



FCC Part 27 Test Report

FCC ID: 2BTUR-Q10

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Manufacturer: Shenzhen Coler Intelligent Technology Co. LTD
Address: Room 301, No.39, Zone 1 of the 5th Industrial Zone, Shangfen Community, Minzhi Sub-district, Longhua District, Shenzhen City, Guangdong Province, China
Product Name: Low-power battery surveillance camera
Trade Mark: N/A
Model Number: Q10
Date of Receipt: Mar. 09, 2026
Test Date: Mar. 09, 2026 - Apr. 22, 2026
Date of Report: Apr. 22, 2026
Prepared By: Shenzhen DL Testing Technology Co., Ltd.
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Applicable Standards: FCC CFR Title 47 Part 2, Part 27
Test Result: Pass
Report Number: DLE-260409005R

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Reviewer(Supervisor): Jack Bu
Approved(Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Apr. 22, 2026	



1 Summary

1.1 Test Standards

The tests were performed according to following standards:

[FCC Part 27](#): Miscellaneous Wireless Communications Services.

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[FCC Part 2](#): Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

[KDB971168 D01:v03r01](#): Measurement Guidance For Certification of Licensed Digital Transmitters.

1.2 Test Description

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 27.50(d)(4)	Pass
Peak-to-Average Ratio	Part 27.50(d)(4)	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 27.53(h)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 27.53(h)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 27.53(h)	Pass
Out of band emission, Band Edge	Part 2.1051 Part 27.53(h)	Pass
Frequency stability	Part 2.1055 Part 27.54	Pass

Note:

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. The measurement uncertainty is not included in the test result.



1.3 Information of The Test Laboratory

Shenzhen DL Testing Technology Co., Ltd.

101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

1.4 Statement of The Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

No.	Item	MU
1	Conducted Emission 0.15~30MHz	$\pm 2.22\text{dB}$
2	All Emissions, Radiated(<1G)	$\pm 3.60\text{dB}$
3	All Emissions, Radiated(1-18G)	$\pm 3.86\text{dB}$
4	All Emissions, Radiated(18-40G)	$\pm 4.76\text{dB}$
5	Transmitter Power Conducted	$\pm 0.37\text{dB}$
6	Conducted Spurious Emission	$\pm 2.20\text{dB}$
7	Occupied Bandwidth	$\pm 3.68\%$
8	Temperature	$\pm 0.1^{\circ}\text{C}$
9	Humidity	$\pm 1.0\%$



2 General Information

2.1 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 Description of Test Modes

The EUT has been tested under typical operating condition. The CMW500 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

Note:

1. For the ERP/EIRP and radiated emission test, every axis (X, Y, Z) was verified, and show the worst result on this report.
2. Test method and refer to 3GPP TS136521.

2.3 Test frequency list

TX Channel Bandwidth	Frequency (MHz)	Channel
1.4 MHz	1710.7	19957
	1732.5	20175
	1754.3	20393
3 MHz	1711.5	19965
	1732.5	20175
	1753.5	20385
5 MHz	1712.5	19975
	1732.5	20175
	1752.5	20375
10 MHz	1715.0	20000
	1732.5	20175
	1750.0	20350
15 MHz	1717.5	20025
	1732.5	20175
	1747.5	20325
20 MHz	1720.0	20050
	1732.5	20175
	1745.0	20300



2.4 Equipments Used During The Test

For Conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
EMI Receiver	R&S	ESR	101421	Oct. 25, 2025	Oct. 24, 2026
LISN	R&S	ENV216	102417	Oct. 25, 2025	Oct. 24, 2026
843 Cable 1#	ChengYu	CE Cable	001	Oct. 25, 2025	Oct. 24, 2026
843 Cable 1#	FUJIKURA	843C1#	001	Oct. 25, 2025	Oct. 24, 2026

For Radiated test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Oct. 25, 2025	Oct. 24, 2026
Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Oct. 25, 2025	Oct. 24, 2026
Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Oct. 25, 2025	Oct. 24, 2026
Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 25, 2025	Oct. 24, 2026
Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Oct. 25, 2025	Oct. 24, 2026
Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Oct. 25, 2025	Oct. 24, 2026
Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Oct. 25, 2025	Oct. 24, 2026
Amplifier(18GHz-40GHz)	Quanjuda	DLE-161	97	Oct. 25, 2025	Oct. 24, 2026
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Oct. 25, 2025	Oct. 24, 2026
RF cables1 (9kHz-1GHz)	ChengYu	966	004	Oct. 25, 2025	Oct. 24, 2026
RF cables2 (1GHz-40GHz)	ChengYu	966	003	Oct. 25, 2025	Oct. 24, 2026
Antenna connector	Florida RF Labs	N/A	RF 01#	Oct. 25, 2025	Oct. 24, 2026
Power probe	KEYSIGHT	U2021XA	MY55210018	Oct. 25, 2025	Oct. 24, 2026
Signal Analyzer	Agilent	N9020A	MY55370280	Oct. 25, 2025	Oct. 24, 2026
Test Receiver	R&S	ESU 40	100376	Oct. 25, 2025	Oct. 24, 2026
D.C. Power Supply	LongWei	PS-305D	010964729	Oct. 25, 2025	Oct. 24, 2026
Signal Amplifier	DAZE	ZN3380B	11235	Oct. 25, 2025	Oct. 24, 2026
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	Oct. 25, 2025	Oct. 24, 2026
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	Oct. 25, 2025	Oct. 24, 2026
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	Oct. 25, 2025	Oct. 24, 2026
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	Oct. 25, 2025	Oct. 24, 2026
Splitter	Agilent	11435B	1125162	Oct. 25, 2025	Oct. 24, 2026

For RF Conducted Test

System Simulator	Agilent	E5515C	GB43130252	Oct. 25, 2025	Oct. 24, 2026
Spectrum Analyzer	Agilent	N9020A	MY45108040	Oct. 25, 2025	Oct. 24, 2026
DC Power Supply	LongWei	PS-305D	010965682	Oct. 25, 2025	Oct. 24, 2026
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	Oct. 25, 2025	Oct. 24, 2026
Universal radio communication tester	R&S	CMW500	115295	Oct. 25, 2025	Oct. 24, 2026



2.5 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2BTUR-Q10 filing to comply with of the FCC Part 27 Rules.

2.6 Modifications

No modifications were implemented to meet testing criteria.



3 Test Conditions and Results

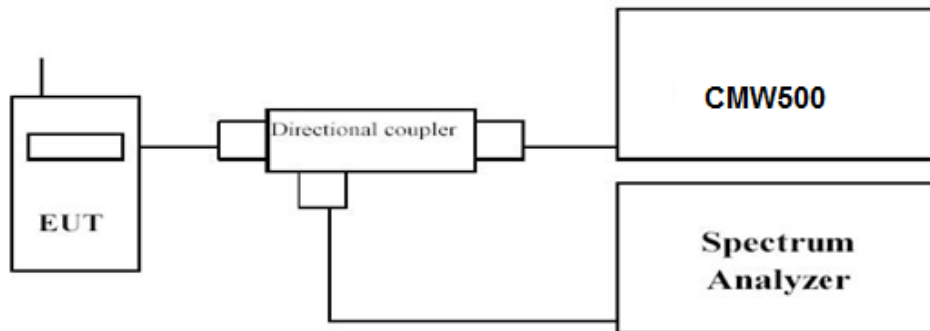
3.1 Output Power

LIMIT

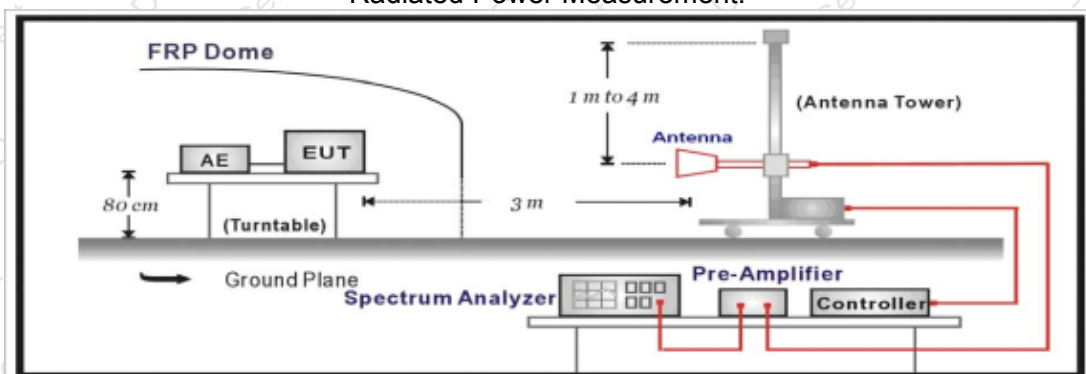
According to §27.50 (d) (4): Fixed, mobile, and portable (hand- held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

TEST CONFIGURATION

Conducted Power Measurement



Radiated Power Measurement:



TEST PROCEDURE

The EUT was setup according to ANSI/TIA-603-E.

Conducted Power Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- EUT Communicate with CMW500, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

- The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.
- The output of the test antenna shall be connected to the measuring receiver.
- The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.



- e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. Test site anechoic chamber refer to ANSI C63.4.

