



TEST REPORT

REPORT NUMBER: 24B02W000030-001
ON

Type of Equipment: Smart POS system
Type of Designation: T6F10
Brand Name: SUNMI
Manufacturer: Shanghai Sunmi Technology Co.,Ltd.
FCC ID: 2AH25T6F10NA
IC: 22621-T6F10

ACCORDING TO
FCC 47 CFR Part 2
FCC 47 CFR Part 27
FCC 47 CFR Part 90
RSS-Gen Issue 5
RSS-140 Issue 1
RSS-195 Issue 2
ANSI C63.26-2015

Chongqing Academy of Information and Communications Technology

Month date, year
Sep.10, 2024

Signature



Jin Zhou

Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.



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Revision Version

Report Number	Revision	Date
24B02W000030-001	00	2024-09-10

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1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
Designation Number:	CN1239
IC Registration Number:	29397
Address:	No.19EastRoad,Xiantao Big-data Valley,Yubei District,Chongqing,People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	15-35°C
Relative Humidity:	30-70%

1.3. Project data

Testing Start Date:	2024-07-11
Testing End Date:	2024-09-05

1.4. Signature

	2024-09-10
Junxin Dong (Prepared this test report)	Date
	2024-09-10
Lili Wang (Reviewed this test report)	Date
	2024-09-10
Jin Zhou Director of the laboratory (Approved this test report)	Date

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2. Client Information

2.1. Applicant Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address /Post:	Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
City:	Shanghai
Country:	China
Telephone:	18826519551
Fax:	N/A
Email:	chenxuanfei@sunmi.com
Contact Person:	chenxuanfei

2.2. Manufacturer Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address /Post:	Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
City:	Shanghai
Country:	China
Telephone:	18826519551
Fax:	N/A
Email:	chenxuanfei@sunmi.com
Contact Person:	chenxuanfei

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3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	Smart POS system
Model name	T6F10
Brand name	SUNMI
WCDMA Frequency Band	WCDMA Band II/IV/V
LTE Frequency Band	LTE Band 2/4/5/7/12/13/14/17/25/26/30/38/41/66/71
Type of LTE modulation	QPSK/16QAM
Power Class 2	N/A
Power Class 3	LTE Band 2/4/5/7/12/13/14/17/25/26/30/38/41/66/71
HVIN	T6F10
Power Rating	DC7.7V form battery, DC 5V form adapter
Extreme Temperature	-10/+50°C
Nominal Test Voltage	7.7V
Extreme Test High Voltage	8.8V
Extreme Test Low Voltage	6.0V

Note1: Photographs of EUT are shown in ANNEX A of this test report.

Note2: High and low voltage values in extreme condition test are given by manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
24B02W000030#S1	868393070000351'868393070002357	V1.0(NA)	V3.0.0	2024-07-10
24B02W000030#S2	868393070000286'868393070002282	V1.0(NA)	V3.0.0	2024-07-10

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
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4G	14	788-798	758-768	--
4G	26	814-824	859-869	--
4G	30	2305-2315	2350-2360	--

Band	BW (MHz)	Low Channel	Low Freq. (MHz)	Mid Channel	Mid Freq. (MHz)	High Channel	High Freq. (MHz)
Band 14 (788-798MHz)	5	23305	790.5	23330	793	23355	795.5
	10	23330	793	23330	793	23330	793
Band 26 (814-824MHz) (Note 1)	1.4	26697	814.7	26740	819	26783	823.3
	3	26705	815.5	26740	819	26775	822.5
	5	26715	816.5	26740	819	26765	821.5
	10	/	/	26740	819	/	/
Band 30 (2305-2315)	5	27685	2307.5	27710	2310	27735	2312.5
	10	27710	2310	27710	2310	27710	2310

Note 1: This frequency is only used for FCC certification.

No.	Maximum of Antenna Gain	Data
1	LTE band 14	-2.2 dBi
2	LTE band 26	-1.04 dBi
3	LTE band 30	-0.46 dBi

Note: The data of antenna gain is provided by the customer may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.

Emissions Information FDD14

Band	Frequency Min (MHz)	Frequency Max (MHz)	Bandwidth (MHz)	Modulation	Max OutPut Power EIRP (dBm)	Max OutPut Power EIRP(W)	Max OutPut Power ERP(W)	OBW (KHz)	Necessary Bandwidth & Emission Classification
FDD14	790.5	795.5	5	QPSK	20.59	0.1146	0.0698	4490	4M49G7D
FDD14	790.5	795.5	5	16QAM	19.58	0.0908	0.0553	4490	4M49W7D
FDD14	793	793	10	QPSK	20.63	0.1156	0.0705	8930	8M93G7D
FDD14	793	793	10	16QAM	19.49	0.0889	0.0542	8950	8M95W7D

Emissions Information FDD26(PART 90)

Band	Frequency Min (MHz)	Frequency Max (MHz)	Bandwidth (MHz)	Modulation	Max OutPut Power EIRP	Max OutPut Power EIRP(W)	Max OutPut Power ERP(W)	OBW (KHz)	Necessary Bandwidth & Emission Classification
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					(dBm)				
FDD26	814.7	823.3	1.4	QPSK	21.74	0.1493	0.091	1080	1M08G7D
FDD26	814.7	823.3	1.4	16QAM	20.84	0.1213	0.074	1080	1M08W7D
FDD26	815.5	822.5	3	QPSK	21.74	0.1493	0.091	2680	2M68G7D
FDD26	815.5	822.5	3	16QAM	20.84	0.1213	0.074	2680	2M68W7D
FDD26	816.5	821.5	5	QPSK	21.78	0.1507	0.0918	4490	4M49G7D
FDD26	816.5	821.5	5	16QAM	20.83	0.1211	0.0738	4470	4M47W7D
FDD26	819	819	10	QPSK	/	/	/	8940	8M94G7D
FDD26	819	819	10	16QAM	/	/	/	8950	8M95W7D

Emissions Information FDD30

Band	Frequen cy Min (MHz)	Frequen cy Max (MHz)	BandWi dth (MHz)	Modulat ion	Max OutPut Power EIRP(dBm)	Max OutPut Power EIRP(W)	Max OutPut Power ERP(W)	OBW (KHz)	Necessary Bandwidth & Emission Classification
FDD30	2307.5	2312.5	5	QPSK	22.54	0.1795	0.1094	4490	4M49G7D
FDD30	2307.5	2312.5	5	16QAM	21.52	0.1419	0.0865	4470	4M47W7D
FDD30	2310	2310	10	QPSK	22.58	0.1811	0.1104	8940	8M94G7D
FDD30	2310	2310	10	16QAM	21.64	0.1459	0.0889	8950	8M95W7D

Note: This is a report for LTE B14/B26(814-824MHz)/B30 only.

3.4. Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
24B02W000030#AE1	RF Cable	N/A	N/A
24B02W000030#CA01	Adapter	TPA-141A050200UU01	N/A
24B02W000030#CB01	Adapter	UC13US	N/A
24B02W000030#CC01	Adapter	TPA-23A050200UU01	N/A
24B02W000030#UA01	AC Cable	N/A	N/A
24B02W000030#BA02	Battery	HPPA	Guangdong Highpower NewEnergy Technology Co., Ltd.

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NOTE1: AE ID is the internal identification code of the laboratory.

NOTE2: By verifying that CC01+BA02 is the worst battery and adapter combination, this battery and adapter are used in all tests.

*AE ID: is used to identify the test sample in the lab internally.

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4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC 47 CFR Part 2	Frequency Allocations And Radio Treaty Matters; General Rules And Regulations	--
FCC 47 CFR Part 27	Miscellaneous wireless communications services	--
FCC 47 CFR Part 90	Private Land Mobile Radio Services	--
RSS-Gen Issue 5	RSS-Gen —General Requirements For Compliance Of Radio Apparatus	2021-02
RSS-140 Issue 1	Equipment Operating In The Public Safety Broadband Frequency Bands 758- 768 Mhz And 788- 798 Mhz	2018-04
RSS-195 Issue 2	Wireless Communication Service (WCS) Equipment Operating In The Bands 2305-2320 Mhz And 2345- 2360 Mhz	2014-04
ANSI C63.26	American National Standard Of Procedures For Compliance Testing Of Licensed Transmitters Used In Licensed Radio	2015
KDB 971168 D01	Measurement Guidance For Certification Of Licensed Digital Transmitters	v03r01
Note: The standard of KDB 971168 D01 Power Meas License Digital Systems have not been accredited by A2LA.		

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5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	Spectrum analyzer	FSQ 26	201137	--	--	R&S	1 Year	2025-06-28
2	Spectrum analyzer	FSW26	104280	--	--	R&S	1 Year	2025-06-28
3	DC Power Supply	62015L-60-6	L02000001587	--	--	Chroma	1 Year	2025-06-28
4	Universal Radio Communication Tester	CMW500	166779	--	--	R&S	1 Year	2025-06-28
5	Power Divider	--	--	--	--	--	--	--

5.2. RSE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	Universal Radio Communication Tester	CMW500	128181	--	--	R&S	2025-06-28
2	Test Receiver	ESU40	100350	01	4.43 SP3	R&S	2025-06-28
3	Ultra-wideband Log Periodic Antenna	VULB 9163	9163-586	--	--	Schwarzbeck	2024-10-28
4	Double Ridged Guide Antenna	9120D	9120D-1103	--	--	Schwarzbeck	2026-05-13
5	Ultra-wideband Log Periodic Antenna	VULB 9163	00995	--	--	Schwarzbeck	2025-09-11
6	Double Ridged Guide Antenna	9120D	9120D-1083	--	--	Schwarzbeck	2024-12-14
7	High gain horn antenna	DATE 1152	LM7127			ETS	2024-09-06
8	Generator	SMU 200A	104517	--	--	R&S	2025-06-28
9	Amplifier1	SCU-08F1	8320027	--	--	R&S	--
10	Amplifier2	SCU-18F	180093	--	--	R&S	--
11	Test Receiver	ESW 26	101382	00	1.50 SP1	R&S	2025-06-28

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5.3. Climate Chamber

No.	Name	Type	SN	HW Version	SW Version	Manufacture	Cal. Interv al	Cal.Due Date
1	Climate chamber	VT4002	518602722023003	--	--	KQSN	1 Year	2025-06-28

5.4. Anechoic chamber Vibration table

No.	Name	Type	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	Fully-Anechoic Chamber	FAC-5	--	--	--	TDK	2026-07-29
2	Anechoic Chamber	SAC-10	--	--	--	TDK	2026-07-26

5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32	V9.26.01	--	R&S
2	EMC 32	V10.20.01	--	R&S
3	T-RFS500	V2.0	--	Manufacturer:Beijing Zhiwang Xince Technology Co., Ltd.

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6. Test Results

6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

LTE Band 14

FCC Rules	IC Rules	Name of Test	Result
2.1046/90.542(a)(7)	RSS 140 4.3	Output Power and EIRP/ERP	PASS
2.1053/90.543(e)/90.543(f)	RSS 140 4.4	Emission Limit	PASS
2.1055/90.539	RSS 140 4.2	Frequency Stability	PASS
2.1049	RSS-GEN 6.7	Occupied Bandwidth	PASS
90.209(b)	RSS-GEN 6.7	Emission Bandwidth	PASS
2.1051/90.543(e)/90.543(f)	RSS 140 4.4	Band Edge Compliance	PASS
2.1051/90.543(e)/90.543(f)	RSS 140 4.4	Conducted Spurious Emission	PASS
N/A	RSS 140 4.3	Peak to Average Power Ratio	PASS

LTE Band 26(Part 90)

FCC Rules	IC Rules	Name of Test	Result
2.1046/90.635(b)	N/A	Output Power and EIRP/ERP	PASS
2.1053/90.691	N/A	Emission Limit	PASS
2.1055/90.213(a)	N/A	Frequency Stability	PASS
2.1049	N/A	Occupied Bandwidth	PASS
90.209 (b)	N/A	26dB Emission Bandwidth	PASS
2.1051/90.691	N/A	Band Edge Compliance	PASS
2.1051/90.691	N/A	Conducted Spurious Emission	PASS
N/A	N/A	Peak to Average Power Ratio	PASS

LTE Band 30

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FCC Rules	IC Rules	Name of Test	Result
2.1046/27.50(a)	RSS-195 5.5	Output Power and EIRP/ERP	PASS
2.1053/27.53(a)	RSS-195 5.6	Emission Limit	PASS
2.1055/27.54	RSS-195 5.4	Frequency Stability	PASS
2.1049	RSS-GEN 6.7	Occupied Bandwidth	PASS
2.1049	RSS-GEN 6.7	26dB Emission Bandwidth	PASS
2.1051/27.53(a)	RSS-195 5.6	Band Edge Compliance	PASS
2.1051/27.53(a)	RSS-195 5.6	Conducted Spurious Emission	PASS
27.5	RSS-195 5.5	Peak to Average Power Ratio	PASS

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6.2. Output Power and EIRP/ERP

Specifications:	FCC Part 2.1046/27.50(a)/90.635(b)/90.542(a)(7) RSS-140 4.3, RSS-195 5.5
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.2.1. Measurement Limit

FCC §90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

FCC §90.542(a)(7) Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

FCC §27.50(a) 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.

RSS-140 4.3 The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

RSS-195 5.5 The e.i.r.p. of mobile or portable equipment transmitting in the band 2305-2315 MHz or the band 2350-2360 MHz, employing 3GPP LTE (Third Generation Partnership Project Long Term Evolution) standards, shall not exceed 250 mW within any 5 MHz bandwidth. For other technologies, the e.i.r.p. shall not exceed 50 mW within any 1 MHz bandwidth

6.2.2. Method of Measurements

Method of measurements please refer to KDB971168 D01 v03 clause 5.

The EUT was set up for the max output power with pseudo random data modulation.

The power was measured with Rhode & Schwarz base station CMW500.

These measurements were done at 3 frequencies.(bottom, middle and top of operational frequency range).

1. The transmitter output port was connected to base station.
2. Set the EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record maximum average power for other modulation signal.
5. During the process of testing, the EUT was controlled Rhode & Schwarz Digital Radio.
6. Communication tester to ensure max power transmission and proper modulation.
7. This result contains output power and EIRP measurements for the EUT. In all cases, output power is

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within the specified limits.

$EIRP = \text{Conducted power} + \text{Gain}$, $ERP = EIRP - 2.15\text{dBi}$.

6.2.3. Test procedures

The transmitter output power was connected to calibrated attenuator, the other end of which was connected to signal analyzer. Transmitter output power was read off the power in dBm. The power outputs at the transmitter antenna port was determined by adding the value of attenuator to the signal analyzer reading.

