	26.90	H	1	1



MODE	TX channel 133322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

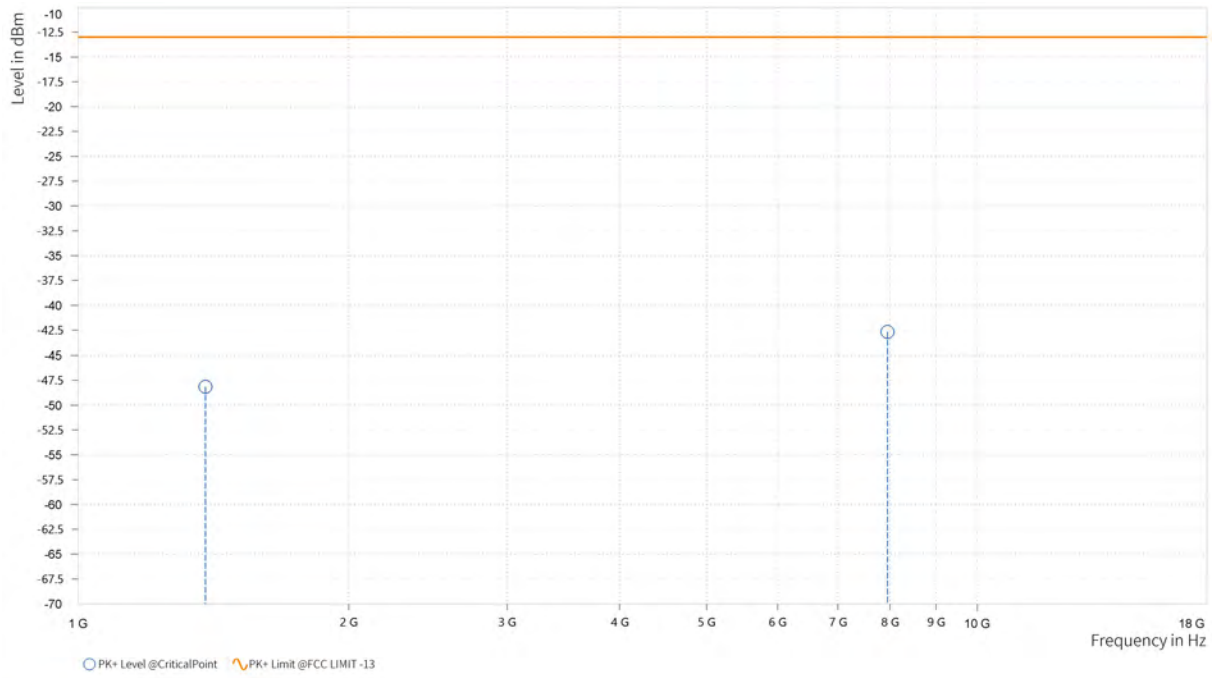
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,356.500	-42.46	-13.00	29.46	23.17	V	0.9	2
2	2,035.000	-42.99	-13.00	29.99	25.19	V	1	1



CH133447

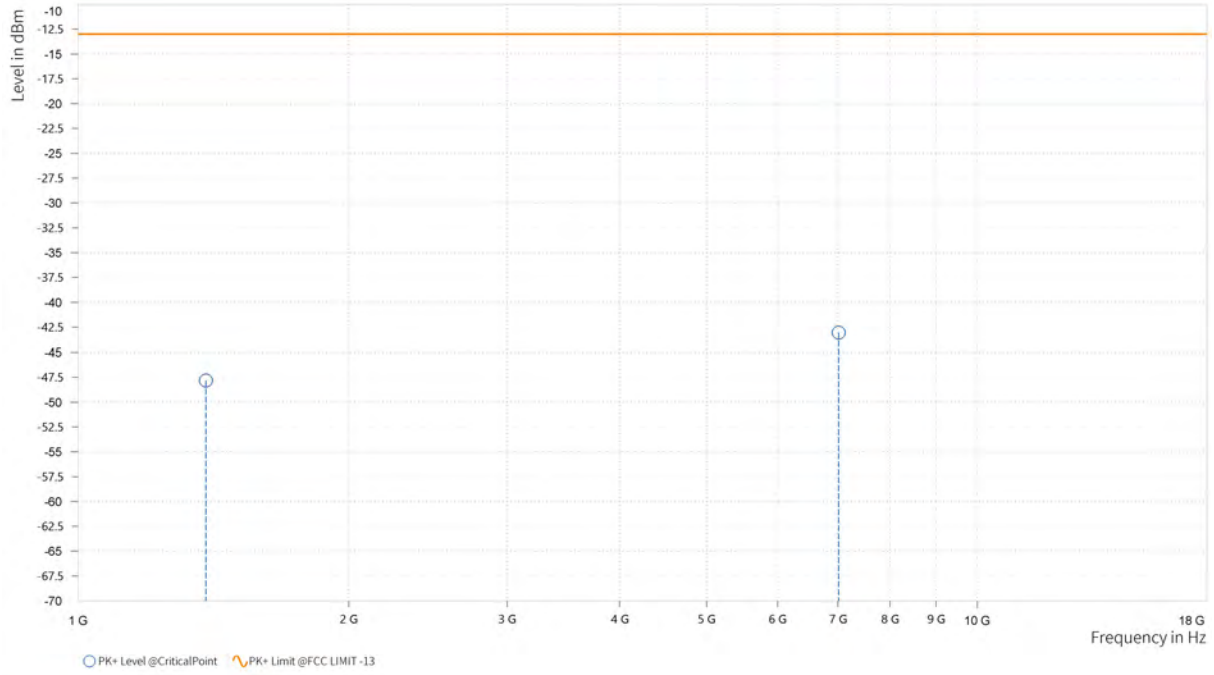
MODE	TX channel 133447	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,386.000	-48.15	-13.00	35.15	22.63	H	359.1	1
5	7,946.939	-42.68	-13.00	29.68	29.95	H	359.1	1



MODE	TX channel 133447	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

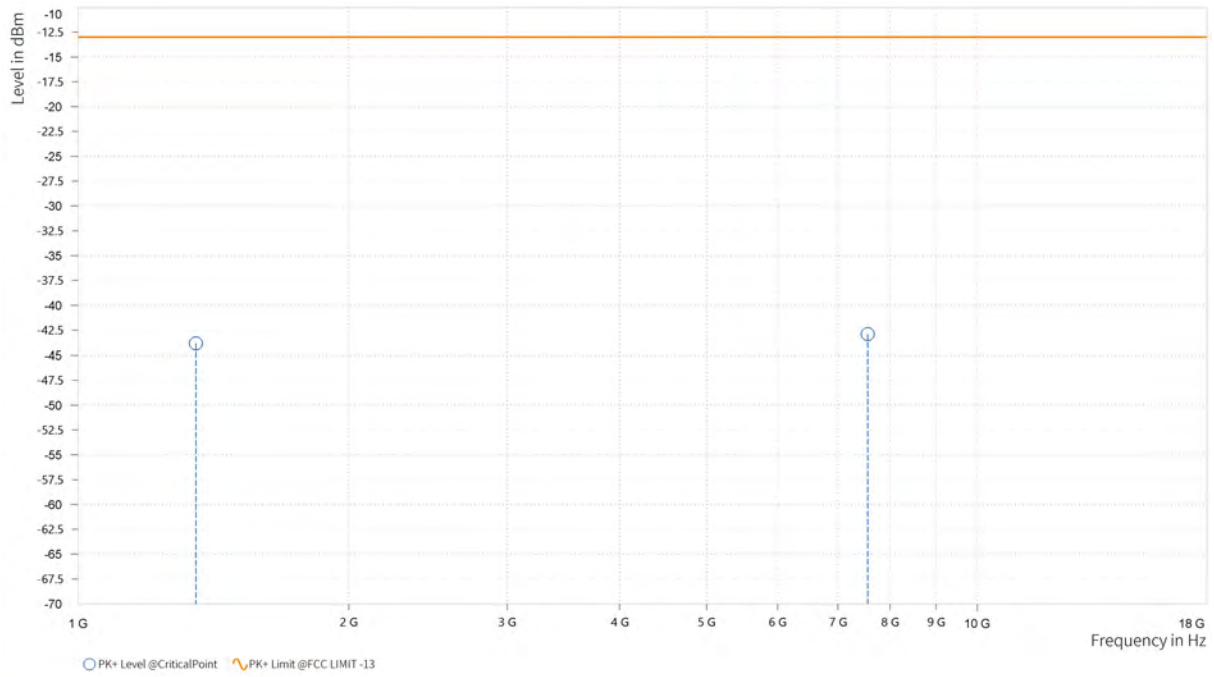
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,387.000	-47.81	-13.00	34.81	22.77	V	1	2
5	7,015.030	-43.06	-13.00	30.06	29.29	V	1	1



CHANNEL BANDWIDTH: 10MHz / QPSK

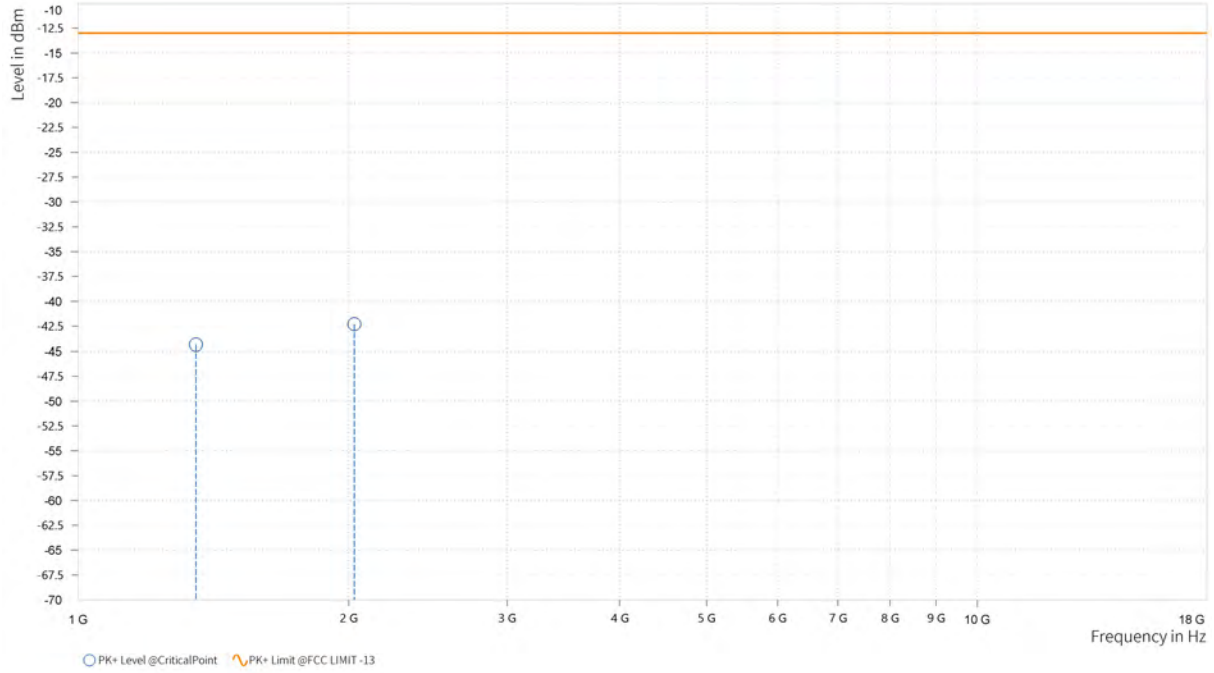
MODE	TX channel 133272	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,352.000	-43.83	-13.00	30.83	23.61	H	297.1	2
5	7,553.621	-42.90	-13.00	29.90	29.72	H	1	2



MODE	TX channel 133272	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

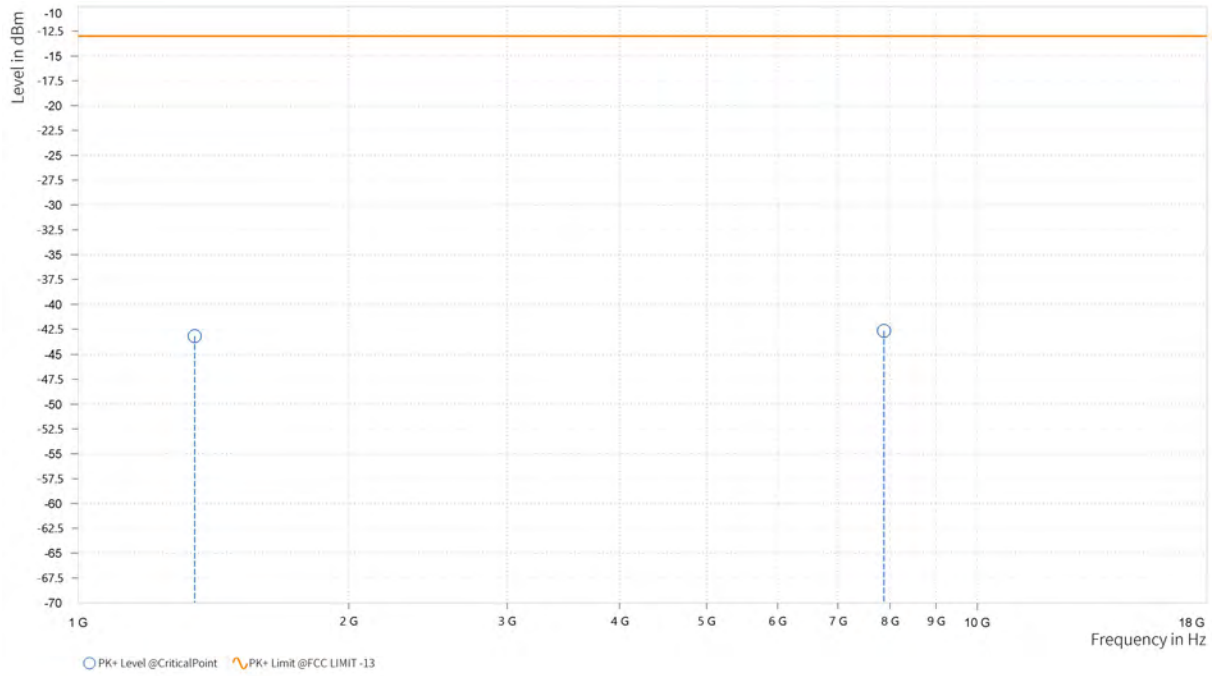
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,352.000	-44.33	-13.00	31.33	22.92	V	1	1
2	2,028.500	-42.29	-13.00	29.29	25.07	V	1	1



CHANNEL BANDWIDTH: 15MHz / QPSK

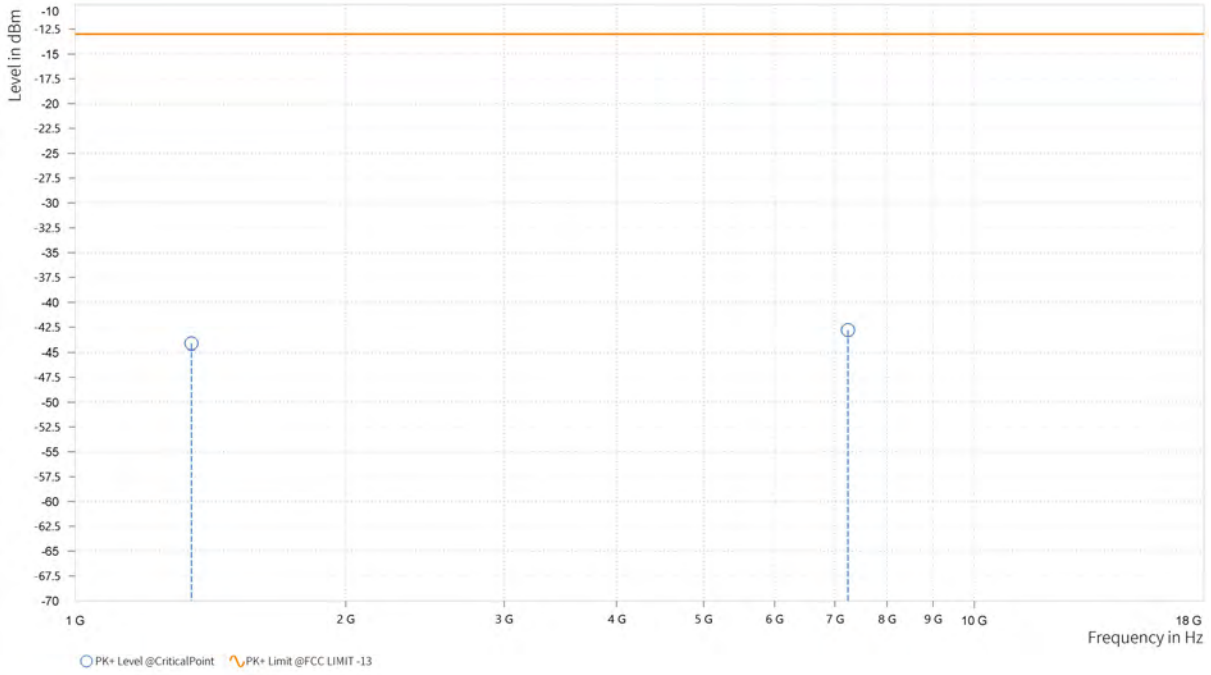
MODE	TX channel 133297	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,348.000	-43.20	-13.00	30.20	23.44	H	61.8	1
5	7,878.167	-42.68	-13.00	29.68	30.00	H	359	1



MODE	TX channel 133297	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

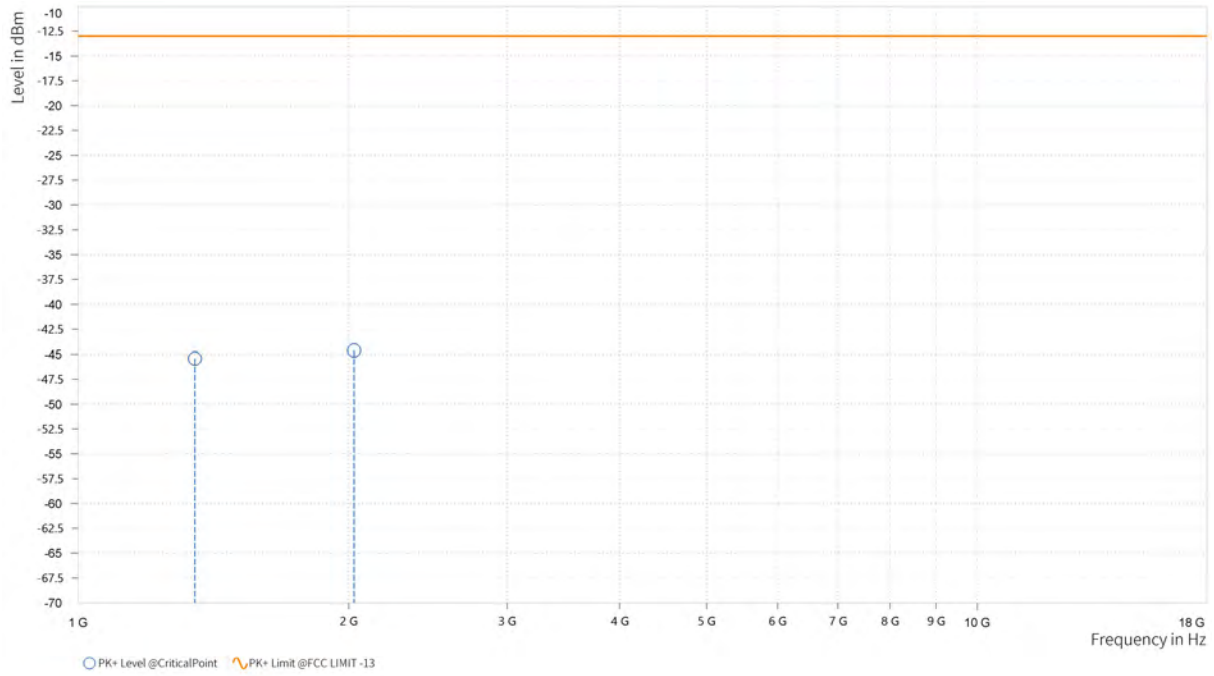
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,347.500	-44.15	-13.00	31.15	22.67	V	61.8	1
5	7,238.864	-42.81	-13.00	29.81	30.00	V	278.2	1



CHANNEL BANDWIDTH: 20MHz / QPSK

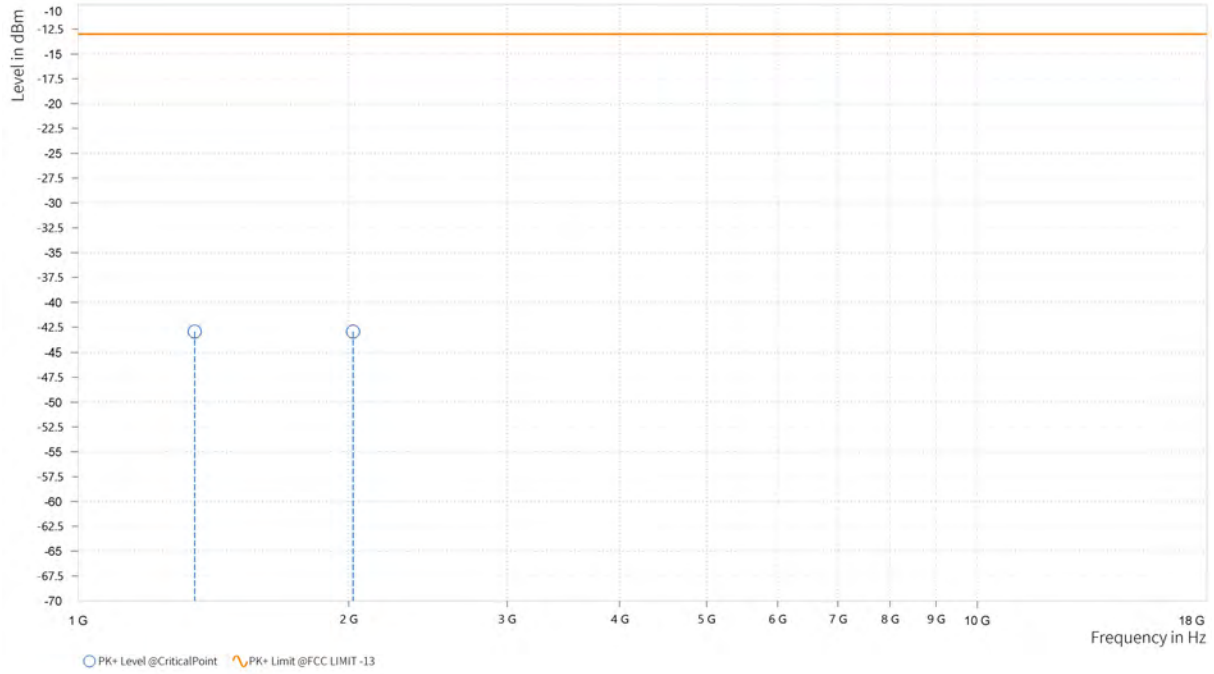
MODE	TX channel 133322	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,348.500	-45.43	-13.00	32.43	23.46	H	63	1
2	2,027.000	-44.62	-13.00	31.62	24.25	H	63	1



MODE	TX channel 133322	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Chao Wu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,348.000	-42.95	-13.00	29.95	22.70	V	359.1	1
2	2,022.500	-42.95	-13.00	29.95	24.94	V	1	1

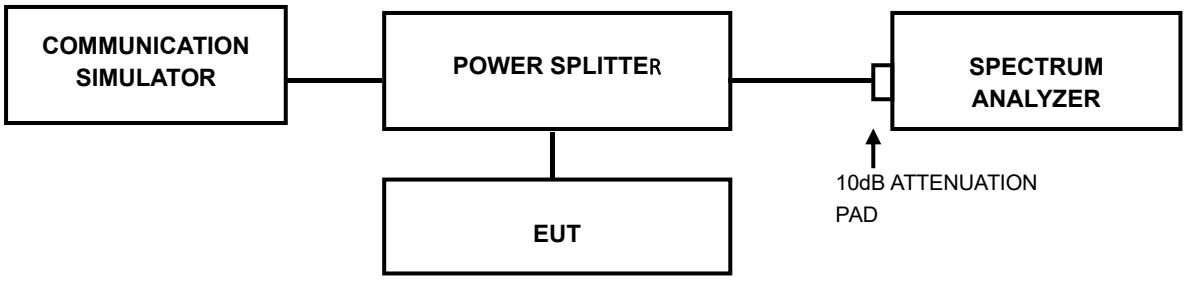


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth ≥ 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%.

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.

4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Suzhou EMC/RF Lab:
Tel: +86 (0557) 368 1008

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

6 APPENDIX

WCDMA IV

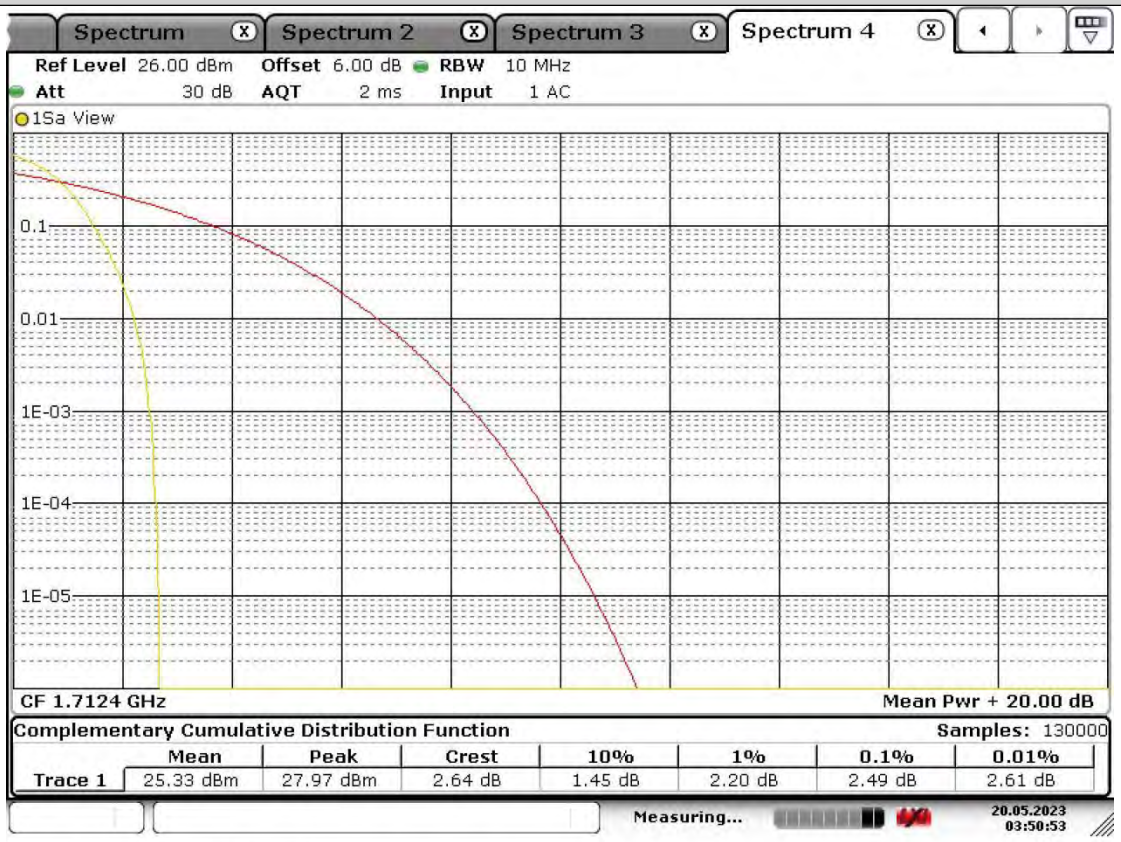
PEAK-TO-AVERAGE RATIO

Test Result

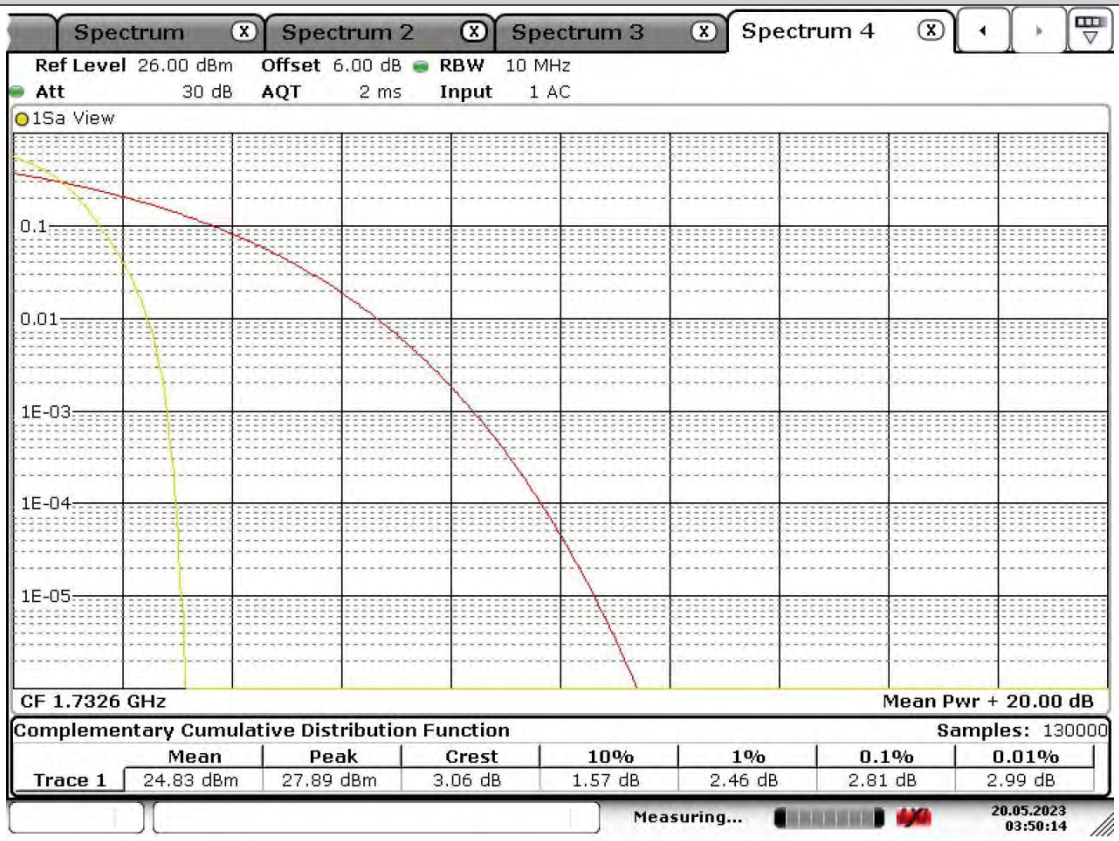
Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band4	1312	2.49	13	PASS
Band4	1413	2.81	13	PASS
Band4	1513	2.29	13	PASS

Test Graphs

Band4-1312

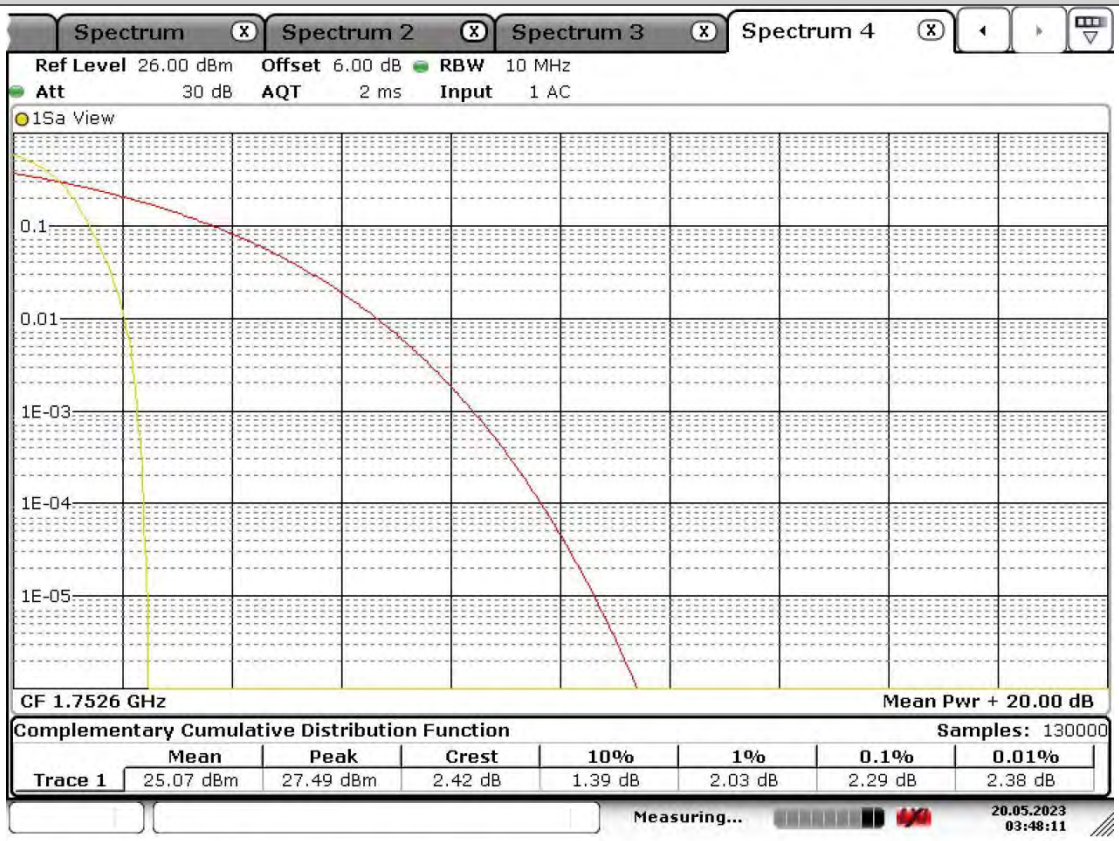


Band4-1413



Date: 20.MAY.2023 03:50:13

Band4-1513


Spectrum
Spectrum 2
Spectrum 3
Spectrum 4
Ref Level 26.00 dBm Offset 6.00 dB RBW 10 MHz
Att 30 dB AQT 2 ms Input 1 AC
1Sa View
0.1
0.01
1E-03
1E-04
1E-05
CF 1.7526 GHz
Mean Pwr + 20.00 dB
Complementary Cumulative Distribution Function
Samples: 130000
Mean Peak Crest 10% 1% 0.1% 0.01%
Trace 1 25.07 dBm 27.49 dBm 2.42 dB 1.39 dB 2.03 dB 2.29 dB 2.38 dB
Measuring...
20.05.2023
03:48:11
Date: 20.MAY.2023 03:48:11

26DB BANDWIDTH AND OCCUPIED BANDWIDTH

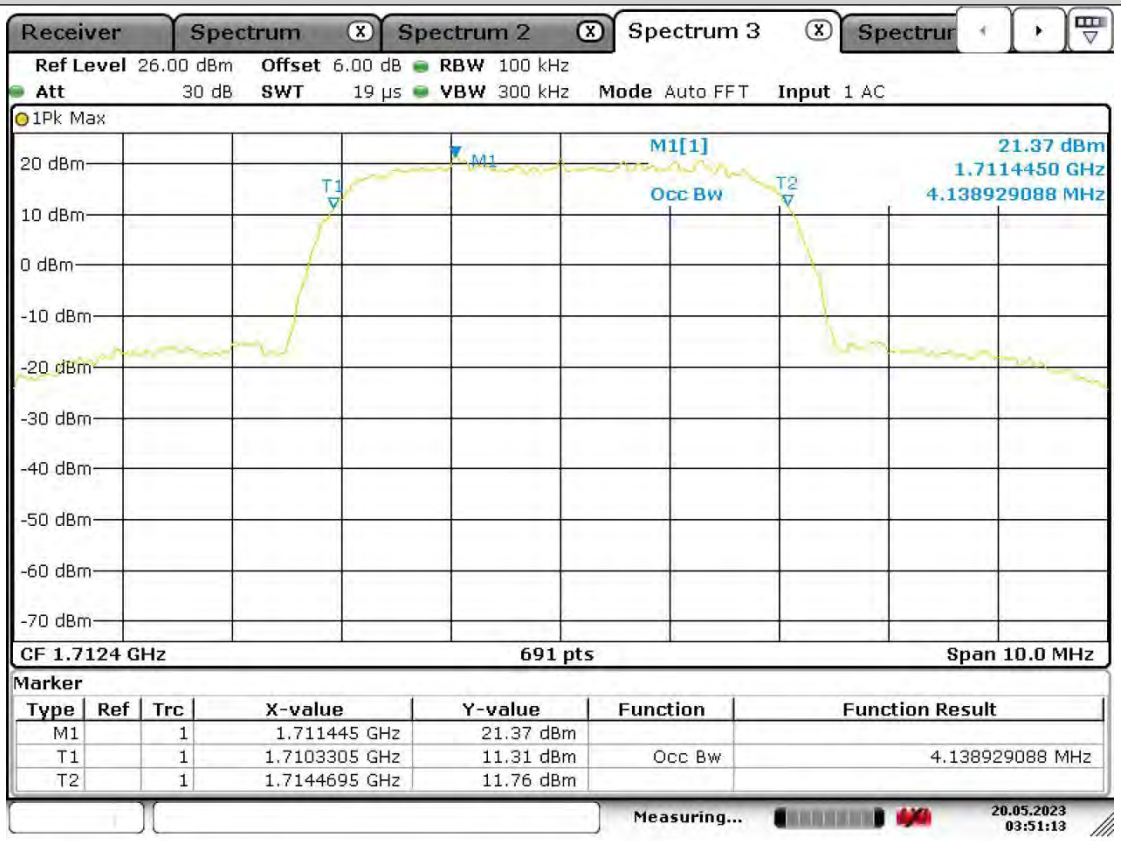
Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band4	1312	4.1389	4.761	---	PASS
Band4	1413	4.1244	4.732	---	PASS
Band4	1513	4.1534	4.761	---	PASS