TEST RESULTS

Conducted Measurement:

FDD Band 4				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	Average Power [dBm]	
			QPSK	16QAM
1.4 MHz	1710.7	1 RB low	23.40	22.35
		1 RB high	23.43	22.64
		50% RB mid	23.56	22.44
		100% RB	23.51	22.40
	1732.5	1 RB low	23.76	22.71
		1 RB high	23.72	22.79
		50% RB mid	23.74	22.64
		100% RB	23.73	22.69
	1754.3	1 RB low	23.03	22.02
		1 RB high	22.93	22.07
		50% RB mid	22.87	21.93
		100% RB	22.91	21.83
3 MHz	1711.5	1 RB low	23.54	22.54
		1 RB high	23.63	22.69
		50% RB mid	23.40	22.46
		100% RB	22.51	21.74
	1732.5	1 RB low	23.76	22.64
		1 RB high	23.64	22.94
		50% RB mid	23.64	22.60
		100% RB	22.82	21.96
	1753.5	1 RB low	23.01	21.81
		1 RB high	22.96	22.07
		50% RB mid	22.83	21.79
		100% RB	22.13	21.23



5 MHz	1712.	1 RB low	23.73	22.63
		1 RB high	23.39	22.38
		50% RB mid	23.75	22.63
		100% RB	22.48	21.64
	1732.5	1 RB low	23.81	22.99
		1 RB high	23.63	22.90
		50% RB mid	23.58	22.76
		100% RB	22.79	21.91
	1752.5	1 RB low	23.01	21.99
		1 RB high	22.86	21.99
		50% RB mid	22.91	21.96
		100% RB	22.98	21.10
10 MHz	1715.0	1 RB low	23.63	22.68
		1 RB high	23.39	22.61
		50% RB mid	23.41	22.55
		100% RB	22.41	/
	1732.5	1 RB low	23.82	22.70
		1 RB high	23.64	22.89
		50% RB mid	23.31	22.29
		100% RB	22.65	/
	1750.0	1 RB low	22.95	21.76
		1 RB high	22.77	21.95
		50% RB mid	22.79	21.70
		100% RB	21.80	/
15 MHz	1717.5	1 RB low	23.59	22.64
		1 RB high	23.46	22.58
		50% RB mid	23.72	22.94
		100% RB	22.54	/
	1732.5	1 RB low	23.79	22.89
		1 RB high	23.85	22.90
		50% RB mid	23.30	22.45
		100% RB	22.71	/
	1747.5	1 RB low	23.02	22.24
		1 RB high	22.96	22.07
		50% RB mid	22.82	22.08
		100% RB	22.00	/
20 MHz	1720.0	1 RB low	22.90	21.97
		1 RB high	23.45	22.77
		50% RB mid	23.66	22.52
		100% RB	22.61	/
	1732.5	1 RB low	24.10	22.97
		1 RB high	24.41	23.46
		50% RB mid	23.76	22.70
		100% RB	23.47	/
	1745.0	1 RB low	24.28	23.29
		1 RB high	23.57	22.68
		50% RB mid	23.71	21.73
		100% RB	23.00	/



Radiated Measurement

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of FDD Band 4; recorded worst case for each Channel Bandwidth of FDD Band 4.

$$EIRP = P_{Mea}(dBm) - G_a(dBi) + P_{cl}(dB) - P_{Ag}(dB)$$

FDD Band 4 Channel Bandwidth 1.4MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.7	65.76	3.06	9.68	34.80	24.34	30.00	5.66	V
1732.5	65.51	3.17	9.68	34.80	24.20	30.00	5.80	V
1754.3	65.04	3.22	9.75	34.80	23.71	30.00	6.29	V

FDD Band 4 Channel Bandwidth 3MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.5	65.49	3.06	9.68	34.80	24.07	30.00	5.93	V
1732.5	64.97	3.17	9.68	34.80	23.66	30.00	6.34	V
1753.5	65.10	3.22	9.75	34.80	23.77	30.00	6.23	V

FDD Band 4 Channel Bandwidth 5MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.5	65.92	3.06	9.68	34.80	24.50	30.00	5.50	V
1732.5	64.86	3.17	9.68	34.80	23.55	30.00	6.45	V
1752.5	65.45	3.22	9.75	34.80	24.12	30.00	5.88	V

FDD Band 4 Channel Bandwidth 10MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.0	65.85	3.06	9.68	34.80	24.43	30.00	5.57	V
1732.5	65.67	3.17	9.68	34.80	24.36	30.00	5.64	V
1750.0	65.03	3.22	9.75	34.80	23.70	30.00	6.30	V

FDD Band 4 Channel Bandwidth 15MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.5	65.75	3.06	9.68	34.80	24.33	30.00	5.67	V
1732.5	64.89	3.17	9.68	34.80	23.58	30.00	6.42	V
1747.5	65.04	3.22	9.75	34.80	23.71	30.00	6.29	V

FDD Band 4 Channel Bandwidth 20MHz QPSK

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.0	65.18	3.06	9.68	34.80	23.76	30.00	6.24	V
1732.5	65.12	3.17	9.68	34.80	23.81	30.00	6.19	V
1745.0	65.03	3.22	9.75	34.80	23.70	30.00	6.30	V

**FDD Band 4 Channel Bandwidth 1.4MHz 16QAM**

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.7	65.12	3.06	9.68	34.80	23.70	30.00	6.30	V
1732.5	65.48	3.17	9.68	34.80	24.17	30.00	5.83	V
1754.3	65.53	3.22	9.75	34.80	24.20	30.00	5.80	V

FDD Band 4 Channel Bandwidth 3MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.5	65.18	3.06	9.68	34.80	23.76	30.00	6.24	V
1732.5	65.25	3.17	9.68	34.80	23.94	30.00	6.06	V
1753.5	65.14	3.22	9.75	34.80	23.81	30.00	6.19	V

FDD Band 4 Channel Bandwidth 5MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.5	65.84	3.06	9.68	34.80	24.42	30.00	5.58	V
1732.5	65.63	3.17	9.68	34.80	24.32	30.00	5.68	V
1752.5	65.30	3.22	9.75	34.80	23.97	30.00	6.03	V

FDD Band 4 Channel Bandwidth 10MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.0	65.65	3.06	9.68	34.80	24.23	30.00	5.77	V
1732.5	65.40	3.17	9.68	34.80	24.09	30.00	5.91	V
1750.0	65.60	3.22	9.75	34.80	24.27	30.00	5.73	V

FDD Band 4 Channel Bandwidth 15MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.5	65.78	3.06	9.68	34.80	24.36	30.00	5.64	V
1732.5	65.67	3.17	9.68	34.80	24.36	30.00	5.64	V
1747.5	65.28	3.22	9.75	34.80	23.95	30.00	6.05	V

FDD Band 4 Channel Bandwidth 20MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.0	65.24	3.06	9.68	34.80	23.82	30.00	6.18	V
1732.5	64.88	3.17	9.68	34.80	23.57	30.00	6.43	V
1745.0	65.65	3.22	9.75	34.80	24.32	30.00	5.68	V

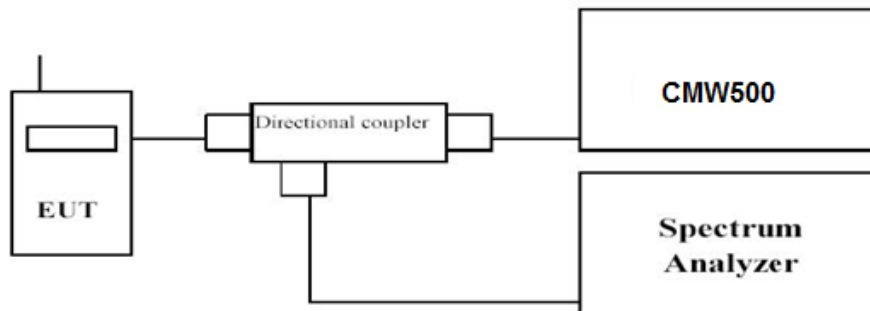


3.2 Peak-to-Average Ratio (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
 - 1). for continuous transmissions, set to 1 ms;
 - 2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

TEST RESULTS

Remark:

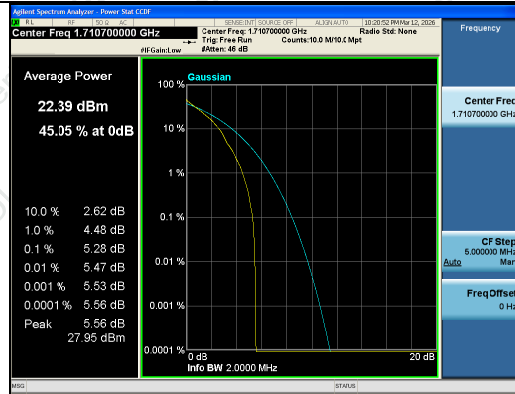
1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of FDD Band 4; recorded worst case for each Channel Bandwidth of FDD Band 4.

FDD Band 4				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	PAPR (dB)	
			QPSK	16QAM
1.4 MHz	1710.7	1RB#0	5.28	6.23
	1732.5		4.67	5.38
	1754.3		4.77	5.84
3 MHz	1711.5	1RB#0	5.43	6.26
	1732.5		4.71	5.41
	1753.5		4.95	6.02
5 MHz	1712.5	1RB#0	5.16	5.84
	1732.5		4.63	5.20
	1752.5		5.09	5.71
10 MHz	1715.0	1RB#0	5.20	5.95
	1732.5		4.50	5.55
	1750.0		5.20	6.04
15 MHz	1717.5	1RB#0	6.01	6.90
	1732.5		4.31	5.18
	1747.5		4.52	5.30
20 MHz	1720.0	1RB#0	5.38	5.61
	1732.5		4.61	4.98
	1745.0		4.80	5.55