6.2.4. Measurement Uncertainty

Expanded Uncertainty	0.6dB (k=2)
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6.2.5. Test Setup



6.2.6. Test result

LTE B14			Maximum Conducted Power (dBm)		
Modulation	RB	RB Offset	5MHz		
			Channel/Frequency(MHz)		
			23305/790.5	23330/793	23355/795.5
QPSK	1	Low	22.51	22.53	22.58
		Middle	22.71	22.75	22.79
		High	22.48	22.51	22.46
	50%	Low	21.57	21.60	21.70
		Middle	21.47	21.51	21.54
		High	21.74	21.74	21.72
	100%	/	21.60	21.60	21.61
16QAM	1	Low	21.62	21.78	21.48
		Middle	21.52	21.46	21.41
		High	21.52	21.56	21.52
	50%	Low	20.66	20.72	20.70
		Middle	20.61	20.68	20.64
		High	20.65	20.76	20.69
	100%	/	20.63	20.73	20.67

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Modulation	RB	RB Offset	10MHz		
			Channel/Frequency(MHz)		
			/	23330/793	/
QPSK	1	Low	/	22.56	/
		Middle	/	22.83	/
		High	/	22.60	/
	50%	Low	/	21.67	/
		Middle	/	21.57	/
		High	/	21.69	/
	100%	/	/	21.69	/
16QAM	1	Low	/	21.69	/
		Middle	/	21.58	/
		High	/	21.57	/
	50%	Low	/	20.72	/
		Middle	/	20.68	/
		High	/	20.72	/
	100%	/	/	20.70	/

LTE B26 (Part 90)			Maximum Conducted Power (dBm)		
Modulation	RB	RB Offset	1.4MHz		
			Channel/Frequency(MHz)		
			26697/814.7	26740/819	26783/823.3
QPSK	1	Low	22.50	22.58	22.66
		Middle	22.77	22.78	22.58
		High	22.74	22.52	22.47
	50%	Low	22.72	22.77	22.76
		Middle	22.69	22.72	22.62
		High	22.69	22.72	22.69
	100%	/	21.80	21.81	21.79
16QAM	1	Low	21.76	21.79	21.53
		Middle	21.78	21.70	21.79
		High	21.74	21.88	21.86
	50%	Low	21.67	21.72	21.74
		Middle	21.71	21.71	21.63
		High	21.65	21.79	21.69
	100%	/	20.68	20.78	20.70
Modulation	RB	RB Offset	3MHz		
			Channel/Frequency(MHz)		
			26705/815.5	26740/819	26775/822.5
QPSK	1	Low	22.52	22.47	22.57
		Middle	22.69	22.78	22.60

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	50%	High	22.67	22.53	22.47
		Low	21.74	21.81	21.79
		Middle	21.70	21.69	21.67
		High	21.87	21.65	21.90
	100%	/	21.81	21.79	21.63
16QAM	1	Low	21.88	21.71	21.54
		Middle	21.87	21.55	21.78
		High	21.84	21.81	21.87
	50%	Low	20.82	20.92	20.79
		Middle	20.79	20.76	20.68
		High	20.76	20.83	20.72
	100%	/	20.74	20.77	20.68
Modulation	RB	RB Offset	5MHz		
			Channel/Frequency(MHz)		
			26715/816.5	26740/819	26765/821.5
QPSK	1	Low	22.42	22.48	22.56
		Middle	22.78	22.79	22.54
		High	22.82	22.58	22.47
	50%	Low	21.81	21.82	21.85
		Middle	21.76	21.87	21.74
		High	21.73	21.75	21.89
	100%	/	21.76	21.70	21.66
16QAM	1	Low	21.76	21.81	21.70
		Middle	21.78	21.61	21.81
		High	21.77	21.84	21.87
	50%	Low	20.74	20.77	20.81
		Middle	20.76	20.92	20.78
		High	20.73	20.97	20.83
	100%	/	20.82	20.90	20.78
Modulation	RB	RB Offset	10MHz		
			Channel/Frequency(MHz)		
			/	26740/819	/
QPSK	1	Low	/	22.53	/
		Middle	/	22.78	/
		High	/	22.68	/
	50%	Low	/	21.74	/
		Middle	/	21.83	/
		High	/	21.75	/
	100%	/	/	21.84	/
16QAM	1	Low	/	21.74	/
		Middle	/	21.87	/
		High	/	21.70	/
	50%	Low	/	20.79	/

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		Middle	/	20.81	/
		High	/	20.76	/
	100%	/	/	20.65	/

LTE B30			Maximum Conducted Power (dBm)		
Modulation	RB	RB Offset	5MHz		
			Channel/Frequency(MHz)		
			27685/2307.5	27710/2310	27735/2312.5
QPSK	1	Low	22.79	22.75	22.76
		Middle	23.00	22.96	22.99
		High	22.77	22.72	22.76
	50%	Low	21.74	21.73	21.86
		Middle	21.91	21.76	21.91
		High	21.84	21.84	21.88
	100%	/	21.81	21.97	21.81
16QAM	1	Low	21.86	21.98	21.89
		Middle	21.86	21.70	21.84
		High	21.67	21.57	21.59
	50%	Low	20.84	20.98	20.93
		Middle	20.96	20.86	20.87
		High	20.90	20.76	20.99
	100%	/	20.89	20.76	20.89
Modulation	RB	RB Offset	10MHz		
			Channel/Frequency(MHz)		
			/	27710/2310	/
QPSK	1	Low	/	22.83	/
		Middle	/	23.04	/
		High	/	22.81	/
	50%	Low	/	21.85	/
		Middle	/	21.90	/
		High	/	21.92	/
	100%	/	/	21.88	/
16QAM	1	Low	/	22.10	/
		Middle	/	21.88	/
		High	/	21.67	/
	50%	Low	/	20.91	/
		Middle	/	20.93	/
		High	/	20.85	/
	100%	/	/	20.85	/

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6.2.7. EIRP/ERP result

Band	BW	Modulation	Channel	Conducted(dBm)	Gain(dBi)	EIRP(dBm)	ERP(dBm)
14	5	QPSK	Low	22.71	-2.2	20.51	18.36
14	5	QPSK	Mid	22.75	-2.2	20.55	18.4
14	5	QPSK	High	22.79	-2.2	20.59	18.44
14	5	16QAM	Low	21.62	-2.2	19.42	17.27
14	5	16QAM	Mid	21.78	-2.2	19.58	17.43
14	5	16QAM	High	21.52	-2.2	19.32	17.17
14	10	QPSK	Low	/	-2.2	/	/
14	10	QPSK	Mid	22.83	-2.2	20.63	18.48
14	10	QPSK	High	/	-2.2	/	/
14	10	16QAM	Low	/	-2.2	/	/
14	10	16QAM	Mid	21.69	-2.2	19.49	17.34
14	10	16QAM	High	/	-2.2	/	/
26(Part90)	1.4	QPSK	Low	22.77	-1.04	21.73	19.58
26(Part90)	1.4	QPSK	Mid	22.78	-1.04	21.74	19.59
26(Part90)	1.4	QPSK	High	22.76	-1.04	21.72	19.57
26(Part90)	1.4	16QAM	Low	21.78	-1.04	20.74	18.59
26(Part90)	1.4	16QAM	Mid	21.88	-1.04	20.84	18.69
26(Part90)	1.4	16QAM	High	21.86	-1.04	20.82	18.67
26(Part90)	3	QPSK	Low	22.69	-1.04	21.65	19.50
26(Part90)	3	QPSK	Mid	22.78	-1.04	21.74	19.59
26(Part90)	3	QPSK	High	22.60	-1.04	21.56	19.41
26(Part90)	3	16QAM	Low	21.88	-1.04	20.84	18.69
26(Part90)	3	16QAM	Mid	21.81	-1.04	20.77	18.62
26(Part90)	3	16QAM	High	21.87	-1.04	20.83	18.68
26(Part90)	5	QPSK	Low	22.82	-1.04	21.78	19.63
26(Part90)	5	QPSK	Mid	22.79	-1.04	21.75	19.60
26(Part90)	5	QPSK	High	22.56	-1.04	21.52	19.37
26(Part90)	5	16QAM	Low	21.78	-1.04	20.74	18.59
26(Part90)	5	16QAM	Mid	21.84	-1.04	20.80	18.65
26(Part90)	5	16QAM	High	21.87	-1.04	20.83	18.68
26(Part90)	10	QPSK	Low	/	-1.04	/	/
26(Part90)	10	QPSK	Mid	22.78	-1.04	21.74	19.59
26(Part90)	10	QPSK	High	/	-1.04	/	/
26(Part90)	10	16QAM	Low	/	-1.04	/	/
26(Part90)	10	16QAM	Mid	21.87	-1.04	20.83	18.68
26(Part90)	10	16QAM	High	/	-1.04	/	/
30	5	QPSK	Low	23	-0.46	22.54	20.39
30	5	QPSK	Mid	22.96	-0.46	22.5	20.35
30	5	QPSK	High	22.99	-0.46	22.53	20.38

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30	5	16QAM	Low	21.86	-0.46	21.4	19.25
30	5	16QAM	Mid	21.98	-0.46	21.52	19.37
30	5	16QAM	High	21.89	-0.46	21.43	19.28
30	10	QPSK	Low	/	-0.46	/	/
30	10	QPSK	Mid	23.04	-0.46	22.58	20.43
30	10	QPSK	High	/	-0.46	/	/
30	10	16QAM	Low	/	-0.46	/	/
30	10	16QAM	Mid	22.1	-0.46	21.64	19.49
30	10	16QAM	High	/	-0.46	/	/

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6.3. 99% Occupied Bandwidth

Specifications:	FCC Part 2.1049 RSS-GEN 6.7
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.3.1. Summary

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the Mid frequencies of FDD14,FDD26(814-824) and FDD30.

6.3.2. Method of Measurement

The EUT output RF connector was connected with a short cable to the signal analyzer.

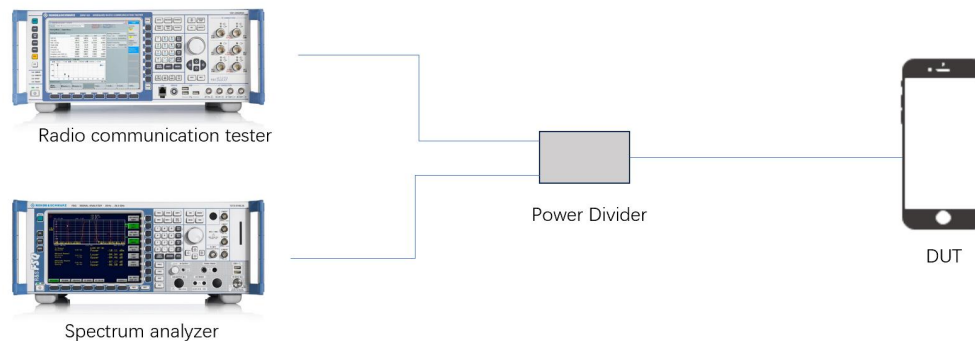
RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW,.

99% bandwidth were measured, the occupied bandwidth is delta frequency between the two points where the display line intersects the signal trace.

6.3.3. Measurement Uncertainty

Expanded Uncertainty	70.04 Hz (k=2)
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6.3.4. Test Setup