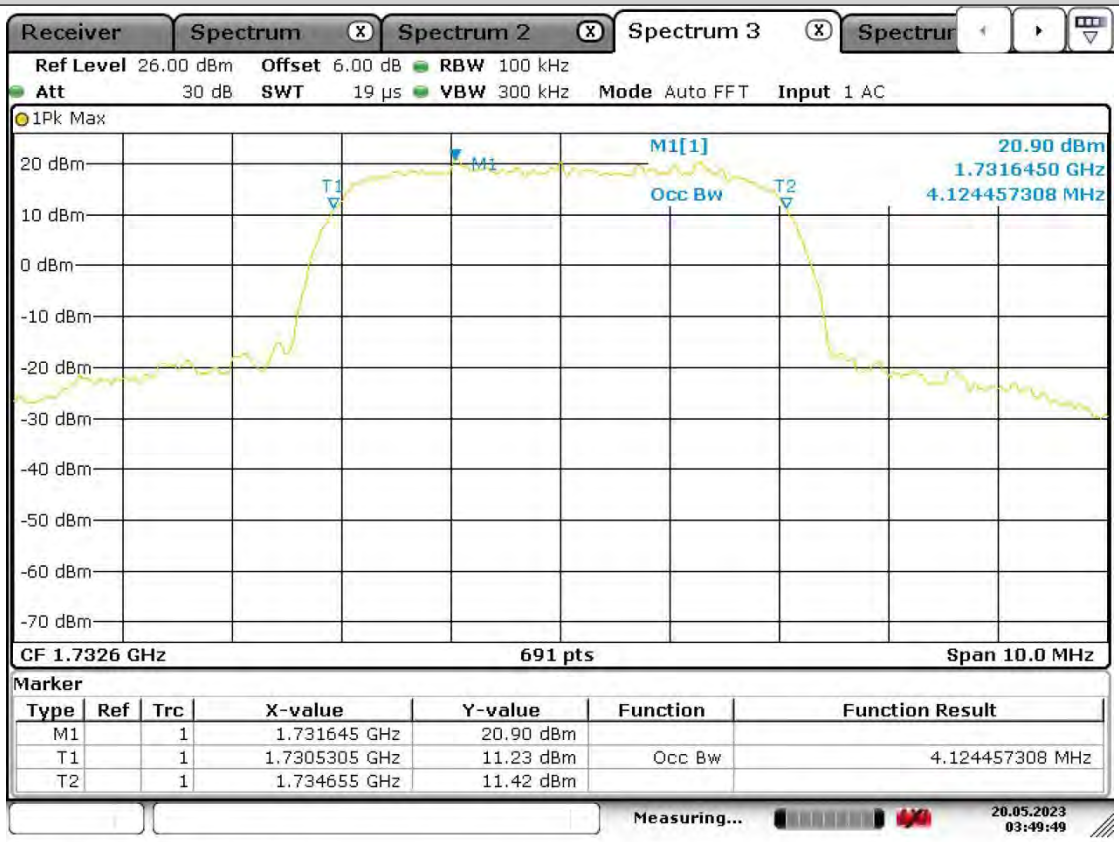
Test Graphs

Occupied Bandwidth

Band4-1312

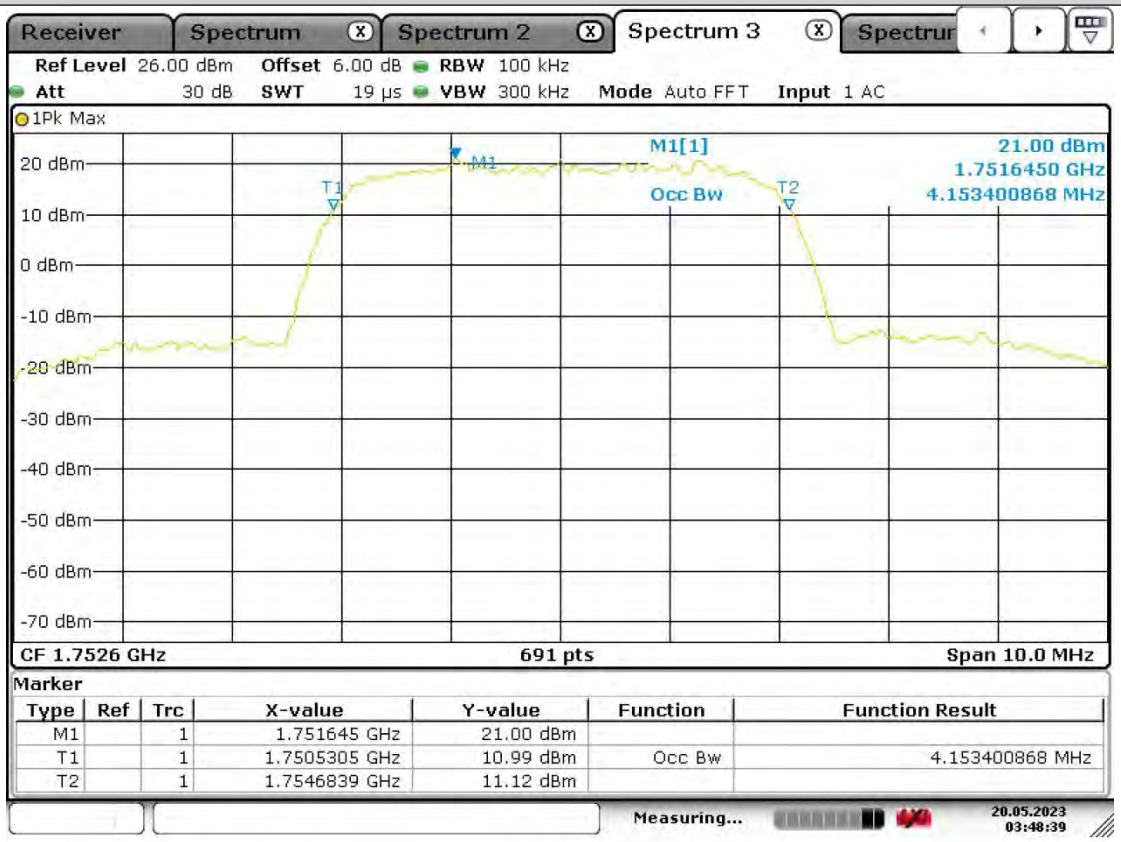


Band4-1413



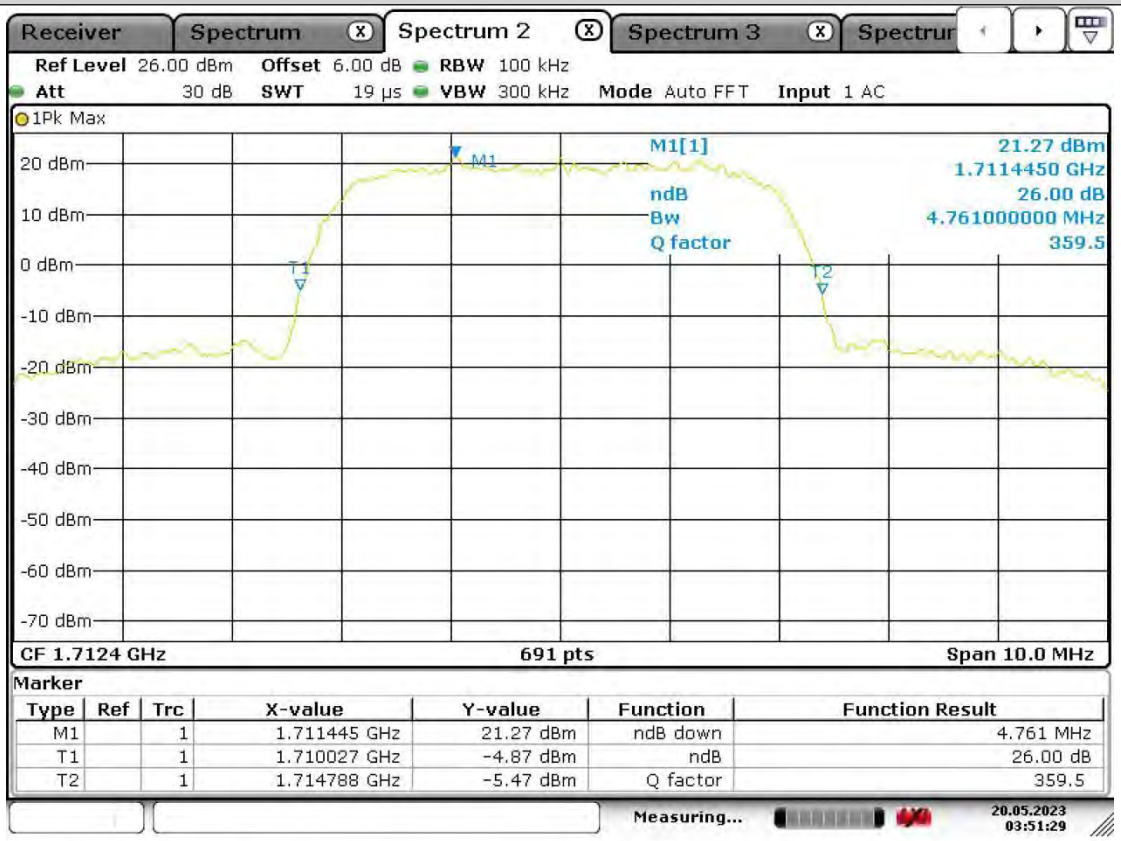
Date: 20.MAY.2023 03:49:49

Band4-1513

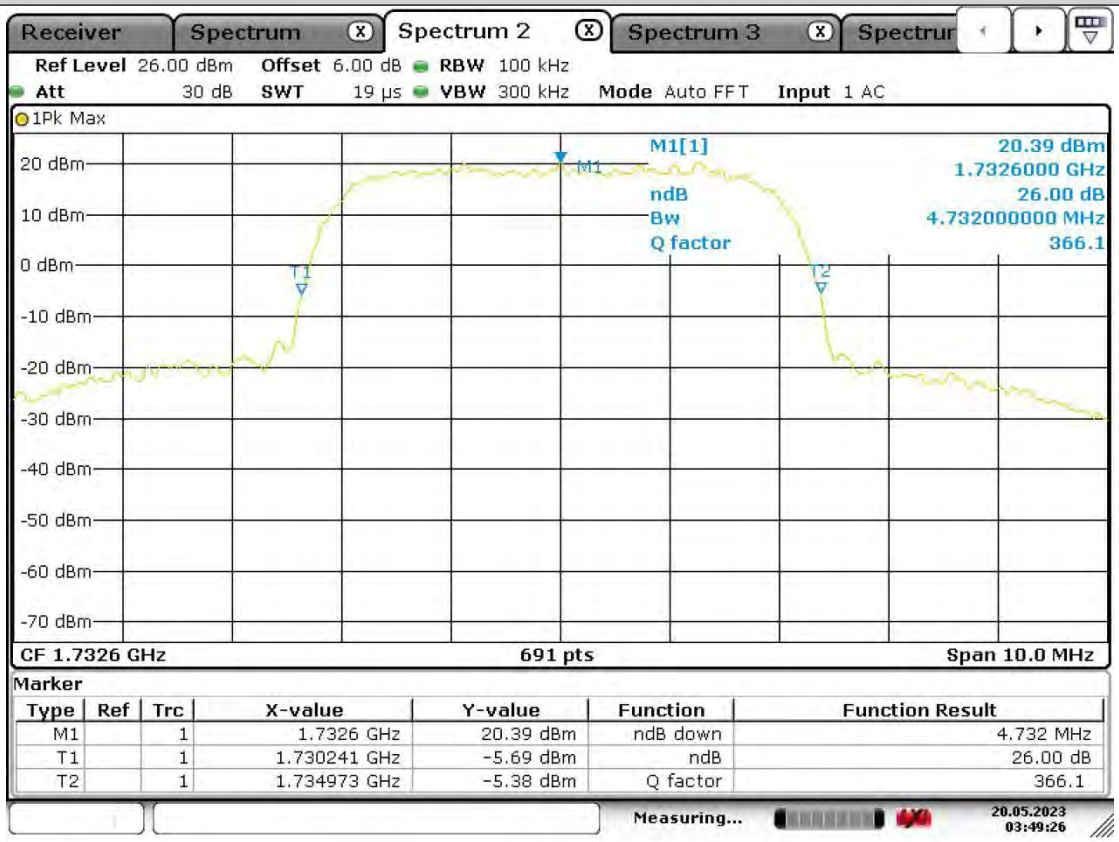

Receiver
Spectrum
Spectrum 2
Spectrum 3
Ref Level 26.00 dBm Offset 6.00 dB RBW 100 kHz
Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1]
21.00 dBm
1.7516450 GHz
4.153400868 MHz
Occ Bw
T1
T2
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 1.7526 GHz
691 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 1.751645 GHz 21.00 dBm
T1 1 1.7505305 GHz 10.99 dBm Occ Bw 4.153400868 MHz
T2 1 1.7546839 GHz 11.12 dBm
Measuring...
20.05.2023
03:48:39
Date: 20.MAY.2023 03:48:39

26dB Bandwidth

Band4-1312

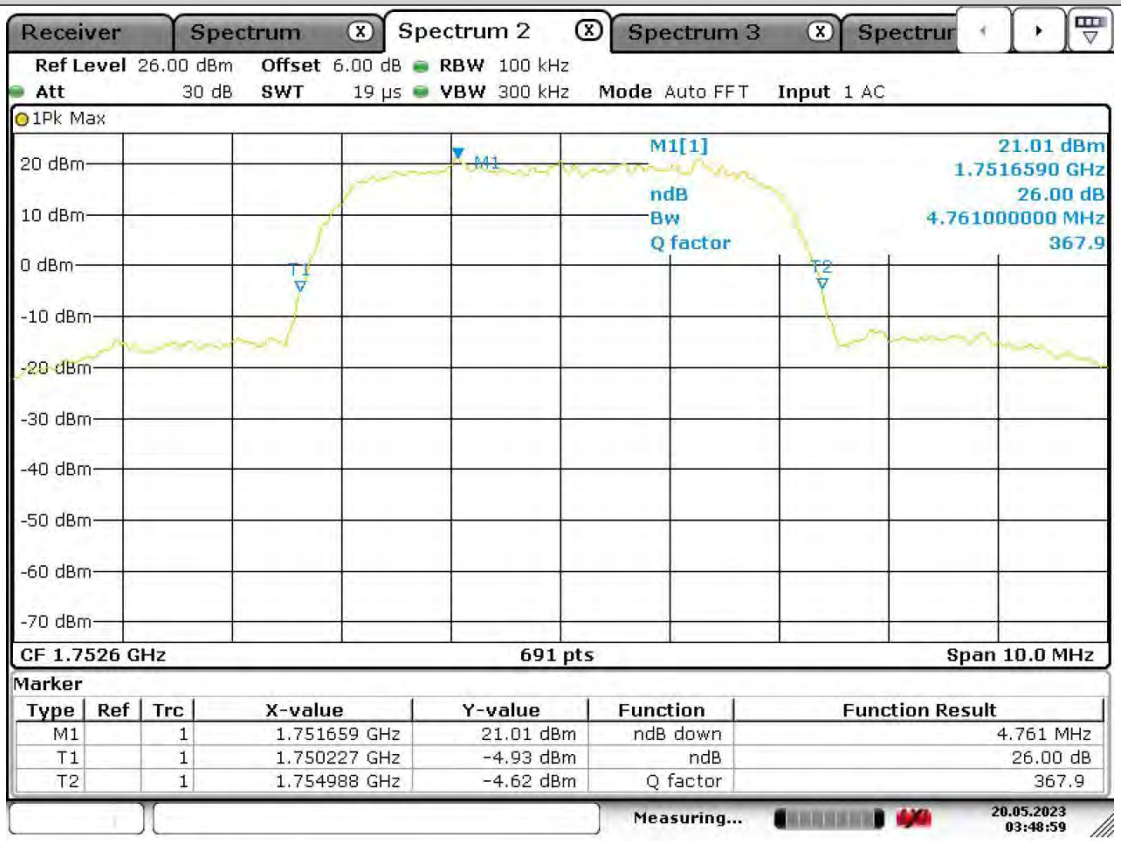


Band4-1413



Date: 20.MAY.2023 03:49:26

Band4-1513


Receiver
Spectrum
Spectrum 2
Spectrum 3
Spectrur
Ref Level 26.00 dBm Offset 6.00 dB RBW 100 kHz
Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1]
21.01 dBm
1.7516590 GHz
ndB
26.00 dB
Bw
4.761000000 MHz
Q factor
367.9
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 1.7526 GHz
691 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 1.751659 GHz 21.01 dBm ndB down 4.761 MHz
T1 1 1.750227 GHz -4.93 dBm ndB 26.00 dB
T2 1 1.754988 GHz -4.62 dBm Q factor 367.9
Measuring...
20.05.2023
03:48:59
Date: 20.MAY.2023 03:48:59

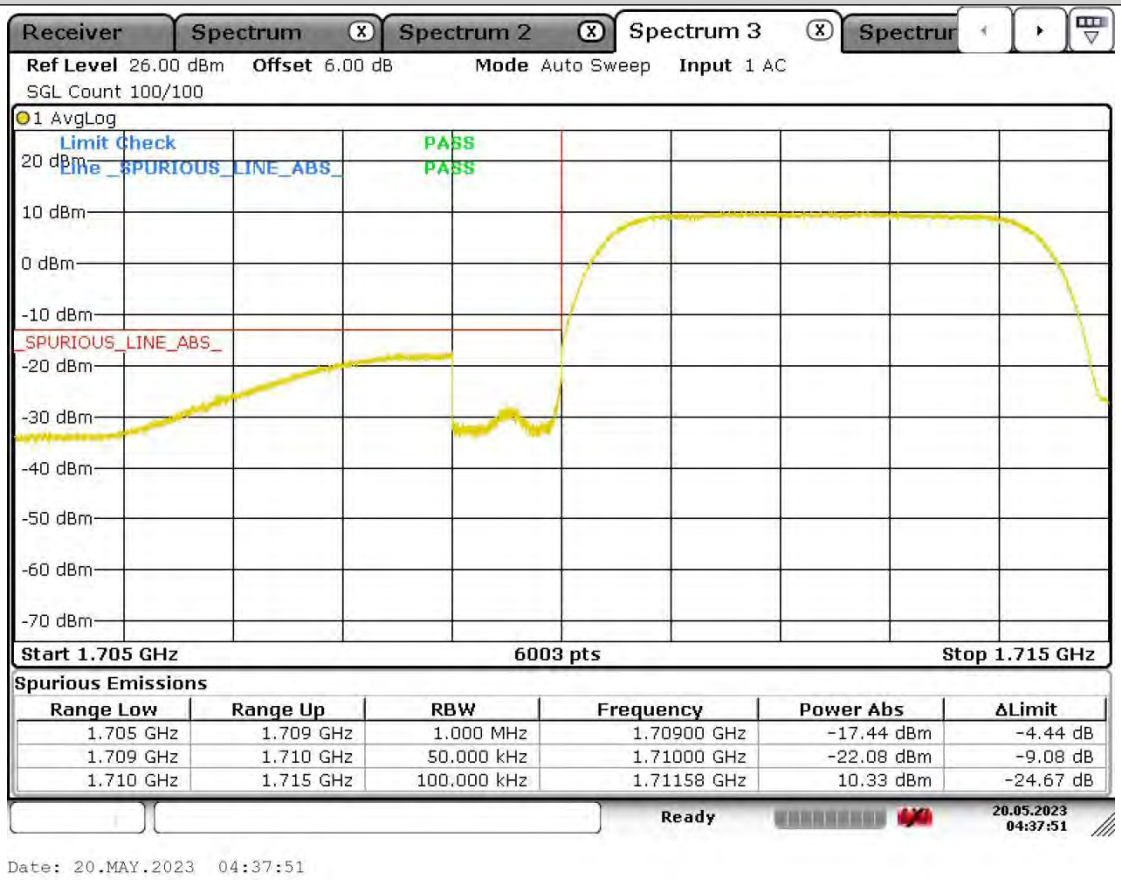
BAND EDGE

Test Result

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band4	1312	1709.00	-17.44	-13	PASS
Band4	1513	1756.01	-14.04	-13	PASS

Test Graphs

Band4-1312



Date: 20.MAY.2023 04:37:51

Band4-1513


Receiver
Spectrum
Spectrum 2
Spectrum 3
Spectrur
Ref Level 26.00 dBm Offset 6.00 dB Mode Auto Sweep Input 1 AC
SGL Count 100/100
1 AvgLog
SPURIOUS_LINE_ABS_
LimitCheck PASS
Line SPURIOUS_LINE_ABS_ PASS
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 1.75 GHz
6003 pts
Stop 1.76 GHz
Spurious Emissions
Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit
1.750 GHz | 1.755 GHz | 100.000 kHz | 1.75210 GHz | 9.37 dBm | -25.63 dB
1.755 GHz | 1.756 GHz | 50.000 kHz | 1.75500 GHz | -20.14 dBm | -7.14 dB
1.756 GHz | 1.760 GHz | 1.000 MHz | 1.75601 GHz | -14.04 dBm | -1.04 dB
Ready
20.05.2023
04:37:11
Date: 20.MAY.2023 04:37:11

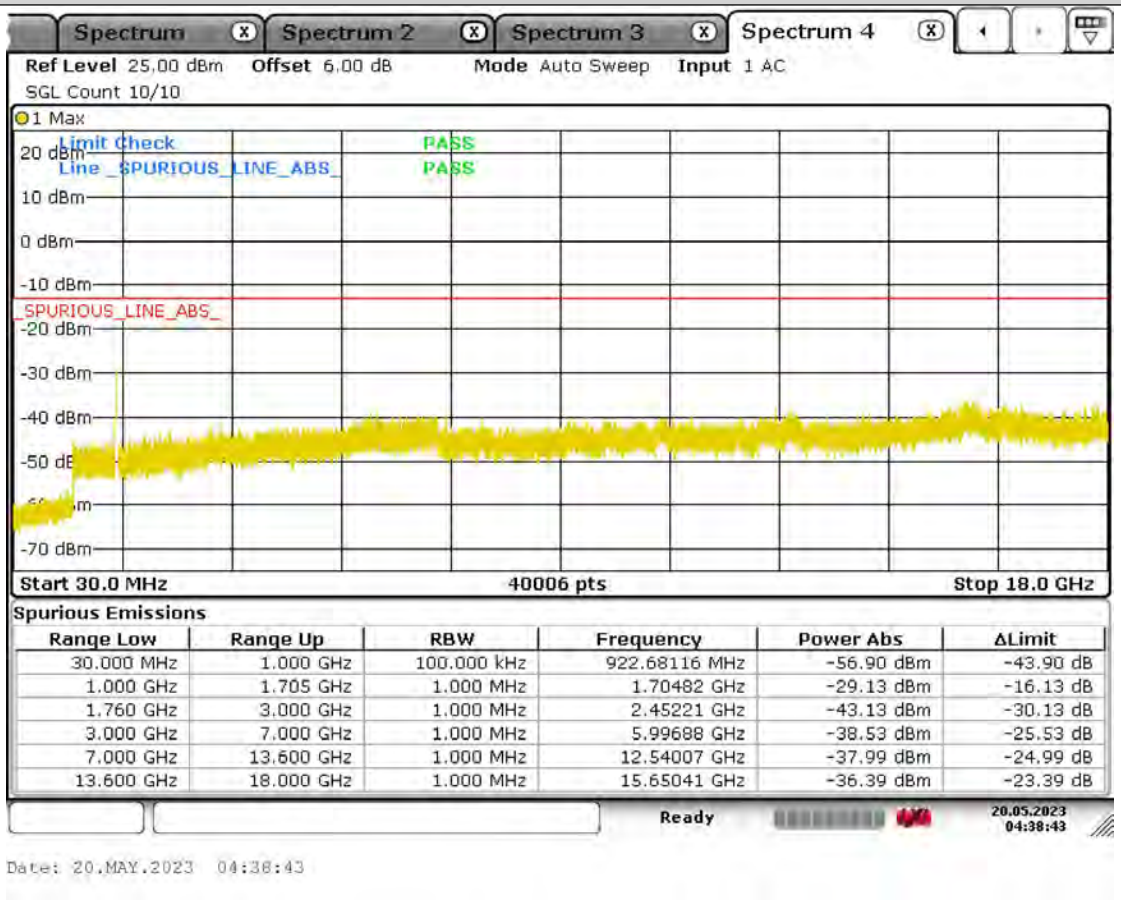
CONDUCTED SPURIOUS EMISSION

Test Result

Band	Channel	Frequency Range (Mhz)	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
Band4	1312	30~1000MHz	922.68116	-56.90	-13	PASS
Band4	1312	1000~3000MHz	1704.82	-29.13	-13	PASS
Band4	1312	3000~18000MHz	15650.41	-36.39	-13	PASS
Band4	1413	30~1000MHz	953.22089	-57.82	-13	PASS
Band4	1413	1000~3000MHz	2980.94	-43.84	-13	PASS
Band4	1413	3000~18000MHz	15668.45	-35.34	-13	PASS
Band4	1513	30~1000MHz	918.31834	-57.22	-13	PASS
Band4	1513	1000~3000MHz	1760.15	-25.98	-13	PASS
Band4	1513	3000~18000MHz	15723.01	-36.31	-13	PASS

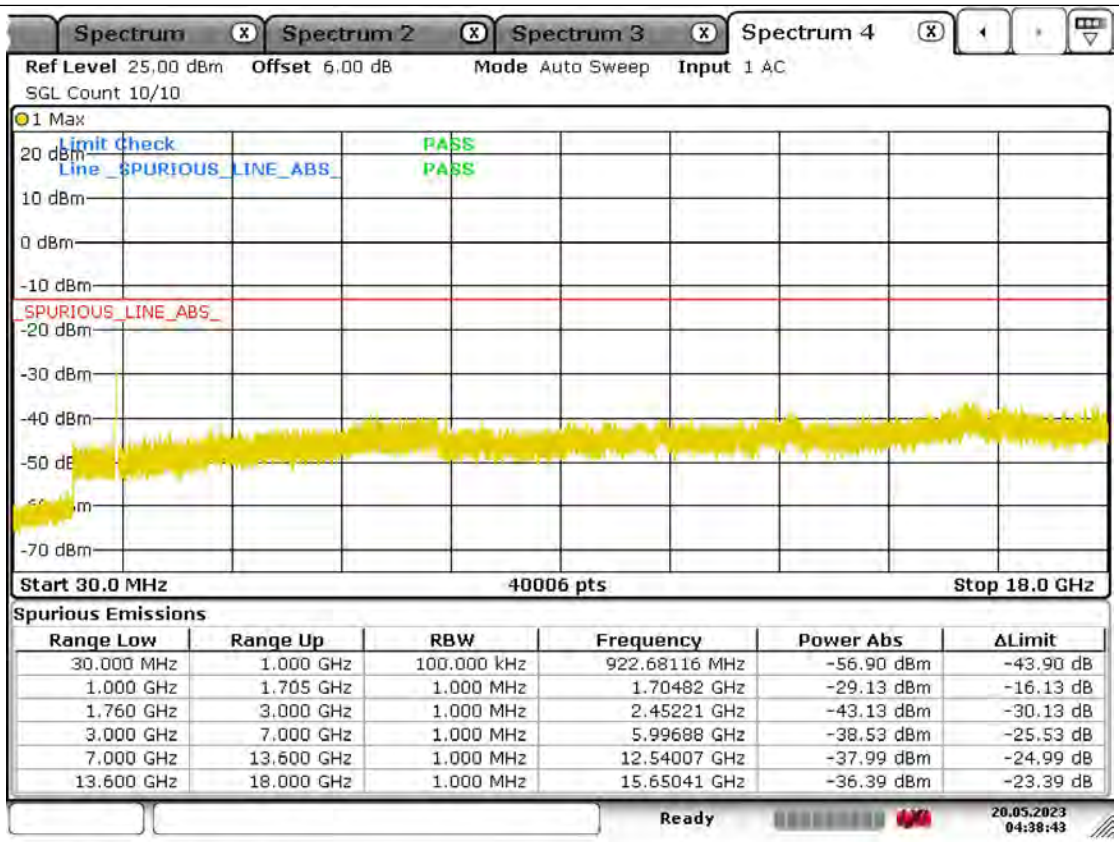
Test Graphs

Band4-1312-30~1000MHz



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	922.68116 MHz	-56.90 dBm	-43.90 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70482 GHz	-29.13 dBm	-16.13 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.45221 GHz	-43.13 dBm	-30.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.99688 GHz	-38.53 dBm	-25.53 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.54007 GHz	-37.99 dBm	-24.99 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.65041 GHz	-36.39 dBm	-23.39 dB

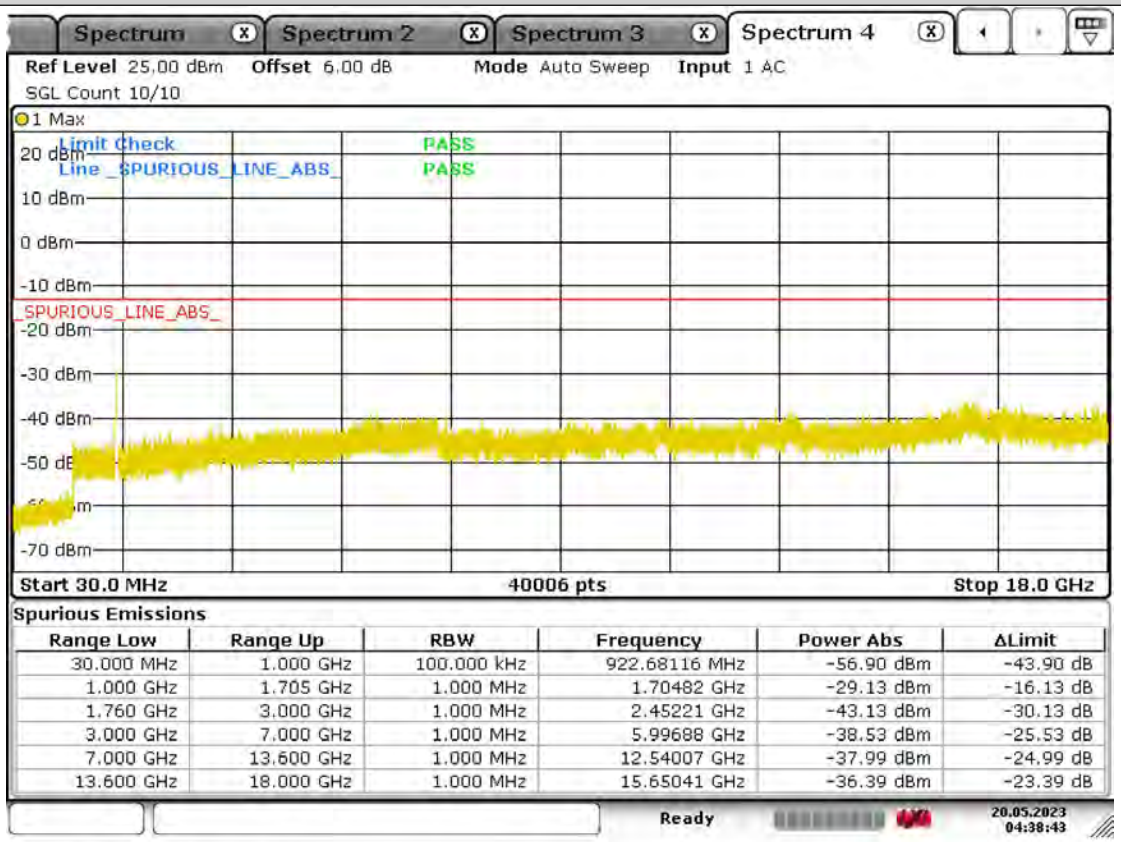
Band4-1312-1000~3000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	922.68116 MHz	-56.90 dBm	-43.90 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70482 GHz	-29.13 dBm	-16.13 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.45221 GHz	-43.13 dBm	-30.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.99688 GHz	-38.53 dBm	-25.53 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.54007 GHz	-37.99 dBm	-24.99 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.65041 GHz	-36.39 dBm	-23.39 dB

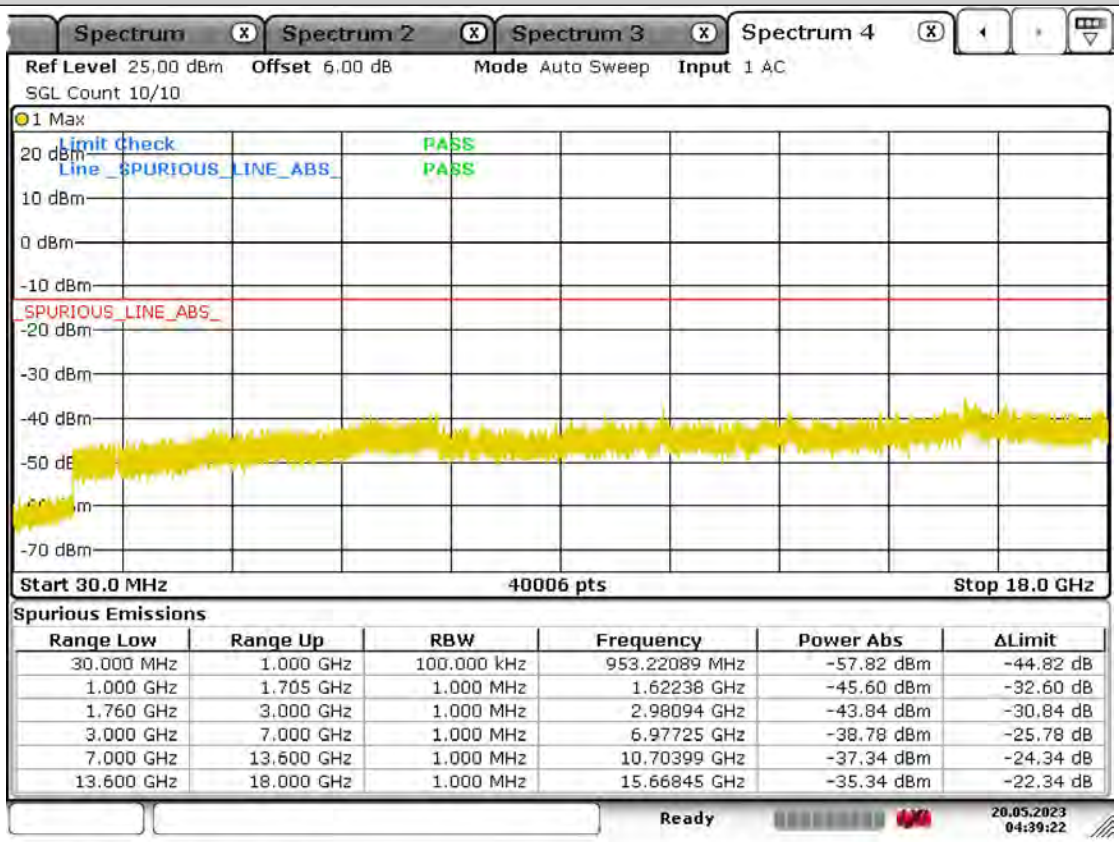
Band4-1312-3000~18000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	922.68116 MHz	-56.90 dBm	-43.90 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.70482 GHz	-29.13 dBm	-16.13 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.45221 GHz	-43.13 dBm	-30.13 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.99688 GHz	-38.53 dBm	-25.53 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.54007 GHz	-37.99 dBm	-24.99 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.65041 GHz	-36.39 dBm	-23.39 dB