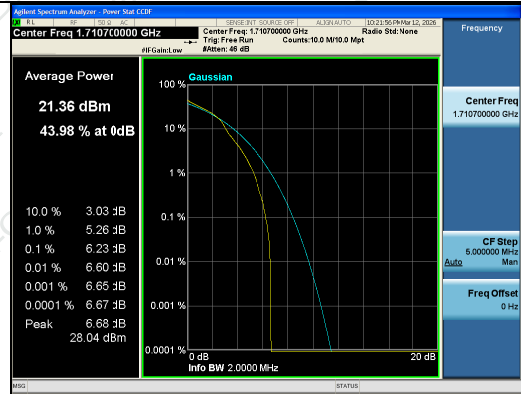


FDD Band 4-1.4MHz Channel Bandwidth PAPR

QPSK



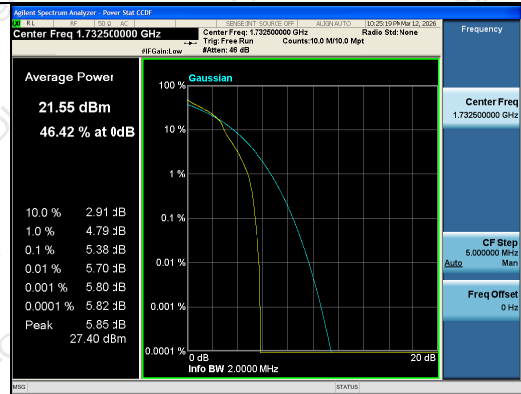
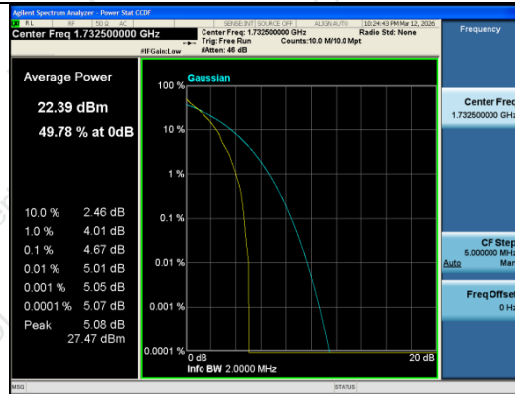
16QAM



1RB#0

1RB#0

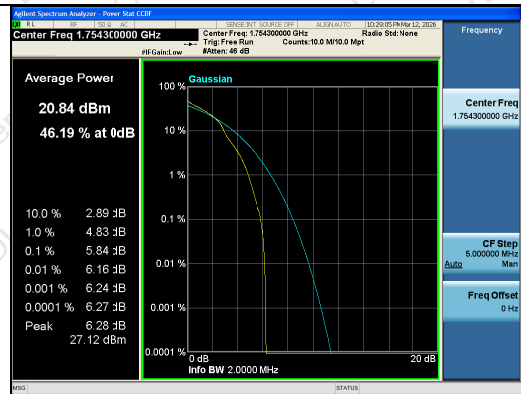
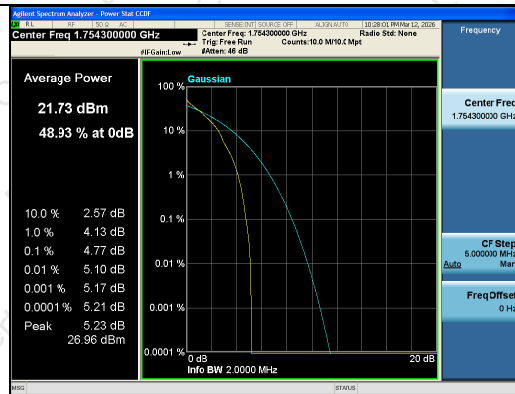
Low Channel



1RB#0

1RB#0

Middle Channel



1RB#0

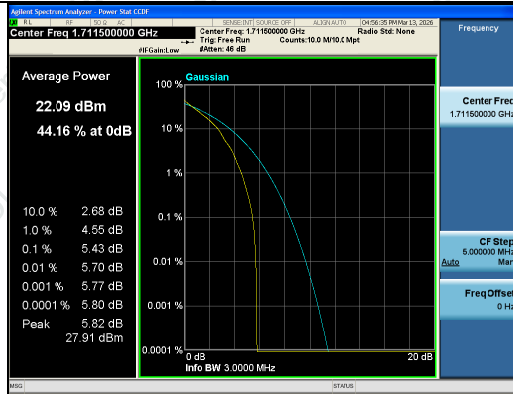
1RB#0

High Channel

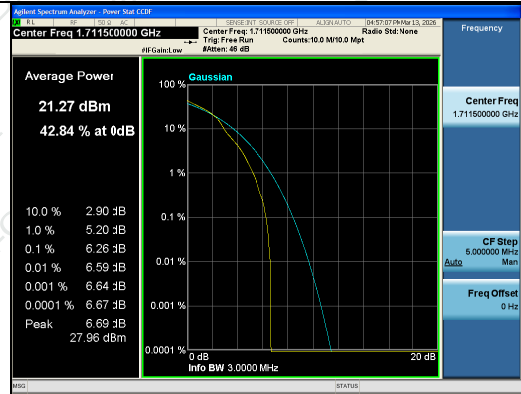


FDD Band 4-3MHz Channel Bandwidth PAPR

QPSK



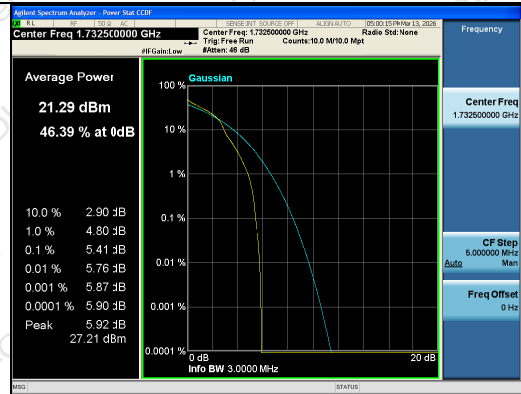
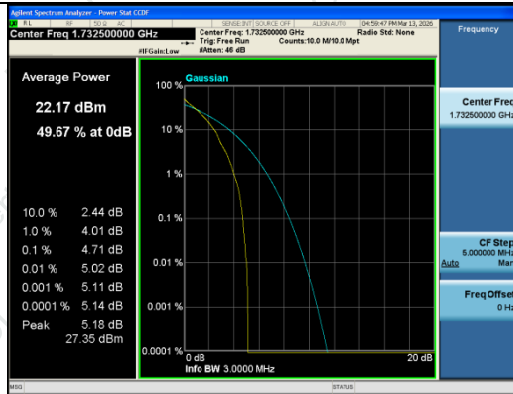
16QAM



1RB#0

1RB#0

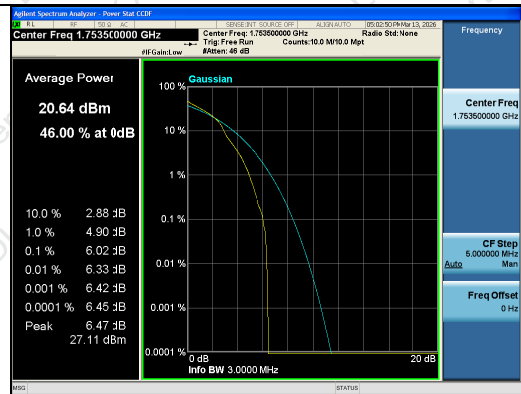
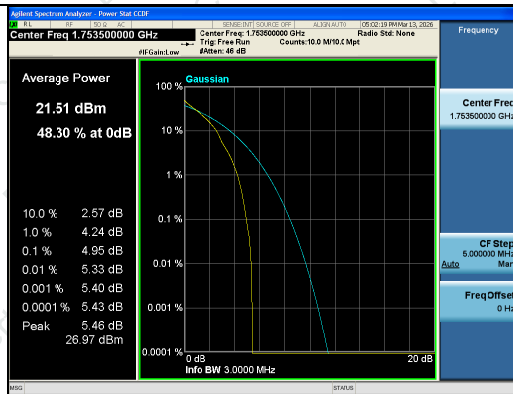
Low Channel



1RB#0

1RB#0

Middle Channel



1RB#0

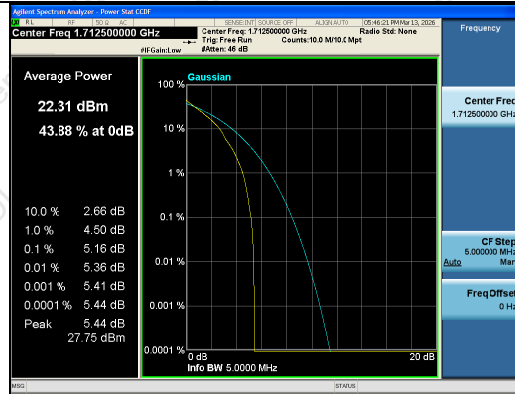
1RB#0

High Channel

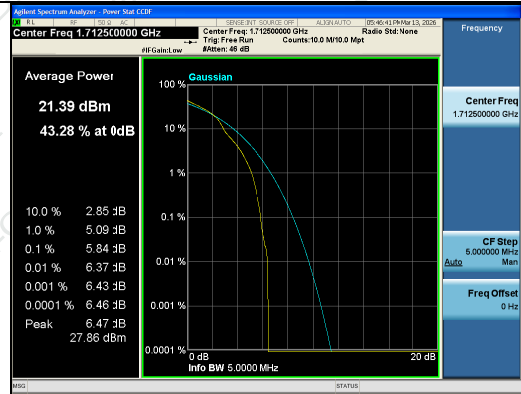


FDD Band 4-5MHz Channel Bandwidth PAPR

QPSK



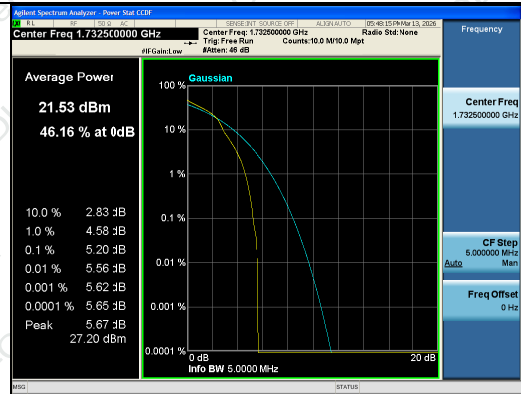
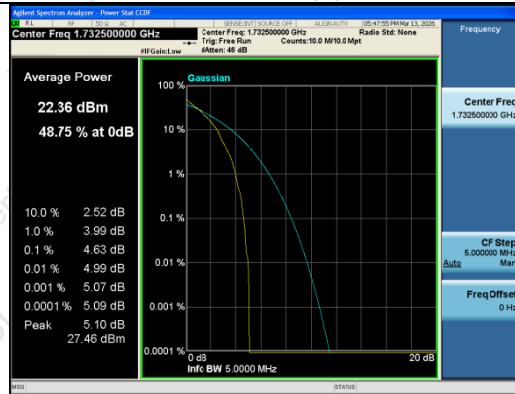
16QAM