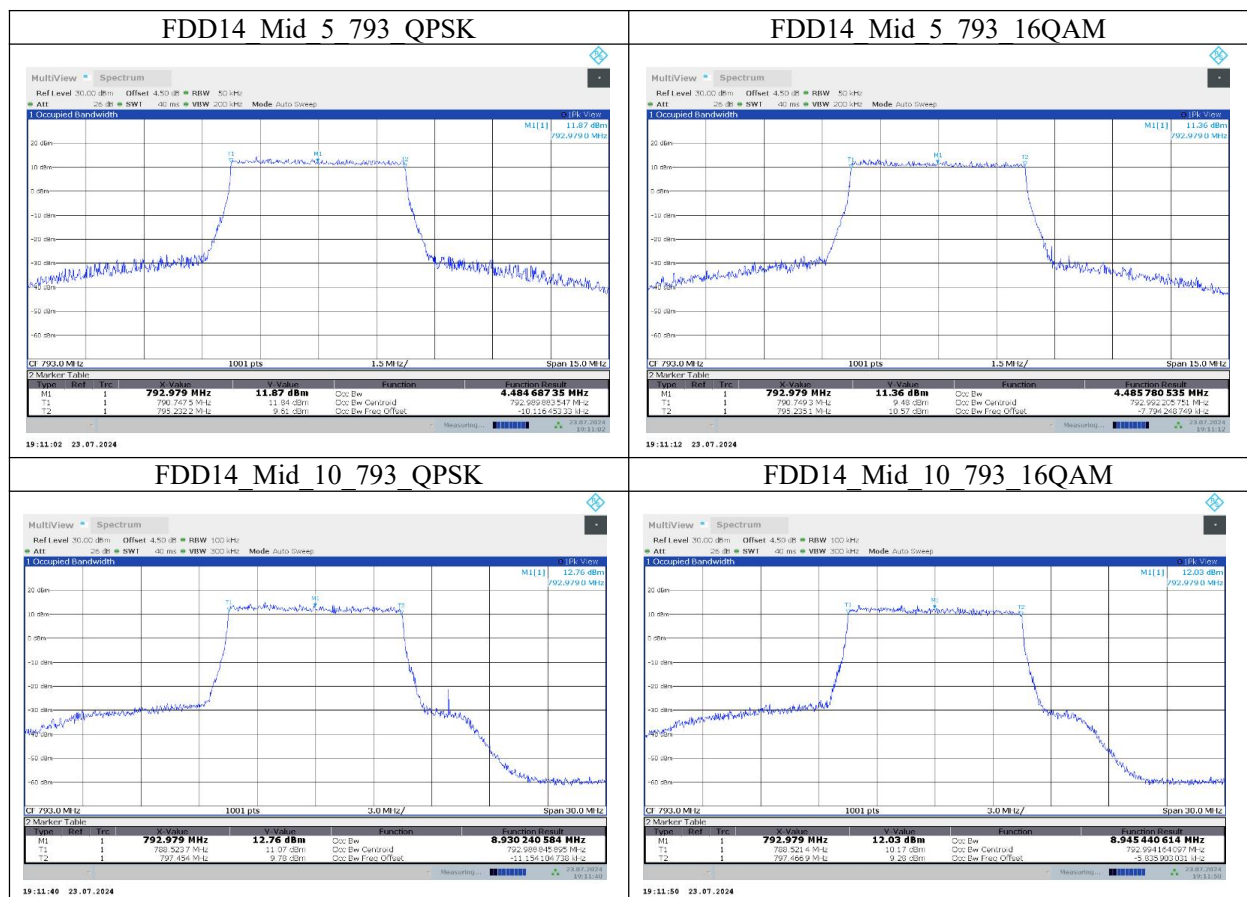


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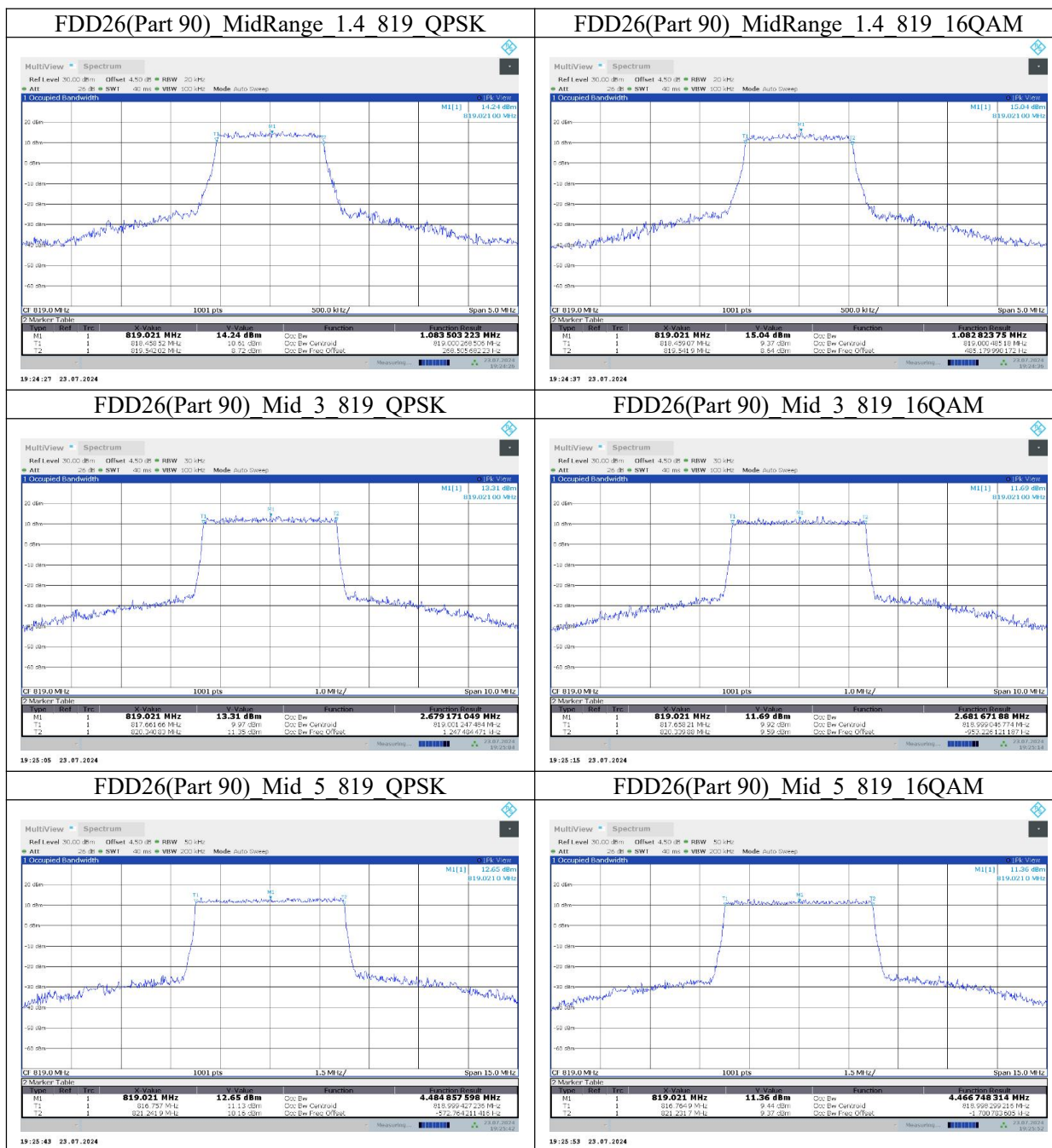
6.3.5. Test result

Band	Channel	BandWidth(MHz)	Frequency(MHz)	QPSK(MHz)	16QAM(MHz)
FDD14	Mid	5	793	4.49	4.49
FDD14	Mid	10	793	8.93	8.95
FDD26_Part90	Mid	1.4	819	1.08	1.08
FDD26_Part90	Mid	3	819	2.68	2.68
FDD26_Part90	Mid	5	819	4.49	4.47
FDD26_Part90	Mid	10	819	8.94	8.95
FDD30	Mid	5	2310	4.49	4.47
FDD30	Mid	10	2310	8.94	8.95

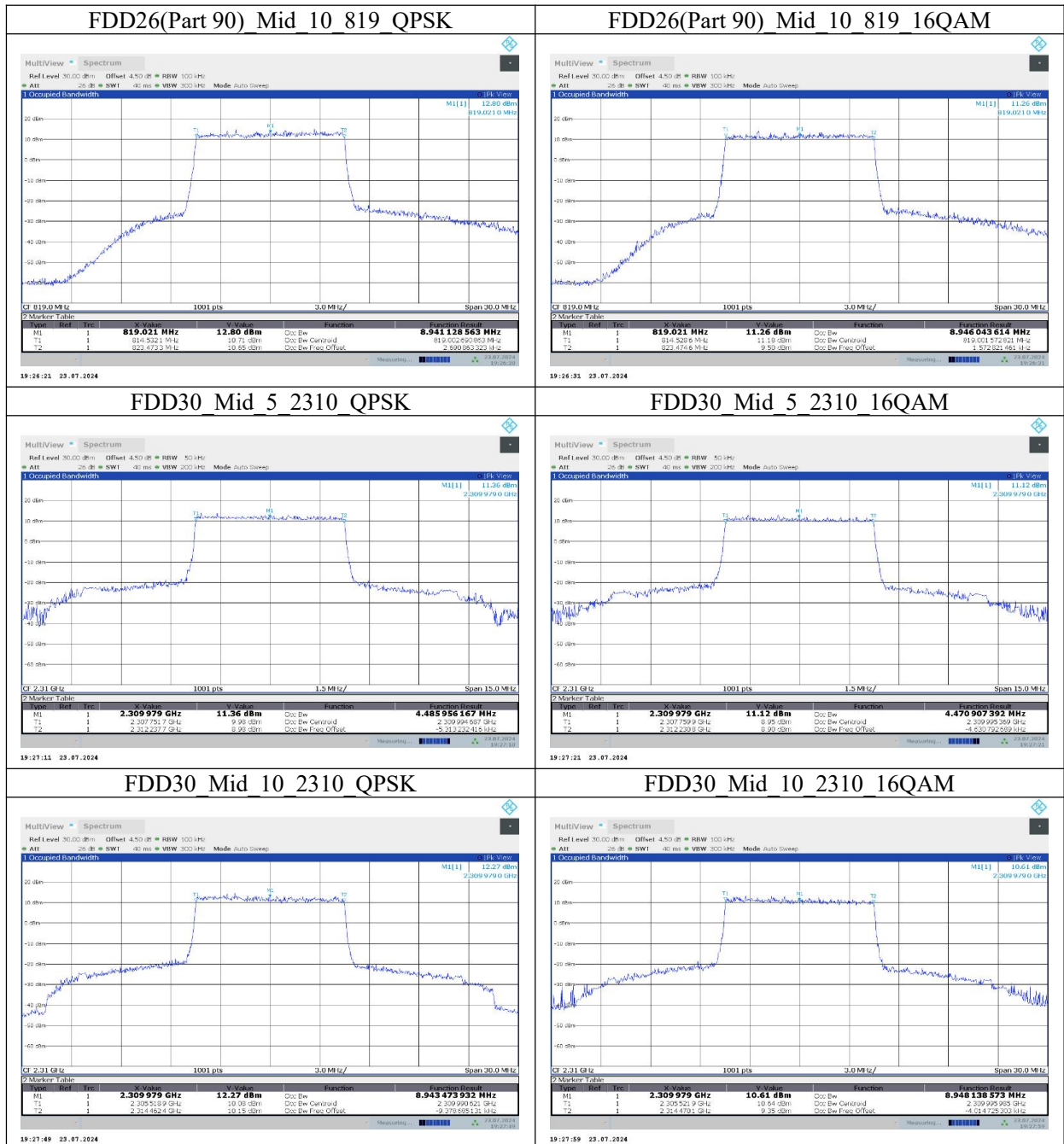


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6.4. 26dB Emission Bandwidth

Specifications:	FCC Part 2.1049/90.209 (b) RSS-GEN 6.7
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.4.1. Summary

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the mid frequencies of FDD14 and FDD26 (814-824) .

6.4.2. Method of Measurement

The EUT output RF connector was connected with a short cable to the signal analyzer.

RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW,.

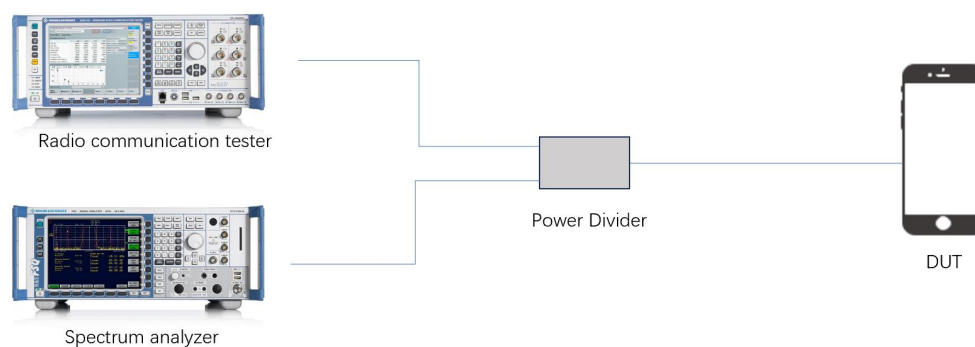
26dB bandwidth were measured, the occupied bandwidth is delta frequency between the two points where the display line intersects the signal trace.

For GSM: signal analyzer setting as: RBW= 3KHz; VBW=10KHz; Span=1MHz.

6.4.3. Measurement Uncertainty

Expanded Uncertainty	70.44 Hz (k=2)
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6.4.4. Test Setup

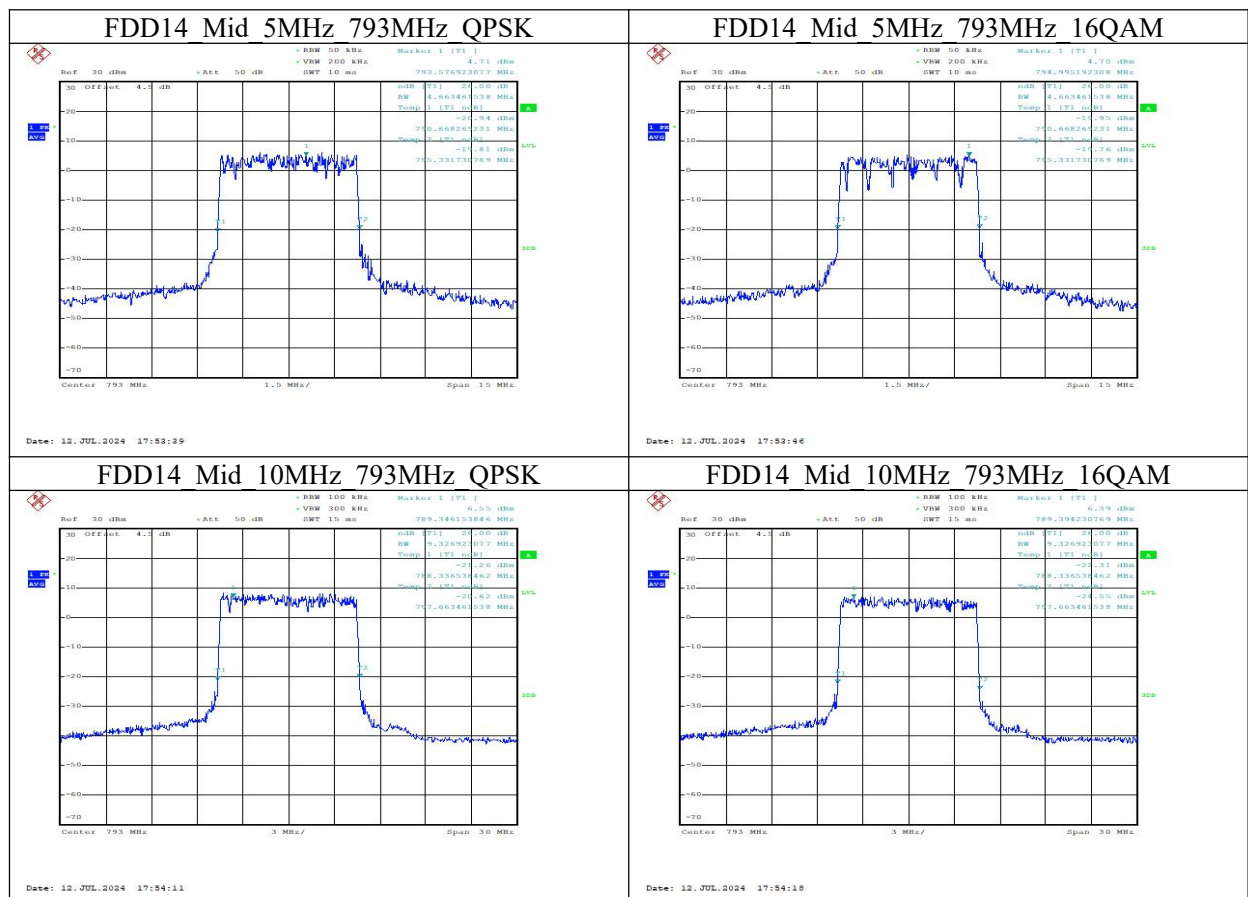


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6.4.5. Test result

Band	Channel	BandWidth(MHz)	Frequency(MHz)	QPSK(MHz)	16QAM(MHz)
FDD14	Mid	5	793	4.66	4.66
FDD14	Mid	10	793	9.33	9.33
FDD26(Part 90)	Mid	1.4	819	1.28	1.23
FDD26(Part 90)	Mid	3	819	2.84	2.85
FDD26(Part 90)	Mid	5	819	4.66	4.69
FDD26(Part 90)	Mid	10	819	9.33	9.33
FDD30	Mid	5	2310	4.71	4.66
FDD30	Mid	10	2310	9.33	9.38



[illegible]

[illegible]

6.5. Frequency Stability

Specifications:	FCC Part 2.1055/27.54/90.213(a)/90.539 RSS 140 4.2, RSS-195 5.4
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.5.1. Measurement Limit

FCC §2.1055 The frequency stability shall be measured with variation of ambient temperature as follows:
(1) From -30° to $+50^{\circ}$ centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(2) From -20° to $+50^{\circ}$ centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radiobeacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.