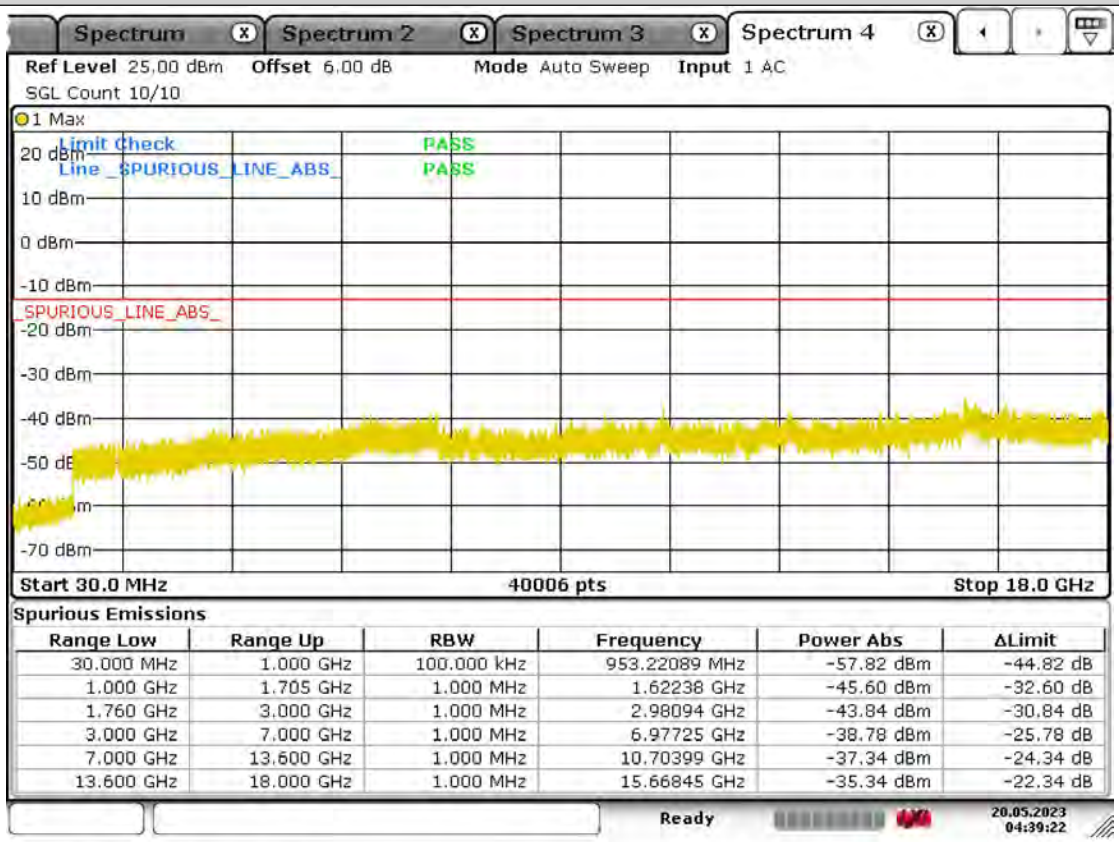
Band4-1413-30~1000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	953.22089 MHz	-57.82 dBm	-44.82 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.62238 GHz	-45.60 dBm	-32.60 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.98094 GHz	-43.84 dBm	-30.84 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97725 GHz	-38.78 dBm	-25.78 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.70399 GHz	-37.34 dBm	-24.34 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.66845 GHz	-35.34 dBm	-22.34 dB

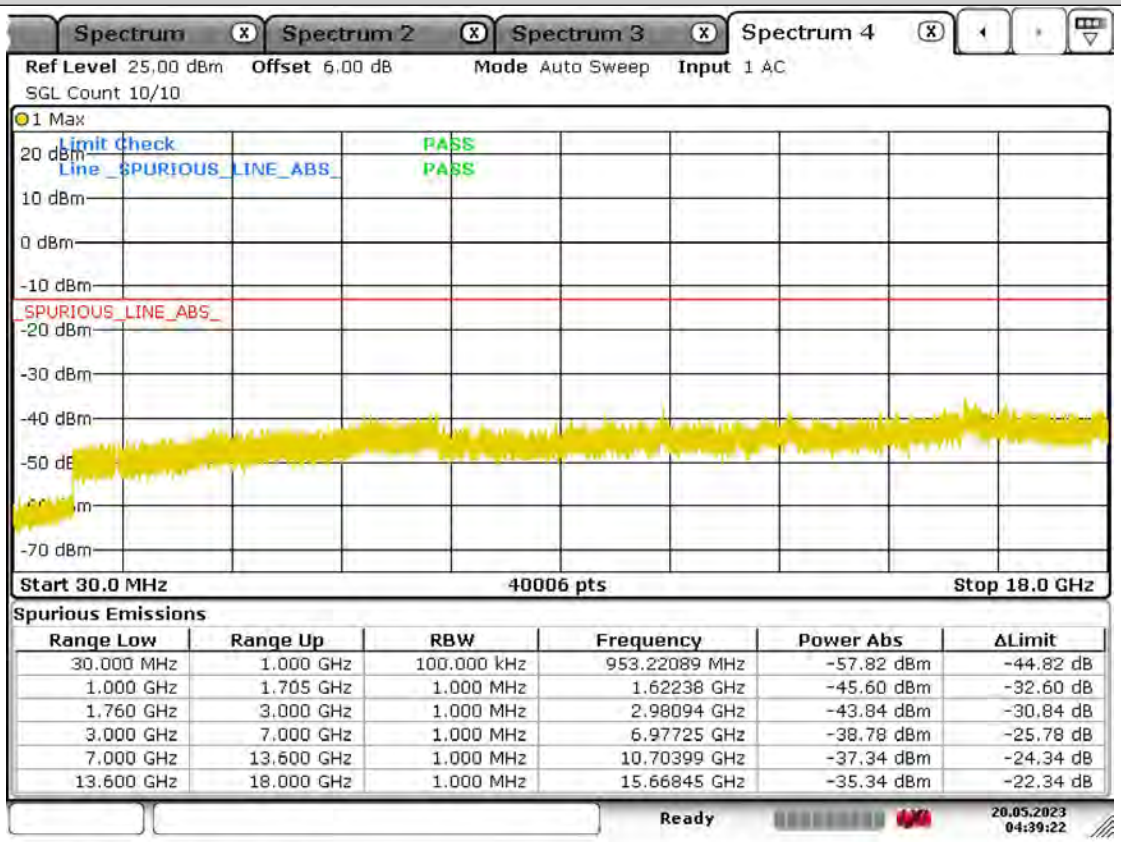
Band4-1413-1000~3000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	953.22089 MHz	-57.82 dBm	-44.82 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.62238 GHz	-45.60 dBm	-32.60 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.98094 GHz	-43.84 dBm	-30.84 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97725 GHz	-38.78 dBm	-25.78 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.70399 GHz	-37.34 dBm	-24.34 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.66845 GHz	-35.34 dBm	-22.34 dB

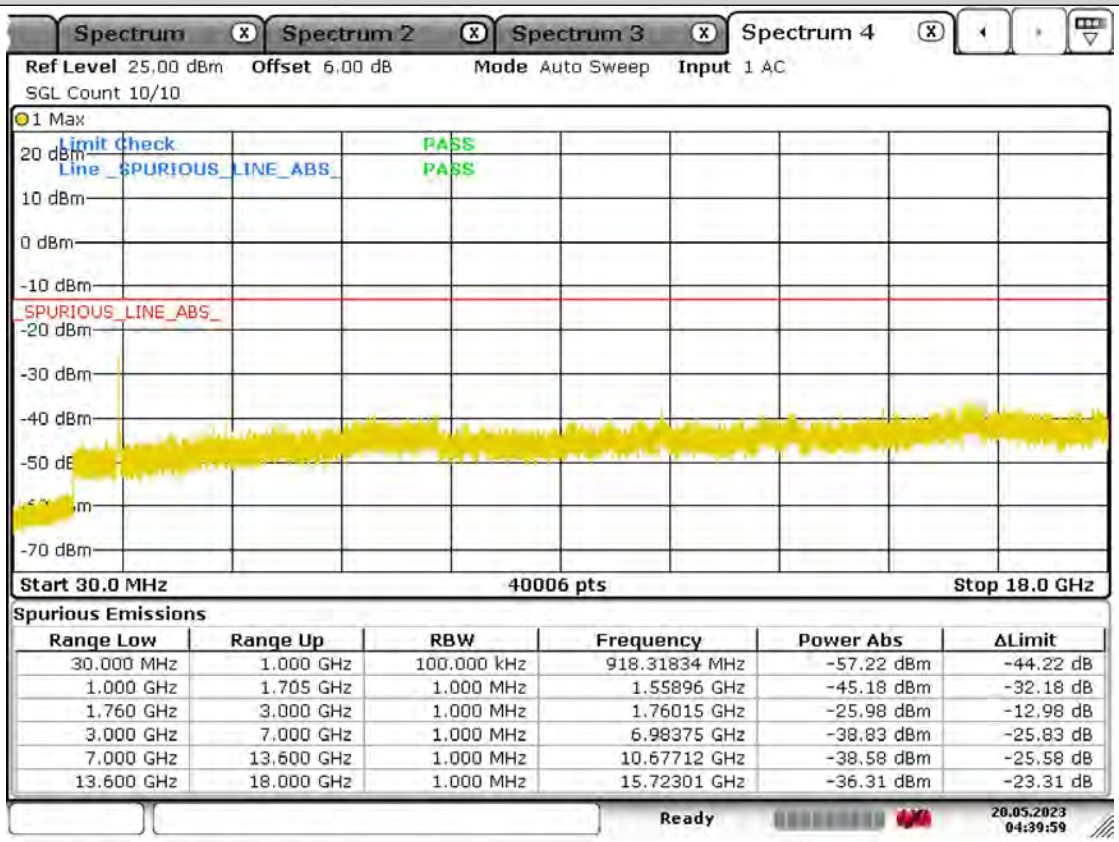
Band4-1413-3000~18000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	953.22089 MHz	-57.82 dBm	-44.82 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.62238 GHz	-45.60 dBm	-32.60 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.98094 GHz	-43.84 dBm	-30.84 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.97725 GHz	-38.78 dBm	-25.78 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.70399 GHz	-37.34 dBm	-24.34 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.66845 GHz	-35.34 dBm	-22.34 dB

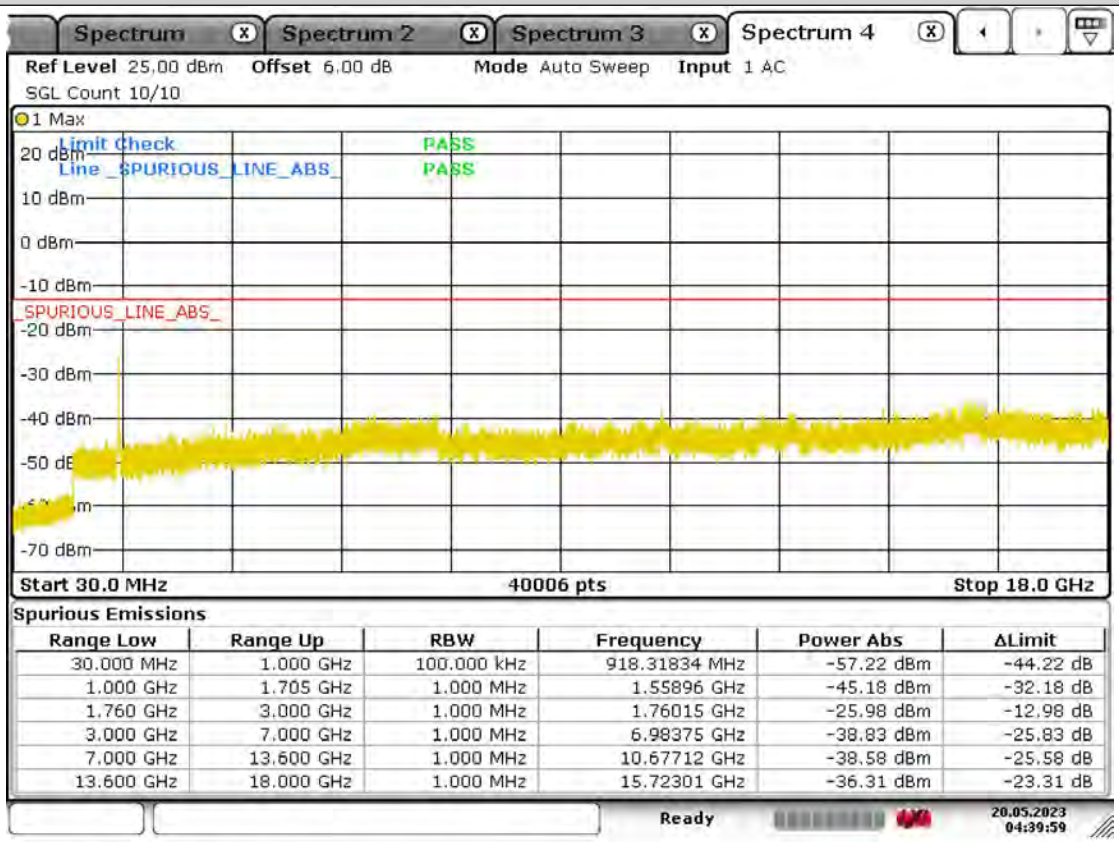
Band4-1513-30~1000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	918.31834 MHz	-57.22 dBm	-44.22 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.55896 GHz	-45.18 dBm	-32.18 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76015 GHz	-25.98 dBm	-12.98 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98375 GHz	-38.83 dBm	-25.83 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.67712 GHz	-38.58 dBm	-25.58 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.72301 GHz	-36.31 dBm	-23.31 dB

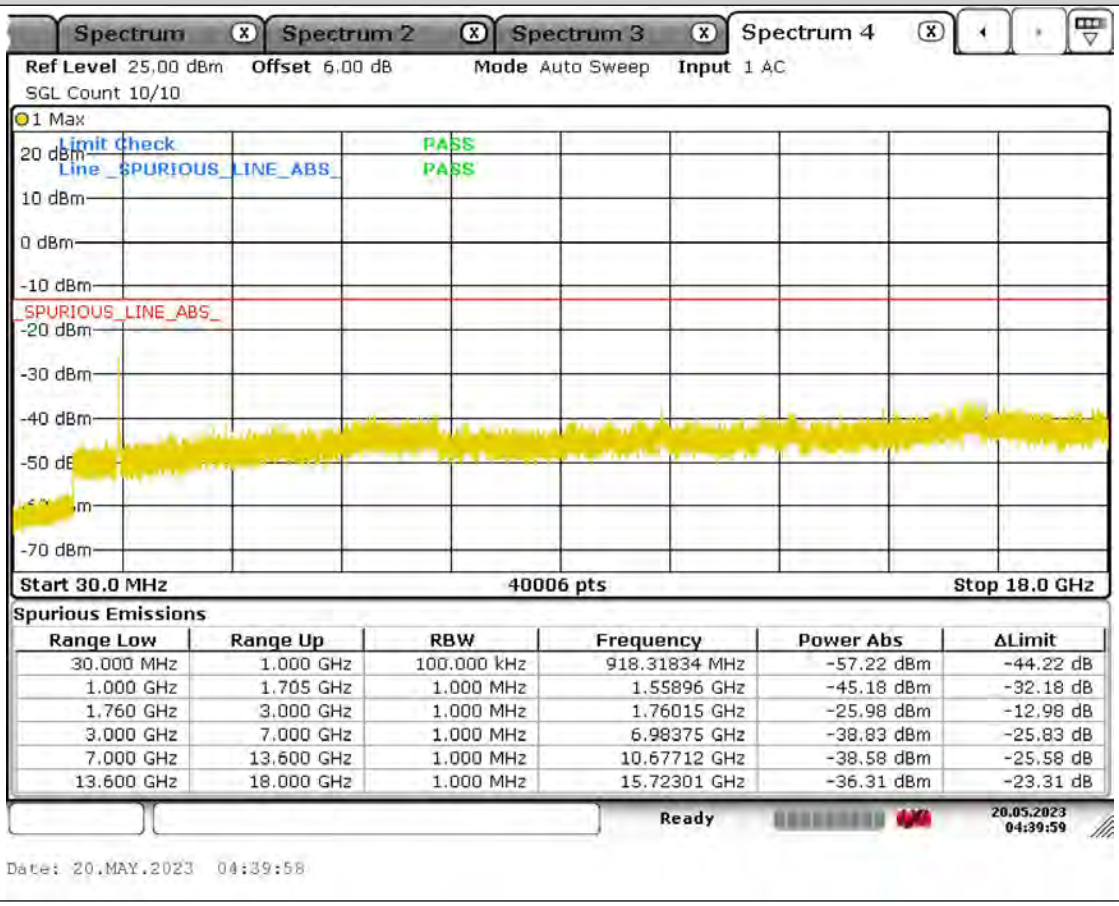
Band4-1513-1000~3000MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	918.31834 MHz	-57.22 dBm	-44.22 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.55896 GHz	-45.18 dBm	-32.18 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76015 GHz	-25.98 dBm	-12.98 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98375 GHz	-38.83 dBm	-25.83 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.67712 GHz	-38.58 dBm	-25.58 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.72301 GHz	-36.31 dBm	-23.31 dB

Band4-1513-3000~18000MHz



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	100.000 kHz	918.31834 MHz	-57.22 dBm	-44.22 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.55896 GHz	-45.18 dBm	-32.18 dB
1.760 GHz	3.000 GHz	1.000 MHz	1.76015 GHz	-25.98 dBm	-12.98 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98375 GHz	-38.83 dBm	-25.83 dB
7.000 GHz	13.600 GHz	1.000 MHz	10.67712 GHz	-38.58 dBm	-25.58 dB
13.600 GHz	18.000 GHz	1.000 MHz	15.72301 GHz	-36.31 dBm	-23.31 dB

FREQUENCY STABILITY

Test Result

Voltage							
Band	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band4	1312	VL	NT	-4.97	-0.002902	±2.5	PASS
Band4	1312	VN	NT	8.19	0.004783	±2.5	PASS
Band4	1312	VH	NT	-5.17	-0.003019	±2.5	PASS
Band4	1413	VL	NT	1.7	0.000973	±2.5	PASS
Band4	1413	VN	NT	-6.31	-0.003611	±2.5	PASS
Band4	1413	VH	NT	3.24	0.001854	±2.5	PASS
Band4	1513	VL	NT	-2.89	-0.001621	±2.5	PASS
Band4	1513	VN	NT	3	0.001683	±2.5	PASS
Band4	1513	VH	NT	9.51	0.005335	±2.5	PASS

Temperature							
Band	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band4	1712.4	NV	-30	-6.87	-0.004012	±2.5	PASS
Band4	1712.4	NV	-20	5.16	0.003013	±2.5	PASS
Band4	1712.4	NV	0	9.65	0.005635	±2.5	PASS
Band4	1712.4	NV	10	2.06	0.001203	±2.5	PASS
Band4	1712.4	NV	20	-5.73	-0.003346	±2.5	PASS
Band4	1712.4	NV	30	4.43	0.002587	±2.5	PASS
Band4	1712.4	NV	40	2.14	0.001250	±2.5	PASS
Band4	1712.4	NV	50	-1.35	-0.000788	±2.5	PASS
Band4	1747.6	NV	-30	-1.55	-0.000887	±2.5	PASS
Band4	1747.6	NV	-20	7.99	0.004572	±2.5	PASS
Band4	1747.6	NV	0	9.06	0.005184	±2.5	PASS
Band4	1747.6	NV	10	0.08	0.000046	±2.5	PASS
Band4	1747.6	NV	20	-7.72	-0.004417	±2.5	PASS
Band4	1747.6	NV	30	9.42	0.005390	±2.5	PASS
Band4	1747.6	NV	40	-5.17	-0.002958	±2.5	PASS
Band4	1747.6	NV	50	-0.74	-0.000423	±2.5	PASS
Band4	1782.6	NV	-30	8.44	0.004735	±2.5	PASS
Band4	1782.6	NV	-20	4.04	0.002266	±2.5	PASS
Band4	1782.6	NV	0	-3.51	-0.001969	±2.5	PASS
Band4	1782.6	NV	10	9.05	0.005077	±2.5	PASS
Band4	1782.6	NV	20	5	0.002805	±2.5	PASS
Band4	1782.6	NV	30	1.85	0.001038	±2.5	PASS
Band4	1782.6	NV	40	-2.43	-0.001363	±2.5	PASS
Band4	1782.6	NV	50	5	0.002805	±2.5	PASS

LTE BAND12

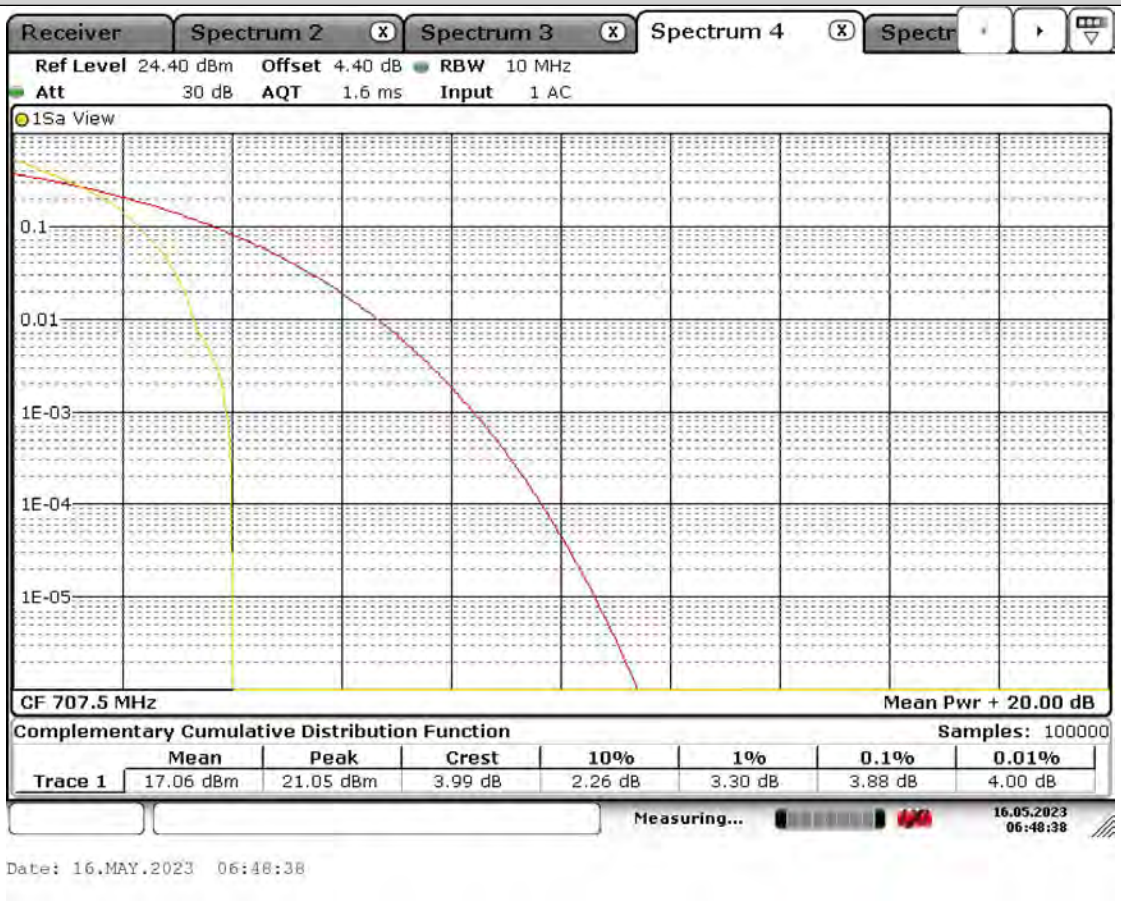
PEAK-TO-AVERAGE RATIO(CCDF)

Test Result

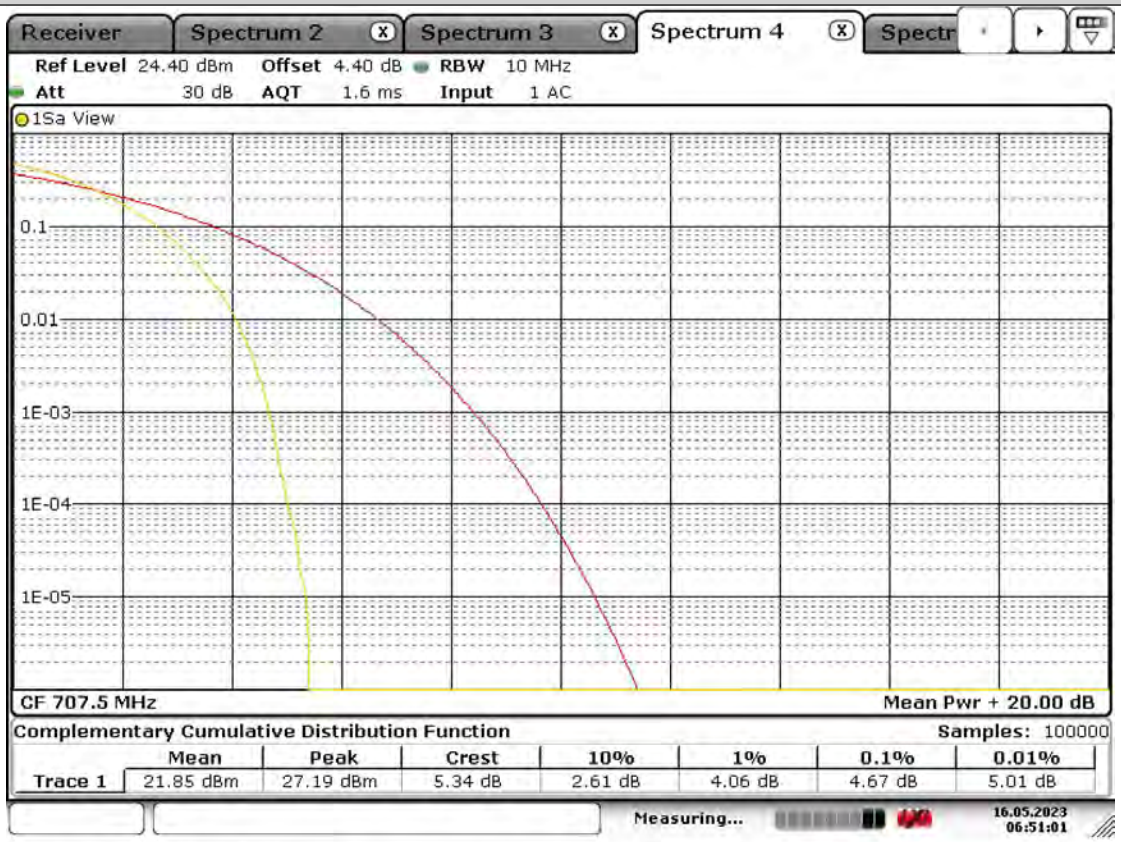
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band12	10MHz	QPSK	23060	1RB#0	3.88	13	PASS
Band12	10MHz	QPSK	23060	50RB#0	4.67	13	PASS
Band12	10MHz	QPSK	23095	1RB#0	3.48	13	PASS
Band12	10MHz	QPSK	23095	50RB#0	4.67	13	PASS
Band12	10MHz	QPSK	23130	1RB#0	4.38	13	PASS
Band12	10MHz	QPSK	23130	50RB#0	4.70	13	PASS
Band12	10MHz	16QAM	23060	1RB#0	4.72	13	PASS
Band12	10MHz	16QAM	23060	50RB#0	5.71	13	PASS
Band12	10MHz	16QAM	23095	1RB#0	4.00	13	PASS
Band12	10MHz	16QAM	23095	50RB#0	5.68	13	PASS
Band12	10MHz	16QAM	23130	1RB#0	4.96	13	PASS
Band12	10MHz	16QAM	23130	50RB#0	5.45	13	PASS
Band12	10MHz	64QAM	23060	1RB#0	5.10	13	PASS
Band12	10MHz	64QAM	23060	50RB#0	6.14	13	PASS
Band12	10MHz	64QAM	23095	1RB#0	4.81	13	PASS
Band12	10MHz	64QAM	23095	50RB#0	6.06	13	PASS
Band12	10MHz	64QAM	23130	1RB#0	5.94	13	PASS
Band12	10MHz	64QAM	23130	50RB#0	5.97	13	PASS