1RB#0

1RB#0

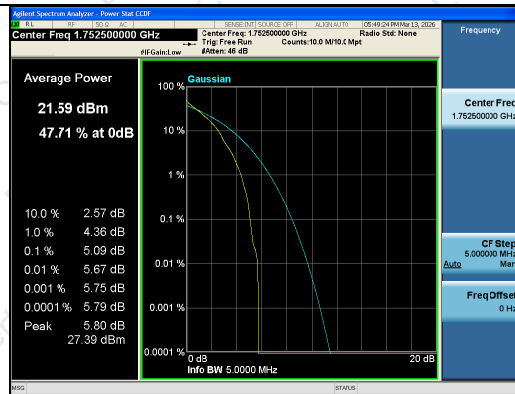
Low Channel



1RB#0

1RB#0

Middle Channel



1RB#0

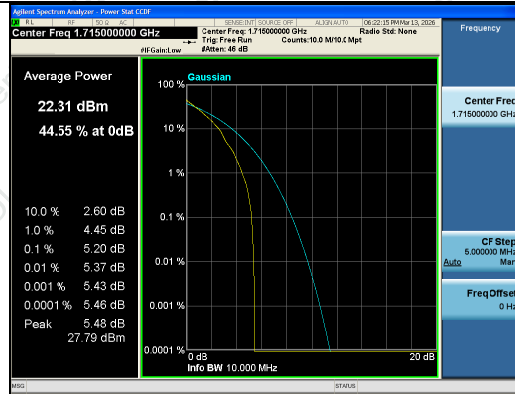
1RB#0

High Channel

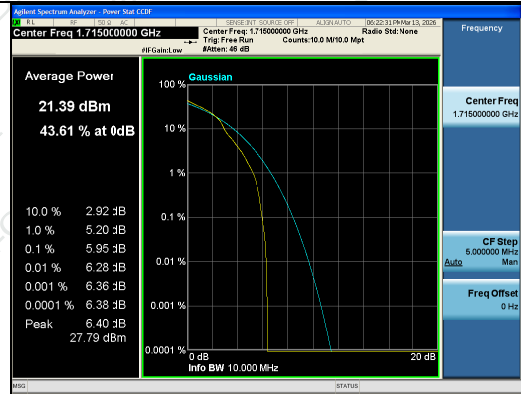


FDD Band 4-10MHz Channel Bandwidth PAPR

QPSK



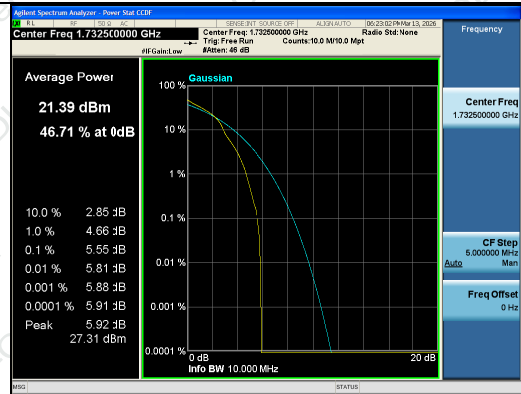
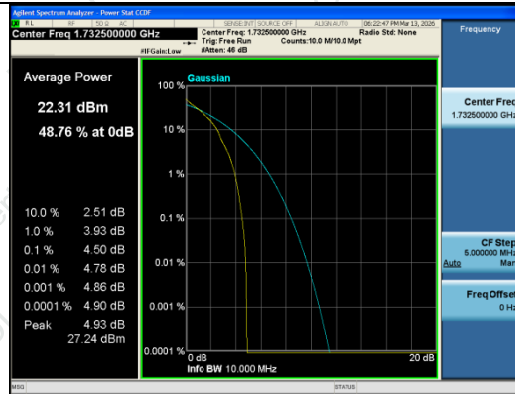
16QAM



1RB#0

1RB#0

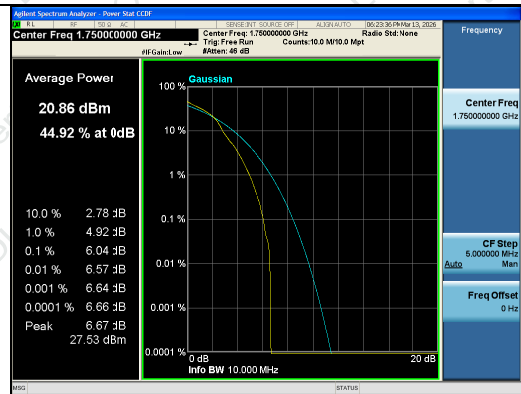
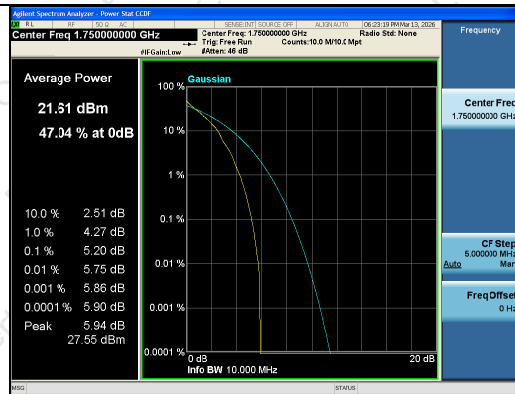
Low Channel