FCC §90.213(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following below.

Frequency range (MHz): 809-824, Fixed and base stations: 1.5, Over 2 watts output power:2.5, 2 watts or less output power:2.5.

FCC §90.539 Transmitters designed to operate in 769-775 MHz and 799-805 MHz frequency bands must meet the frequency stability requirements in this section.

(a) Mobile, portable and control transmitters must normally use automatic frequency control (AFC) to lock on to the base station signal.

(b) The frequency stability of base transmitters operating in the narrowband segment must be 100 parts per billion or better.

(c) The frequency stability of mobile, portable, and control transmitters operating in the narrowband segment must be 400 parts per billion or better when AFC is locked to the base station. When AFC is not locked to the base station, the frequency stability must be at least 1.0 ppm for 6.25 kHz, 1.5 ppm for 12.5 kHz (2 channel aggregate), and 2.5 ppm for 25 kHz (4 channel aggregate).

(d) The frequency stability of base transmitters operating in the wideband segment must be 1 part per million or better.

(e) The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

FCC §27.54 The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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RSS 140 4.2, RSS-195 5.4 The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

6.5.2. Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on mid channel of LTE Band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1 Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

6.5.3. Measurement Uncertainty

Expanded Uncertainty	1.54 Hz (k=2)
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6.5.4. Test Setup



6.5.5. Test results

Only the worst mode data is provided

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Temperature	Voltage	Band	BandWidth (MHz)	RbMod _e	QPSK (Hz)	16QAM (Hz)	QPSK (ppm)	16QAM (ppm)
Normal	Low	FDD14	5	fullRB	-11.558	10.387	0.015	0.013
Normal	Normal	FDD14	5	fullRB	-12.96	-13.835	0.016	0.017
Normal	High	FDD14	5	fullRB	-9.446	-11.973	0.012	0.015
50	Normal	FDD14	5	fullRB	-7.794	-12.75	0.01	0.016
40	Normal	FDD14	5	fullRB	-10.597	-12.527	0.013	0.016
30	Normal	FDD14	5	fullRB	-6.131	10.553	0.008	0.013
20	Normal	FDD14	5	fullRB	-13.511	-12.311	0.017	0.016
10	Normal	FDD14	5	fullRB	-12.617	-11.739	0.016	0.015
0	Normal	FDD14	5	fullRB	-6.819	-16.15	0.009	0.02
-10	Normal	FDD14	5	fullRB	-11.396	12.789	0.014	0.016
-20	Normal	FDD14	5	fullRB	-2.68	-13.349	0.003	0.017
-30	Normal	FDD14	5	fullRB	-4.557	-8.105	0.006	0.01
Normal	Low	FDD26 (Part 90)	5	fullRB	-11.688	8.539	0.014	0.01
Normal	Normal	FDD26 (Part 90)	5	fullRB	-11.314	-11.573	0.014	0.014
Normal	High	FDD26 (Part 90)	5	fullRB	-9.109	-10.535	0.011	0.013
50	Normal	FDD26 (Part 90)	5	fullRB	-7.585	-12.728	0.009	0.016
40	Normal	FDD26 (Part 90)	5	fullRB	-6.62	7.482	0.008	0.009
30	Normal	FDD26 (Part 90)	5	fullRB	-6.048	-13.074	0.007	0.016
20	Normal	FDD26 (Part 90)	5	fullRB	-11.183	-11.408	0.014	0.014
10	Normal	FDD26 (Part 90)	5	fullRB	-10.232	-7.987	0.012	0.01
0	Normal	FDD26 (Part 90)	5	fullRB	-12.09	7.973	0.015	0.01
-10	Normal	FDD26 (Part 90)	5	fullRB	-9.485	-14.223	0.012	0.017
-20	Normal	FDD26 (Part 90)	5	fullRB	-11.901	-11.511	0.015	0.014
-30	Normal	FDD26 (Part 90)	5	fullRB	-8.194	-11.357	0.01	0.014
Normal	Low	FDD30	5	fullRB	-12.993	-15.898	0.006	0.007

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Normal	Normal	FDD30	5	fullRB	-19.158	-19.118	0.008	0.008
Normal	High	FDD30	5	fullRB	-17.605	-28.55	0.008	0.012
50	Normal	FDD30	5	fullRB	-19.503	35.938	0.008	0.016
40	Normal	FDD30	5	fullRB	-15.33	-18.215	0.007	0.008
30	Normal	FDD30	5	fullRB	-27.306	-20.665	0.012	0.009
20	Normal	FDD30	5	fullRB	-22.197	21.697	0.01	0.009
10	Normal	FDD30	5	fullRB	-15.742	-25.42	0.007	0.011
0	Normal	FDD30	5	fullRB	7.947	19.741	0.003	0.009
-10	Normal	FDD30	5	fullRB	-25.393	-23.729	0.011	0.01
-20	Normal	FDD30	5	fullRB	-16.959	-22.334	0.007	0.01
-30	Normal	FDD30	5	fullRB	-24.19	-25.296	0.01	0.011

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6.6. Conducted Spurious Emission

Specifications:	FCC Part 2.1051/27.53(a)/90.691/90.543(e)/90.543(f) RSS 140 4.4,RSS-195 5.6
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.6.1. Measurement Limit

FCC§27.53(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

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.

FCC§90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

- (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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FCC§90.543(e):

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

FCC§90.543(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS 140 4.4:

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

- a. For any frequency between 769-775 MHz and 799-806 MHz:
 - i. $76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment
 - ii. $65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment
- b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

6.6.2. Method of Measurement

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz,

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data taken from 10 MHz to 25 GHz.

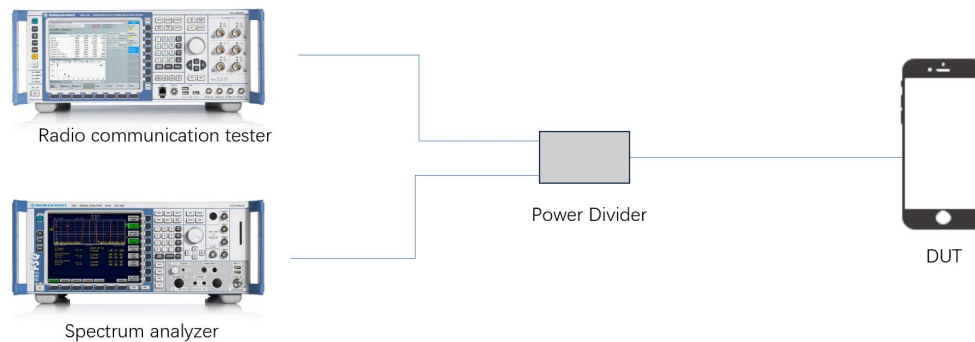
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

6.6.3. Measurement Uncertainty

Expanded Uncertainty	1.54 dB (k=2)
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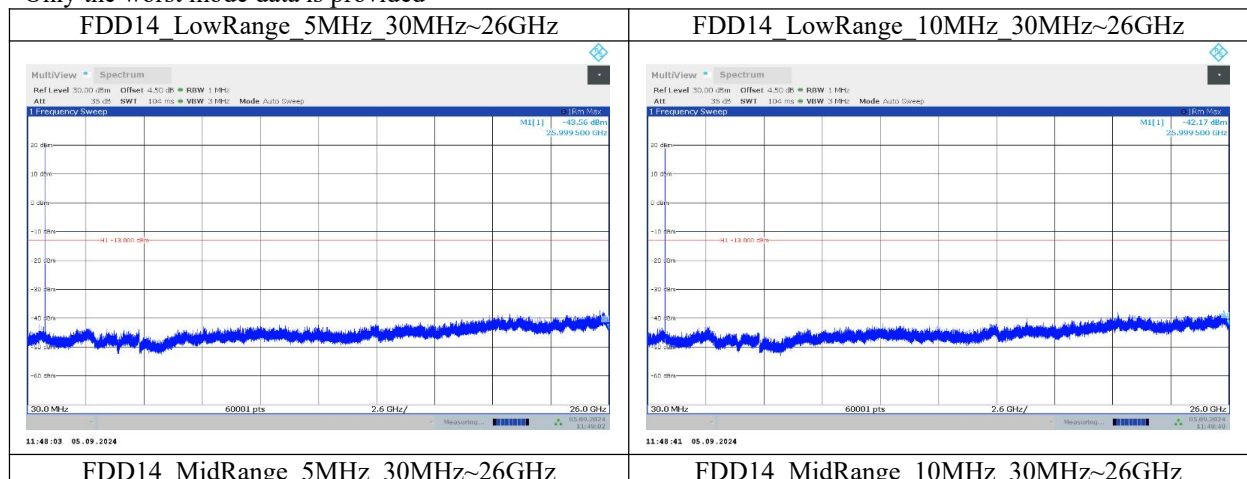
6.6.4. Test Setup



6.6.5. Measurement result

Band	RB Config
Band 14	fullRB
Band 26(Part 90)	fullRB
Band 30	fullRB

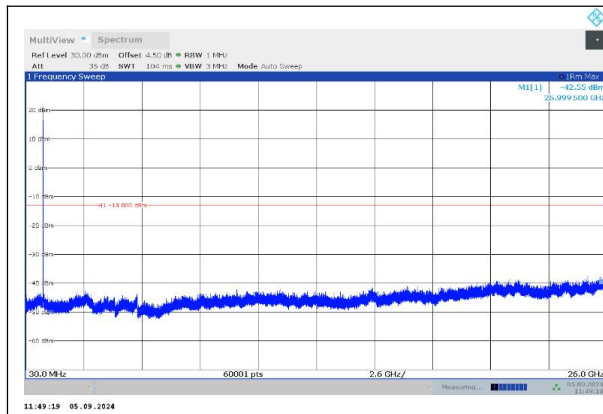
Only the worst mode data is provided



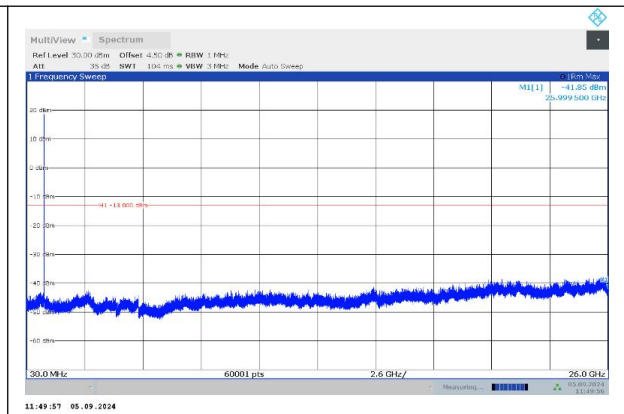
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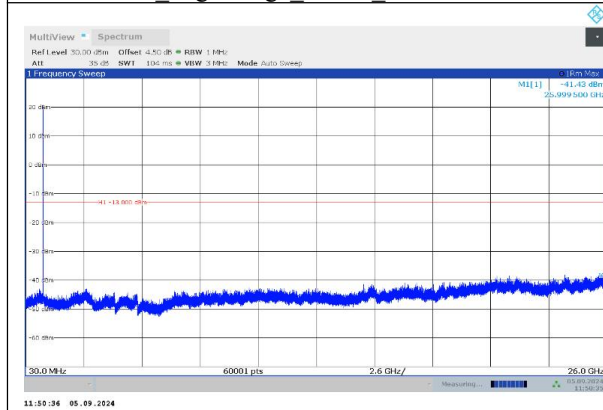
Report No.: 24B02W000030-001



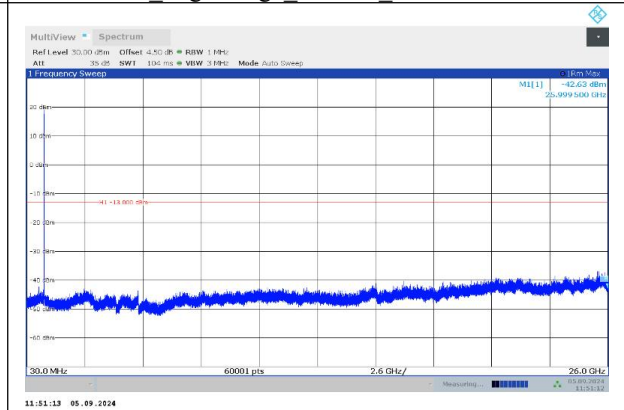
FDD14_HighRange_5MHz_30MHz~26GHz



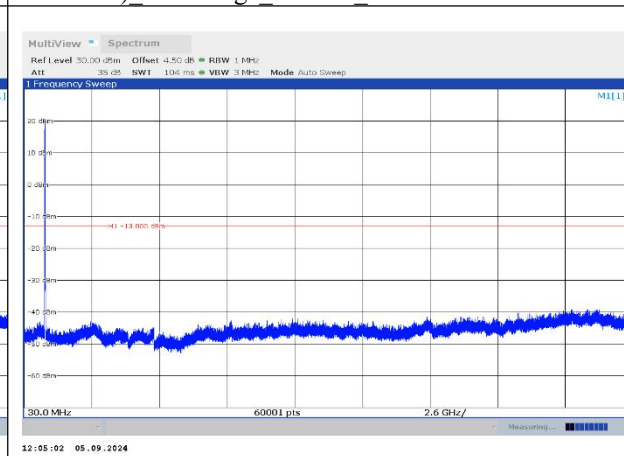
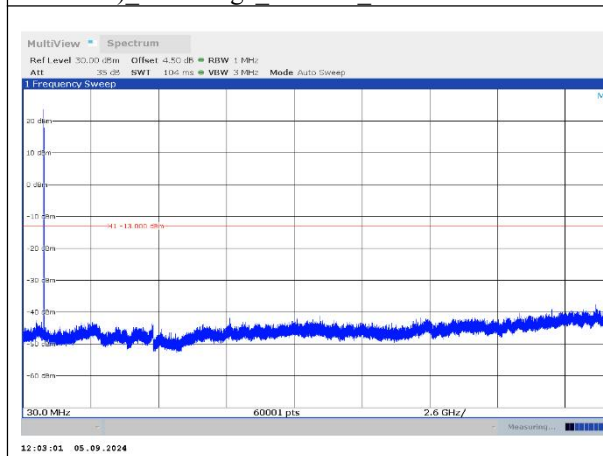
FDD14_HighRange_10MHz_30MHz~26GHz