Test Graphs

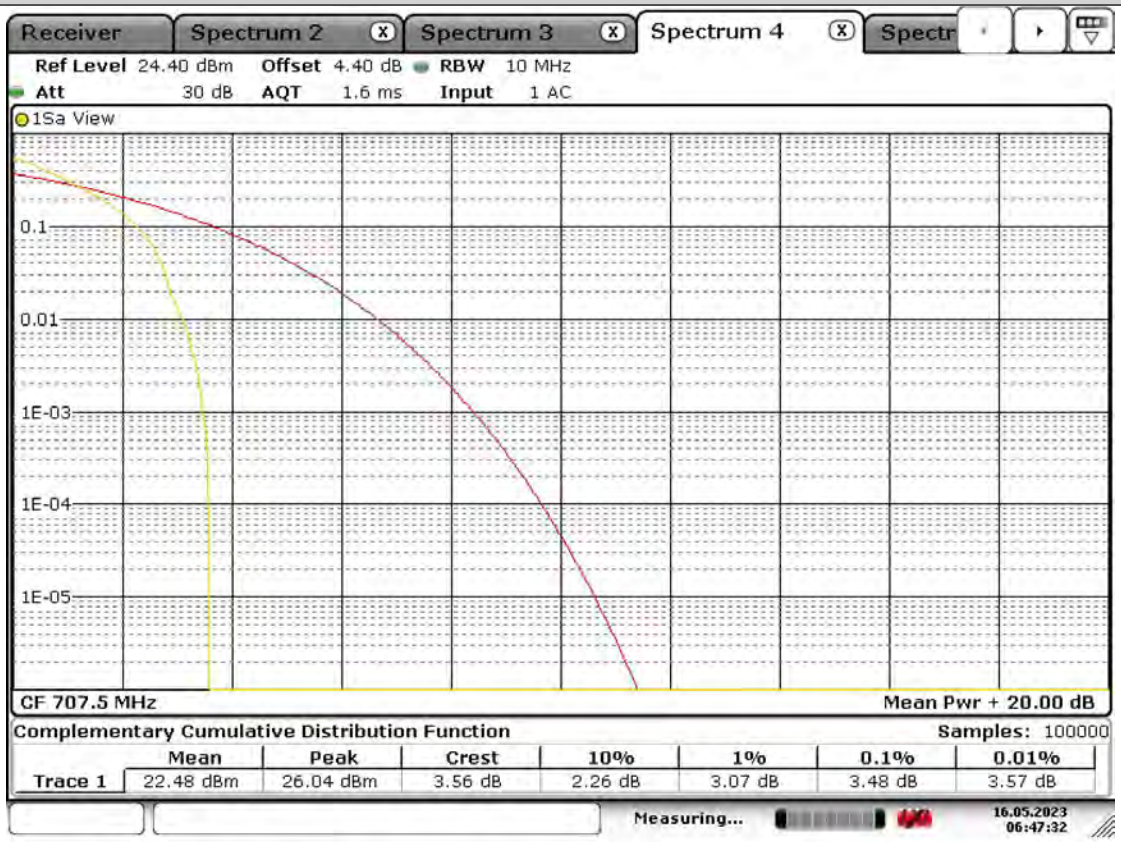
Band12-10MHz-QPSK-23060-1RB#0



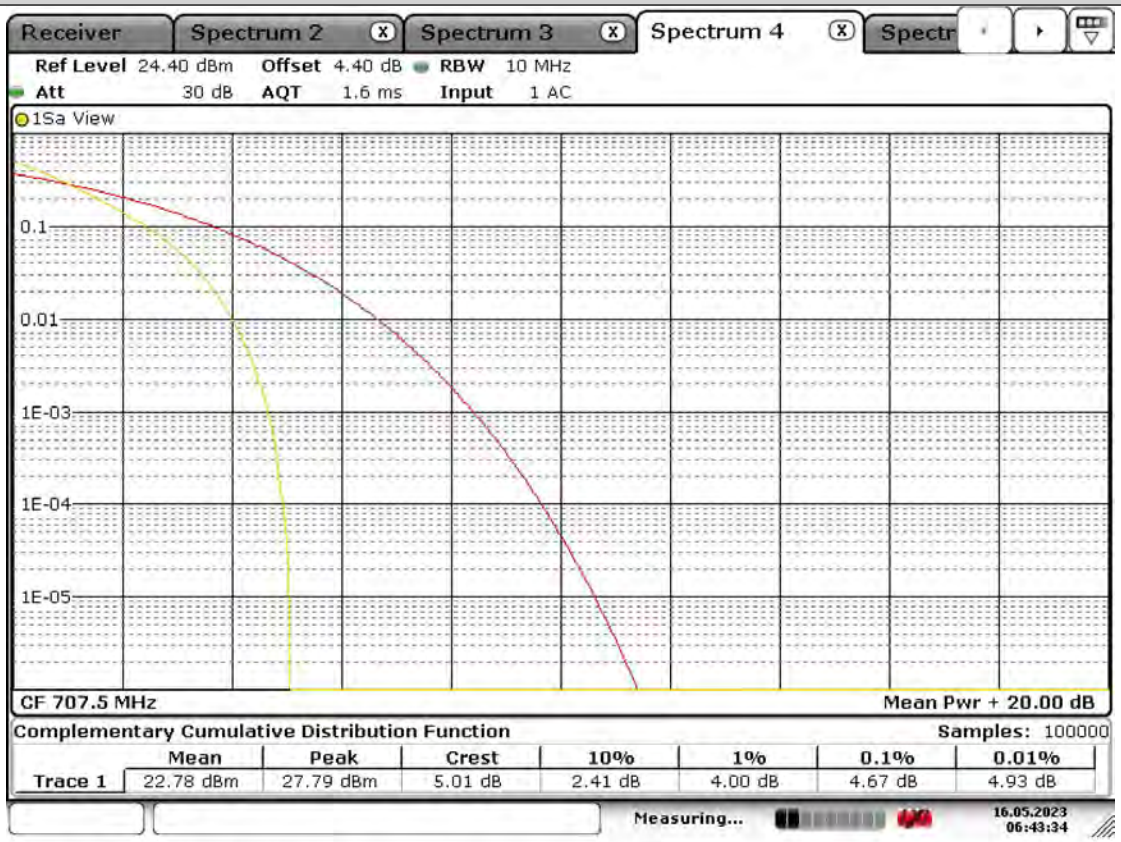
Band12-10MHz-QPSK-23060-50RB#0



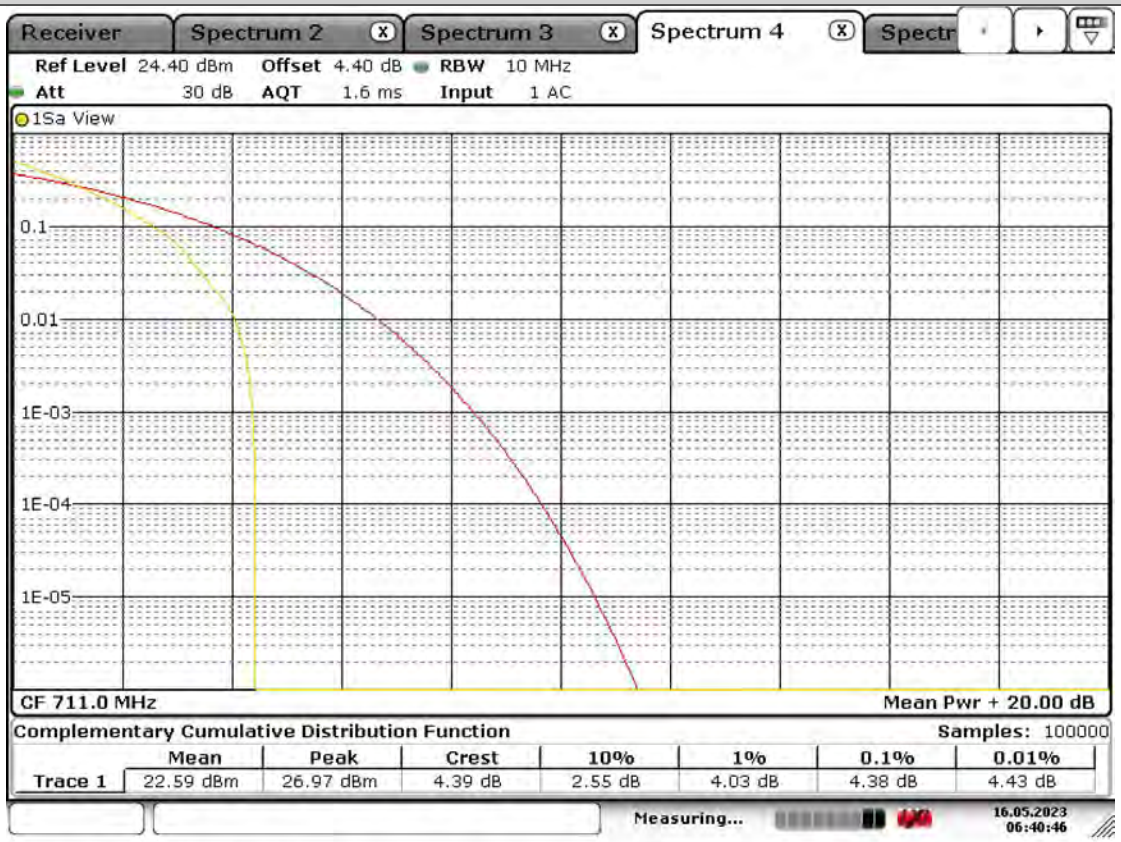
Band12-10MHz-QPSK-23095-1RB#0



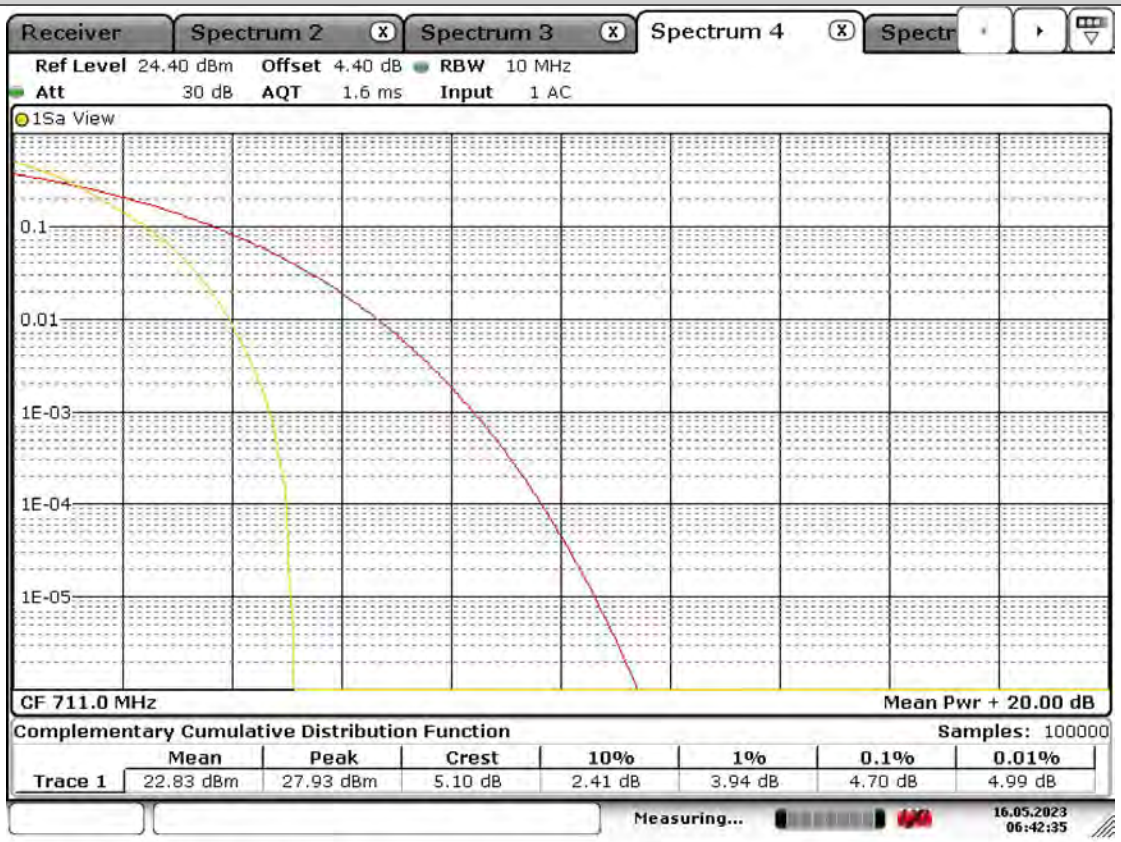
Band12-10MHz-QPSK-23095-50RB#0



Band12-10MHz-QPSK-23130-1RB#0

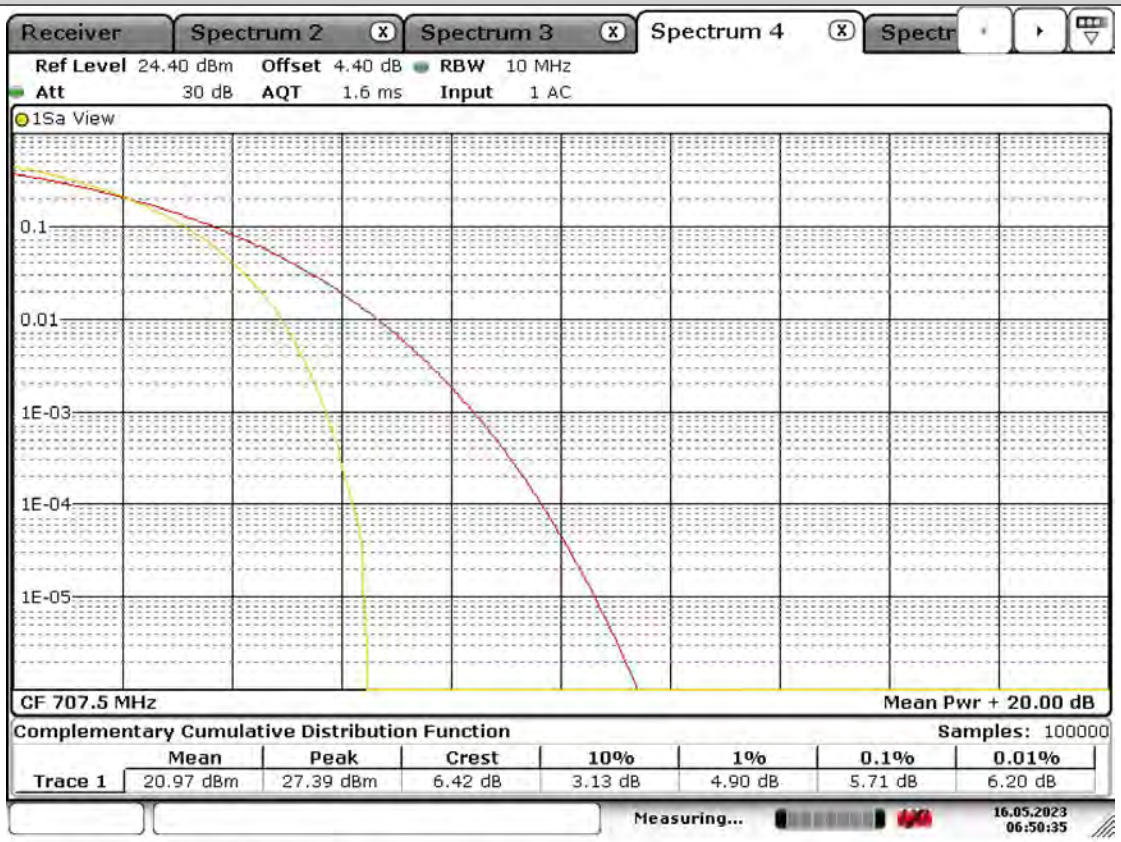


Band12-10MHz-QPSK-23130-50RB#0



Band12-10MHz-16QAM-23060-1RB#0

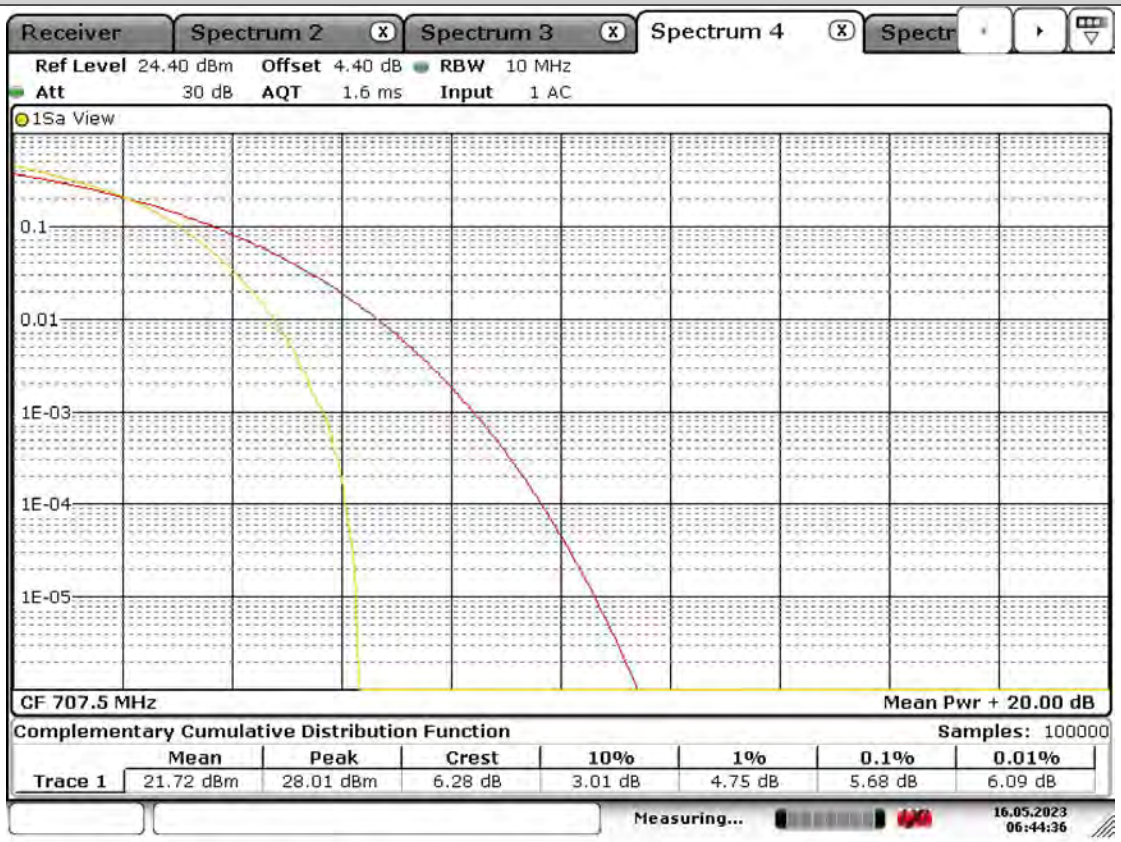
Band12-10MHz-16QAM-23060-50RB#0



Band12-10MHz-16QAM-23095-1RB#0

Date: 16.MAY.2023 06:47:10

Band12-10MHz-16QAM-23095-50RB#0



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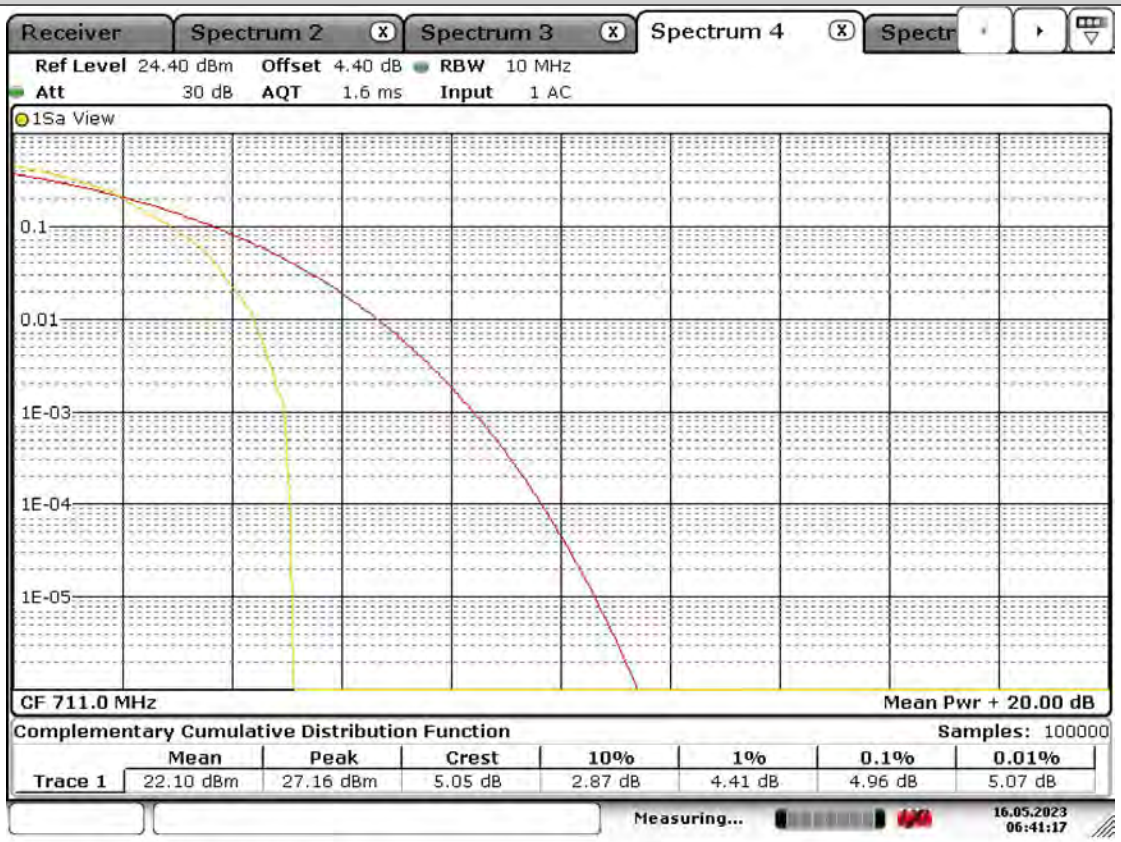

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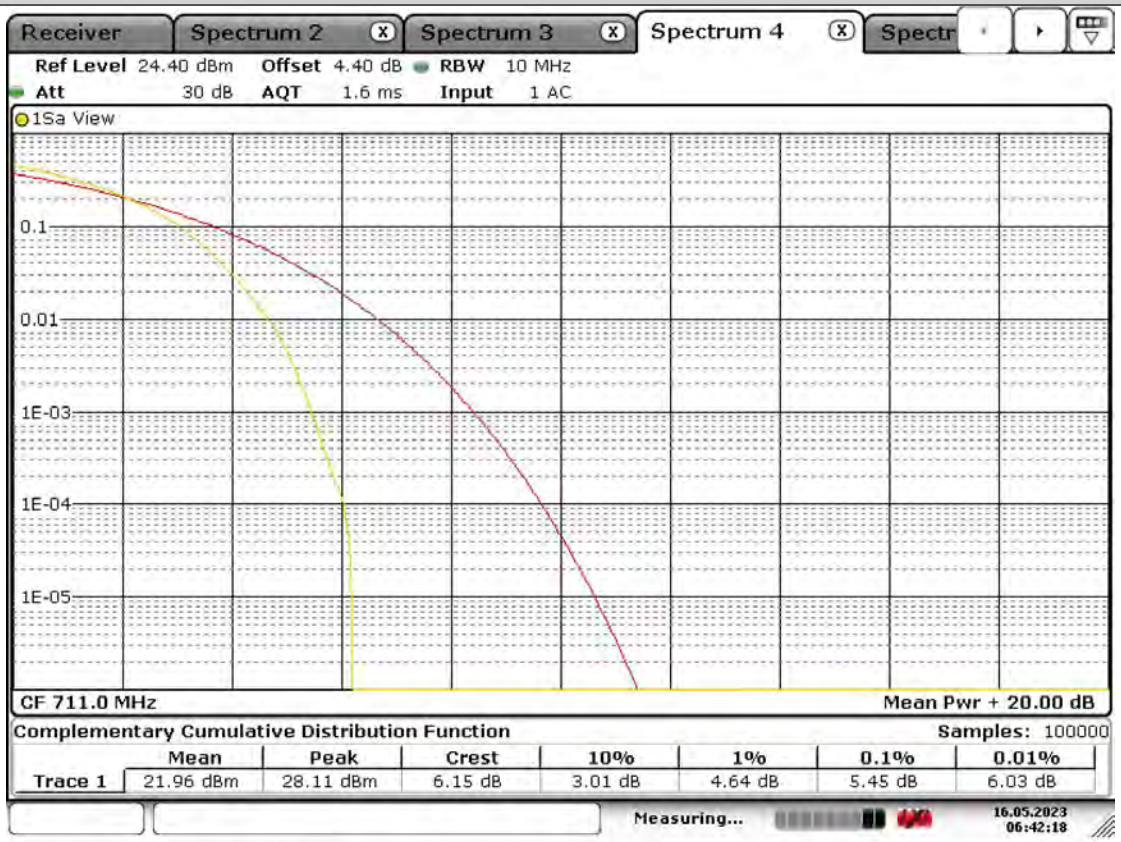

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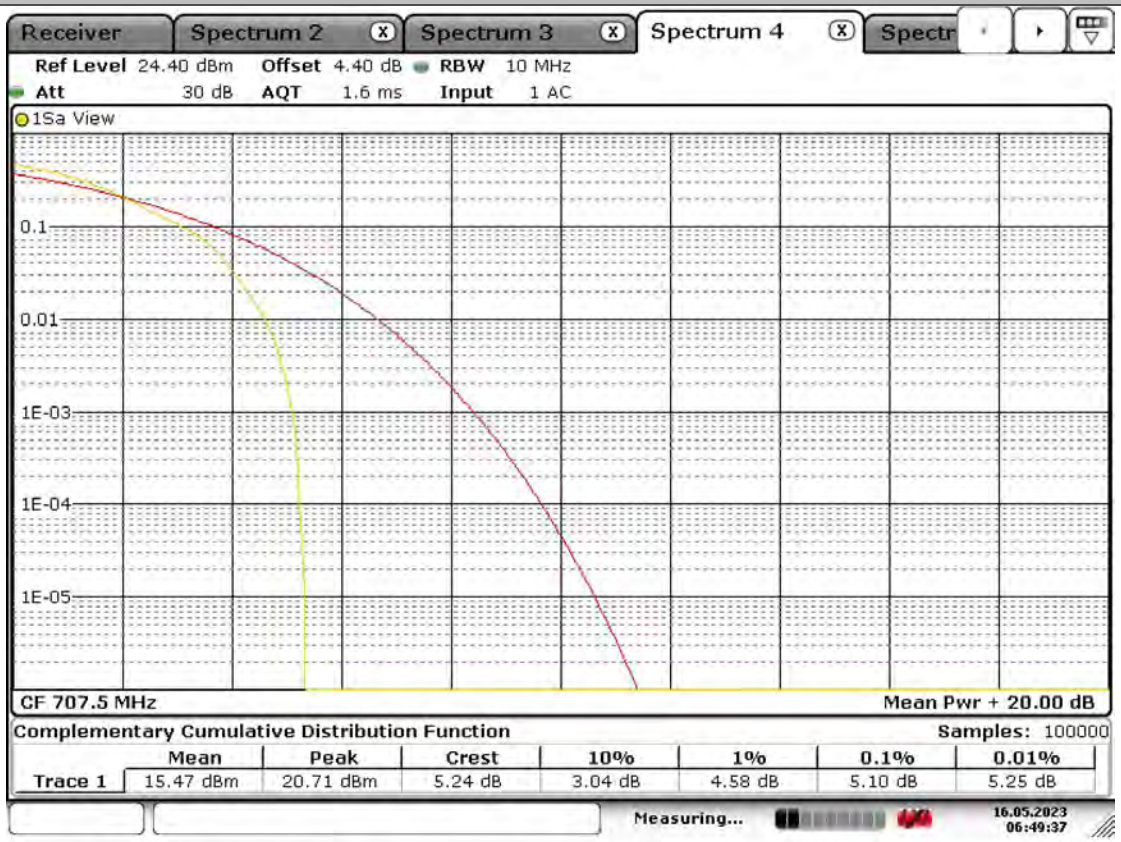

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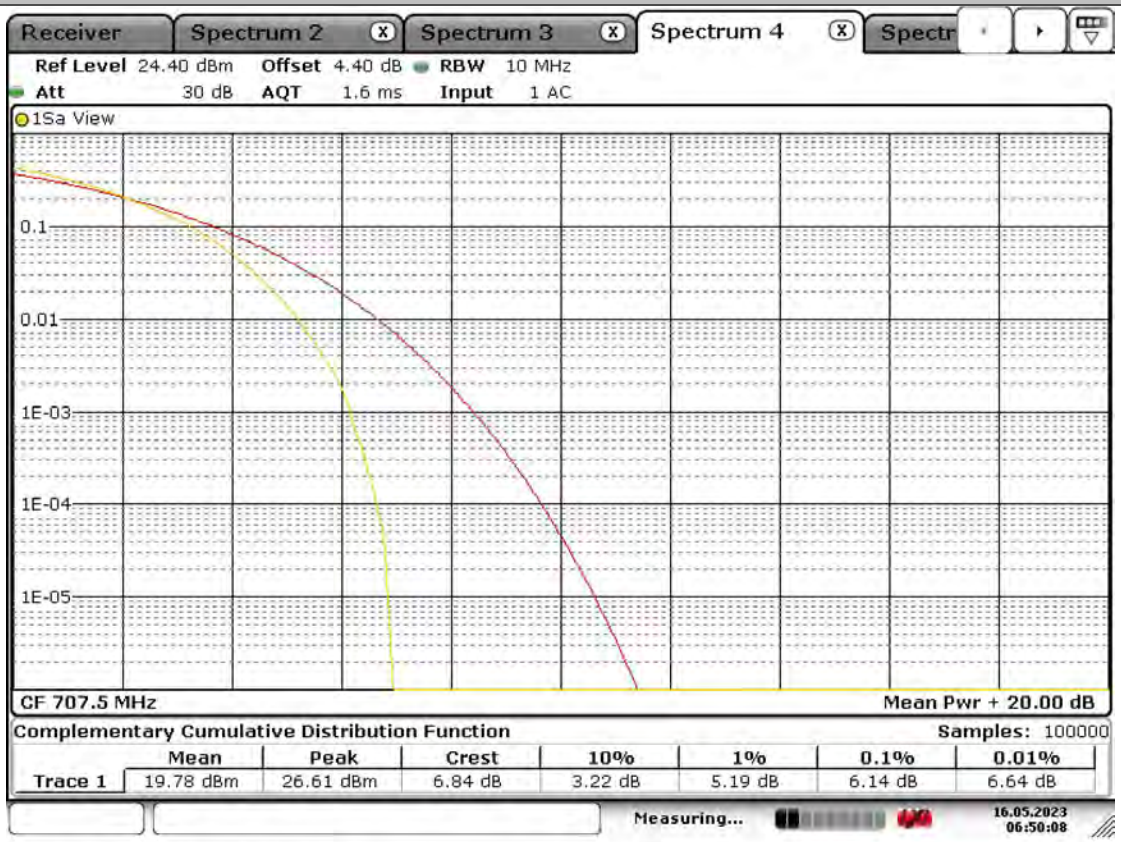

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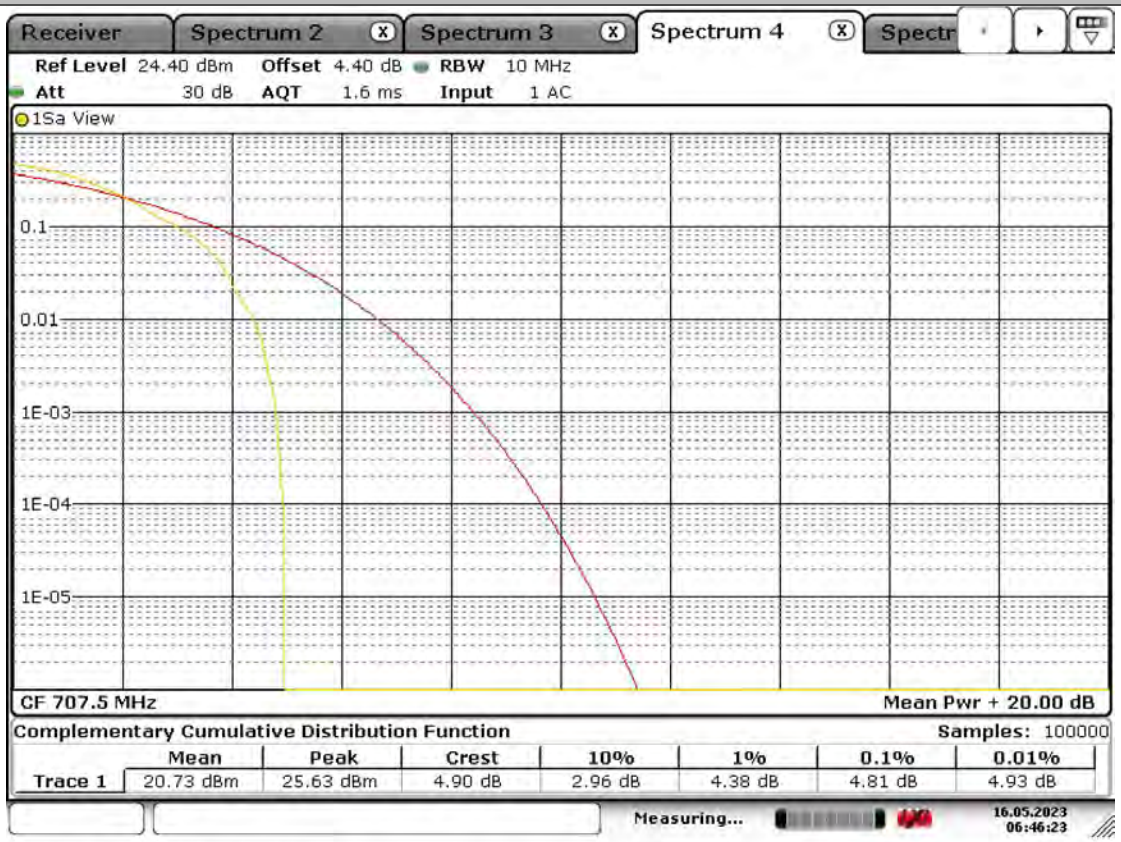

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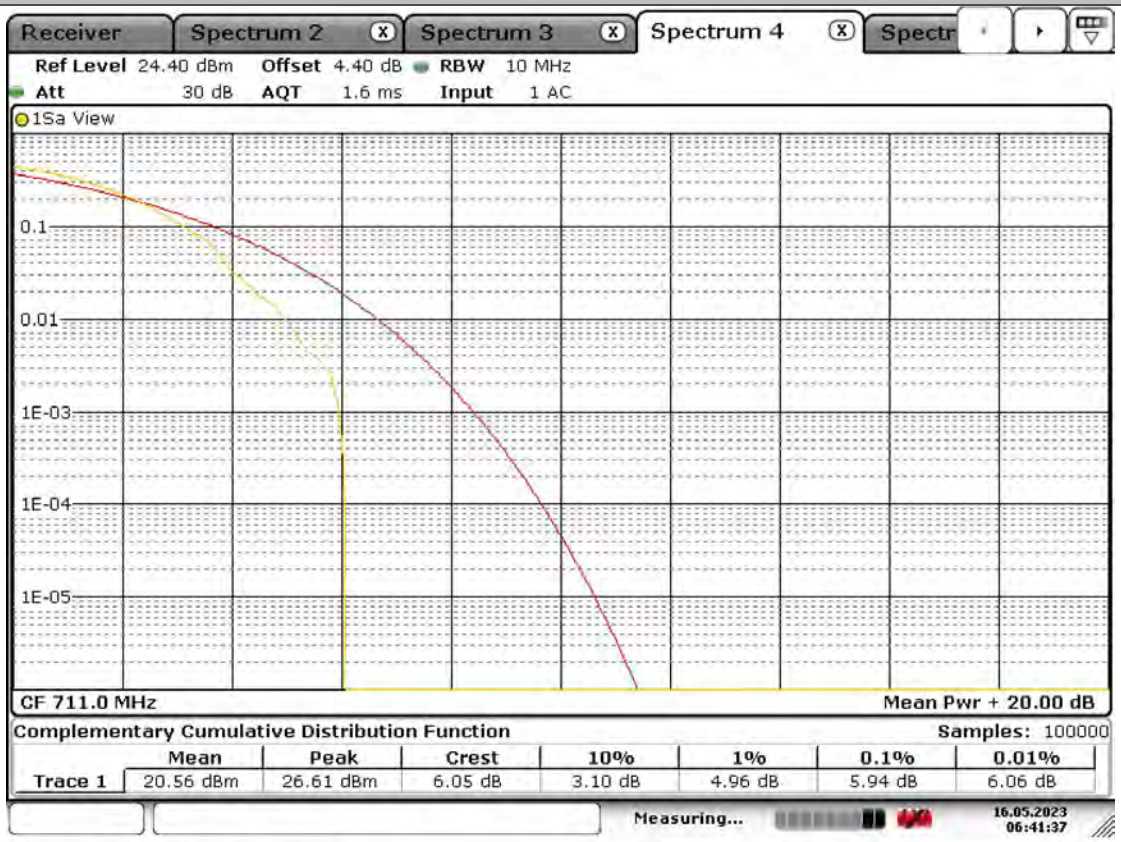

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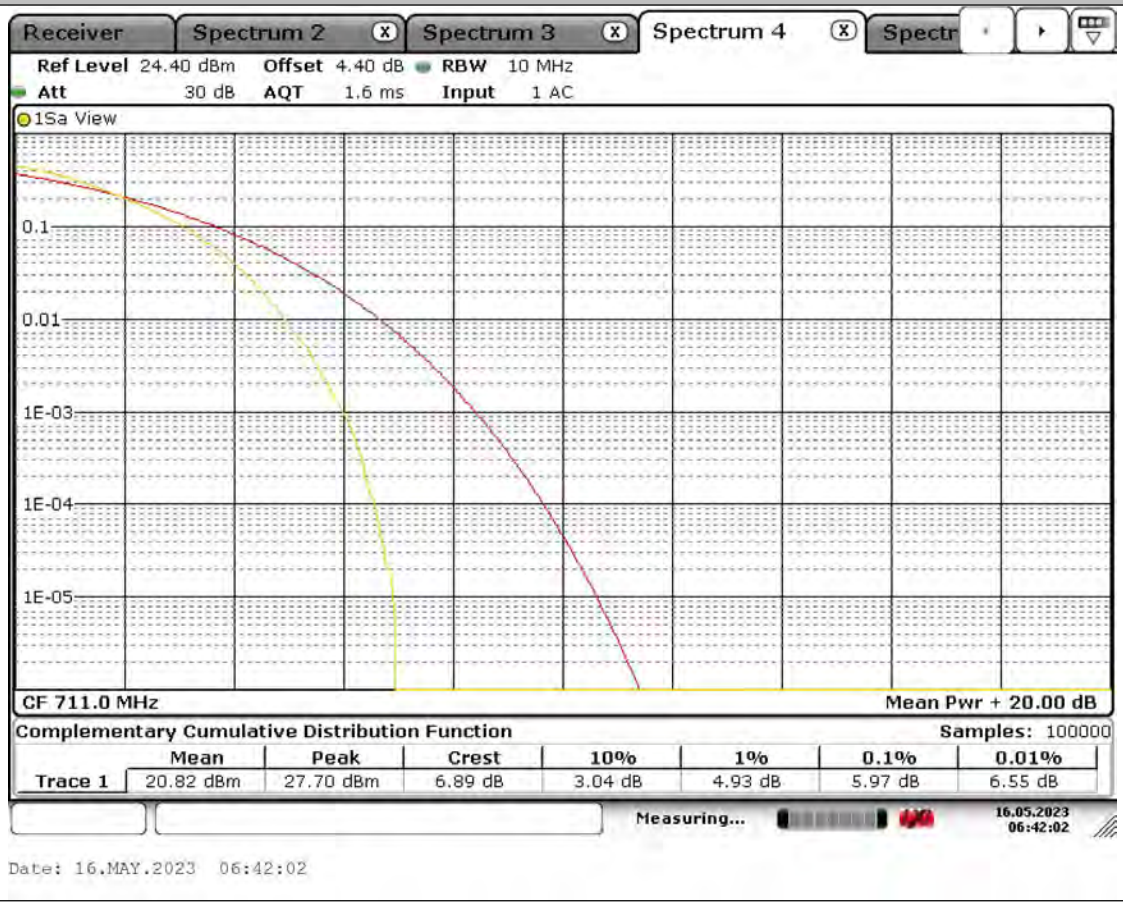


26DB BANDWIDTH AND OCCUPIED BANDWIDTH

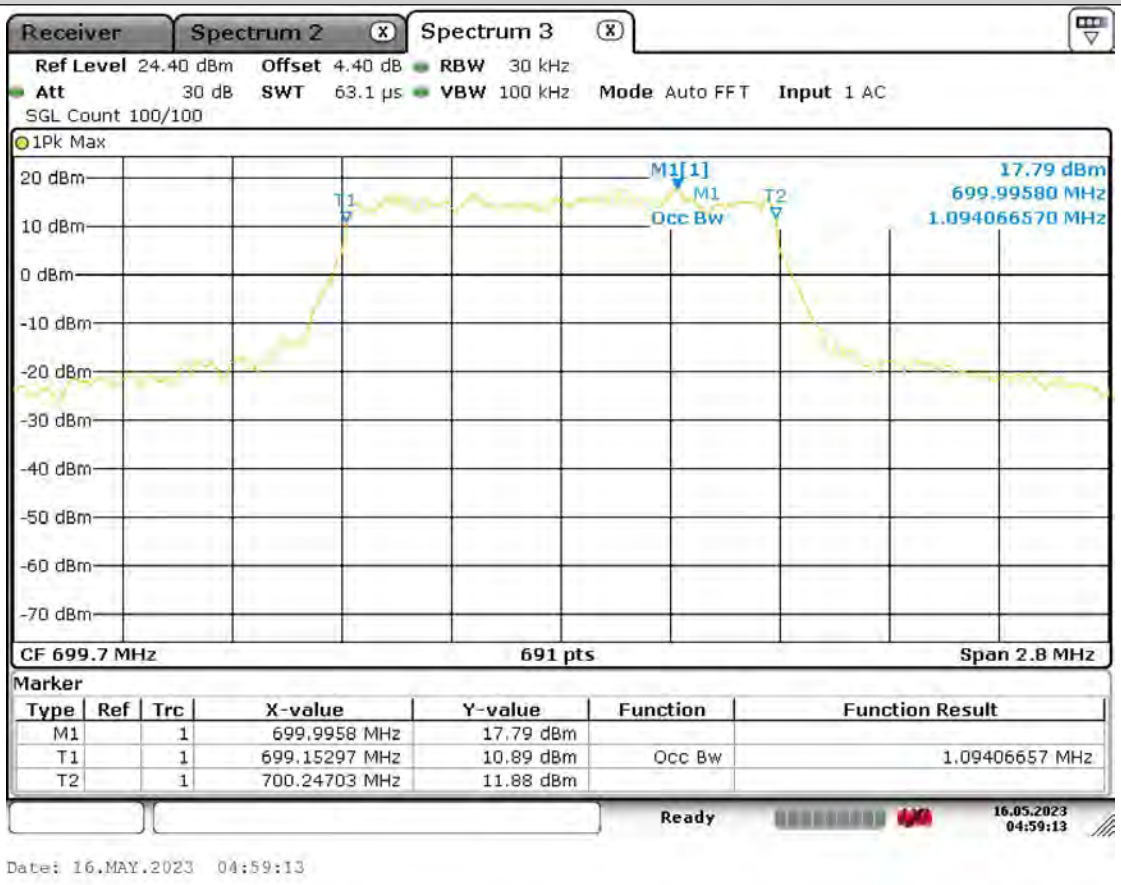
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band12	1.4MHz	QPSK	23017	6RB#0	1.0940	1.2805	PASS
Band12	1.4MHz	QPSK	23095	6RB#0	1.1021	1.2845	PASS
Band12	1.4MHz	QPSK	23173	6RB#0	1.0900	1.2764	PASS
Band12	1.4MHz	16QAM	23017	6RB#0	1.0940	1.2845	PASS
Band12	1.4MHz	16QAM	23095	6RB#0	1.0940	1.2521	PASS
Band12	1.4MHz	16QAM	23173	6RB#0	1.0859	1.2967	PASS
Band12	3MHz	QPSK	23025	15RB#0	2.7351	2.9696	PASS
Band12	3MHz	QPSK	23095	15RB#0	2.7178	3.0043	PASS
Band12	3MHz	QPSK	23165	15RB#0	2.7438	2.9957	PASS
Band12	3MHz	16QAM	23025	15RB#0	2.7091	2.9957	PASS
Band12	3MHz	16QAM	23095	15RB#0	2.7091	3.0043	PASS
Band12	3MHz	16QAM	23165	15RB#0	2.7004	3.0043	PASS
Band12	5MHz	QPSK	23035	25RB#0	4.5007	4.9490	PASS
Band12	5MHz	QPSK	23095	25RB#0	4.4862	4.9490	PASS
Band12	5MHz	QPSK	23155	25RB#0	4.4862	4.8910	PASS
Band12	5MHz	16QAM	23035	25RB#0	4.5007	4.9780	PASS
Band12	5MHz	16QAM	23095	25RB#0	4.5007	4.8630	PASS
Band12	5MHz	16QAM	23155	25RB#0	4.5007	4.8770	PASS
Band12	10MHz	QPSK	23060	50RB#0	8.9725	9.7540	PASS
Band12	10MHz	QPSK	23095	50RB#0	8.9725	9.8120	PASS
Band12	10MHz	QPSK	23130	50RB#0	9.0593	9.6670	PASS
Band12	10MHz	16QAM	23060	50RB#0	9.0593	9.7830	PASS
Band12	10MHz	16QAM	23095	50RB#0	9.0014	9.7250	PASS
Band12	10MHz	16QAM	23130	50RB#0	8.9725	9.7830	PASS
Band12	1.4MHz	64QAM	23017	6RB#0	1.0981	1.2724	PASS
Band12	1.4MHz	64QAM	23095	6RB#0	1.0981	1.3007	PASS
Band12	1.4MHz	64QAM	23173	6RB#0	1.0900	1.2683	PASS
Band12	3MHz	64QAM	23025	15RB#0	2.7091	3.0304	PASS
Band12	3MHz	64QAM	23095	15RB#0	2.7438	3.0304	PASS
Band12	3MHz	64QAM	23165	15RB#0	2.7264	3.0130	PASS
Band12	5MHz	64QAM	23035	25RB#0	4.4862	4.8910	PASS
Band12	5MHz	64QAM	23095	25RB#0	4.5007	4.9930	PASS
Band12	5MHz	64QAM	23155	25RB#0	4.5151	4.8910	PASS
Band12	10MHz	64QAM	23060	50RB#0	8.9435	9.9570	PASS
Band12	10MHz	64QAM	23095	50RB#0	9.0882	9.8700	PASS
Band12	10MHz	64QAM	23130	50RB#0	9.0014	9.8990	PASS