1RB#0

1RB#0

Middle Channel



1RB#0

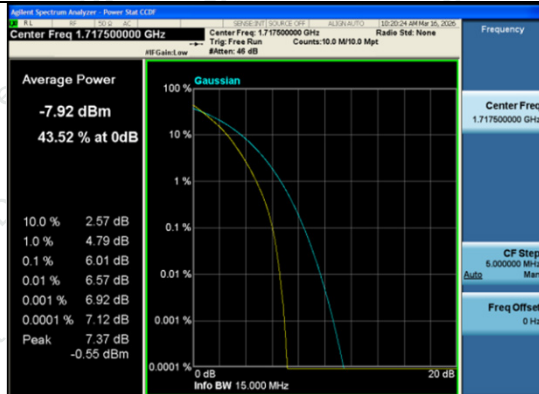
1RB#0

High Channel



FDD Band 4-15MHz Channel Bandwidth PAPR

QPSK



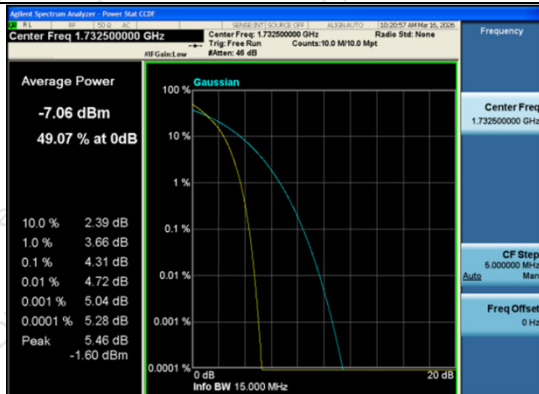
1RB#0

16QAM

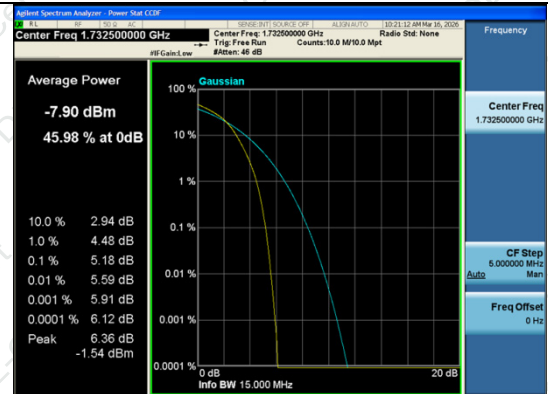


1RB#0

Low Channel



1RB#0



1RB#0

Middle Channel



1RB#0



1RB#0

High Channel



FDD Band 4-20MHz Channel Bandwidth PAPR

QPSK



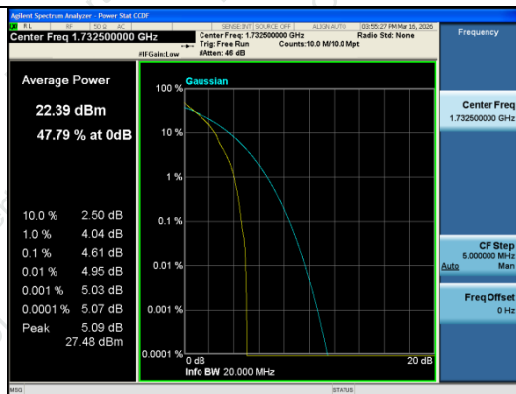
1RB#0

16QAM

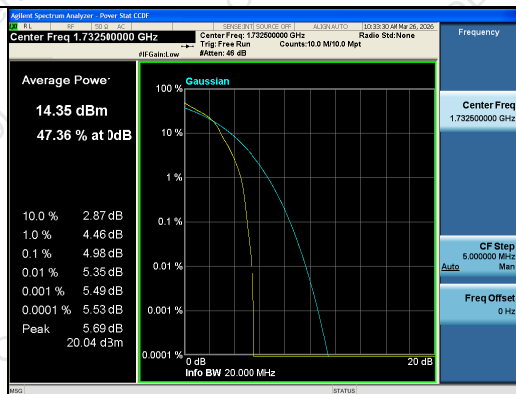


1RB#0

Low Channel

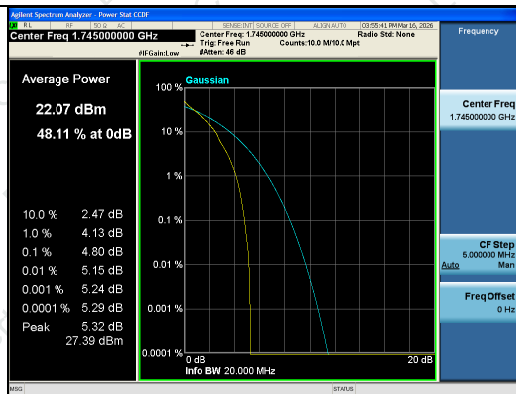


1RB#0



1RB#0

Middle Channel



1RB#0



1RB#0

High Channel

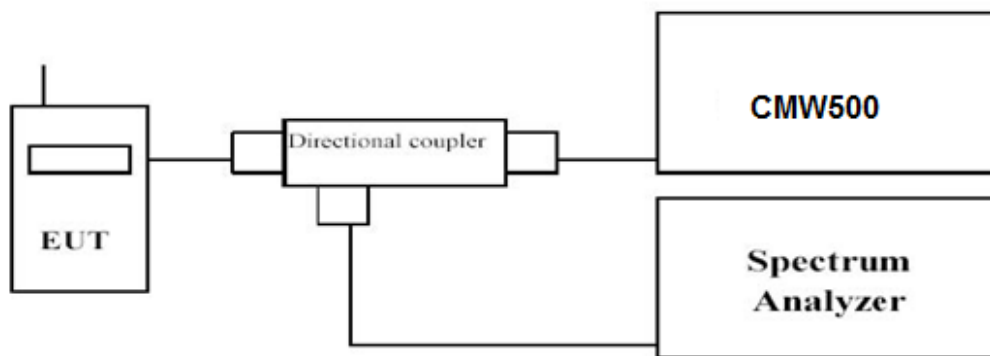


3.3 Occupied Bandwidth and Emission Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded.

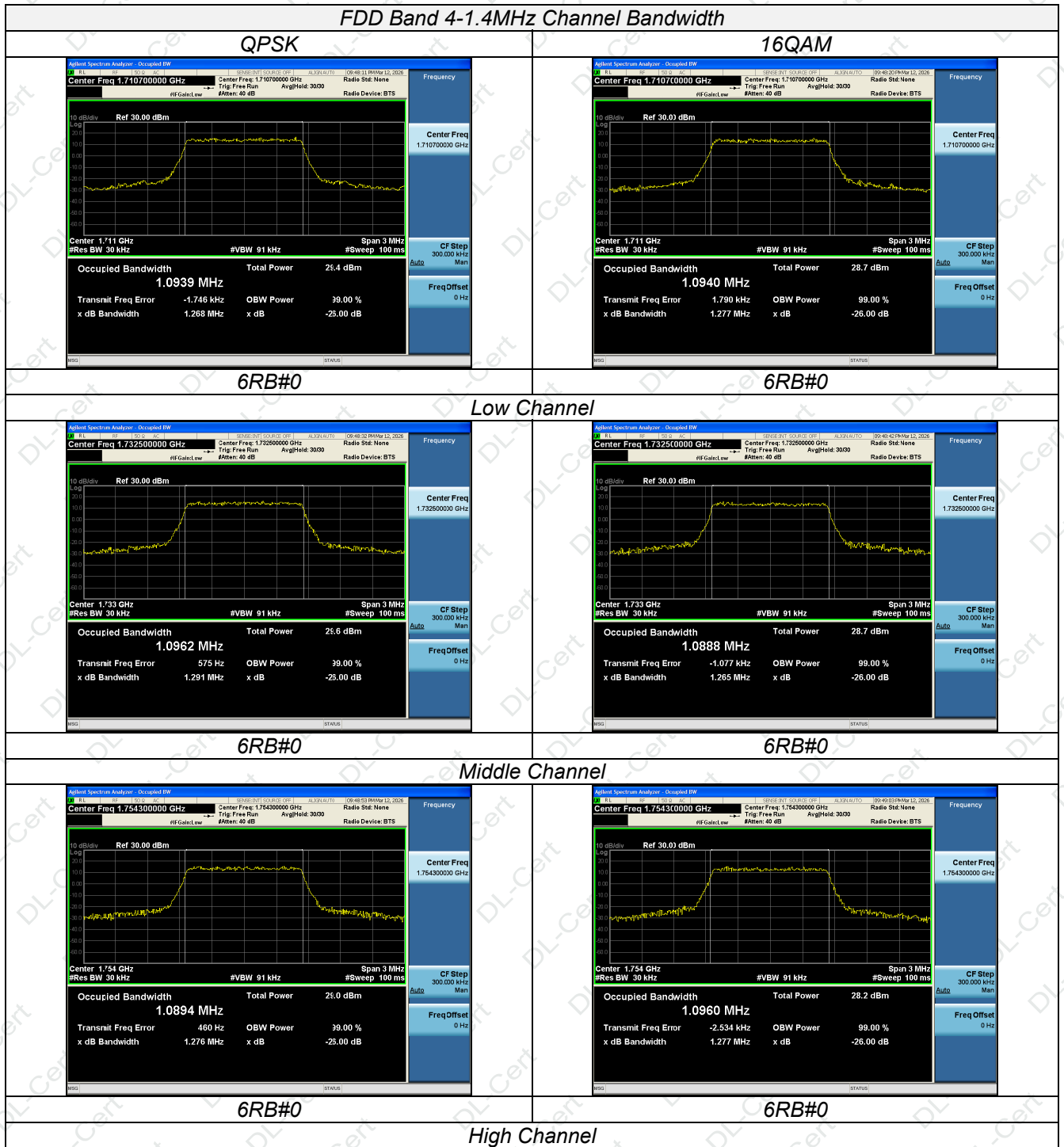
Set RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW.

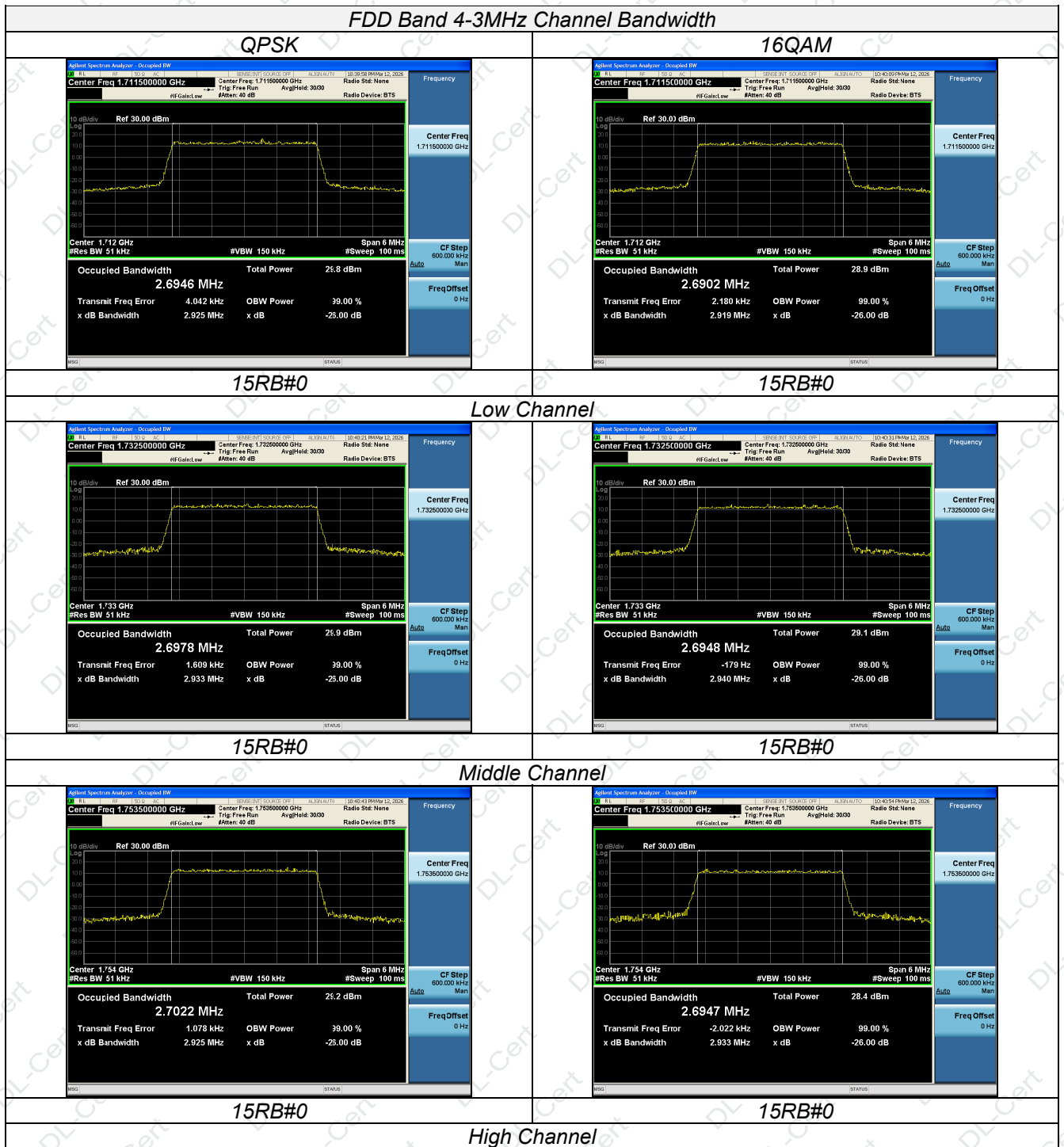
-26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

Remark: We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of FDD Band 4; recorded worst case for each Channel Bandwidth of FDD Band 4.