FDD26(PART
90)_LowRange_1.4MHz_30MHz~26GHz



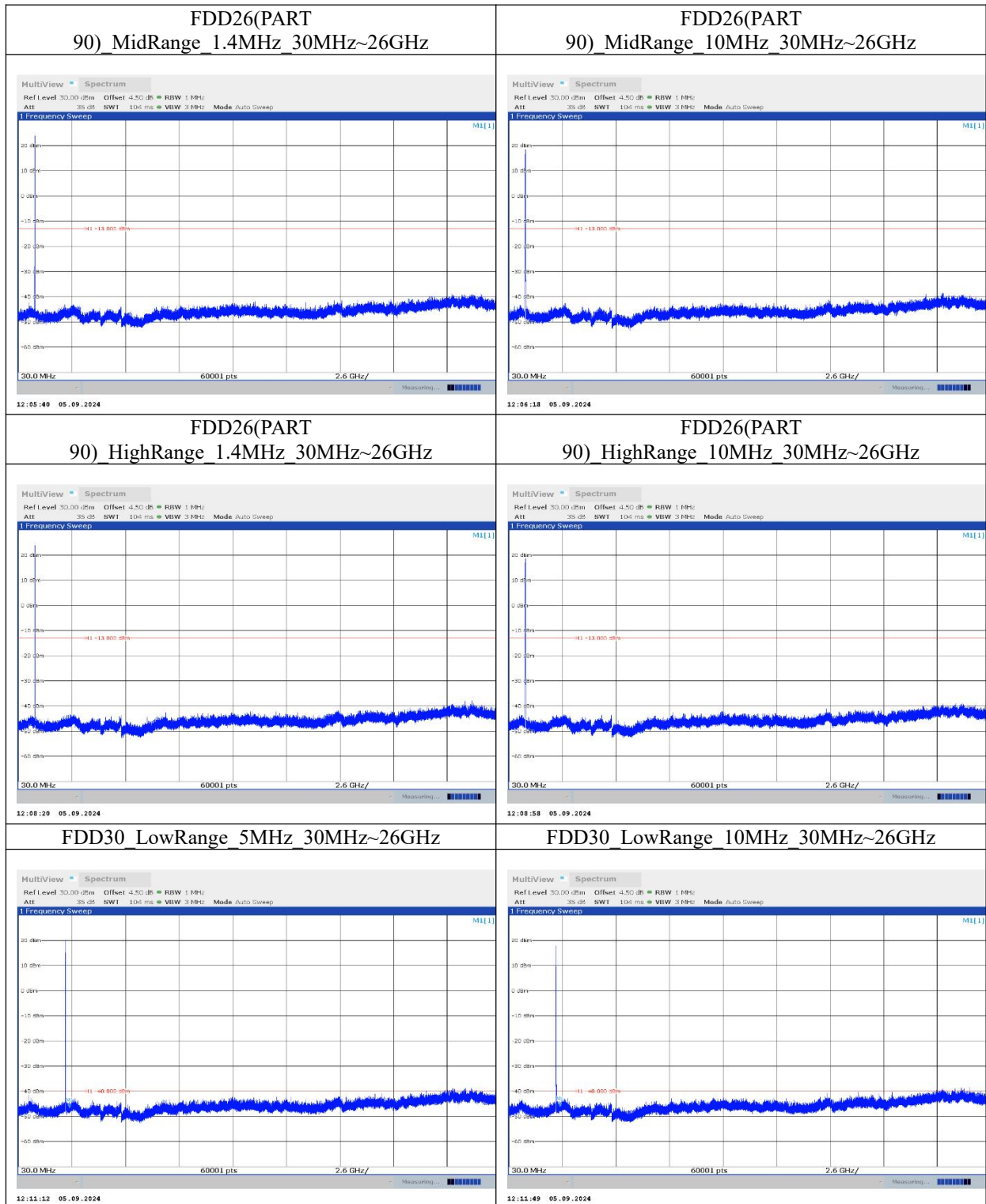
FDD26(PART
90)_LowRange_10MHz_30MHz~26GHz



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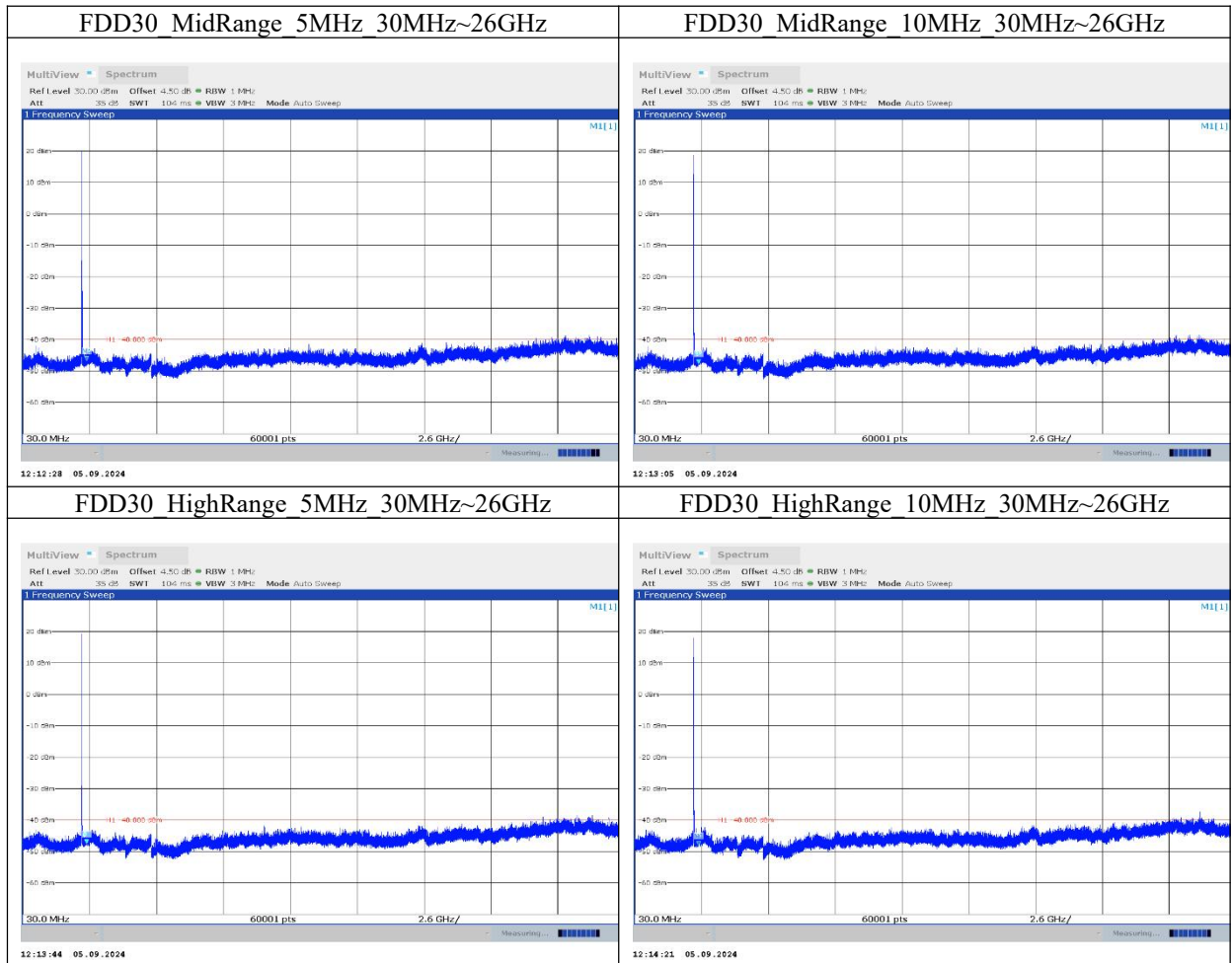
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Note: peak above the limit line is the carrier frequency.

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6.7. Band Edge Compliance

Specifications:	FCC Part 2.1051/27.53(a)/90.691/90.543(e)/90.543(f) RSS 140 4.4,RSS-195 5.6
DUT Serial Number:	24B02W000030#S1
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.7.1. Measurement Limit

FCC§27.53(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

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- (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.

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- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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FCC§90.543(e):

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

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- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

FCC§90.543(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

- a. For any frequency between 769-775 MHz and 799-806 MHz:
 - i. $76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment
 - ii. $65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment
- b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

6.7.2. Method of Measurement

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer. the other end of which was connected to a Base Station Simulator, The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high

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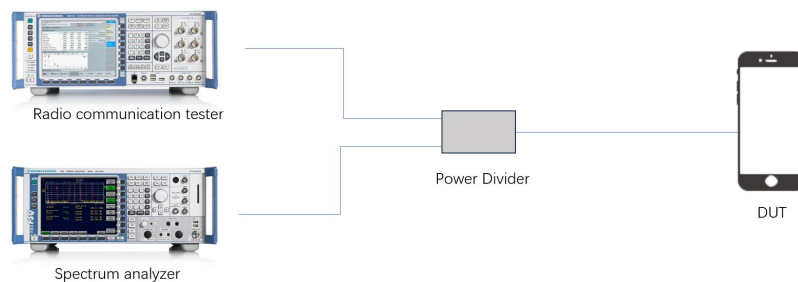
Report No.: 24B02W000030-001

channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points. Outside of which all emission are attenuated at east 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to RMS.

6.7.3. Measurement Uncertainty

Expanded Uncertainty	1.32 dB (k=2)
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6.7.4. Test Setup



6.7.5. Measurement result

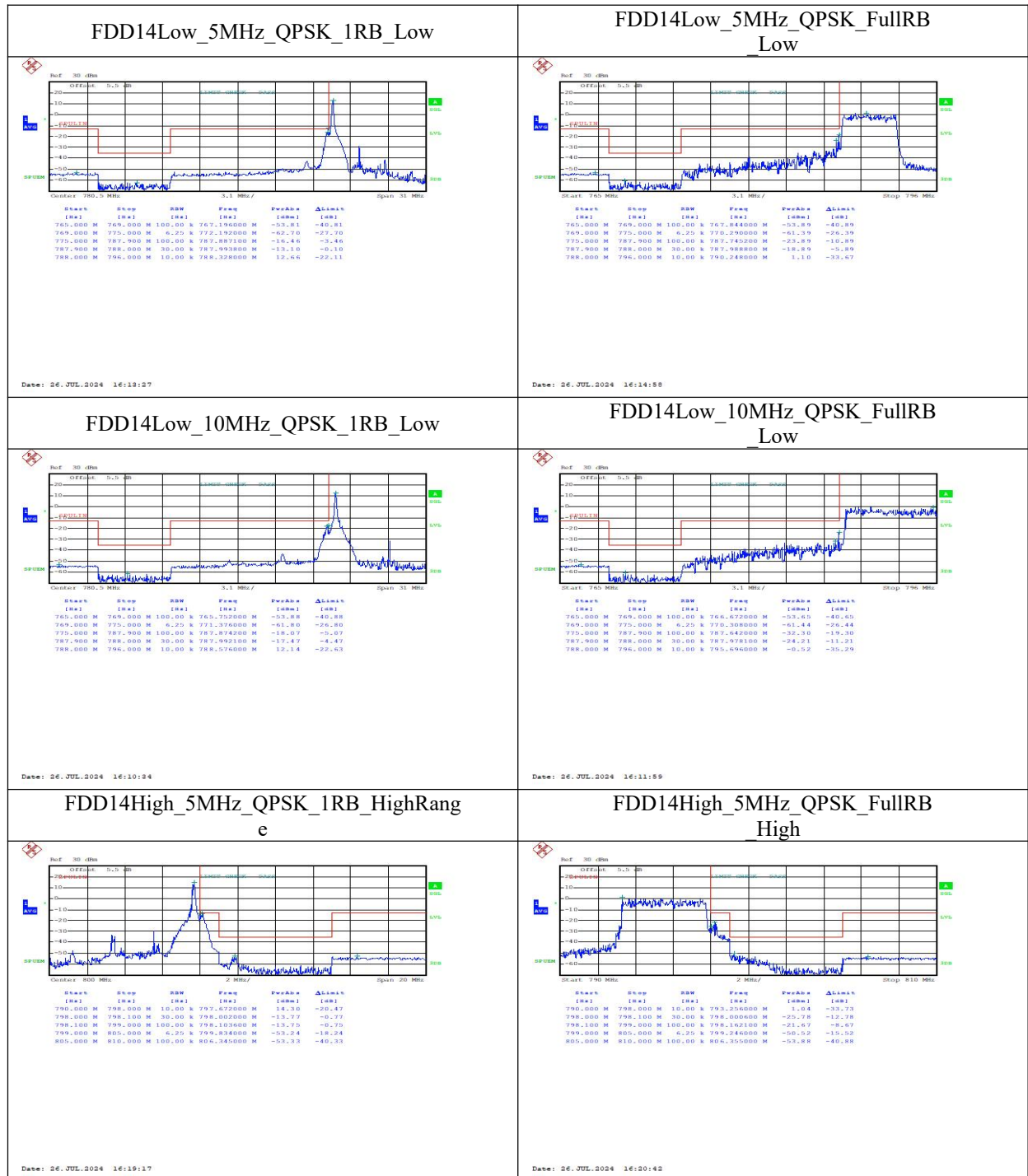
Band 14(Only the worst mode data is provided)

Band	Range	BandWidth(MHz)	Modulation	RbMode
FDD14	Low	5	QPSK	1RB_Low
FDD14	Low	5	QPSK	FullRB_Low
FDD14	Low	10	QPSK	1RB_Low
FDD14	Low	10	QPSK	FullRB_Low
FDD14	High	5	QPSK	1RB_High
FDD14	High	5	QPSK	FullRB_High
FDD14	High	10	QPSK	1RB_High
FDD14	High	10	QPSK	FullRB_High