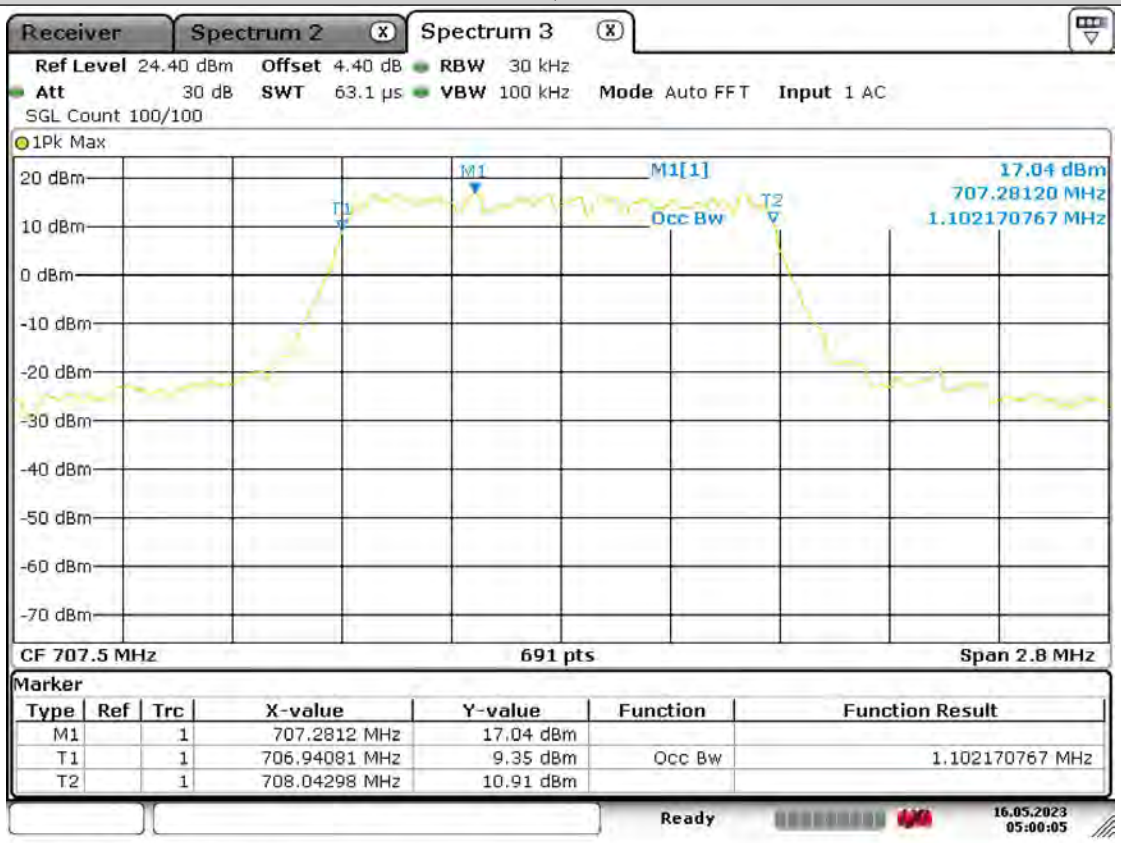
Test Graphs

Occupied Bandwidth

Band12-1.4MHz-QPSK-23017-6RB#0



Band12-1.4MHz-QPSK-23095-6RB#0



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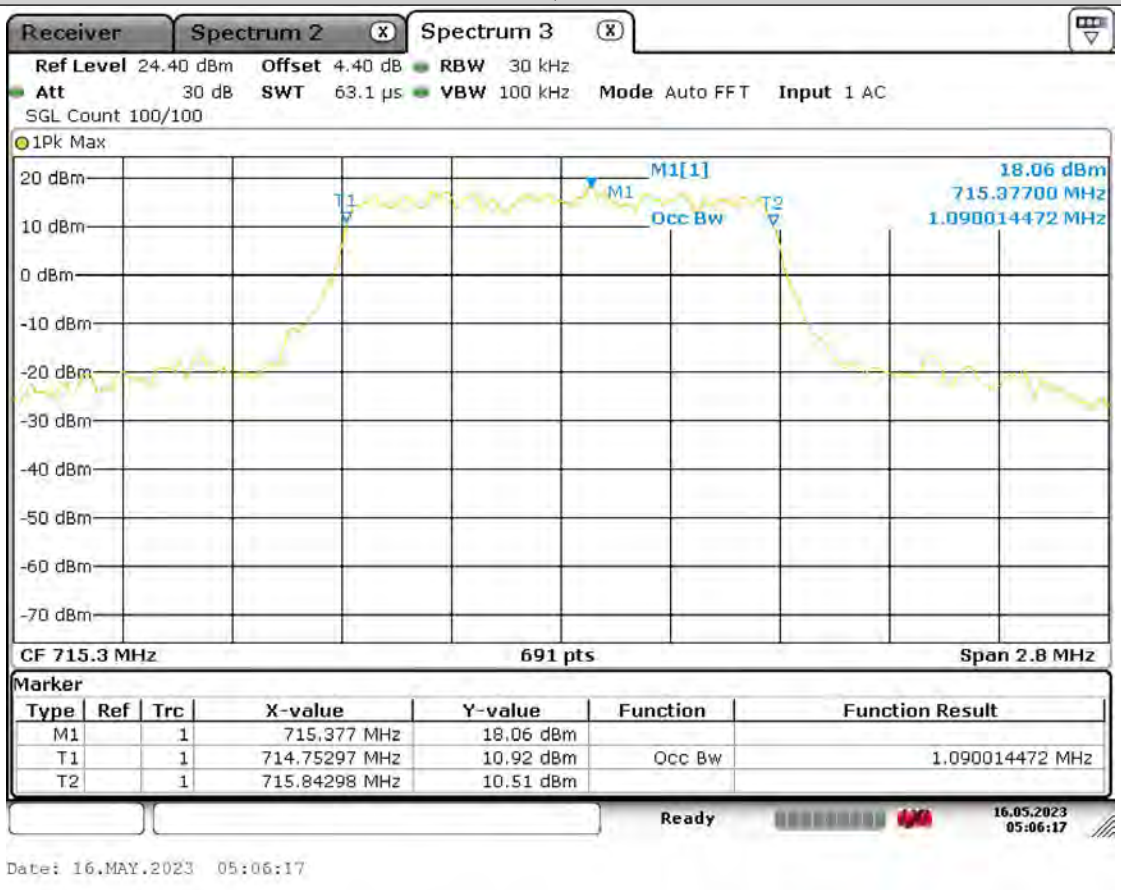
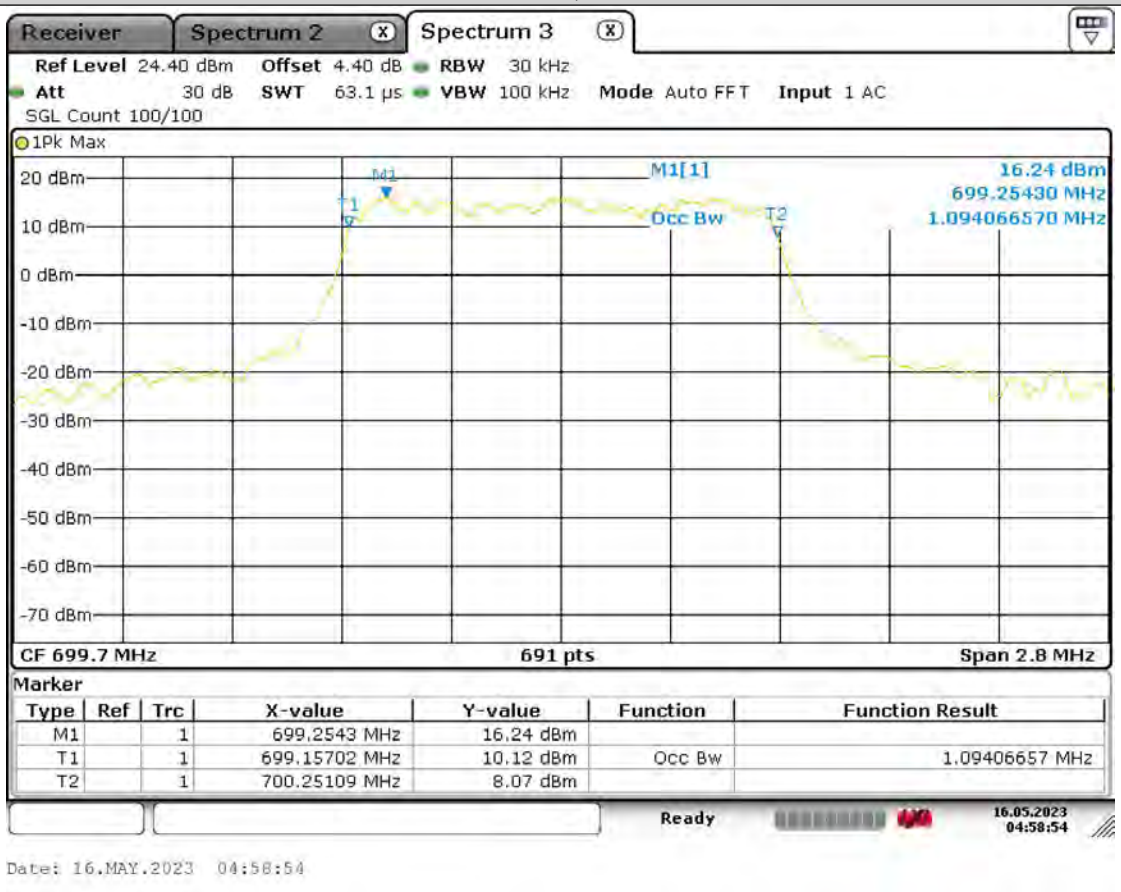


Band12-1.4MHz-16QAM-23017-6RB#0



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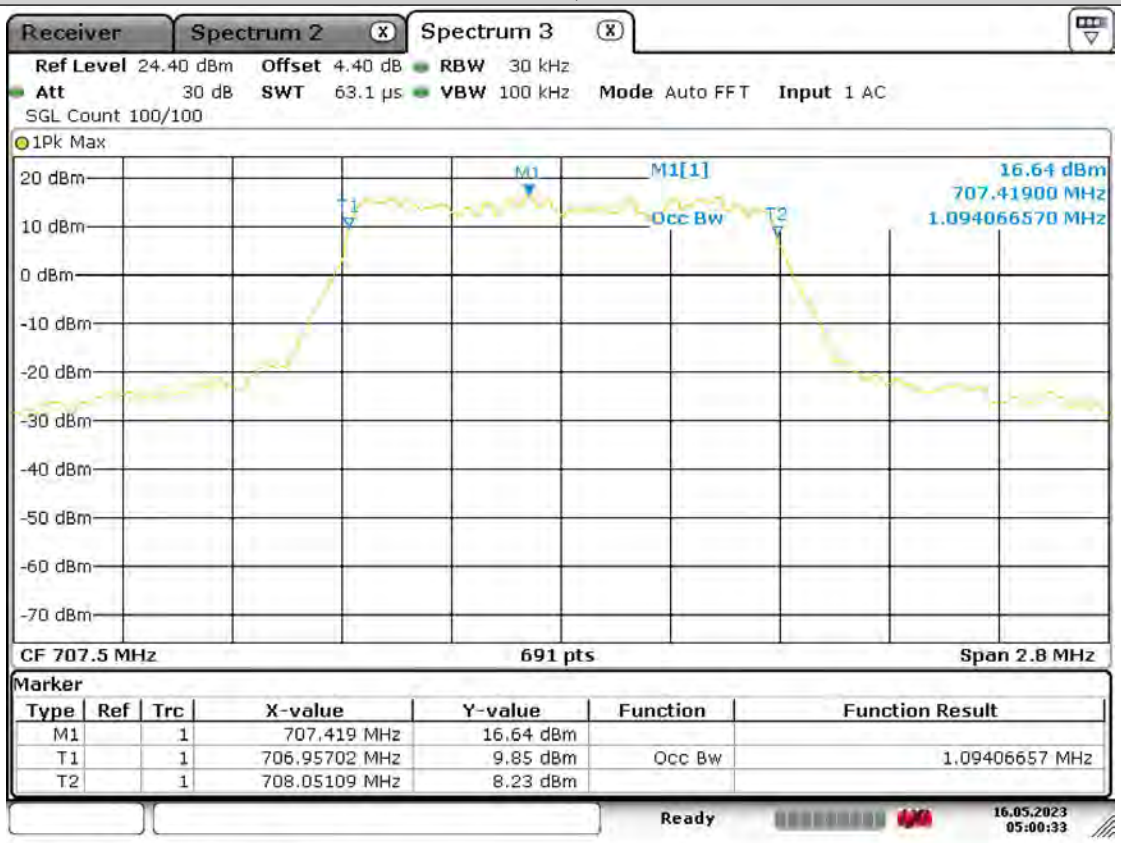

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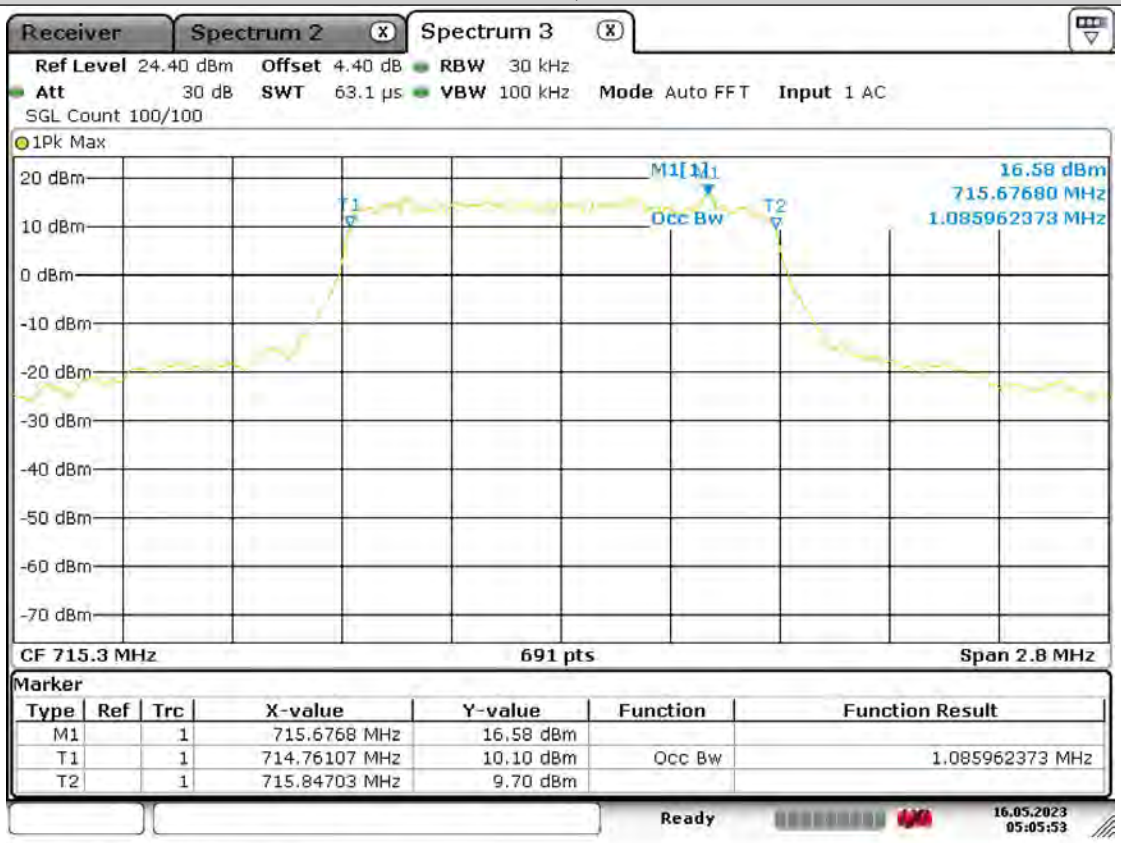

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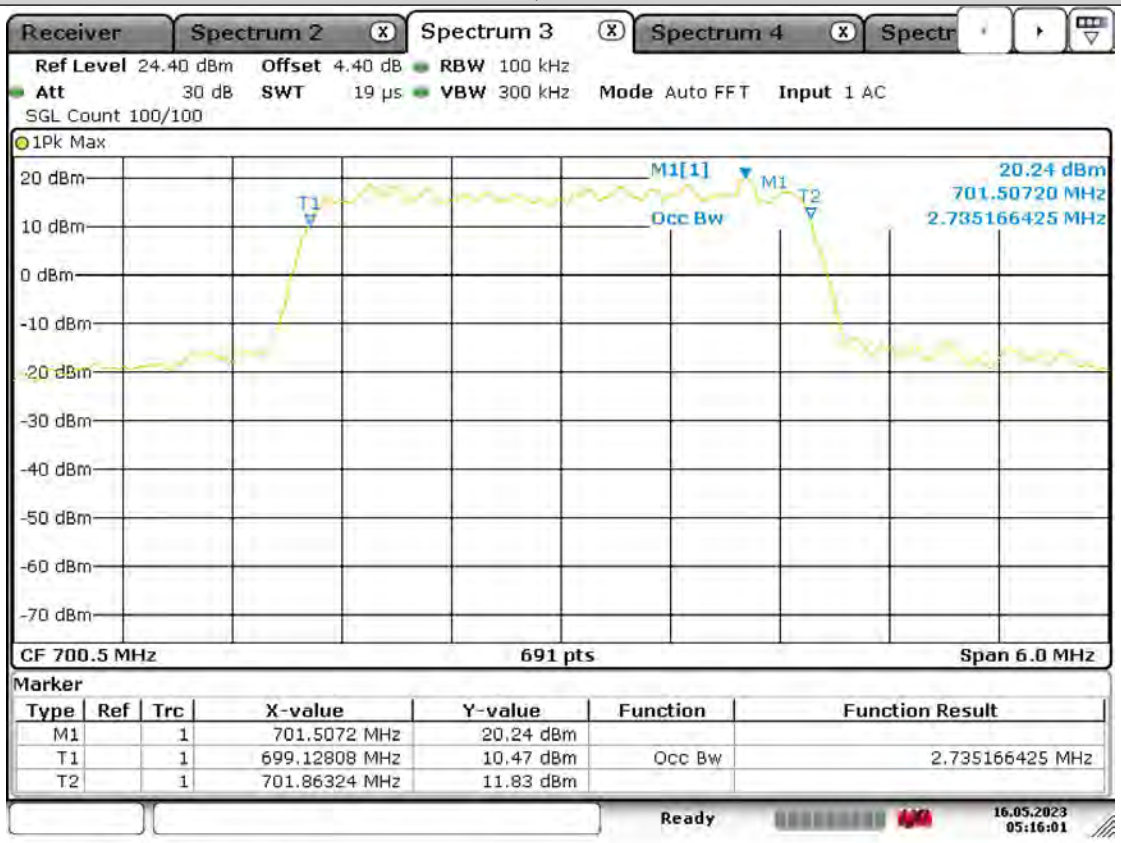

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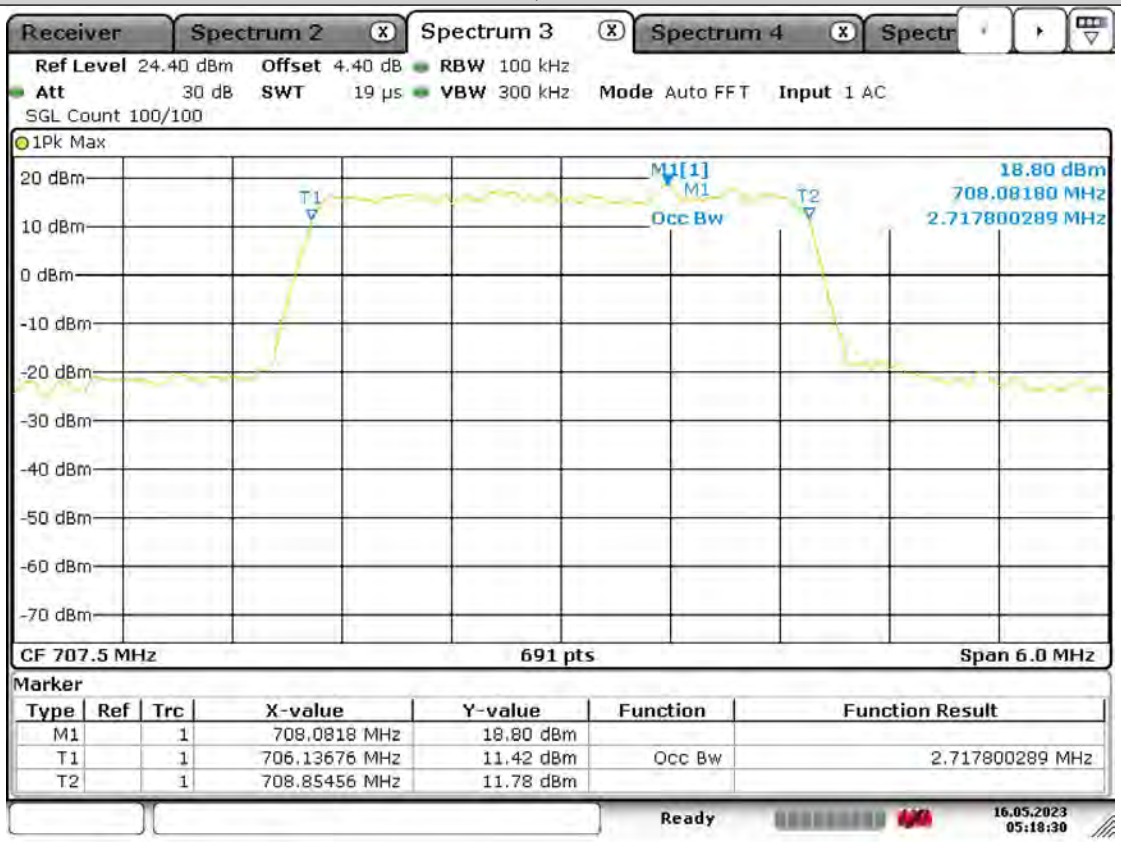

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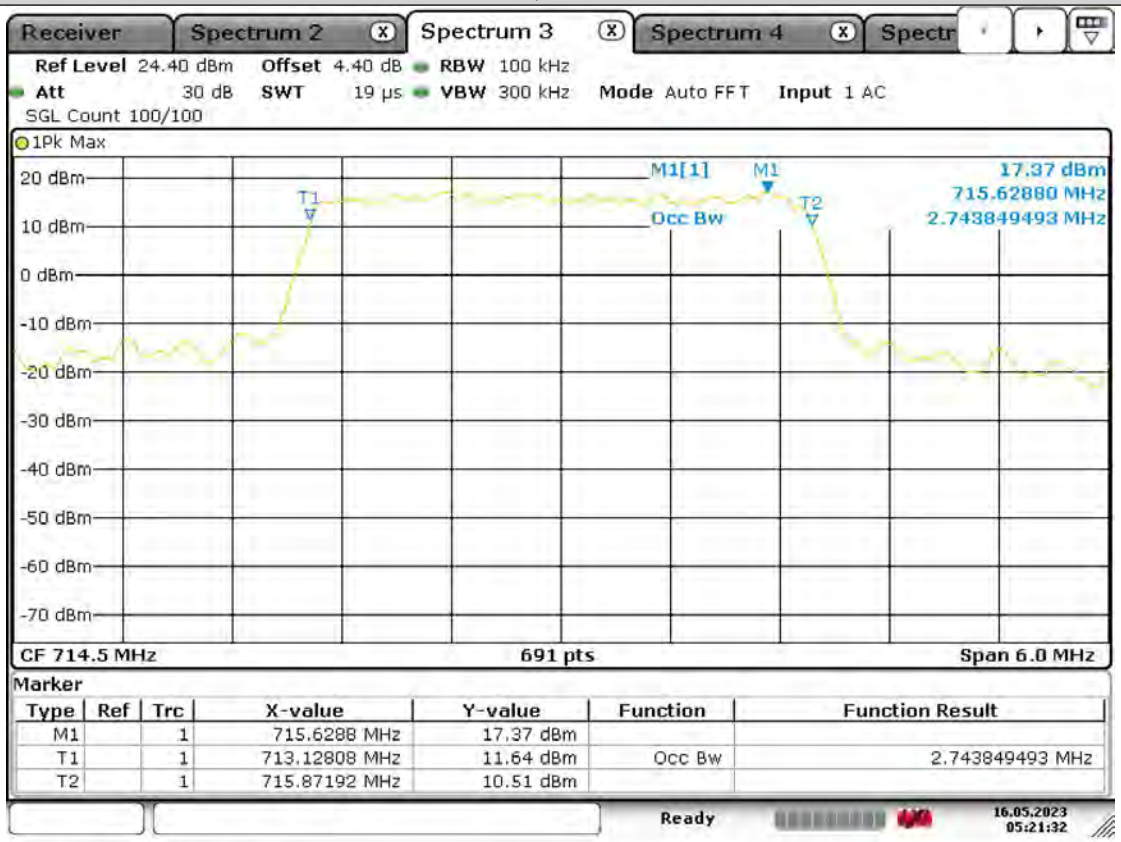

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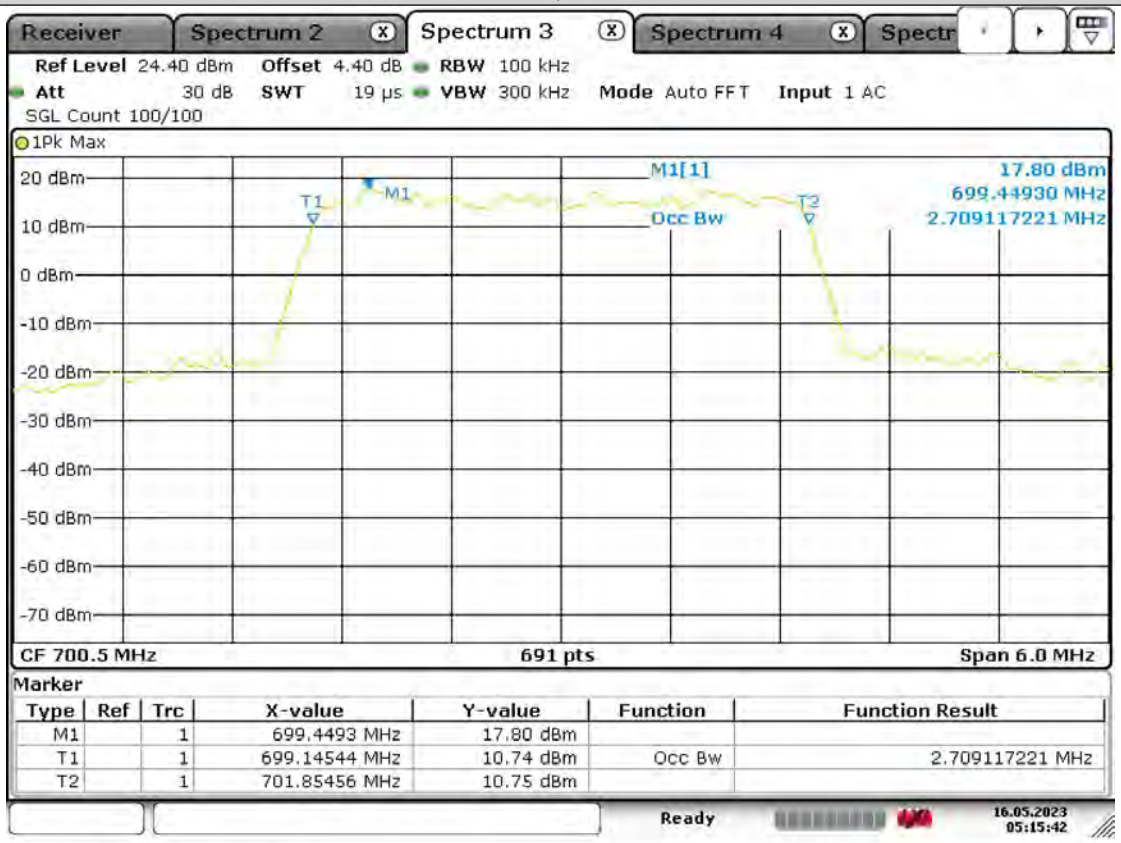

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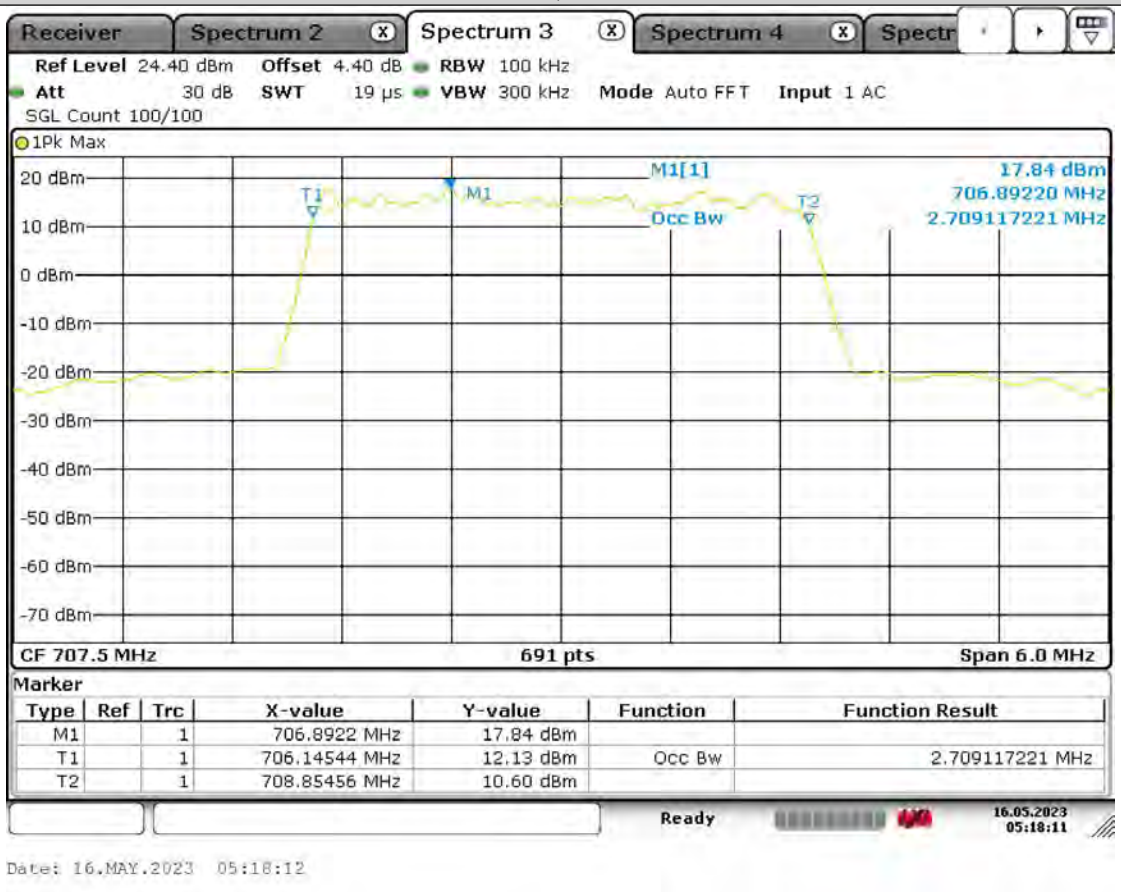

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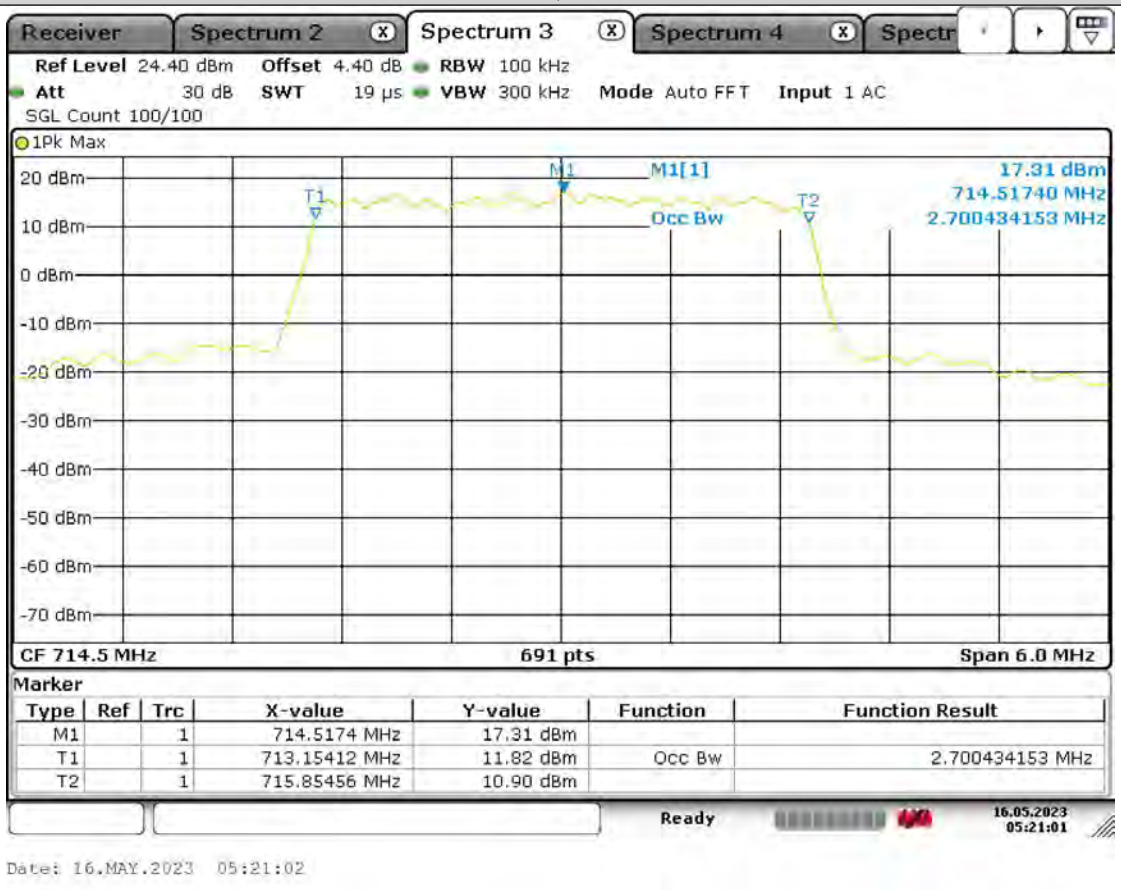