FDD Band 4						
TX Channel Bandwidth	RB Size/Offset	Frequency (MHz)	-26dBc Emission bandwidth (MHz)		99% Occupied bandwidth (MHz)	
			QPSK	16QAM	QPSK	16QAM
1.4 MHz	6RB#0	1710.7	1.268	1.277	1.0939	1.0940
		1732.5	1.291	1.265	1.0962	1.0888
		1754.3	1.276	1.277	1.0894	1.0960
3 MHz	15RB#0	1711.5	2.925	2.919	2.6946	2.6902
		1732.5	2.933	2.940	2.6978	2.6948
		1753.5	2.925	2.933	2.7022	2.6947
5 MHz	25RB#0	1712.5	4.974	4.951	4.5064	4.4979
		1732.5	4.938	4.979	4.4893	4.4966
		1752.5	4.975	4.970	4.5022	4.5159
10 MHz	50RB#0	1715.0	9.762	5.368	8.9662	4.6072
		1732.5	9.738	5.294	8.9812	4.6233
		1750.0	9.791	5.296	8.9614	4.5989
15 MHz	75RB#0	1717.5	14.48	9.128	13.421	6.7994
		1732.5	14.54	8.994	13.468	6.8268
		1747.5	14.60	9.139	13.473	6.8880
20 MHz	100RB#0	1720.0	19.17	10.67	17.903	9.2293
		1732.5	19.23	10.93	17.920	9.1807
		1745.0	19.19	10.72	17.937	9.1655

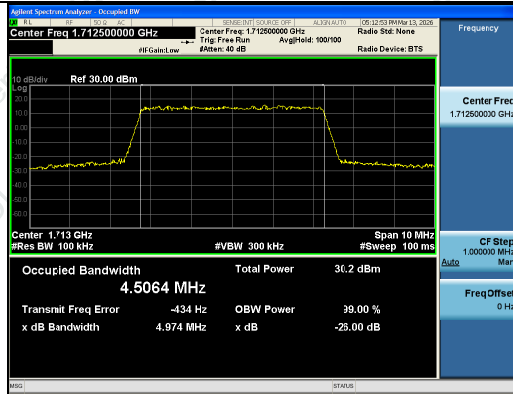




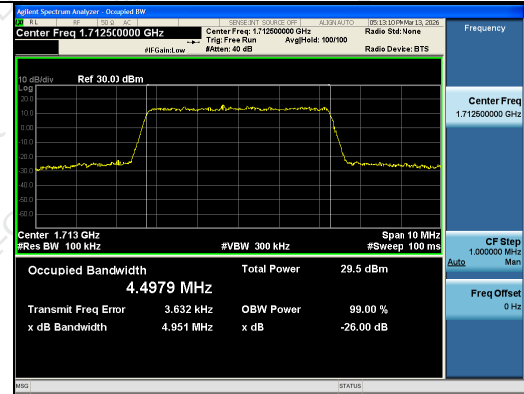


FDD Band 4-5MHz Channel Bandwidth

QPSK



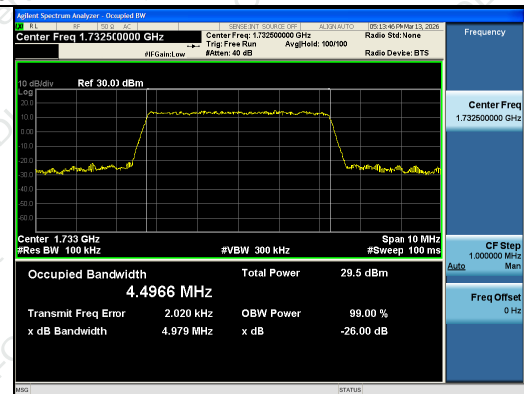
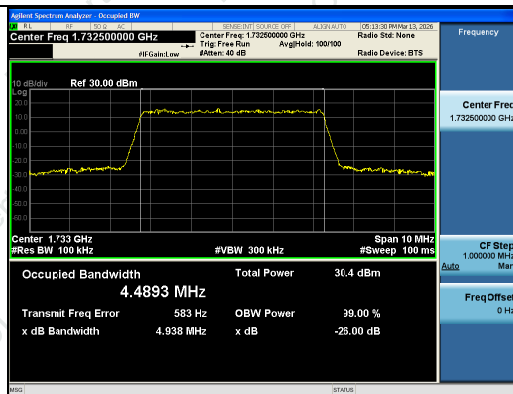
16QAM



25RB#0

25RB#0

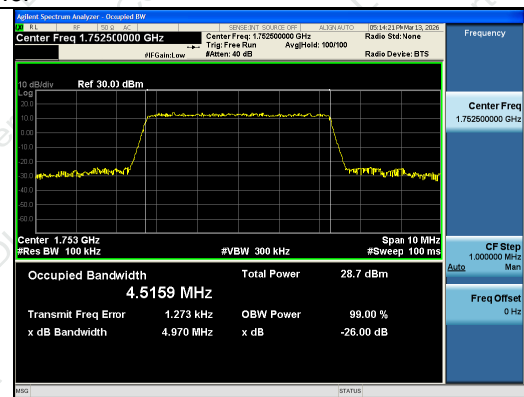
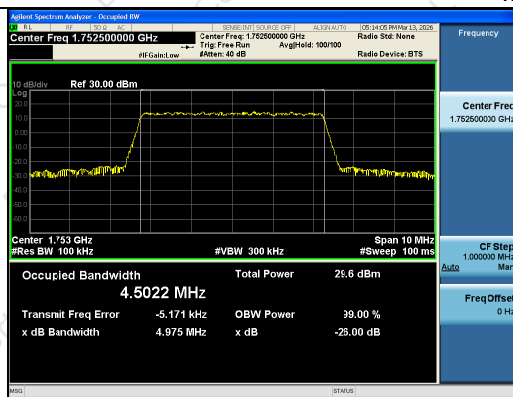
Low Channel