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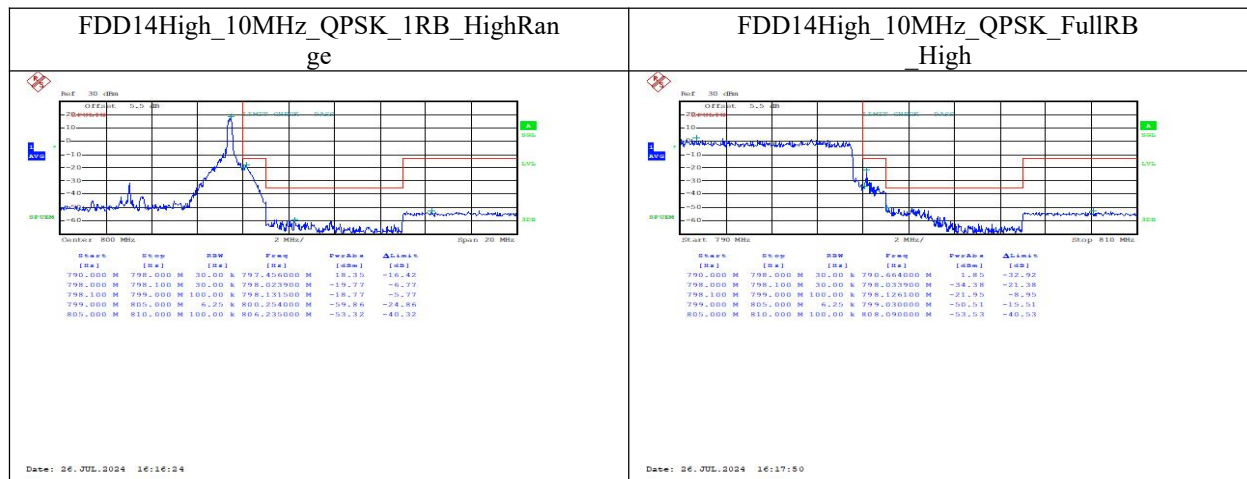
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Band26(Part 90)

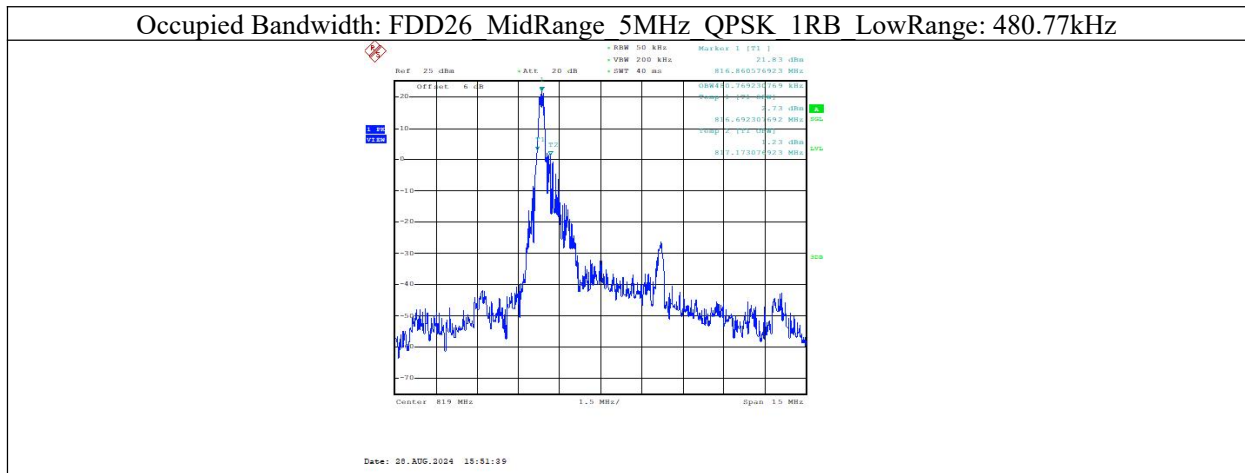
Band	Range	BandWidth(MHz)	Modulation	RbMode
FDD26(Part 90)	Low	1.4	QPSK	1RB_low
FDD26(Part 90)	Low	1.4	QPSK	1RB_high
FDD26(Part 90)	Low	1.4	QPSK	FullRB_Low
FDD26(Part 90)	Low	3	QPSK	1RB_low
FDD26(Part 90)	Low	3	QPSK	1RB_high
FDD26(Part 90)	Low	3	QPSK	FullRB_Low
FDD26(Part 90)	Low	5	QPSK	1RB_low
FDD26(Part 90)	Low	5	QPSK	1RB_high
FDD26(Part 90)	Low	5	QPSK	FullRB_Low
FDD26(Part 90)	Low	10	QPSK	1RB_low
FDD26(Part 90)	Low	10	QPSK	1RB_high
FDD26(Part 90)	Low	10	QPSK	FullRB_Low
FDD26(Part 90)	High	1.4	QPSK	1RB_low
FDD26(Part 90)	High	1.4	QPSK	1RB_high
FDD26(Part 90)	High	1.4	QPSK	FullRB_High
FDD26(Part 90)	High	3	QPSK	1RB_low
FDD26(Part 90)	High	3	QPSK	1RB_high

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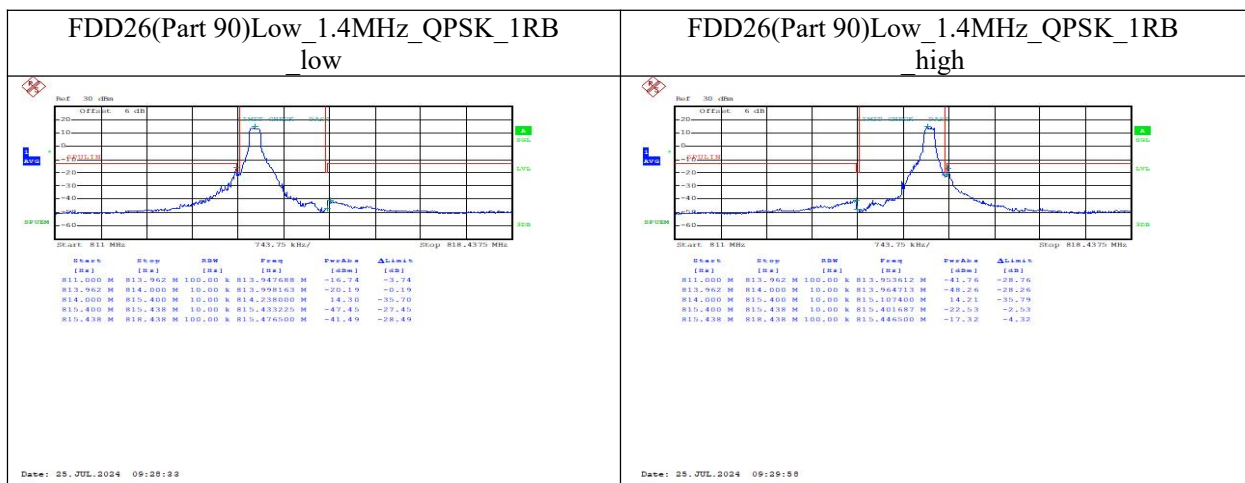
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FDD26(Part 90)	High	3	QPSK	FullRB_High
FDD26(Part 90)	High	5	QPSK	1RB_low
FDD26(Part 90)	High	5	QPSK	1RB_high
FDD26(Part 90)	High	5	QPSK	FullRB_High



Note: This image is only used for the calculation of the sideband test RBW setup.



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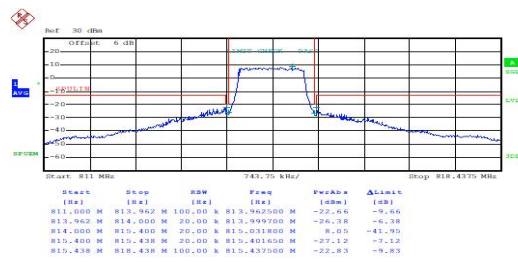
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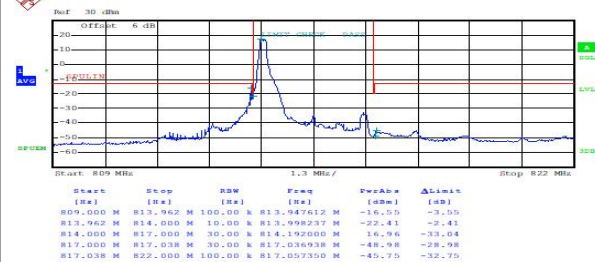
Report No.: 24B02W000030-001

FDD26(Part 90)Low_1.4MHz_QPSK_FullRB
Low



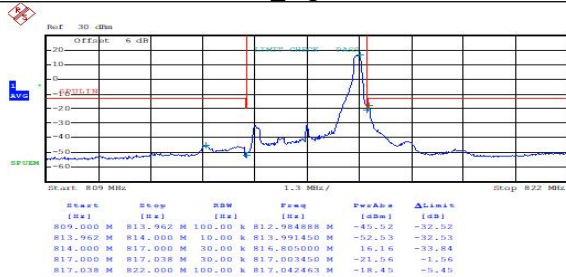
Date: 25.JUL.2024 09:31:23

FDD26(Part 90)Low_3MHz_QPSK_1RB
low



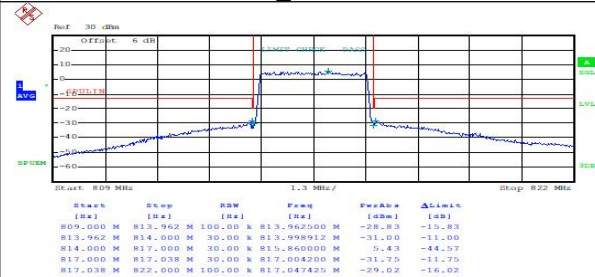
Date: 28.AUG.2024 15:21:24

FDD26(Part 90)Low_3MHz_QPSK_1RB
high



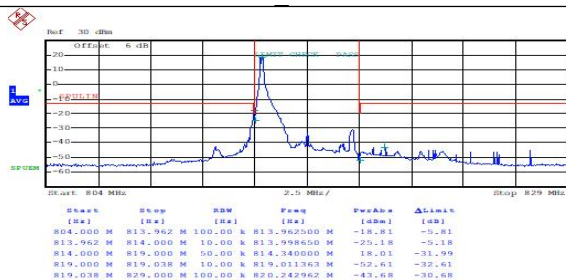
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FDD26(Part 90)Low_3MHz_QPSK_FullRB
Low



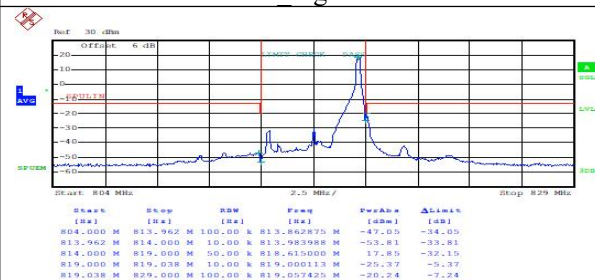
Date: 28.AUG.2024 15:24:15

FDD26(Part 90)Low_5MHz_QPSK_1RB
low



Date: 28.AUG.2024 15:25:41

FDD26(Part 90)Low_5MHz_QPSK_1RB
high



Date: 28.AUG.2024 15:27:07

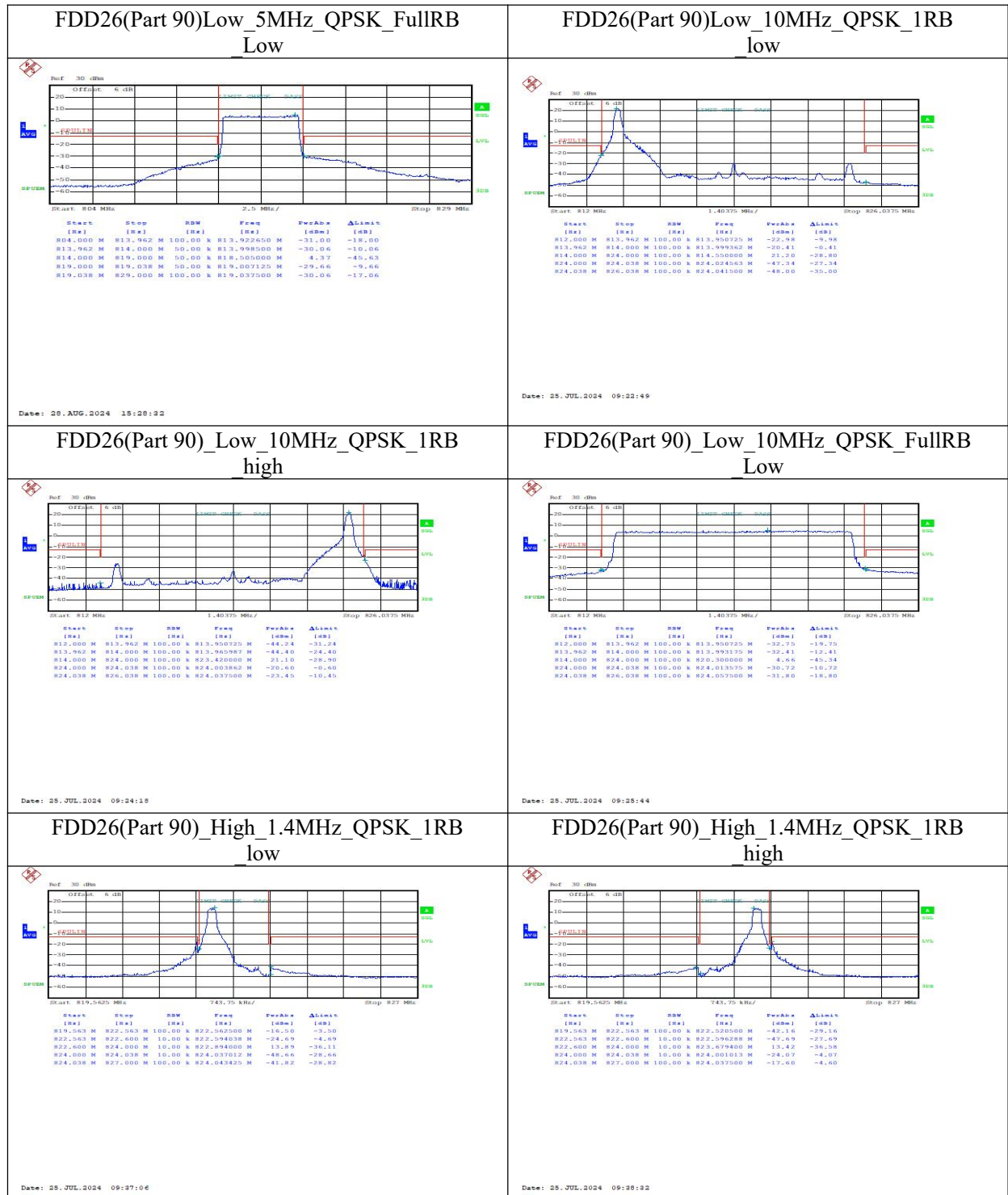
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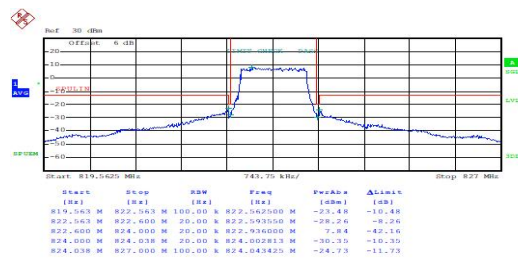