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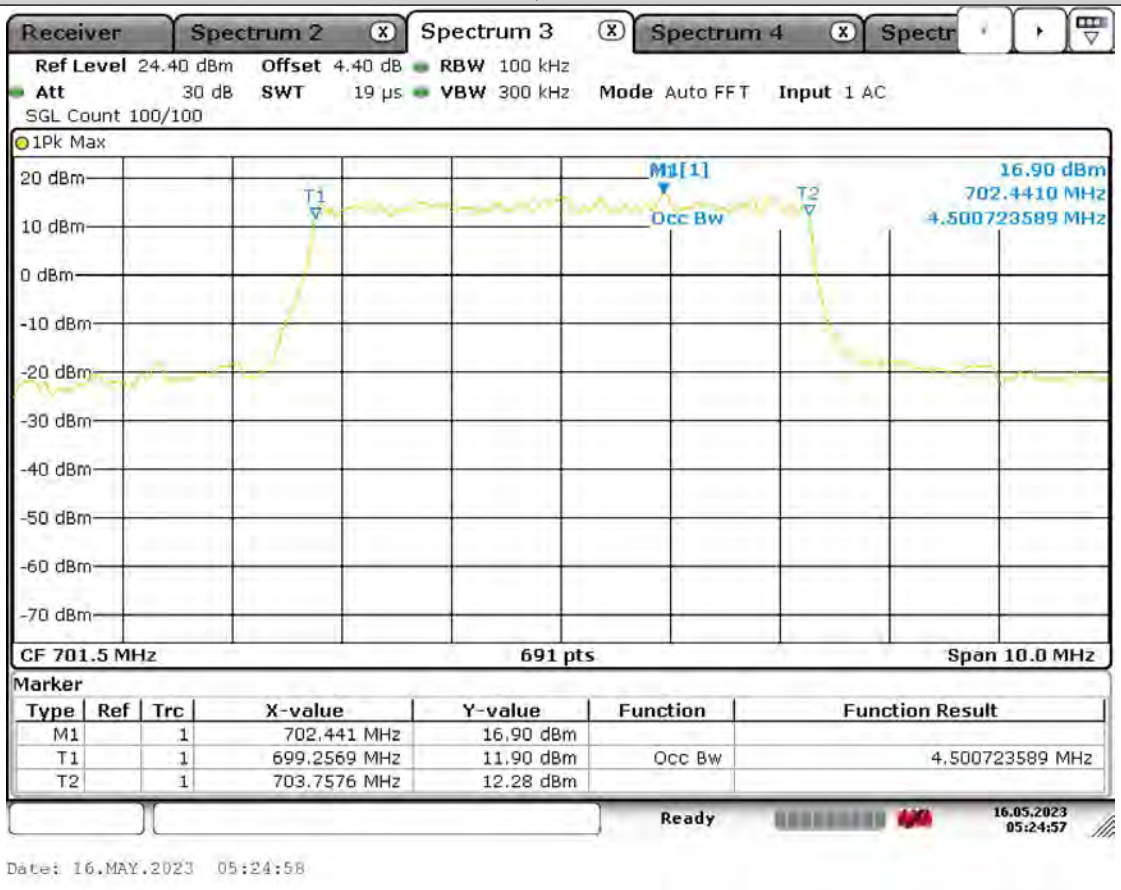

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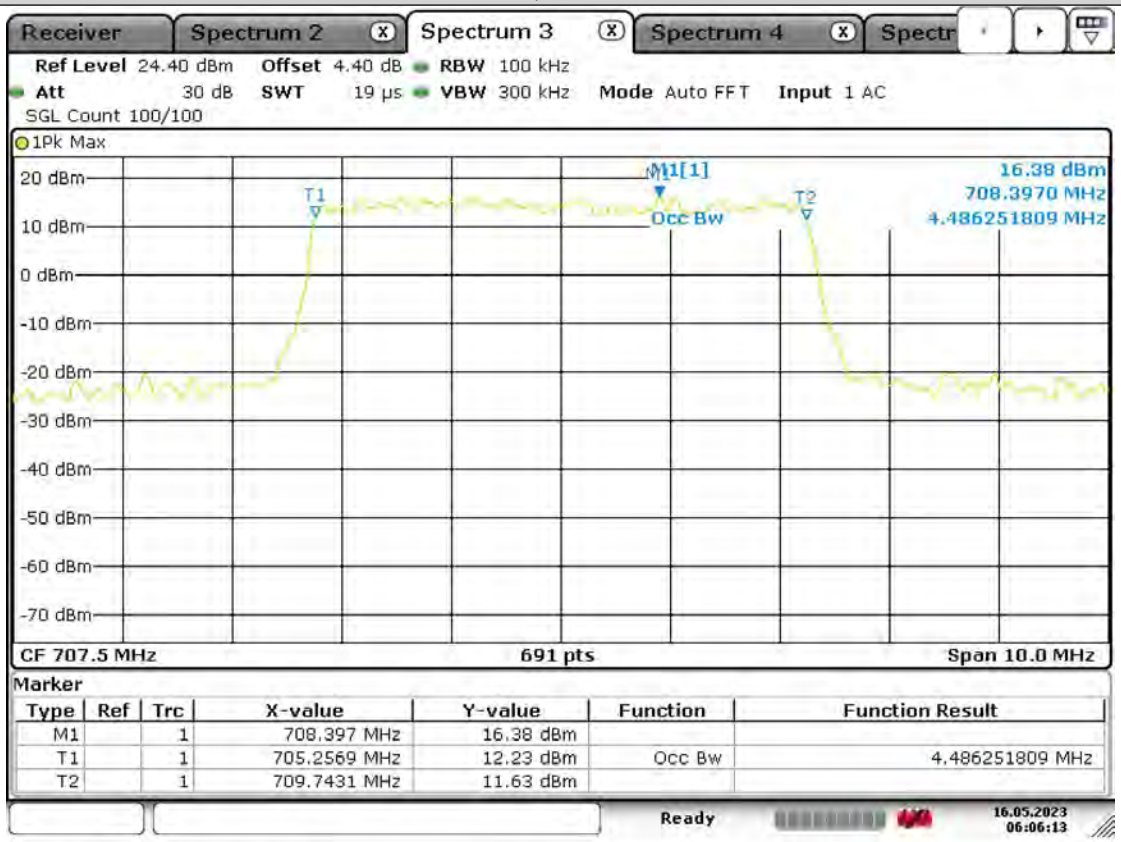

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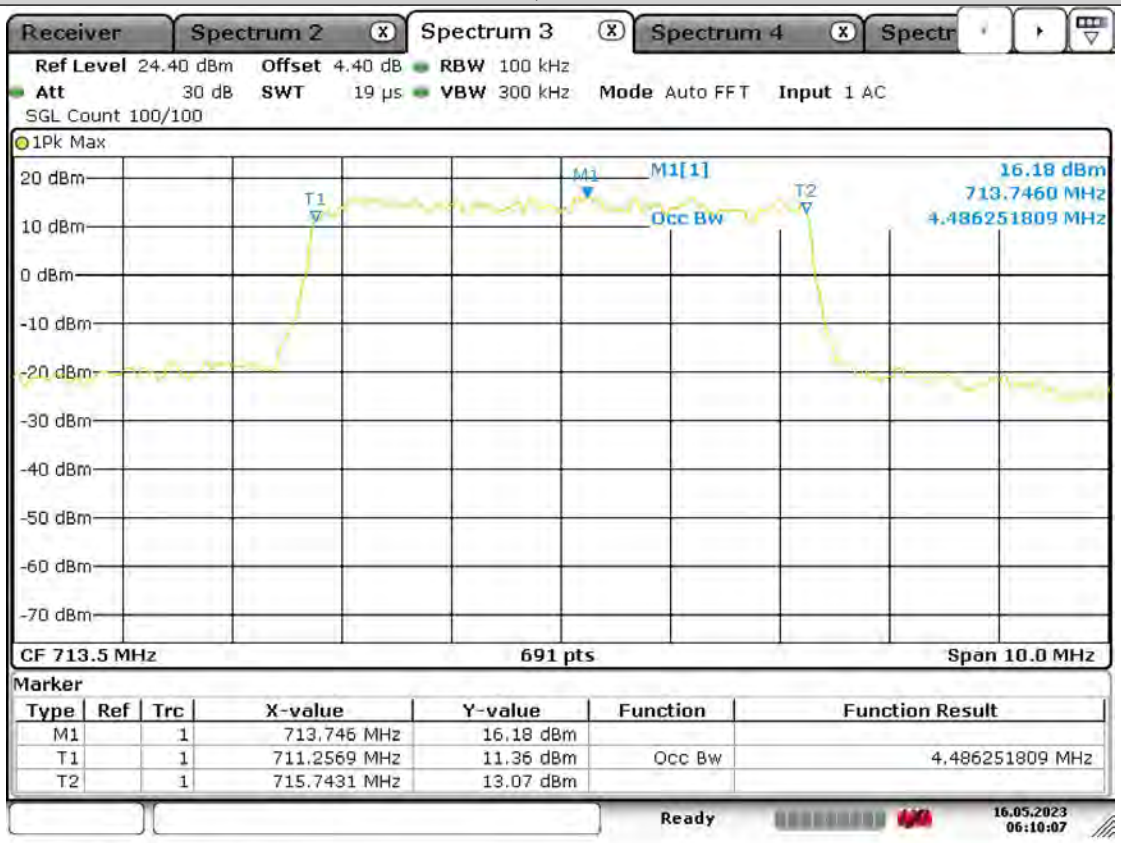

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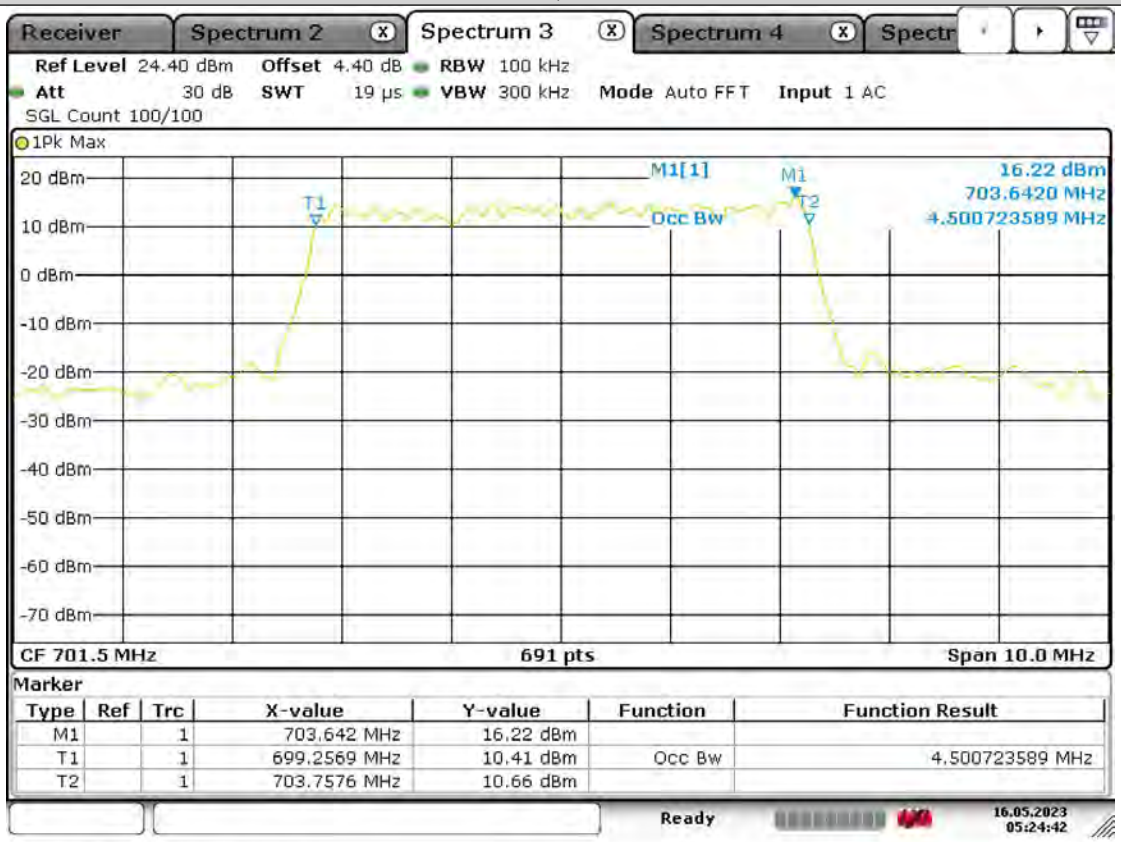

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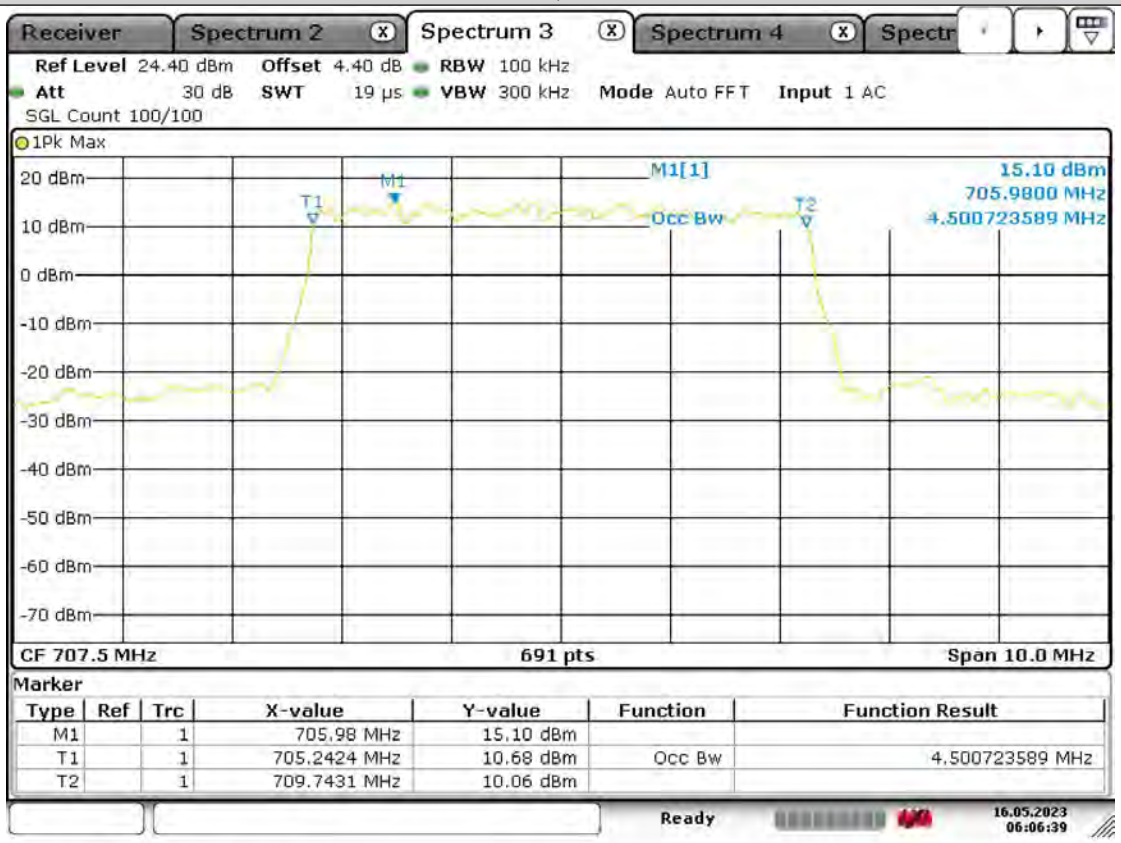

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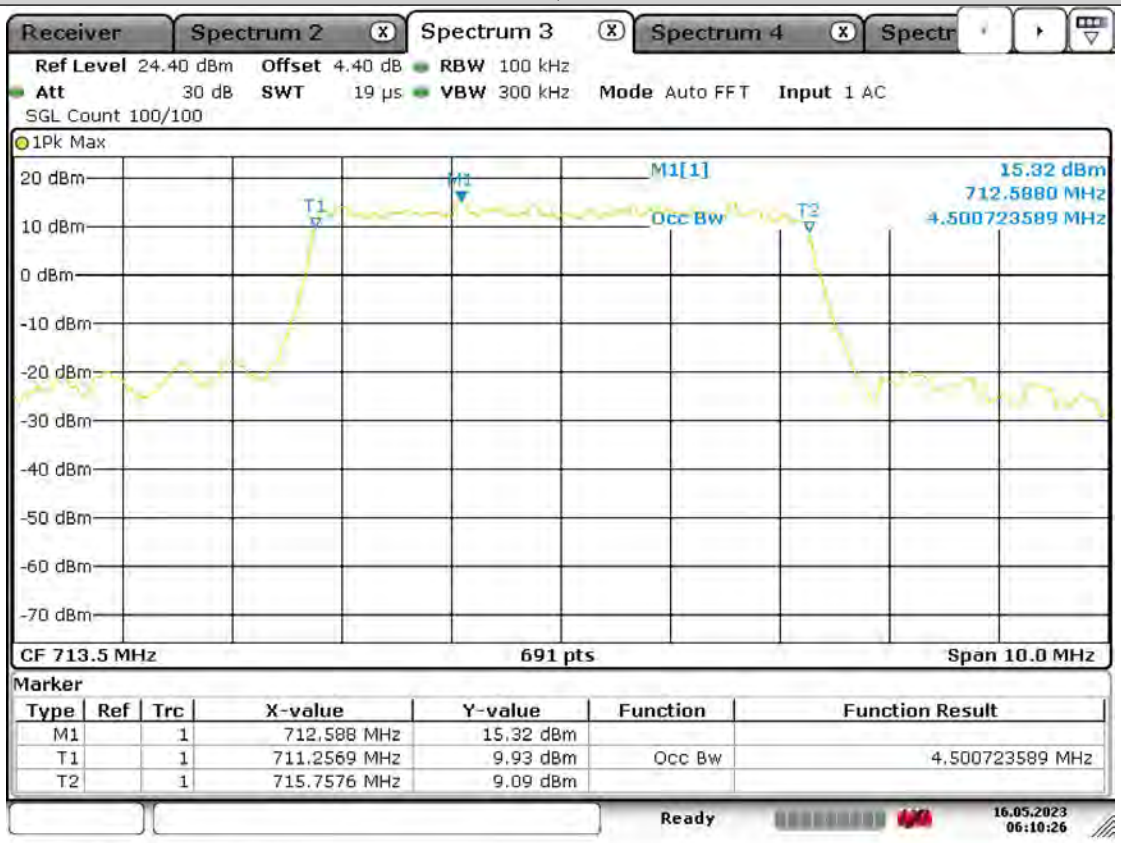

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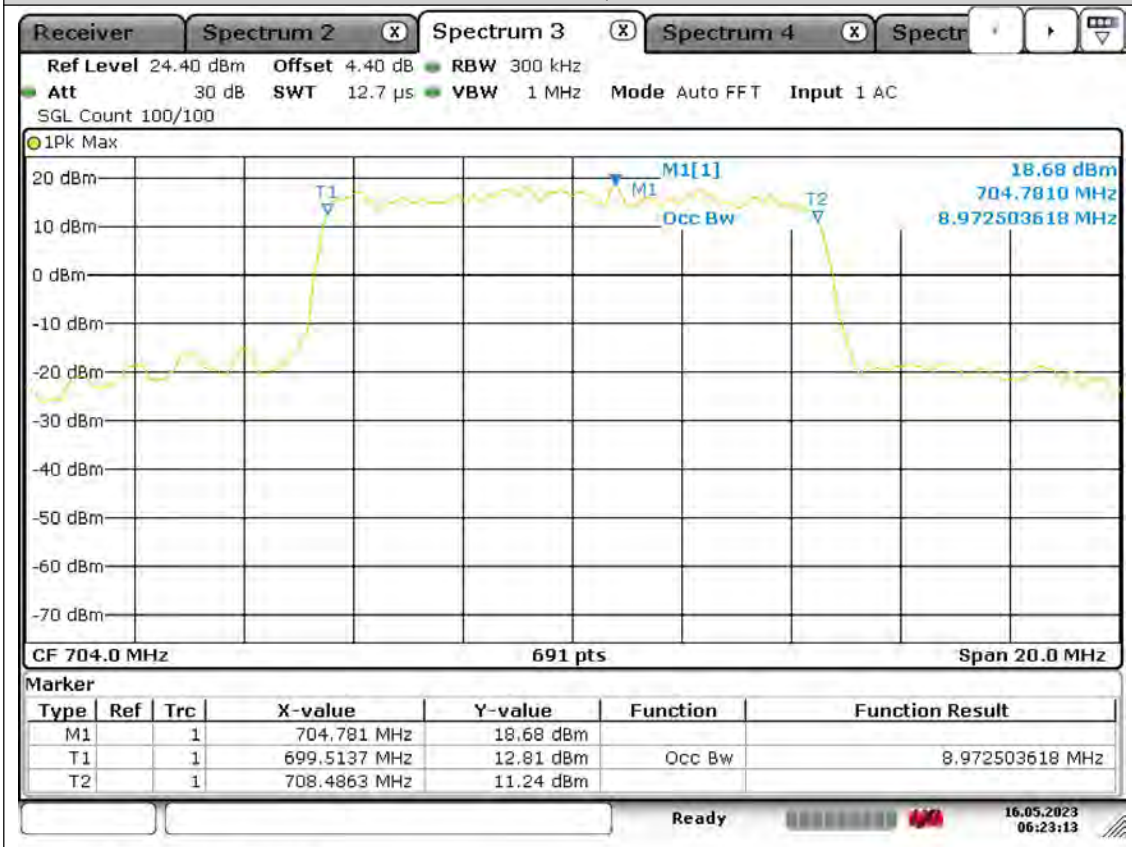

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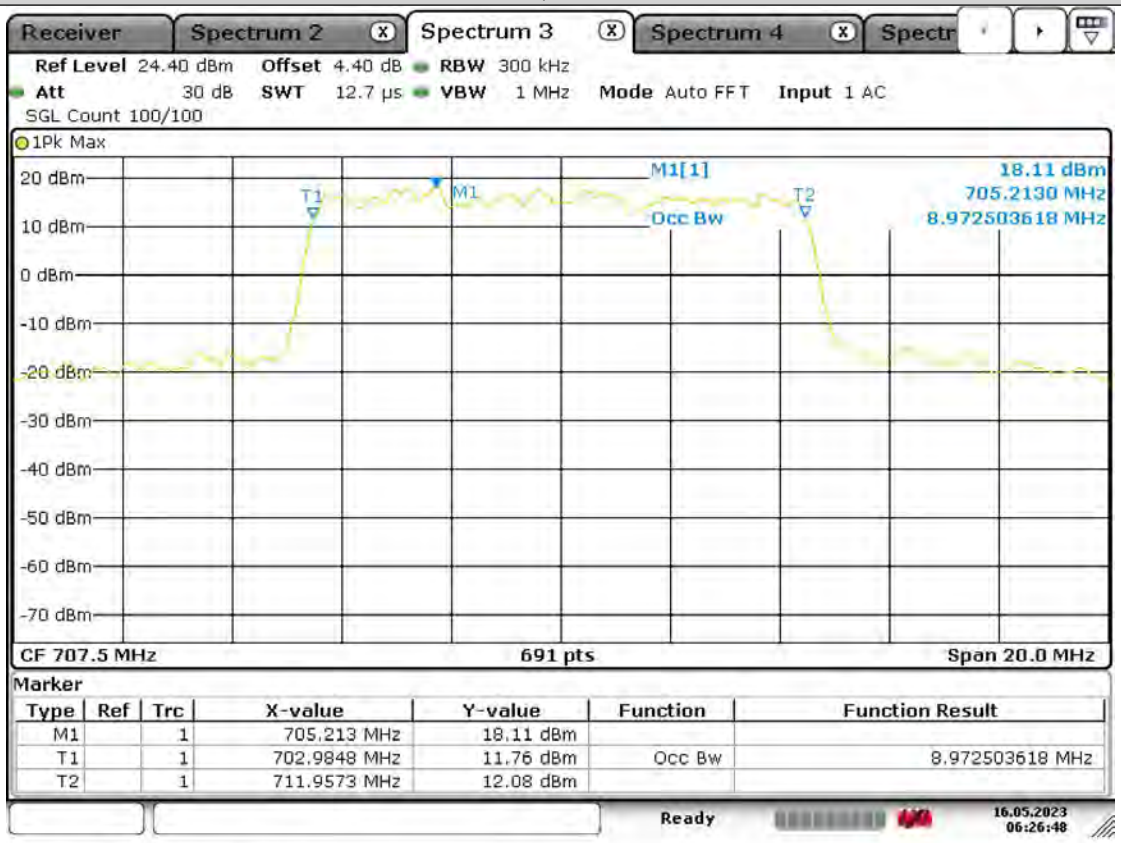

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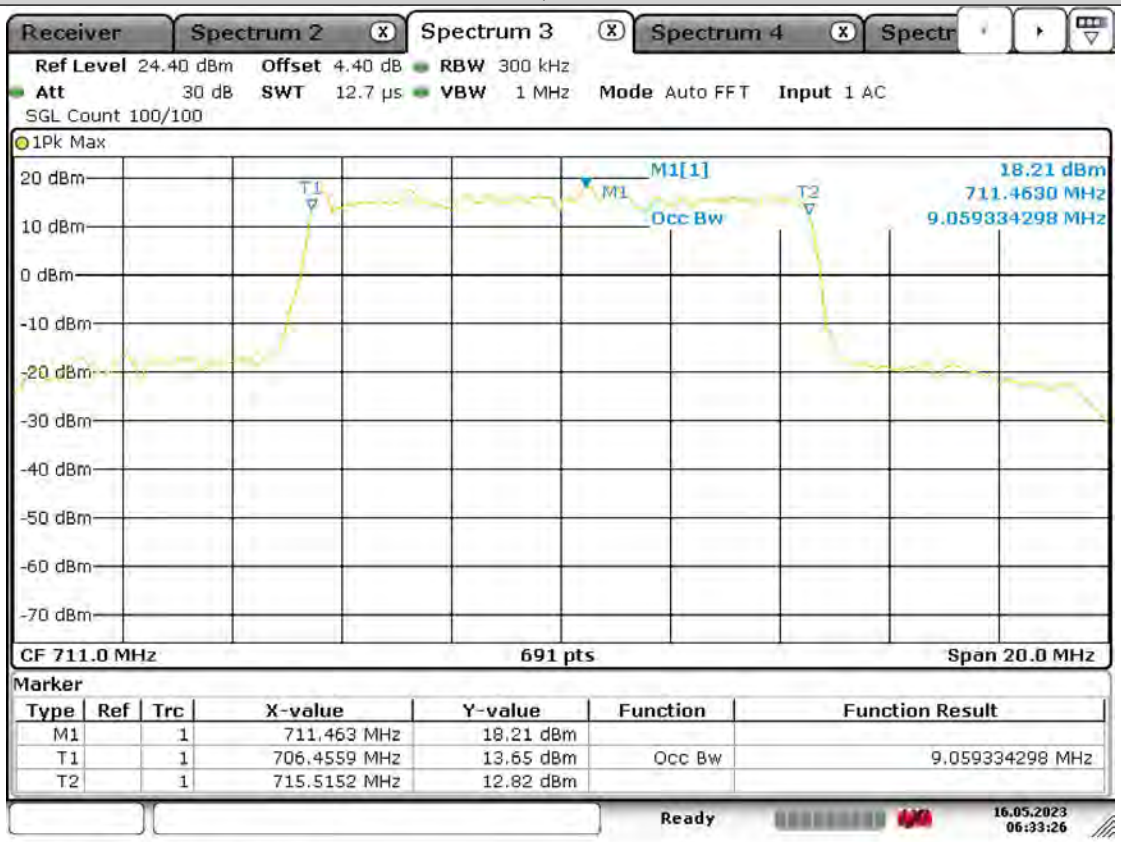

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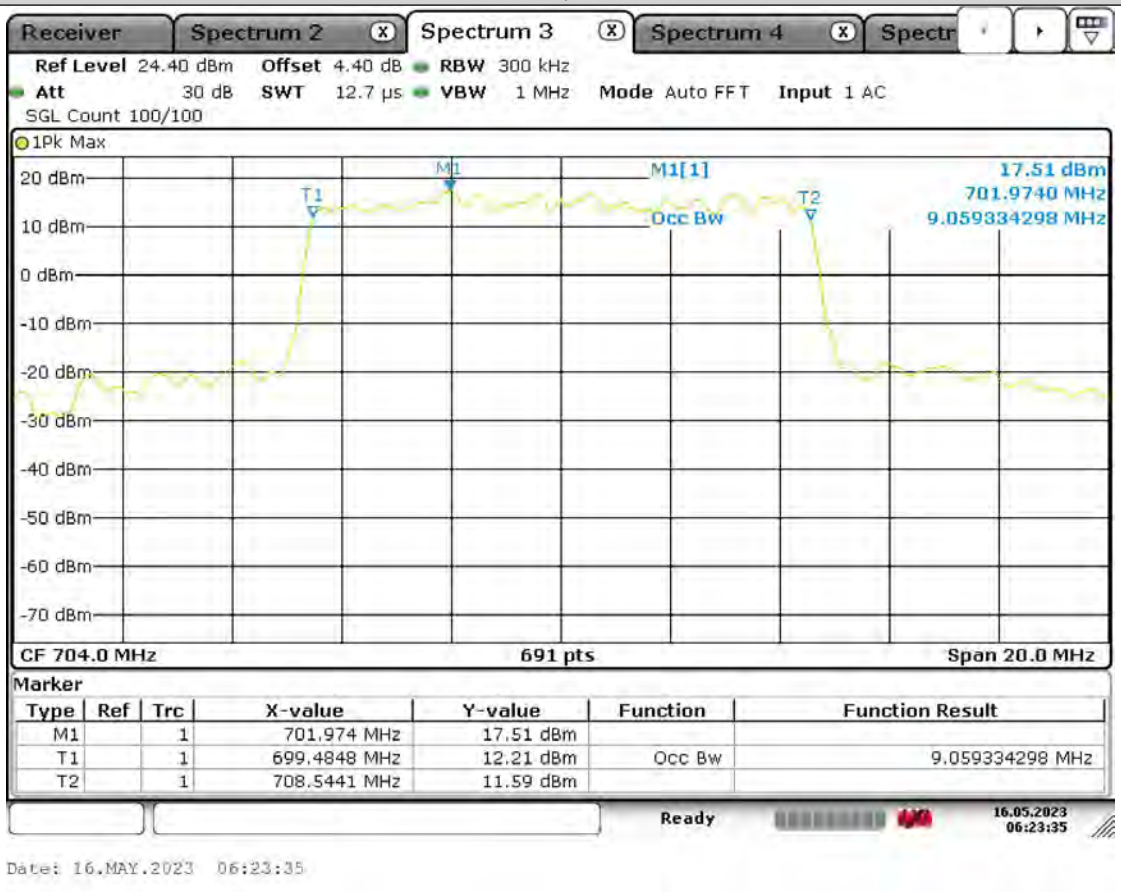

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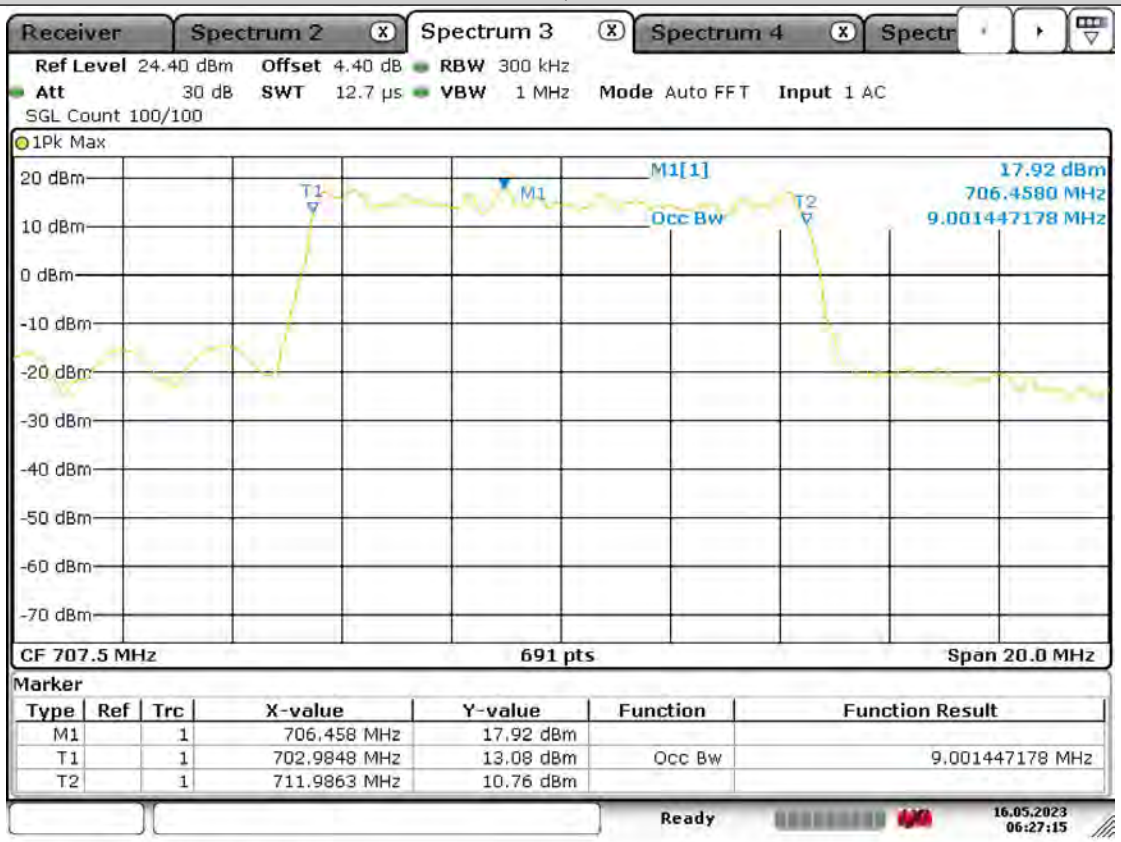