25RB#0

25RB#0

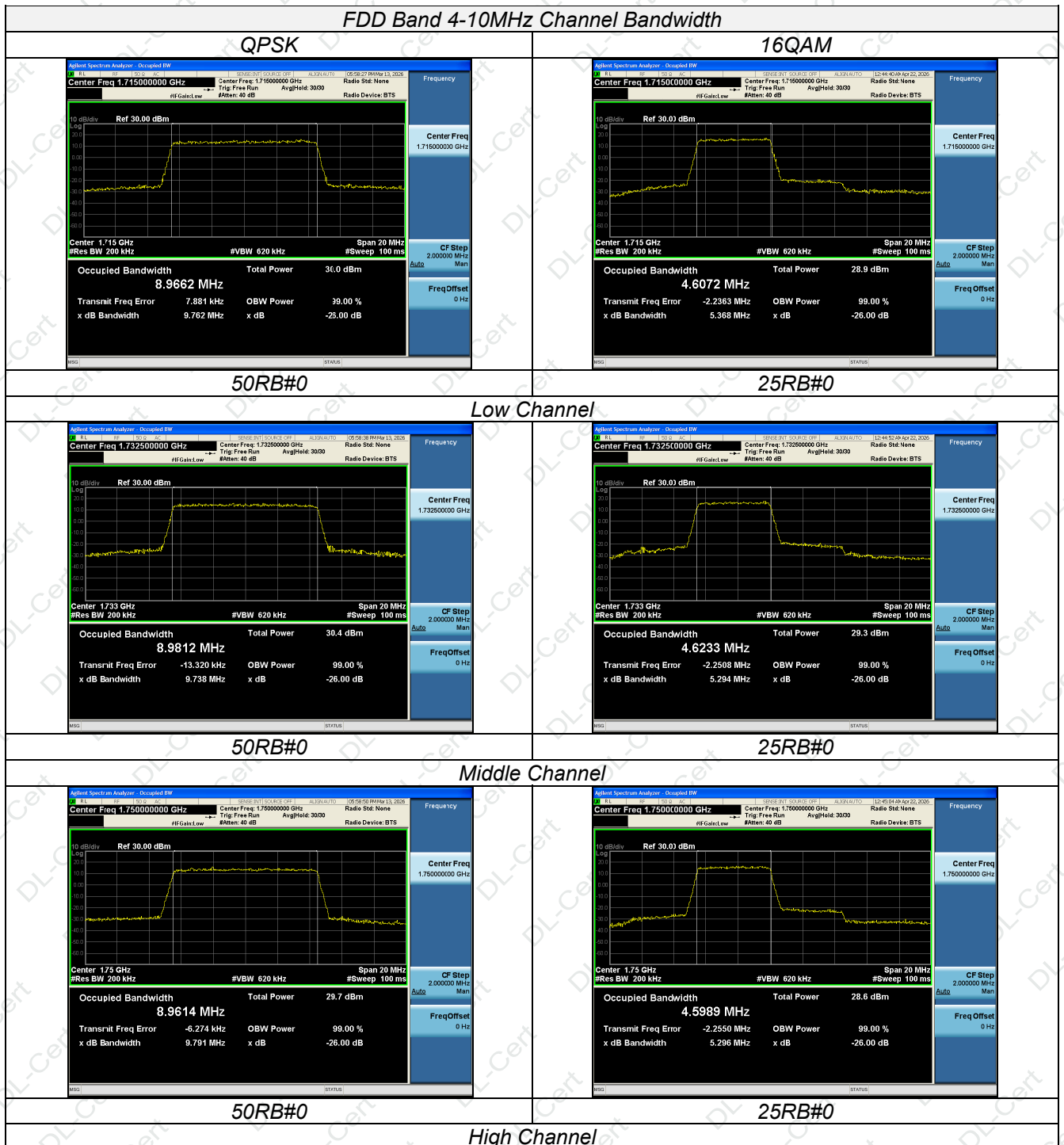
Middle Channel

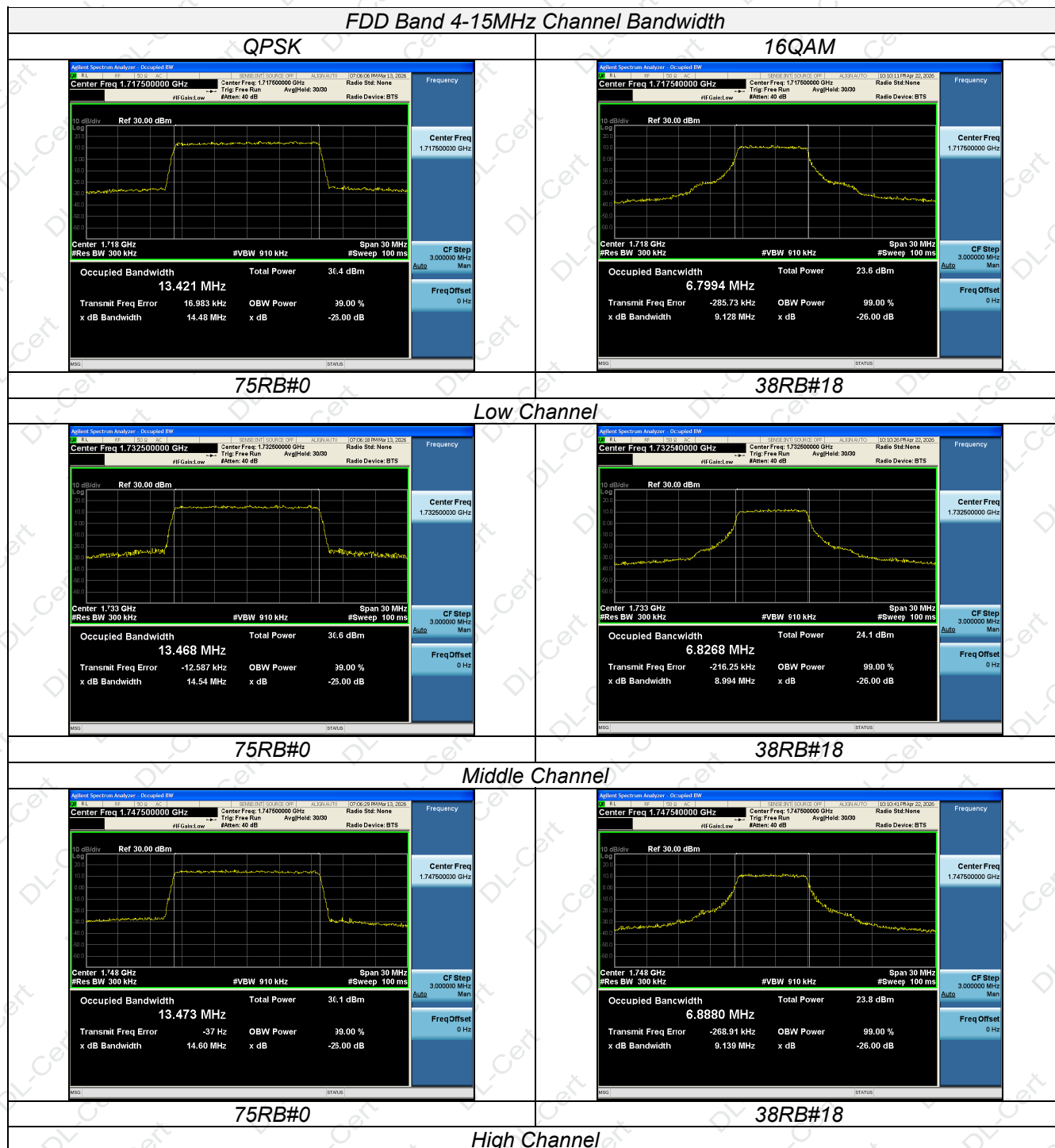


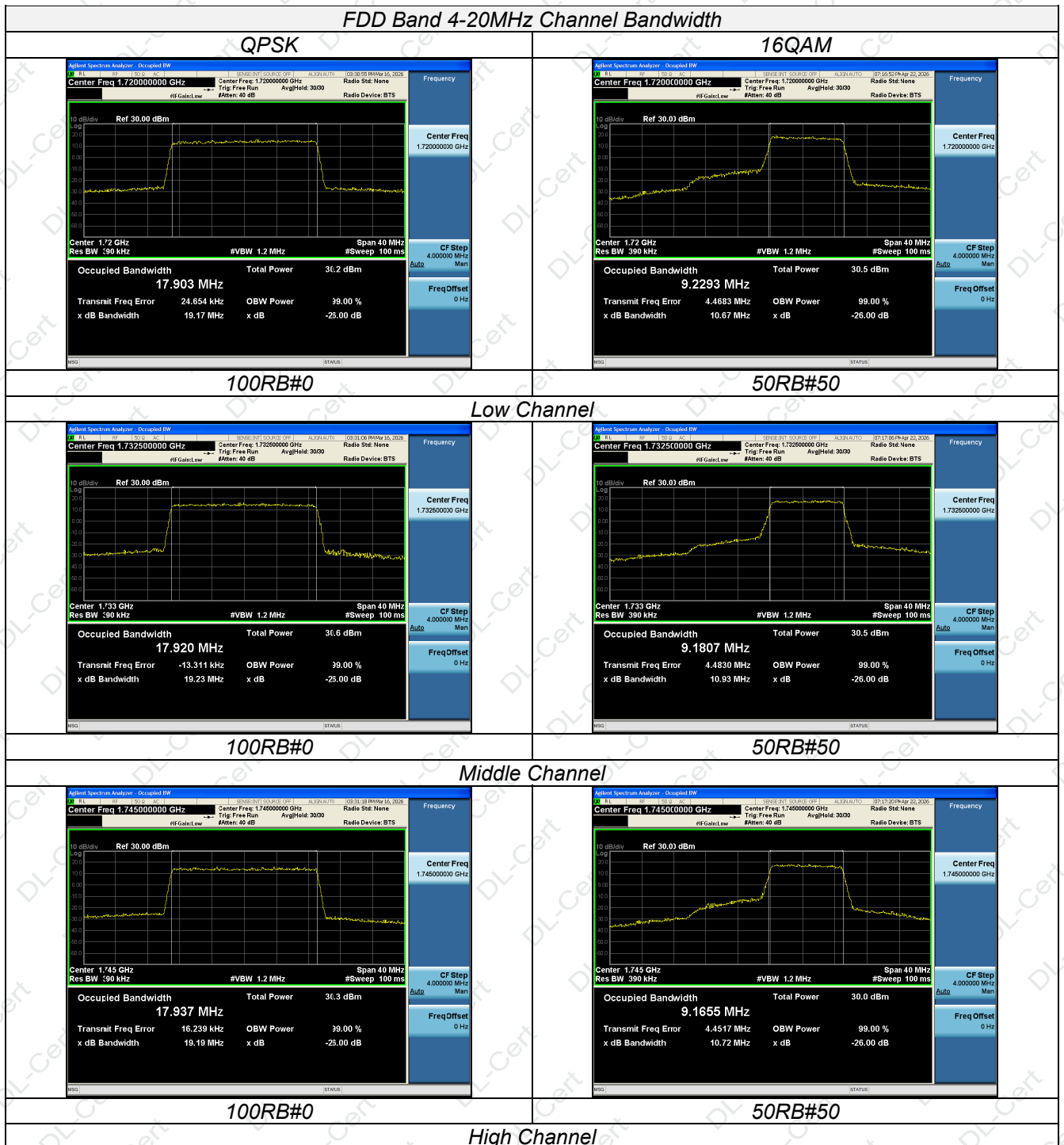
25RB#0

25RB#0

High Channel







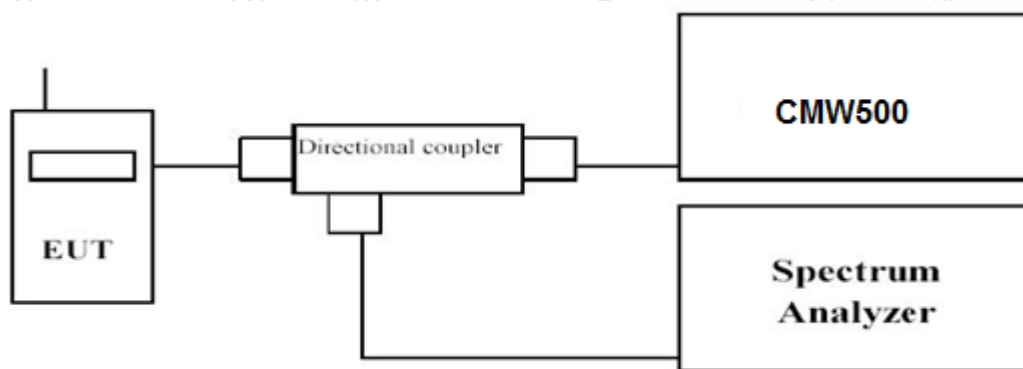


3.4 Band Edge Compliance

LIMIT

According to §27.53 (h): For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum.

TEST RESULTS

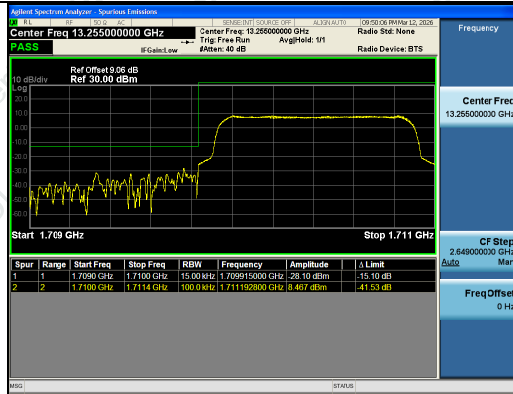
Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of FDD Band 4; recorded worst case for each Channel Bandwidth of FDD Band 4.