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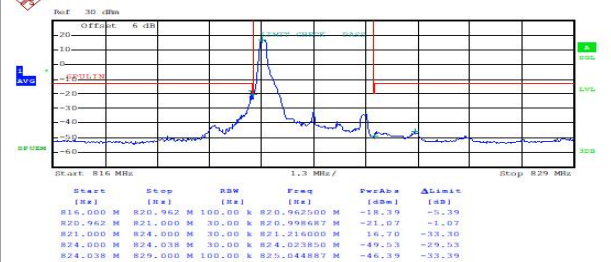
Report No.: 24B02W000030-001

FDD26(Part 90)_High_1.4MHz_QPSK_FullRB
High



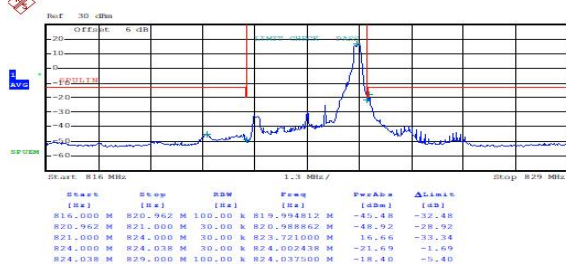
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FDD26(Part 90)_High_3MHz_QPSK_1RB
low



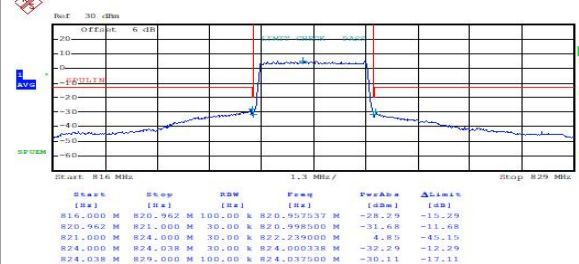
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FDD26(Part 90)_High_3MHz_QPSK_1RB
high



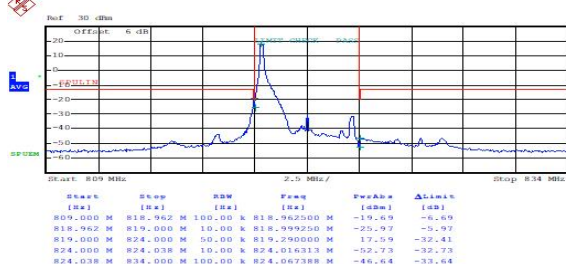
Date: 28.AUG.2024 15:05:12

FDD26(Part 90)_High_3MHz_QPSK_FullRB
High



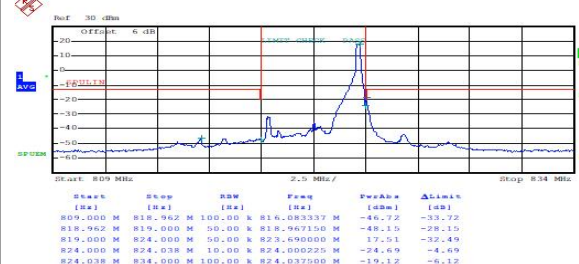
Date: 28.AUG.2024 15:34:06

FDD26(Part 90)_High_5MHz_QPSK_1RB
low



Date: 28.AUG.2024 15:44:42

FDD26(Part 90)_High_5MHz_QPSK_1RB
high



Date: 28.AUG.2024 15:38:14

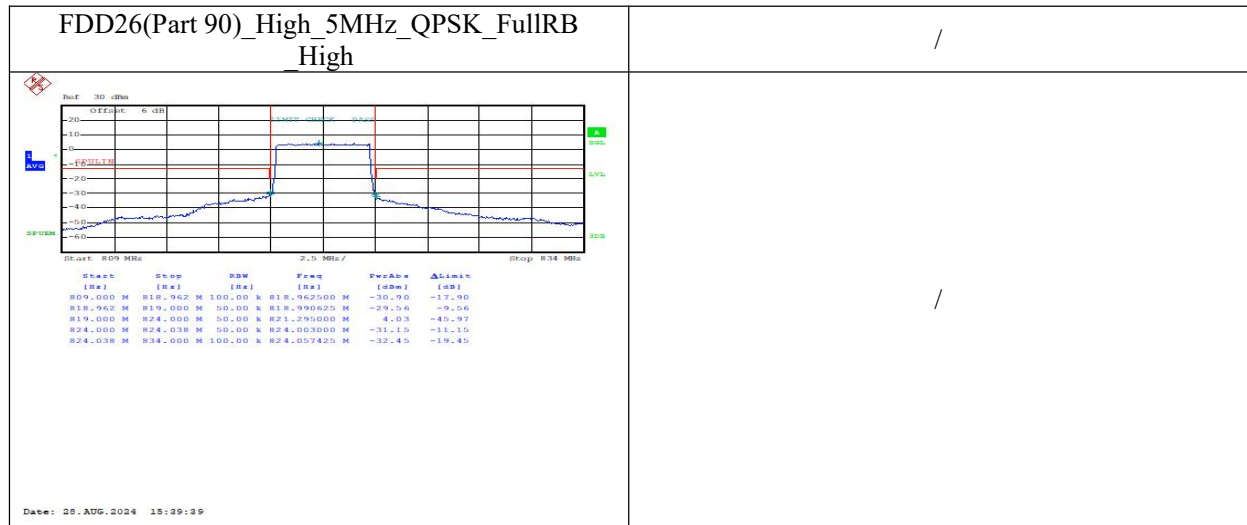
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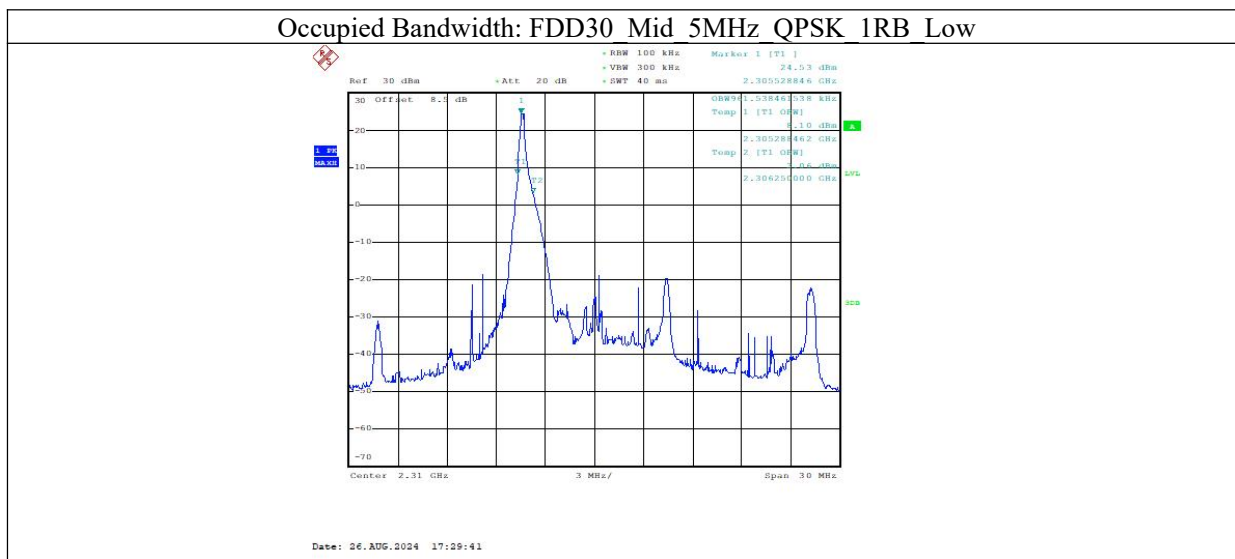


Band 30 (Only the worst mode data is provided)

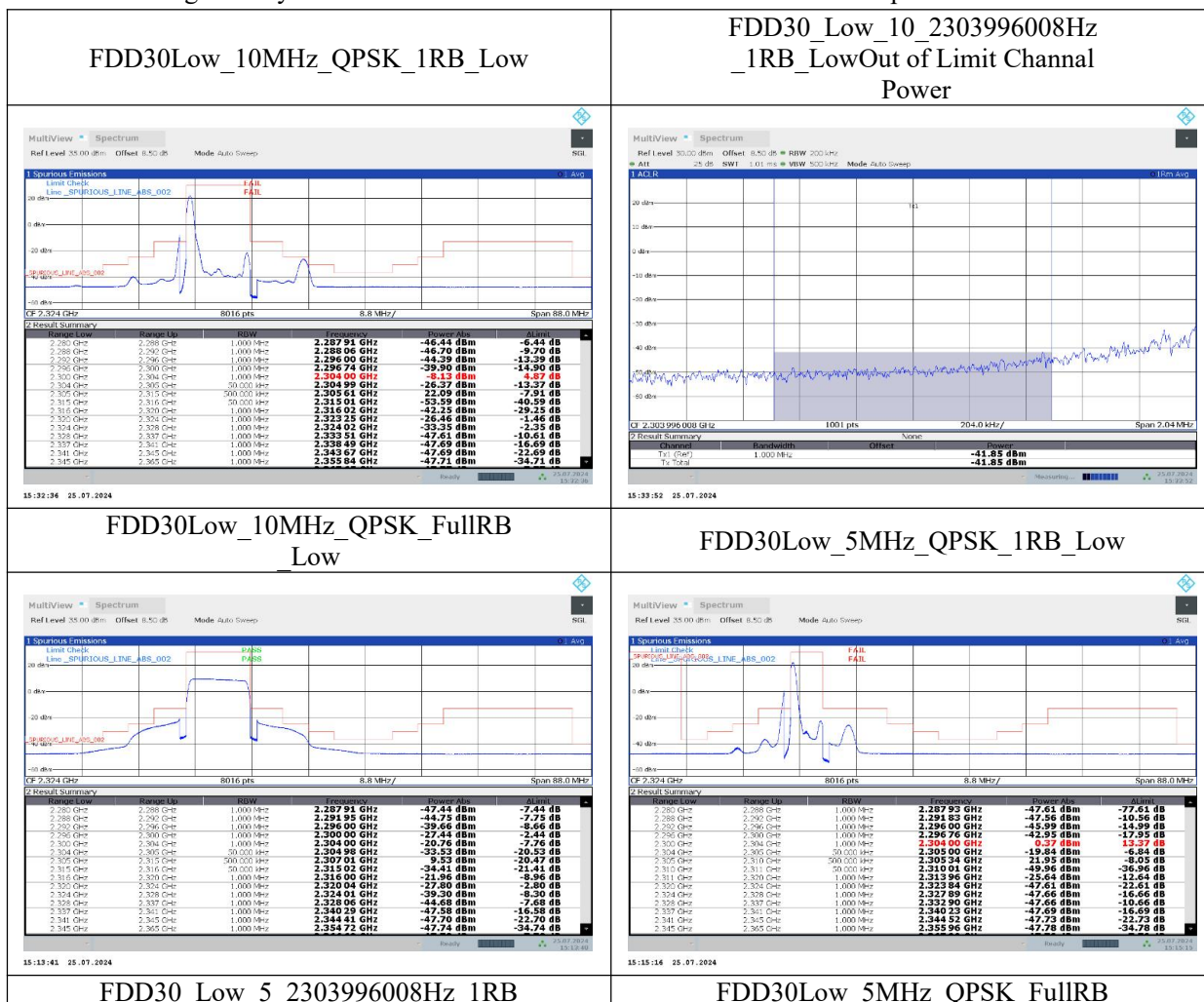
Band	Range	BandWidth(MHz)	Modulation	RbMode
FDD30	Low	10	QPSK	1RB_Low
FDD30	Low	10	QPSK	FullRB_Low
FDD30	Low	5	QPSK	1RB_Low
FDD30	Low	5	QPSK	FullRB_Low
FDD30	High	10	QPSK	1RB_High
FDD30	High	10	QPSK	FullRB_High
FDD30	High	5	QPSK	1RB_High
FDD30	High	5	QPSK	FullRB_High