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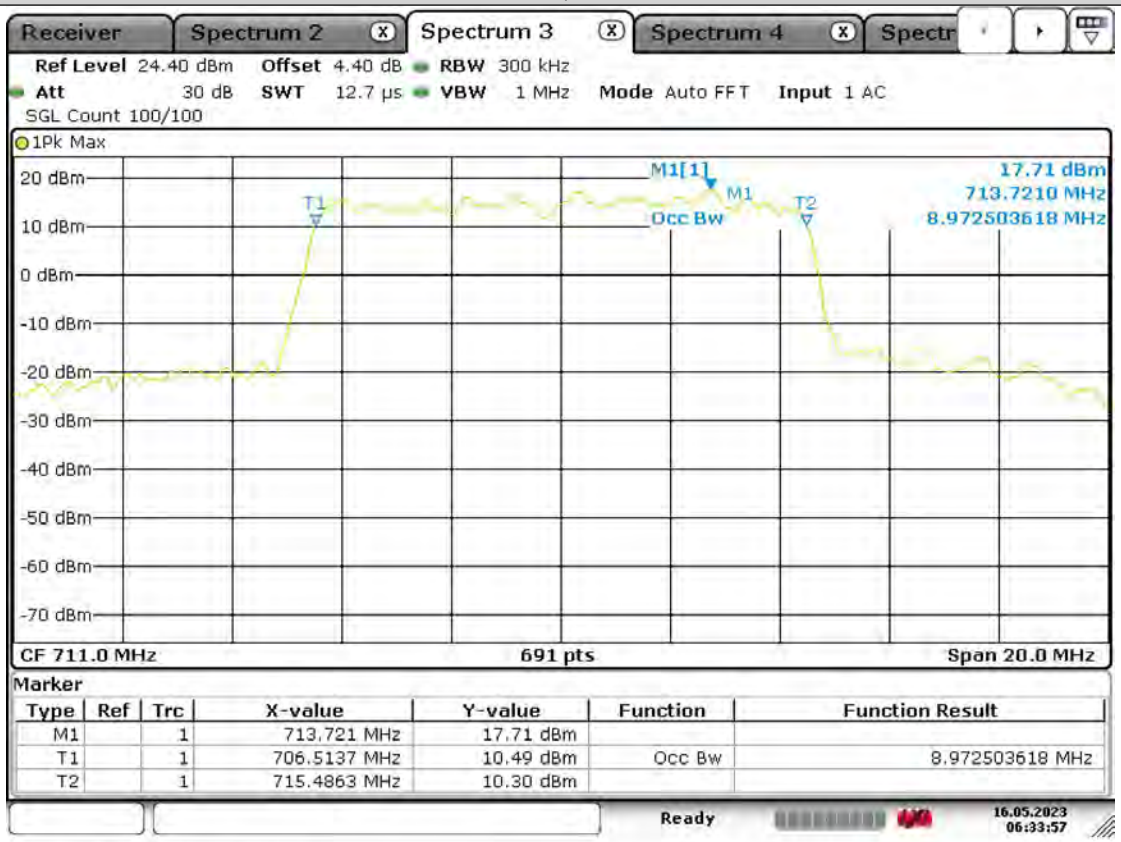
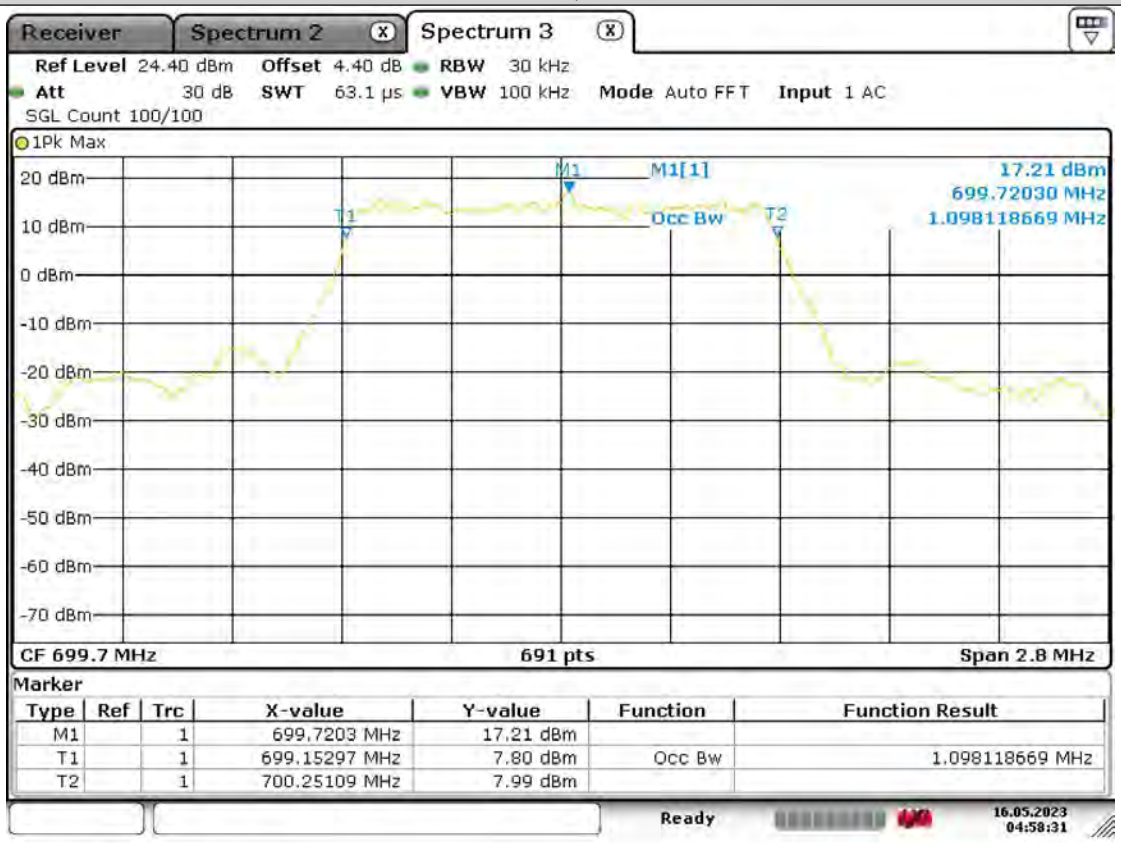
Band12-10MHz-16QAM-23130-50RB#0



Band12-1.4MHz-64QAM-23017-6RB#0



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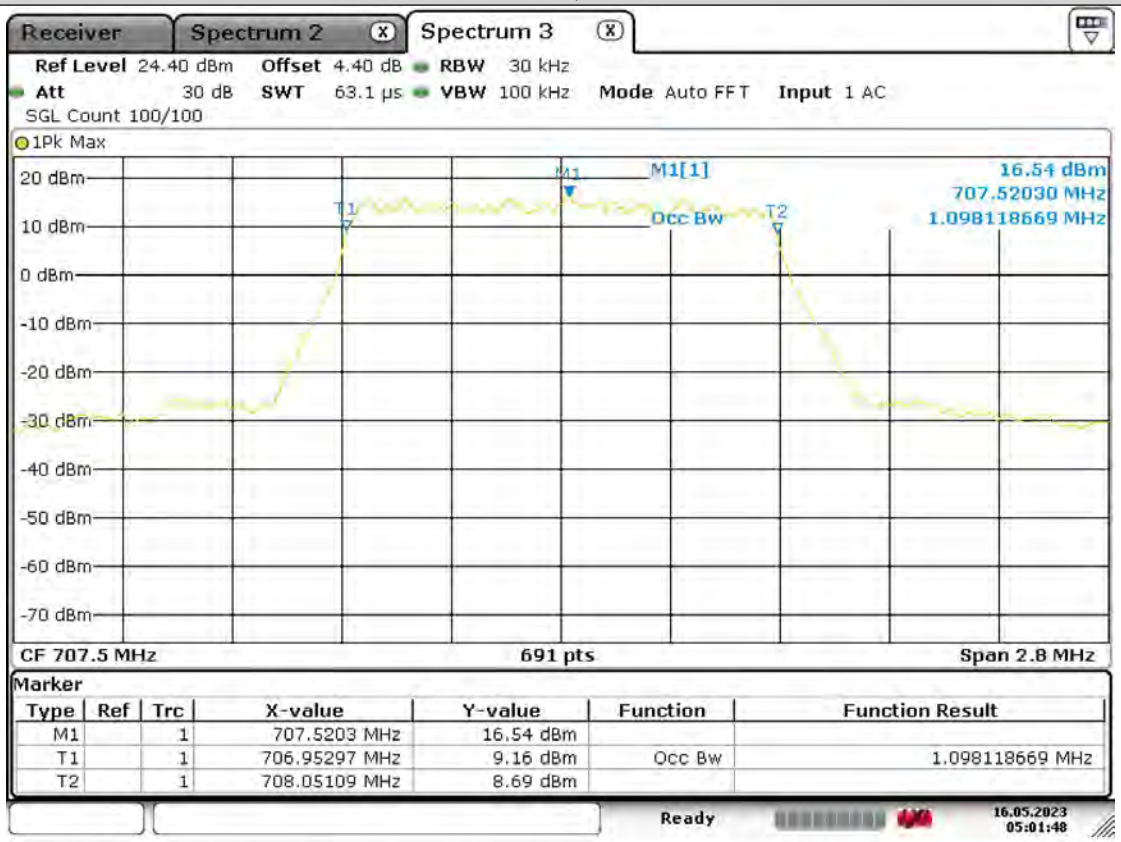

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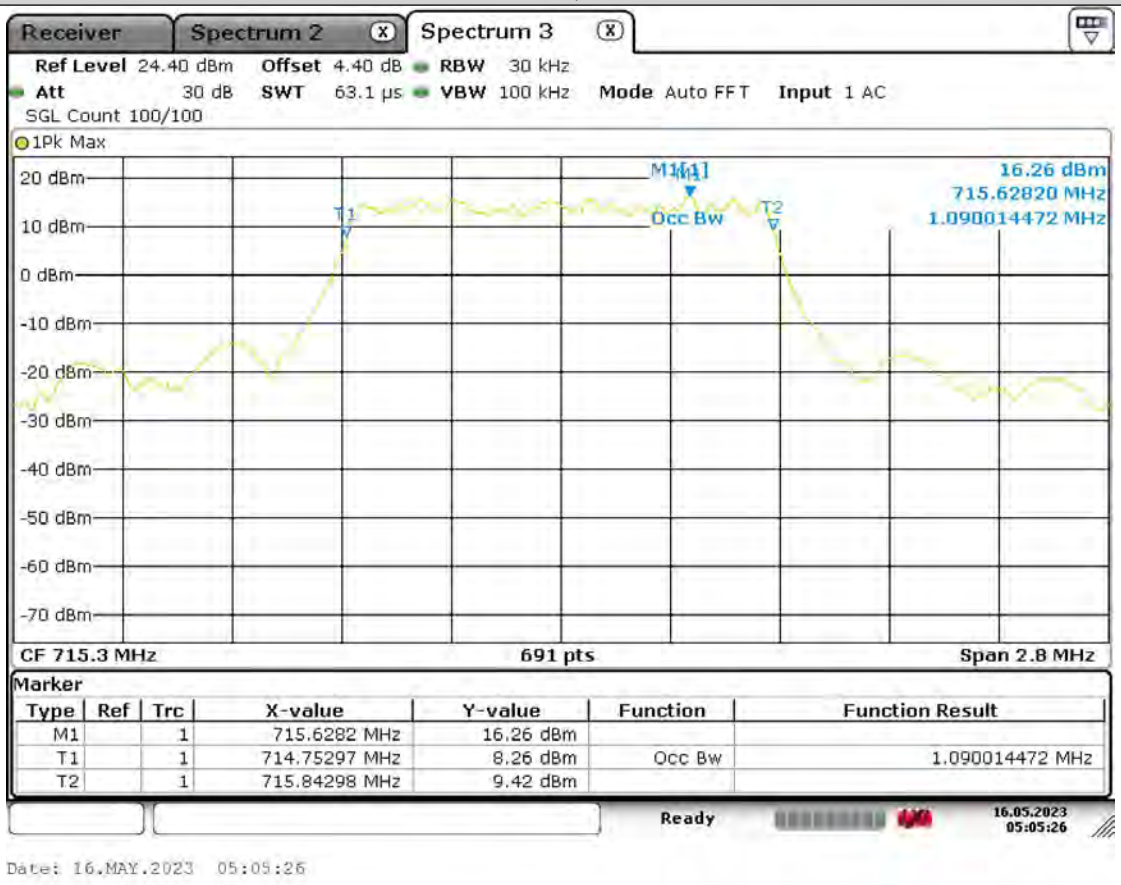

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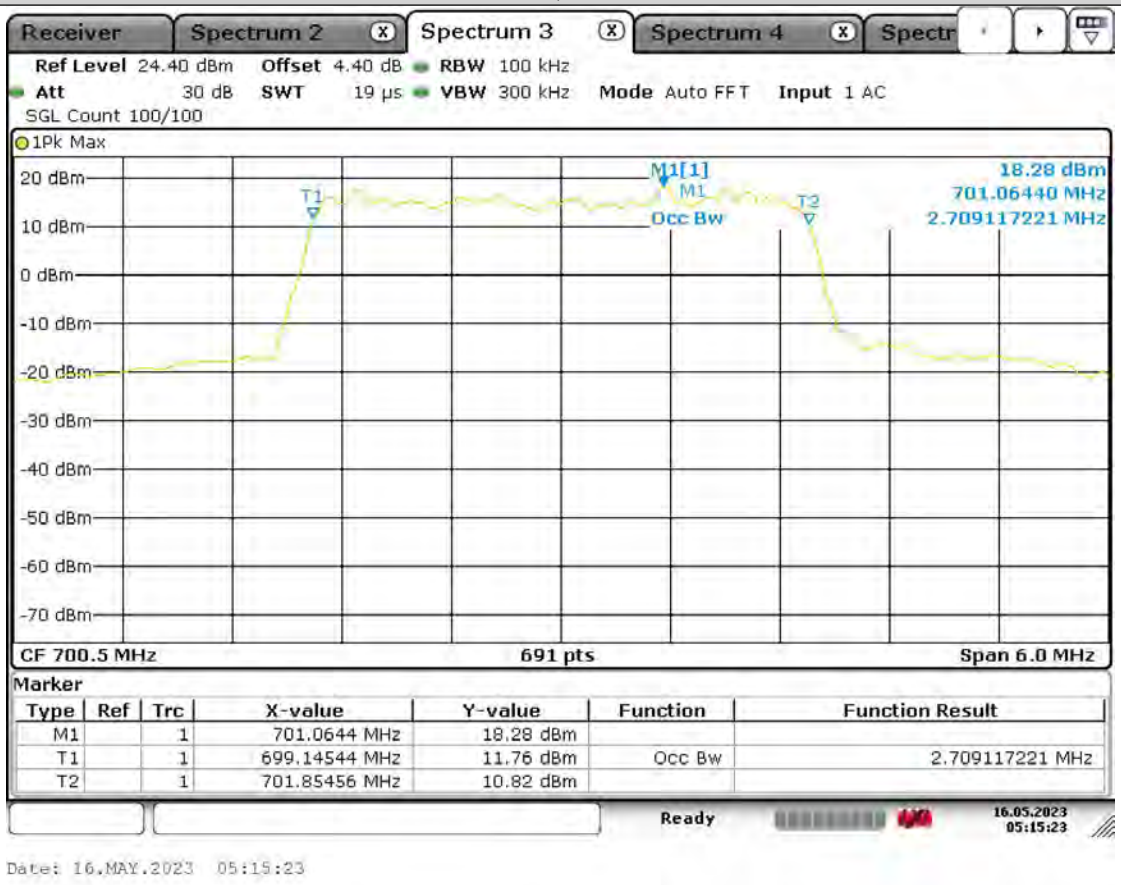

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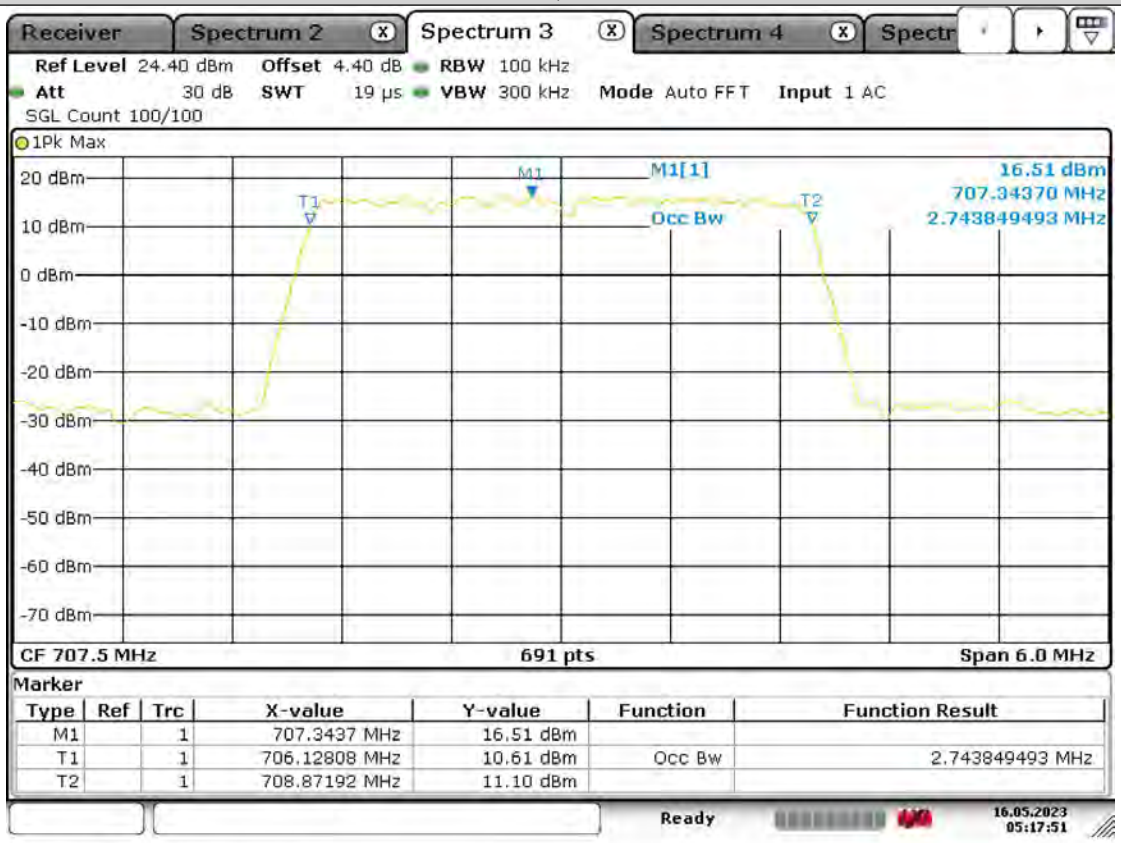

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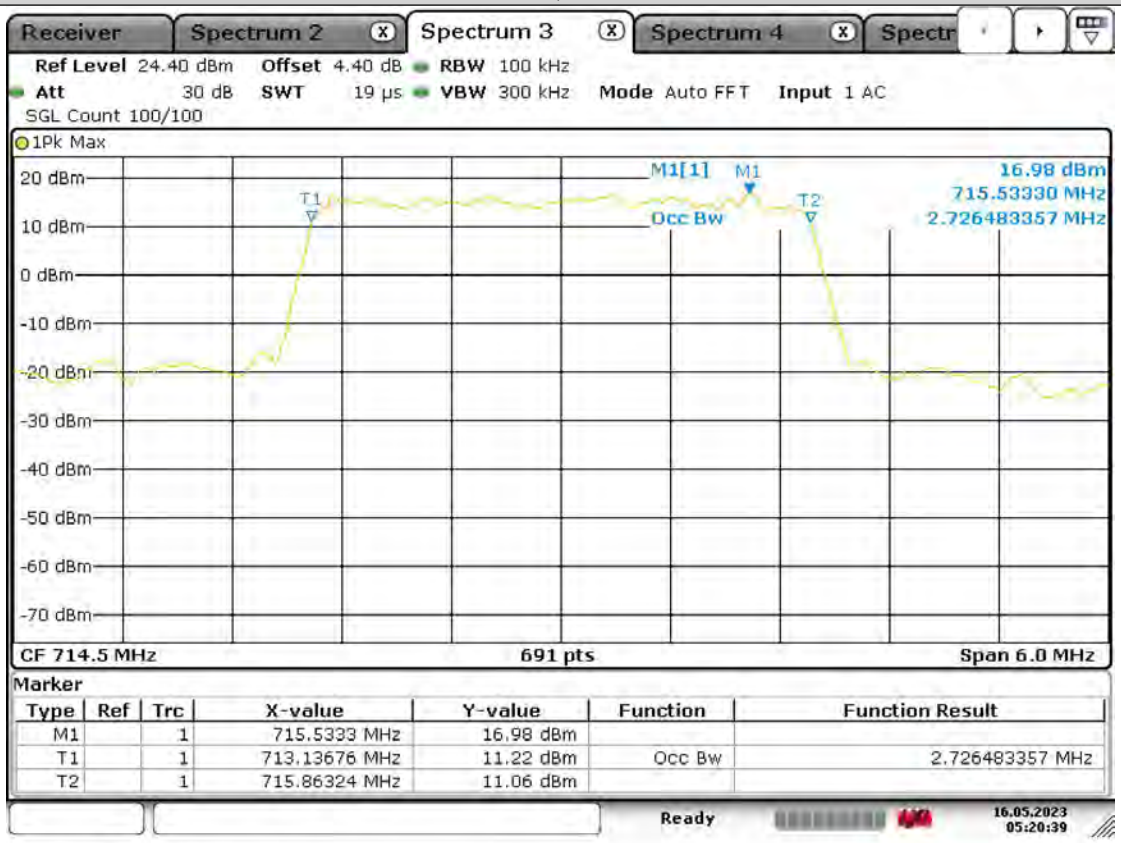
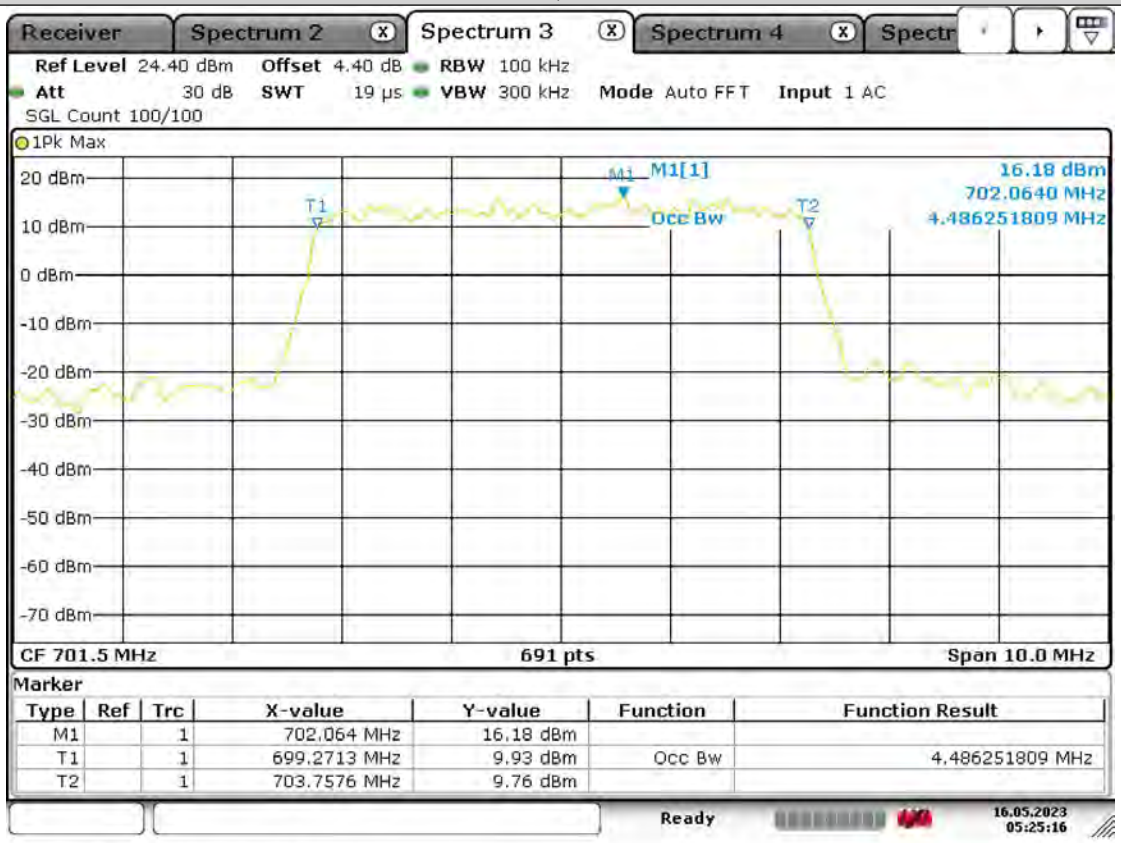
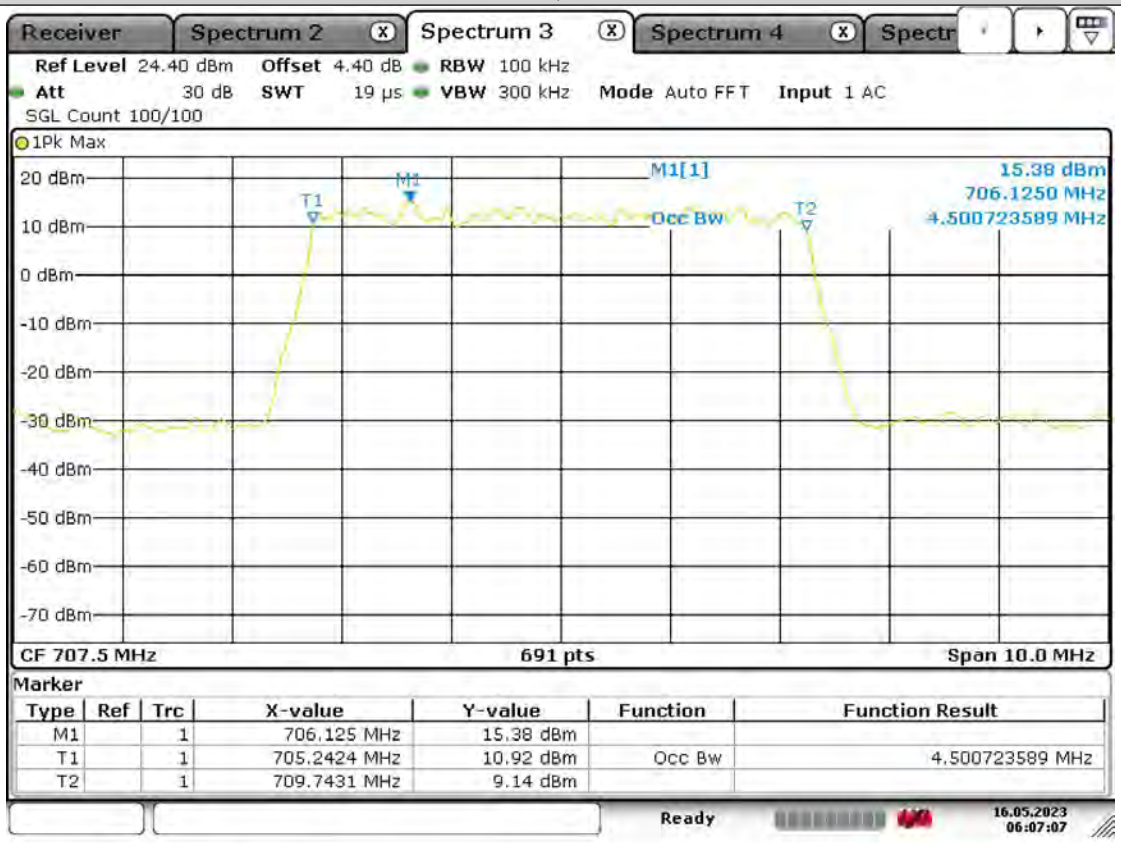


Band12-5MHz-64QAM-23035-25RB#0



Band12-5MHz-64QAM-23095-25RB#0



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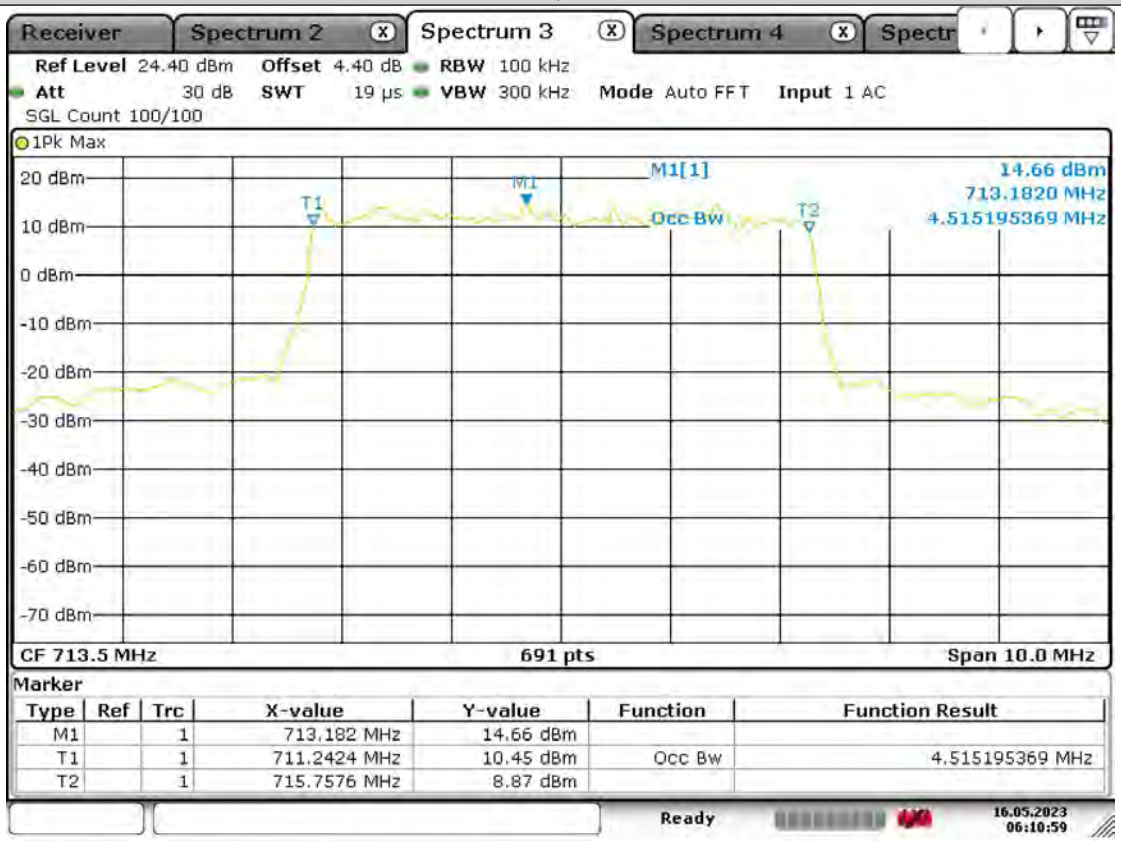
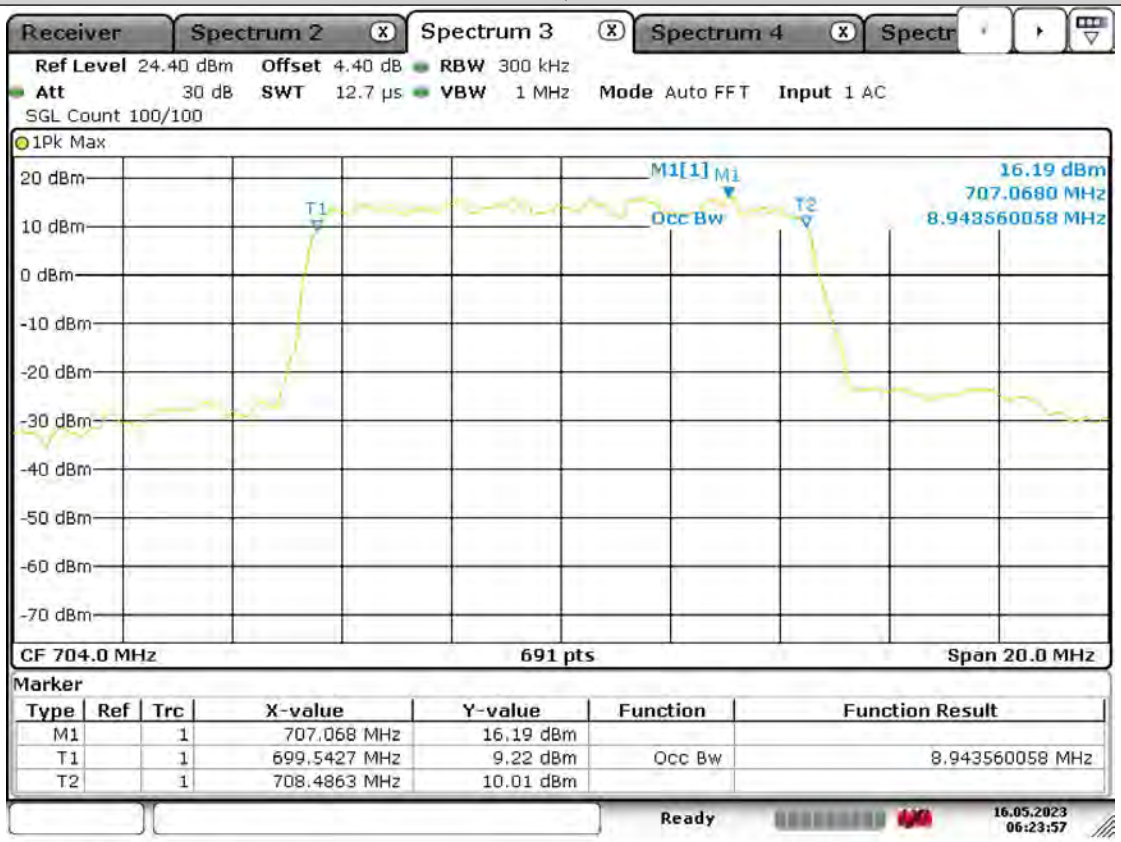


Band12-10MHz-64QAM-23060-50RB#0



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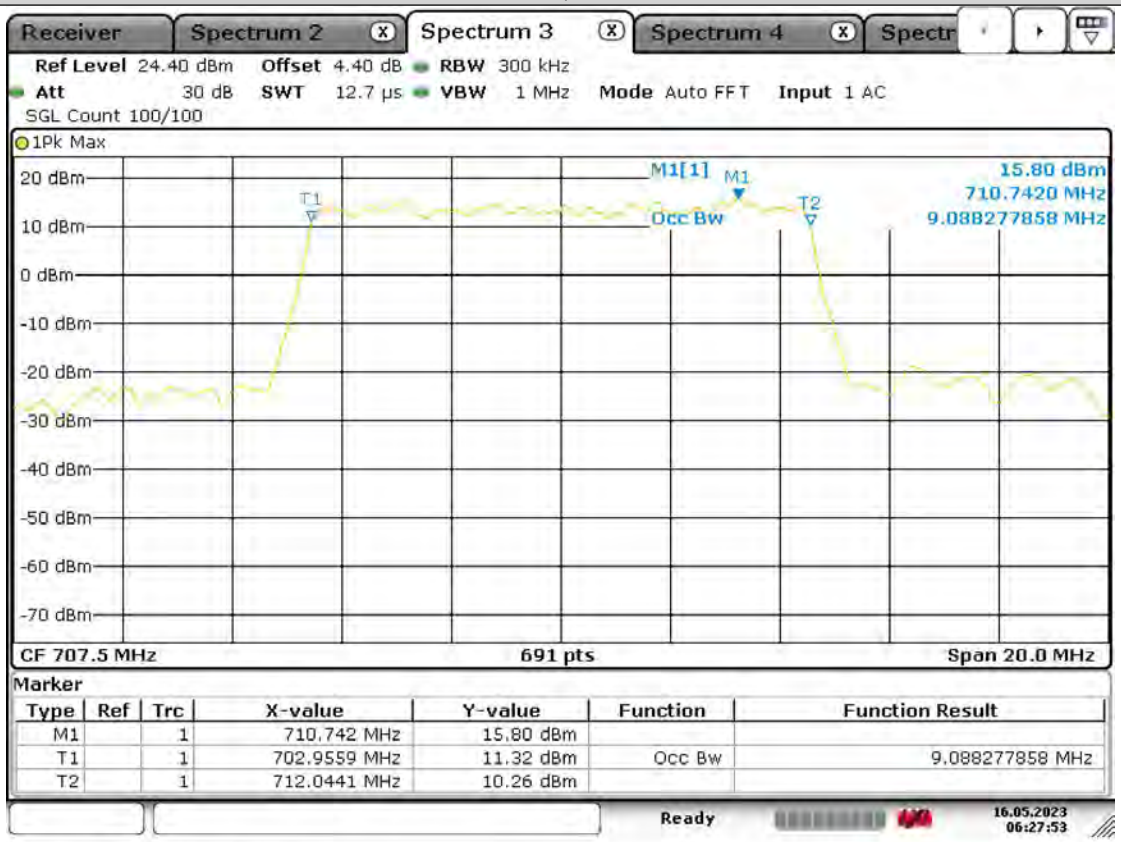

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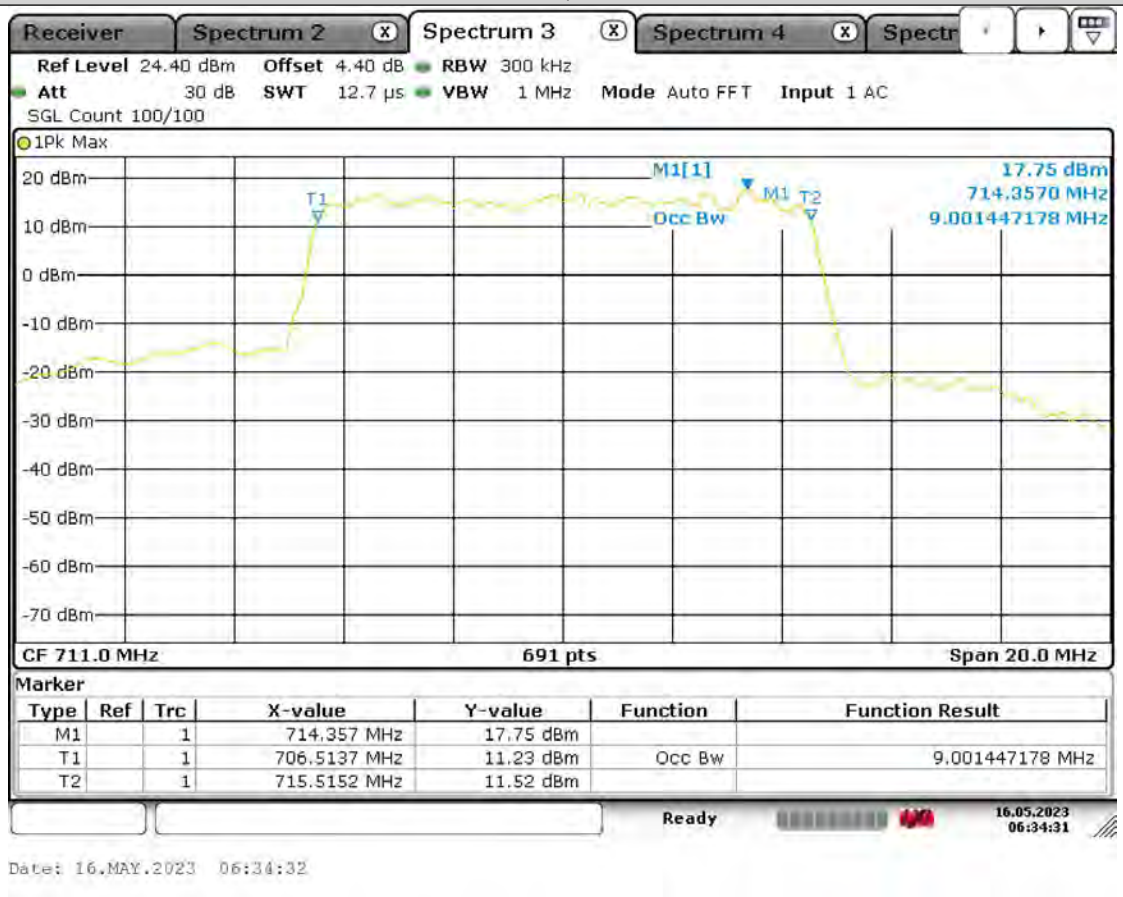
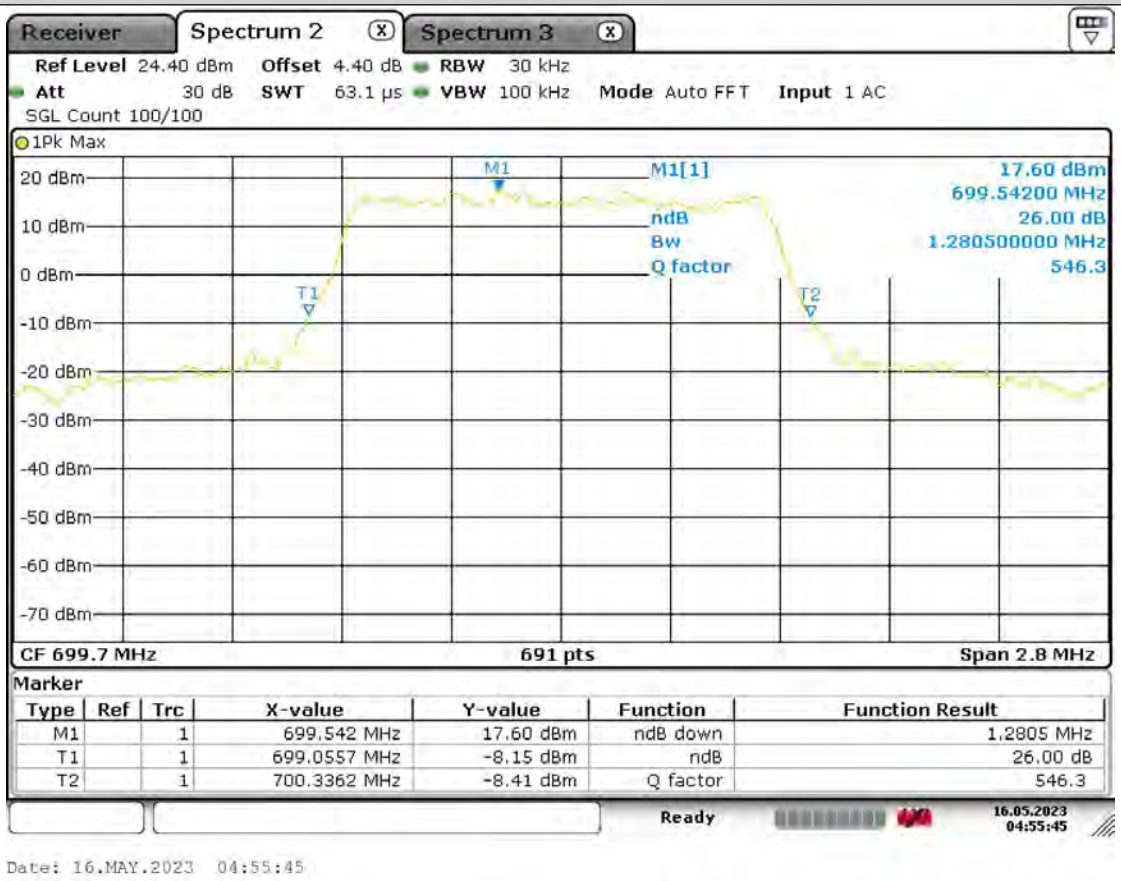
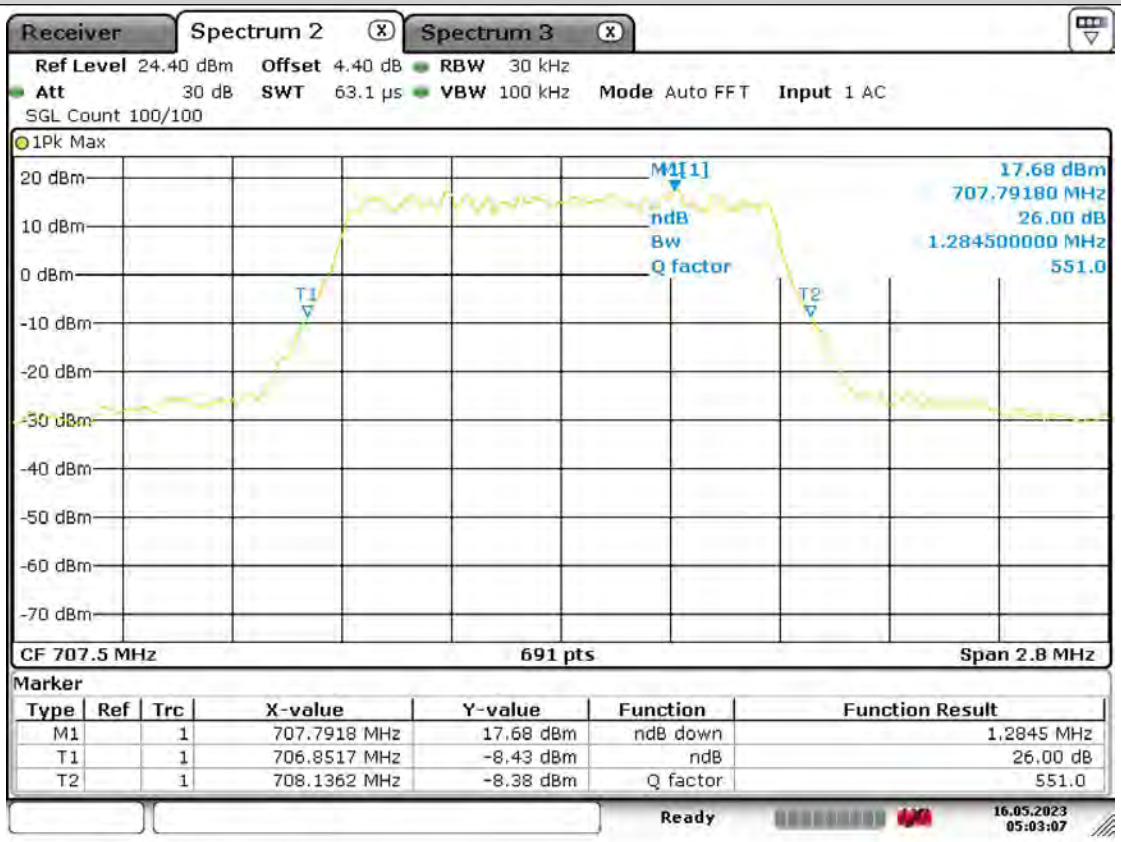


26dB Bandwidth

Band12-1.4MHz-QPSK-23017-6RB#0



Band12-1.4MHz-QPSK-23095-6RB#0



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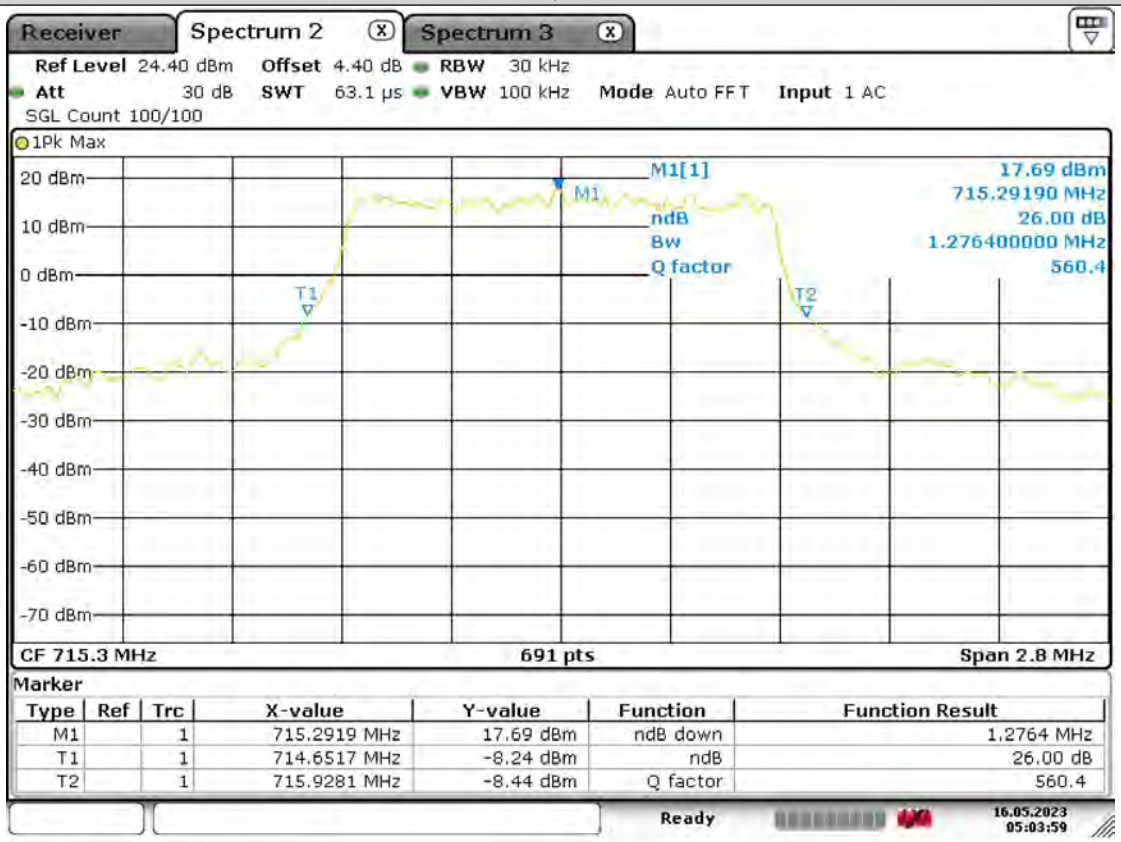

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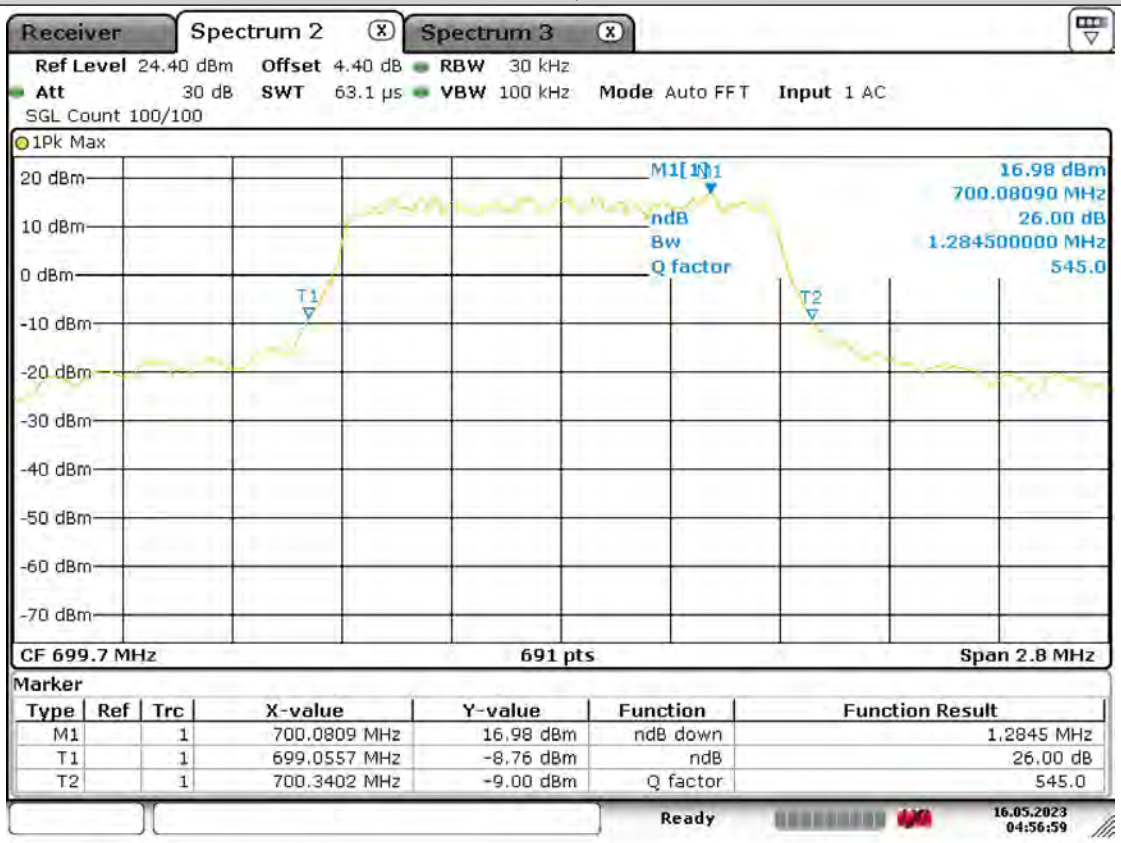
Band12-1.4MHz-16QAM-23017-6RB#0



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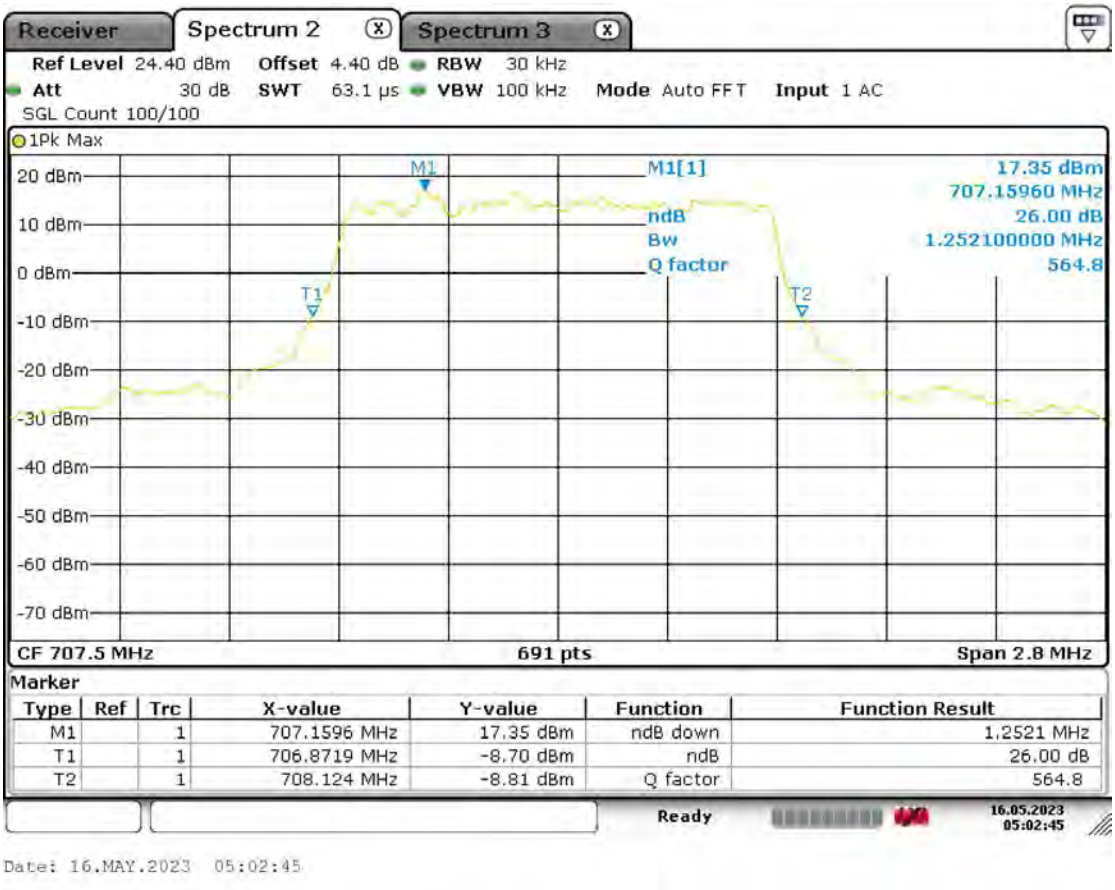

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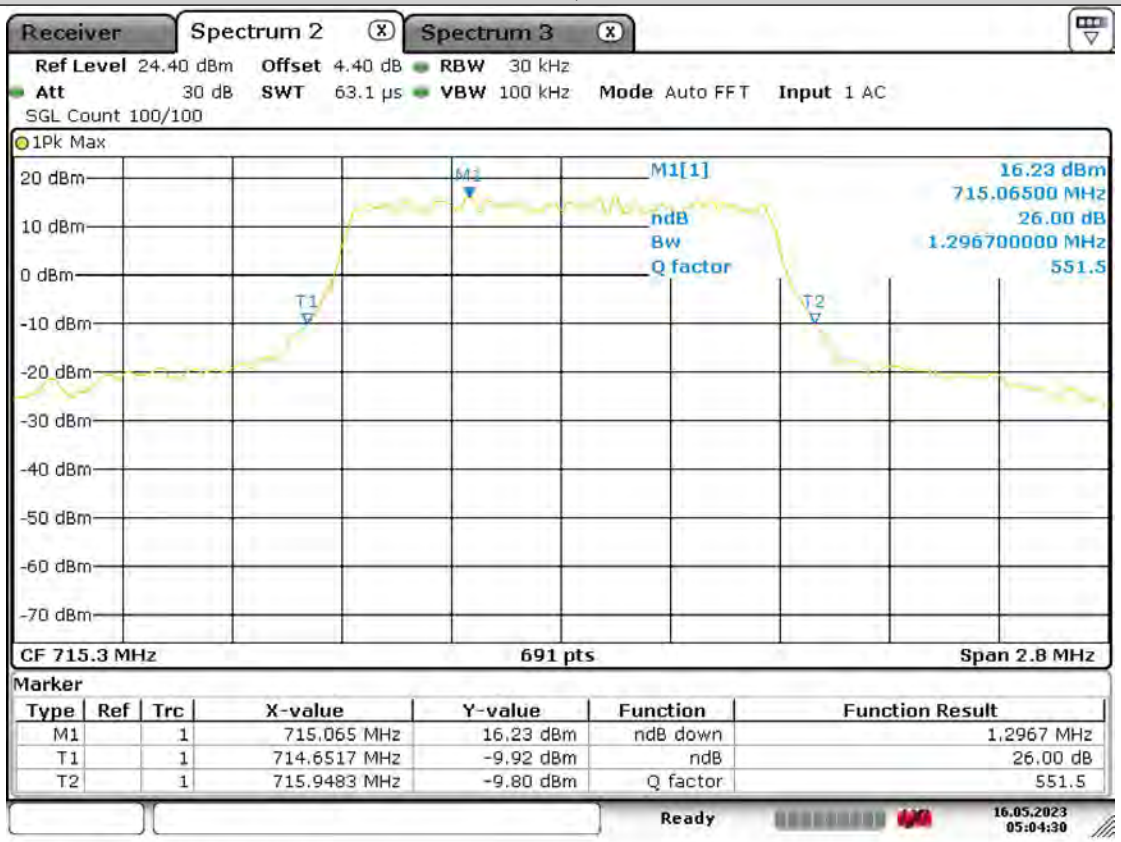

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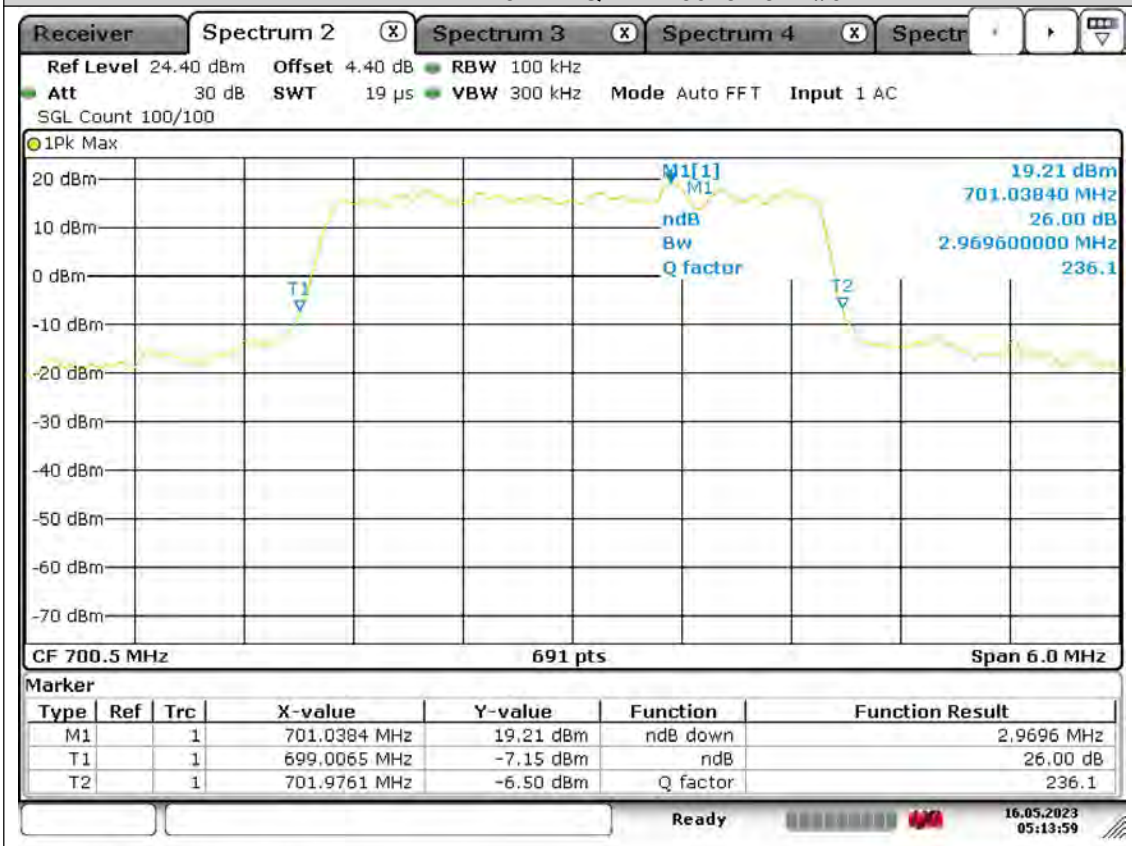

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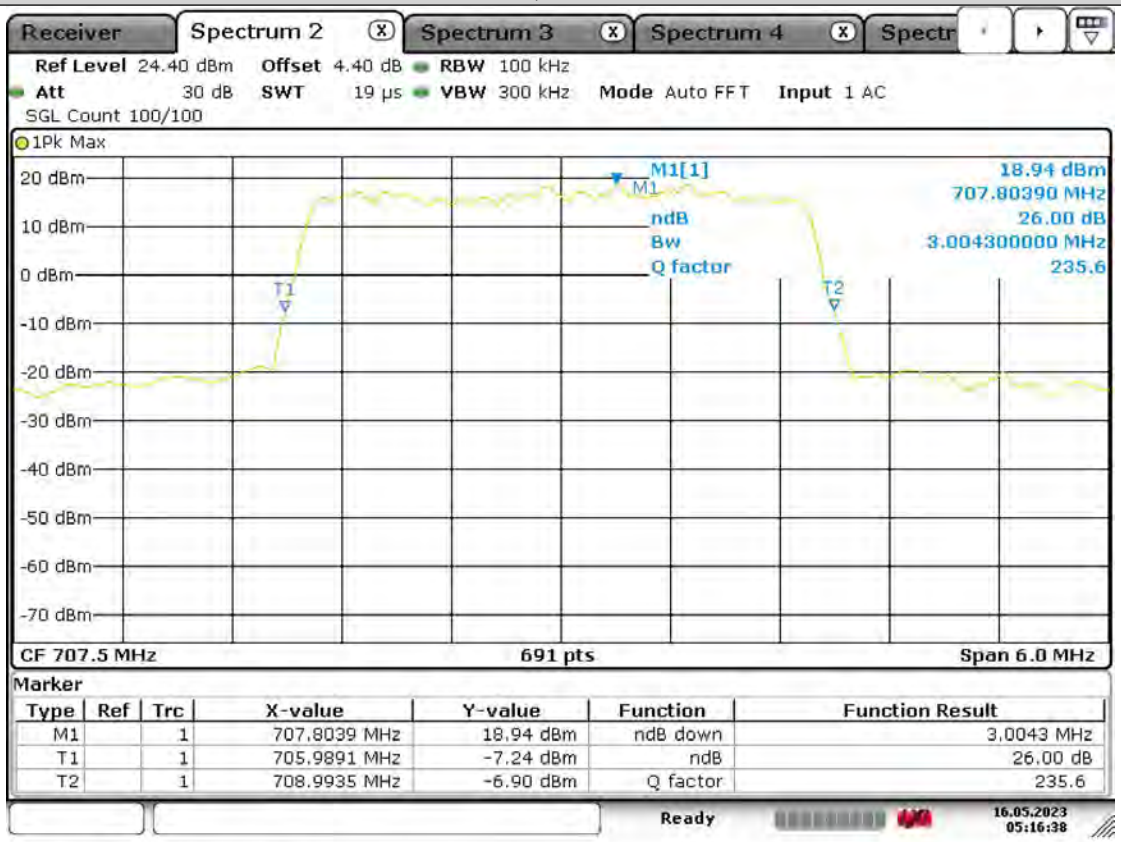

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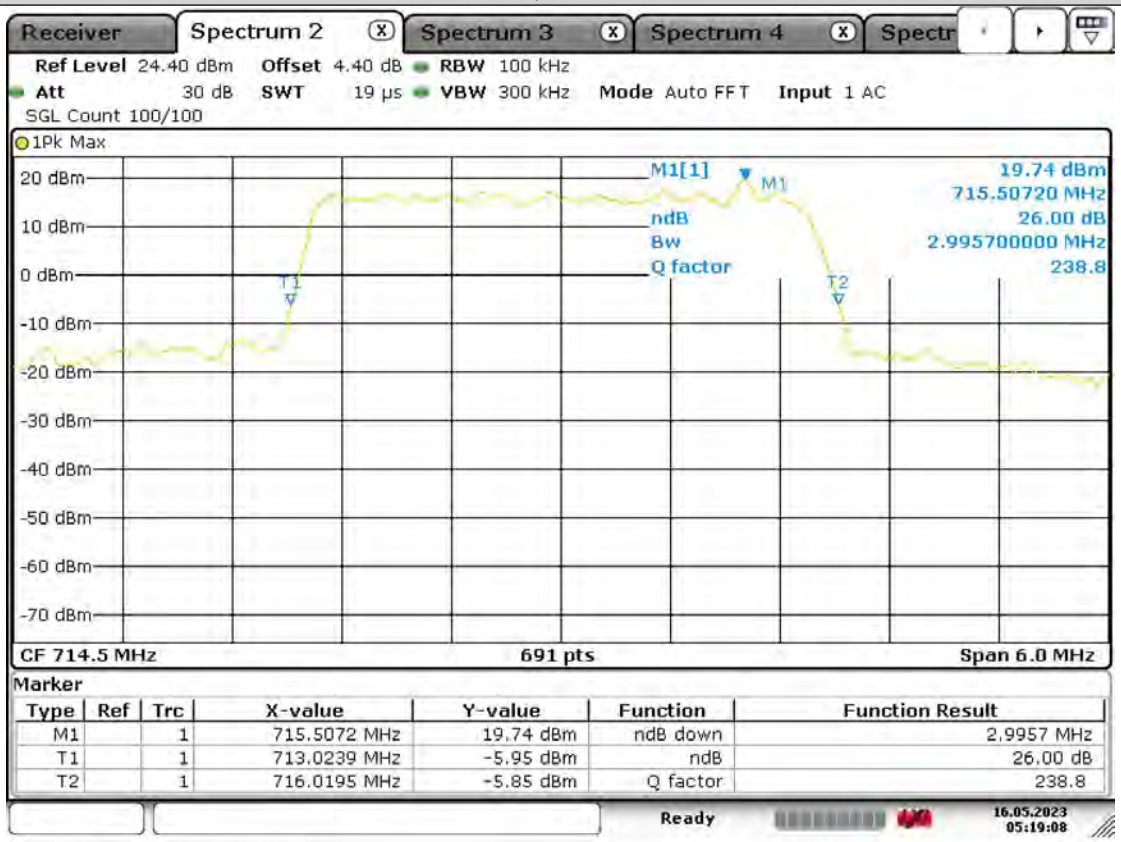

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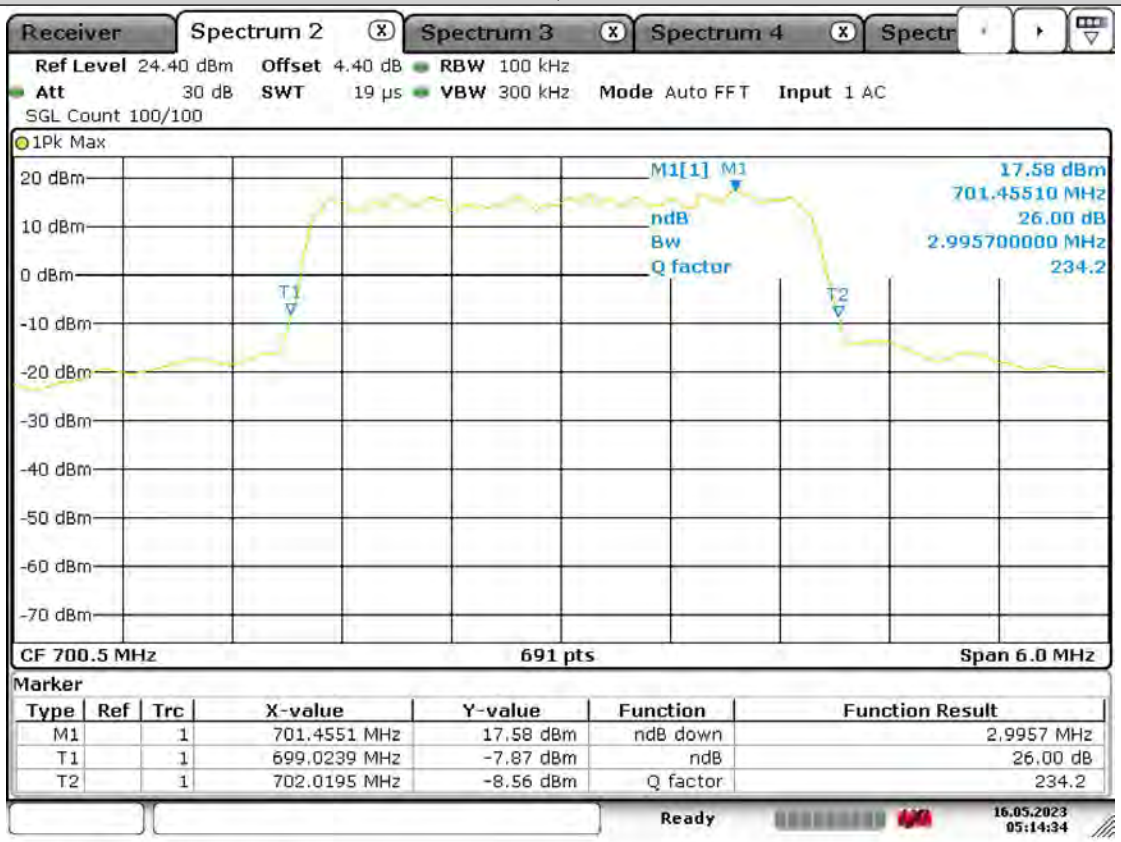

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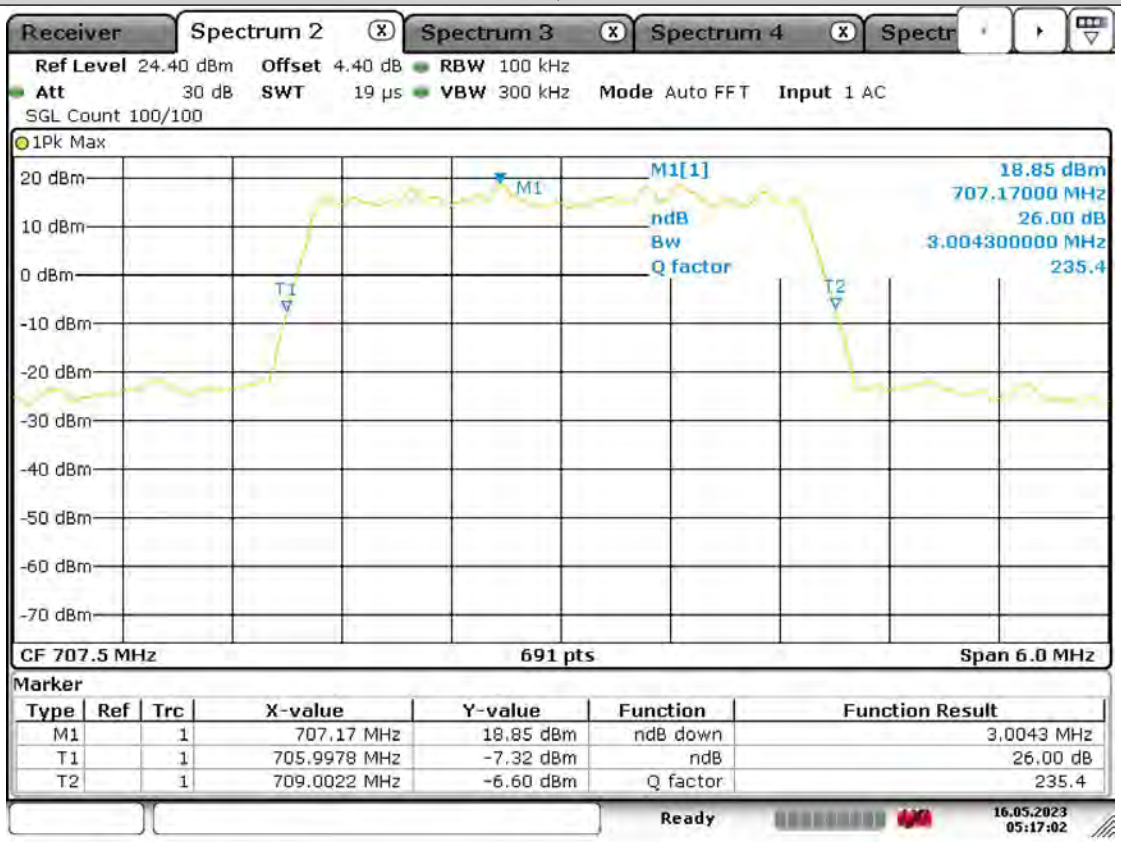

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