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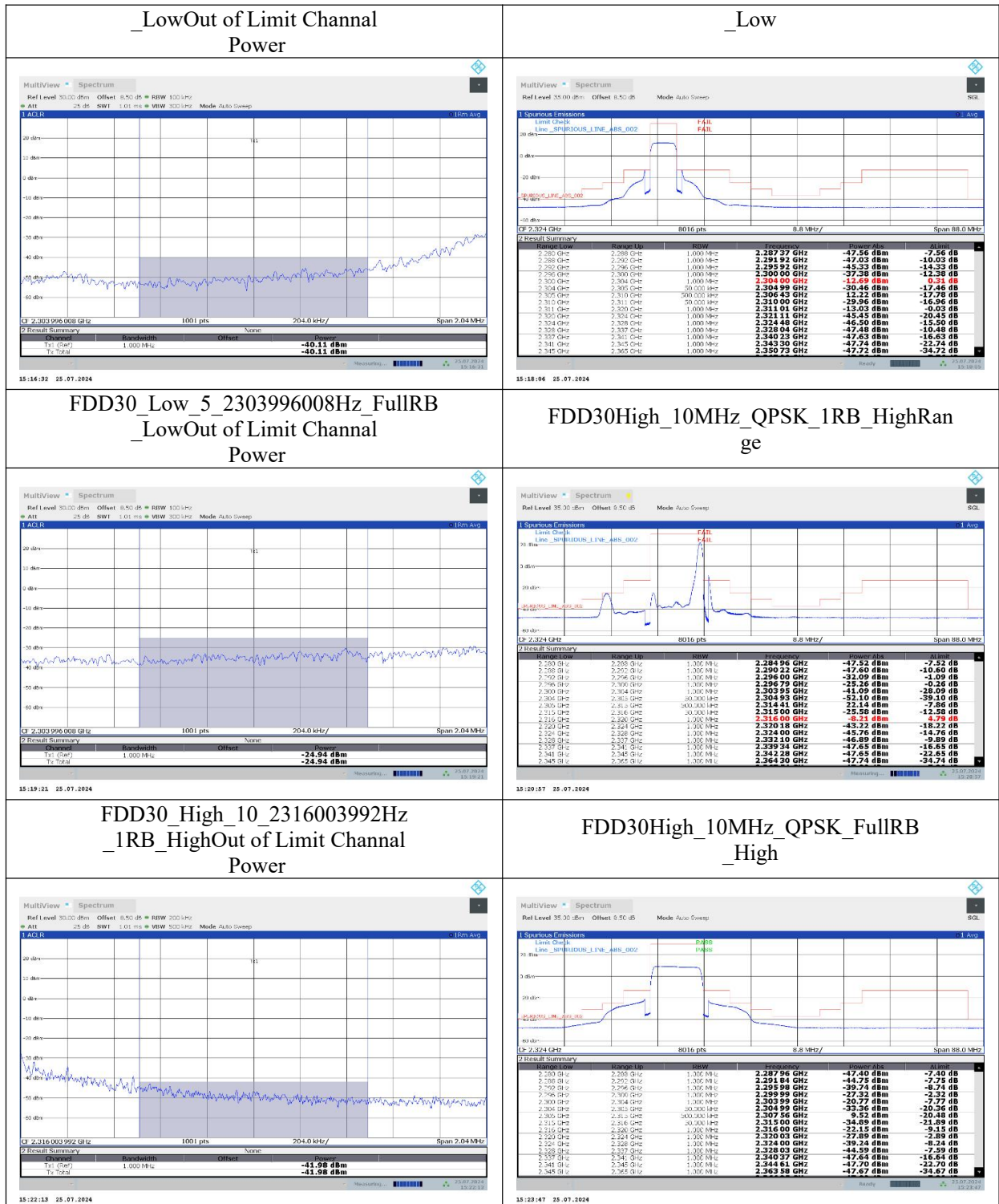


Note: This image is only used for the calculation of the sideband test RBW setup.



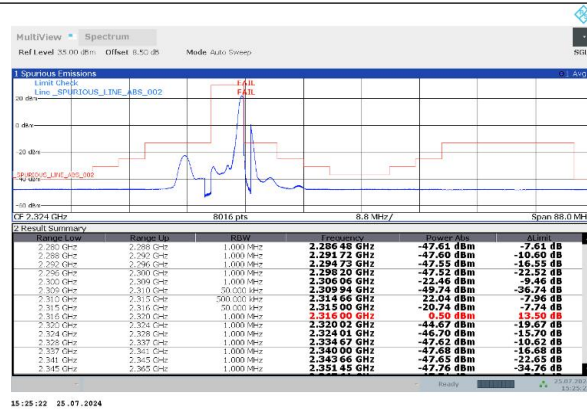
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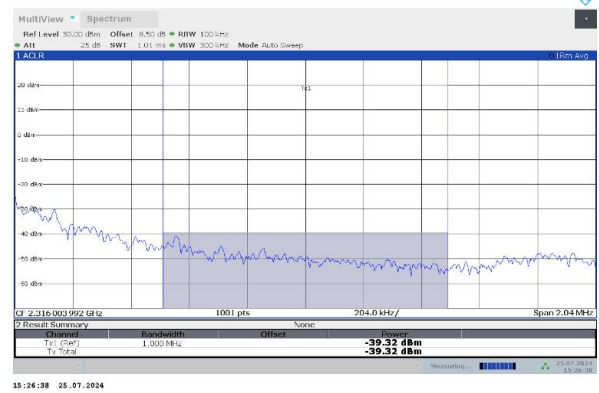
Report No.: 24B02W000030-001

FDD30High_5MHz_QPSK_1RB_HighRange



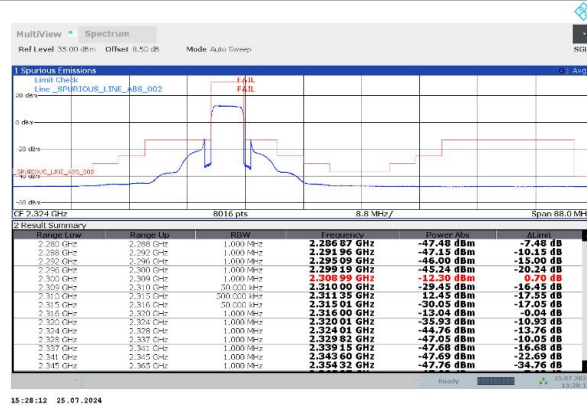
15:25:22 25.07.2024

FDD30_High_5_2316003992Hz _1RB_HighOut of Limit Channel Power



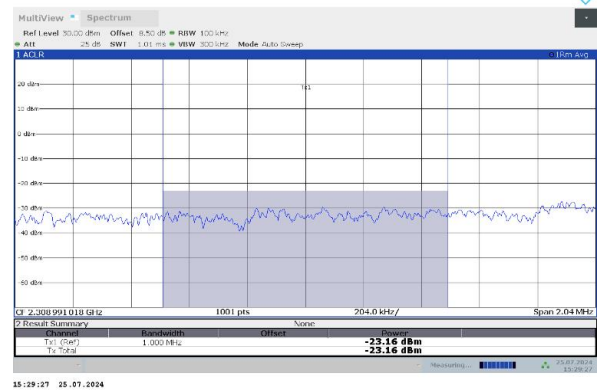
15:26:38 25.07.2024

FDD30High_5MHz_QPSK_FullRB_High



15:28:12 25.07.2024

FDD30_High_5_2308991018Hz _FullRB_HighOut of Limit Channel Power



15:29:27 25.07.2024

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6.8. EMISSION LIMIT

Specifications:	FCC Part 2.1051/27.53(a)/90.691/90.543(e)/90.543(f) RSS 140 4.4,RSS-195 5.6
DUT Serial Number:	24B02W000030#S2
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.8.1. Measurement Limit

FCC§27.53(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

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.

FCC§90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

- (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

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FCC§90.543(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

FCC§90.543(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS 140 4.4:

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

- a. For any frequency between 769-775 MHz and 799-806 MHz:
 - i. $76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment
 - ii. $65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment
- b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

6.8.2. Method of Measurement

The measurements procedures in TIA-603E-2016 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in FCC §90.543

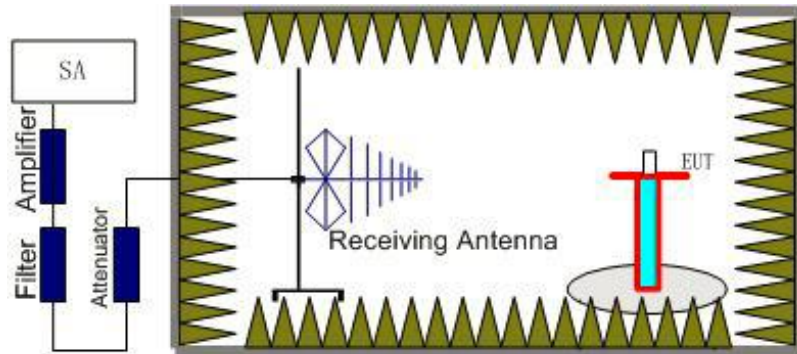
The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of LTE Band.

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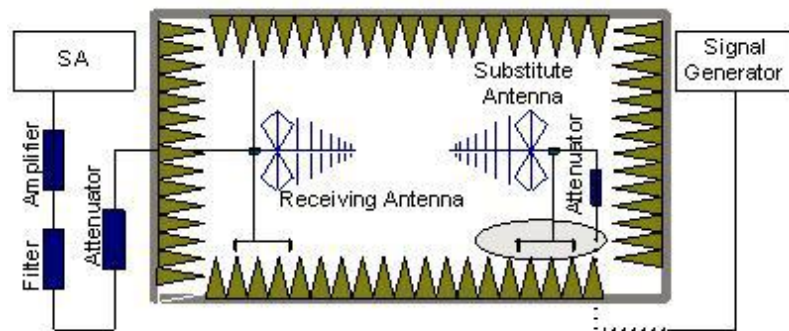
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The procedure of radiated spurious emissions is as follows

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (Pcl) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (Ga) should be recorded after test.
- A amplifier should be connected in for the test.

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The Path loss (Pcl) is the summation of the cable loss .

The measurement results are obtained as described below:

Power(EIRP)=PMea- Pcl+ Ga

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi

6.8.3. Measurement Uncertainty

Expanded Uncertainty	30MHz-150MHz 3.82 dB (k=2) 150MHz-1000MHz 3.97 dB (k=2) 1000MHz-3000MHz 3.09 dB (k=2) 3000MHz-6000MHz 3.29 dB (k=2) 6000MHz-18000MHz 3.91 dB (k=2) 18000MHz-26000MHz 4.60 dB (k=2) 26000MHz-40000MHz 4.77 dB (k=2)
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6.8.4. Measurement Results

Band	BW (MHz)	RB Config	Modulation	Channel	Frequency Range	Result
Band 14	5	OneRB_low	QPSK	Low	30MHz~20GHz	PASS
				Middle	30MHz~20GHz	PASS
				High	30MHz~20GHz	PASS
Band 26 (814-824MHz)	1.4	OneRB_low	QPSK	Low	30MHz~20GHz	PASS
				Middle	30MHz~20GHz	PASS
				High	30MHz~20GHz	PASS
Band 30 (2305-2315)	5	OneRB_low	QPSK	Low	30MHz~20GHz	PASS
				Middle	30MHz~20GHz	PASS
				High	30MHz~20GHz	PASS

RSE-LTE14-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
1580.1	-52.11	4.2	5.3	-51.01	-40	11.01	H
2370.4	-40.86	5.2	5.1	-40.96	-13	27.96	H
3162.0	-53.35	6.0	6.9	-52.45	-13	39.45	H
3952.8	-54.72	6.8	8.6	-52.92	-13	39.92	V
4742.8	-53.96	7.5	9.0	-52.46	-13	39.46	H
5534.0	-53.83	8.2	9.8	-52.23	-13	39.23	V

RSE-LTE14-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result	Limit(dBm)	Margin(dBm)	Polarization
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				(dBm)			
1586.3	-52.55	4.2	5.3	-51.45	-40	11.45	H
2379.6	-42.78	5.2	5.6	-42.38	-13	29.38	H
3172.4	-53.05	6.0	6.9	-52.15	-13	39.15	H
3964.8	-53.74	6.8	8.6	-51.94	-13	38.94	V
4755.6	-52.68	7.5	9.0	-51.18	-13	38.18	H
5550.0	-53.08	8.2	9.8	-51.48	-13	38.48	V

RSE-LTE14-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
1589.5	-53.16	4.2	5.3	-52.06	-40	12.06	V
2385.0	-43.03	5.2	5.6	-42.63	-13	29.63	H
3183.6	-52.96	6.1	6.9	-52.16	-13	39.16	V
3976.8	-54.76	6.9	8.6	-53.06	-13	40.06	H
4773.6	-53.68	7.5	9.0	-52.18	-13	39.19	H
5566.4	-53.22	8.2	9.8	-51.62	-13	38.62	V

RSE-LTE26-L-816.5

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
1633.4	-49.41	4.2	4.7	-48.91	-13	35.91	V
2449.2	-37.38	5.4	5.6	-37.18	-13	24.18	H
3265.2	-51.18	6.1	6.9	-50.38	-13	37.38	H
4081.6	-52.6	7.0	8.6	-51	-13	38.00	V
4889.2	-53.64	7.7	9.6	-51.74	-13	38.74	H
5718.0	-54.42	8.5	10.2	-52.72	-13	39.72	V

RSE-LTE26-M-819

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
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1638.6	-50.14	4.2	4.7	-49.64	-13	36.64	V
2456.9	-36.94	5.4	5.6	-36.74	-13	23.74	H
3275.6	-50.74	6.2	6.9	-50.04	-13	37.04	V
4095.2	-53.31	7.0	8.6	-51.71	-13	38.71	H
4924.4	-53.42	7.7	9.6	-51.52	-13	38.52	H
5723.2	-53.76	8.5	10.2	-52.06	-13	39.06	V

RSE-LTE26-H-821.5

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
1642.4	-47.65	4.2	4.7	-47.15	-13	34.15	V
2464.2	-37.98	5.4	5.6	-37.78	-13	24.78	V
3286.4	-52.33	6.2	6.9	-51.63	-13	38.63	H
4107.2	-53.5	7.0	8.6	-51.9	-13	38.90	H
4939.6	-53.22	7.7	9.6	-51.32	-13	38.32	H
5755.6	-53.43	8.5	10.2	-51.73	-13	38.74	H

RSE-LTE30-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
4614.0	-54.41	7.4	8.7	-53.11	-40	13.11	V
6924.8	-50.7	9.3	11.1	-48.9	-40	8.90	V
9230.0	-56.4	10.5	12.6	-54.3	-40	14.30	V
11537.0	-56.34	12.3	12.3	-56.34	-40	16.34	H
14039.0	-55.3	13.7	12.3	-56.7	-40	16.70	H
16586.0	-44.79	14.9	12.3	-47.39	-40	7.39	V

RSE-LTE30-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
4620.3	-54.72	7.4	8.7	-53.42	-40	13.42	V

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6925.1	-50.97	9.3	11.1	-49.17	-40	9.17	V
9240.0	-57.06	10.5	12.6	-54.96	-40	14.96	V
11559.0	-56.35	12.2	12.3	-56.25	-40	16.25	V
13827.0	-55.13	13.8	12.3	-56.63	-40	16.63	H
16596.0	-45.32	14.9	12.3	-47.92	-40	7.92	V

RSE-LTE30-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Test Result (dBm)	Limit(dBm)	Margin(dBm)	Polarization
4626.6	-55.08	7.5	9.0	-53.58	-40	13.58	H
6938.5	-51.55	9.3	11.1	-49.75	-40	9.75	H
9250.0	-58.25	10.5	12.6	-56.15	-40	16.15	V
10977.0	-57.31	12.0	12.3	-57.01	-40	17.01	V
13413.0	-54.57	13.7	12.3	-55.97	-40	15.97	V
16578.0	-45.39	14.9	12.3	-47.99	-40	7.99	V

Note: Only worse case is recorded in this report.

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