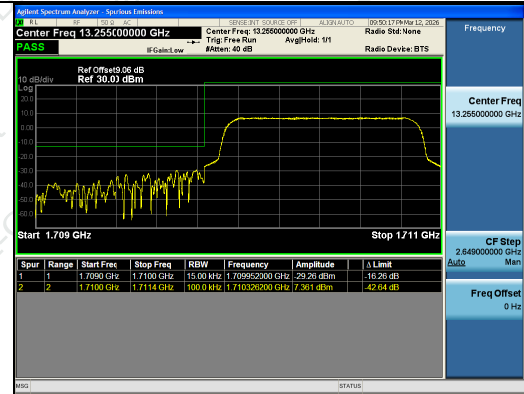


FDD Band 4-1.4MHz Channel Bandwidth Band Edge Compliance

QPSK



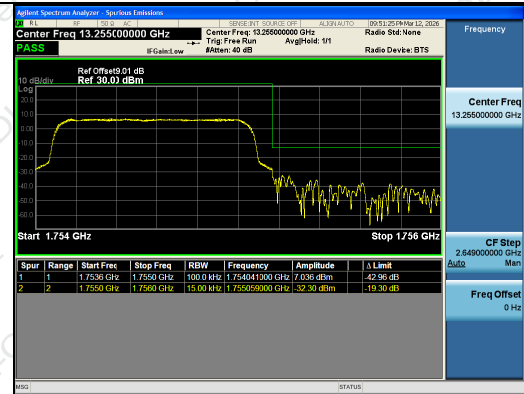
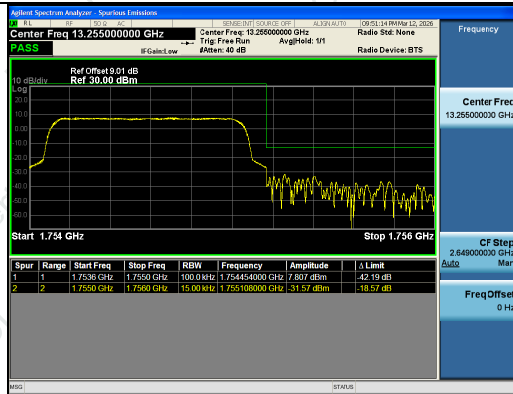
16QAM



6RB#0

6RB#0

Low Channel



6RB#0

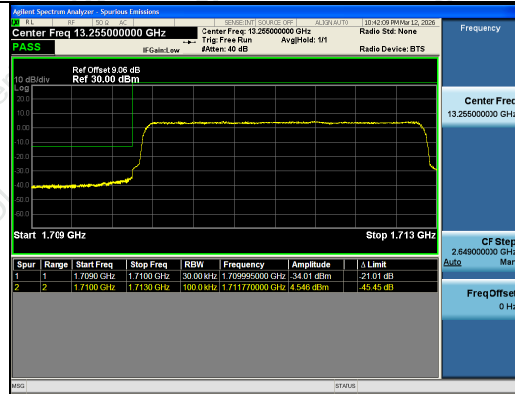
6RB#0

High Channel

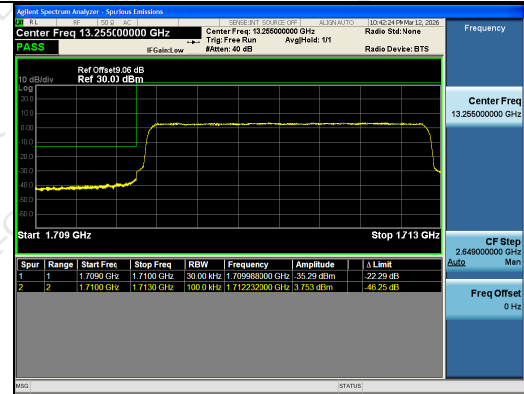


FDD Band 4-3MHz Channel Bandwidth Band Edge Compliance

QPSK



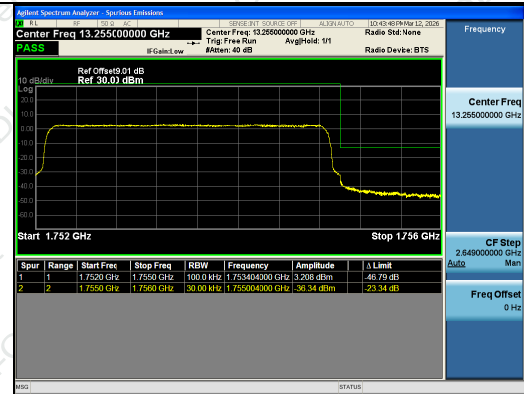
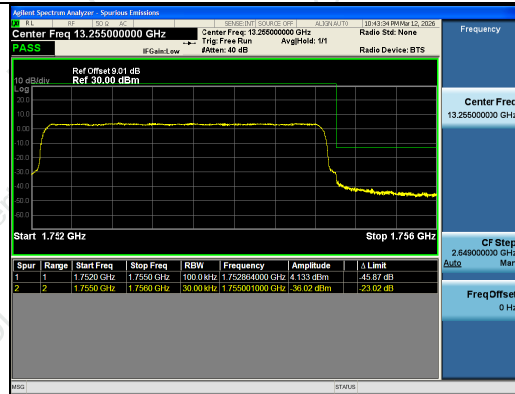
16QAM



15RB#0

15RB#0

Low Channel



15RB#0

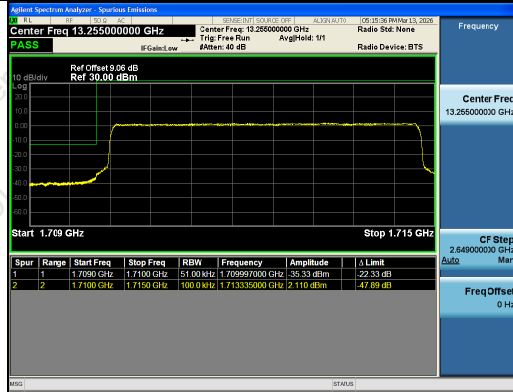
15RB#0

High Channel

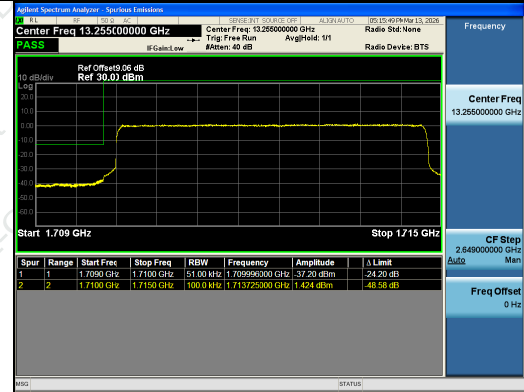


FDD Band 4-5MHz Channel Bandwidth Band Edge Compliance

QPSK



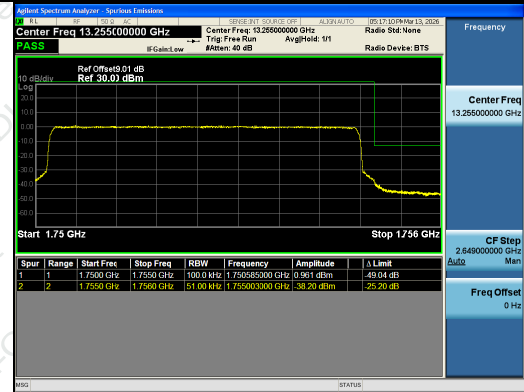
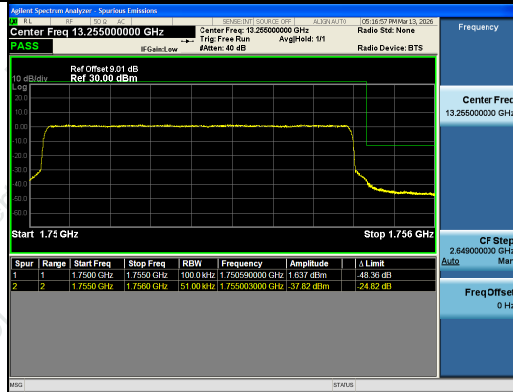
16QAM



25RB#0

25RB#0

Low Channel



25RB#0

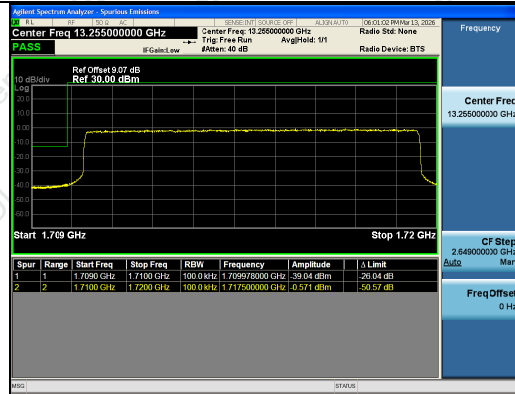
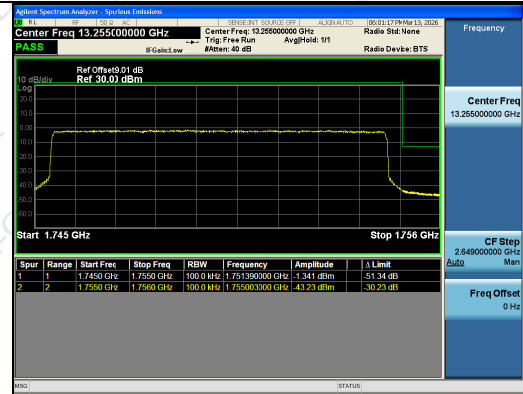
25RB#0

High Channel



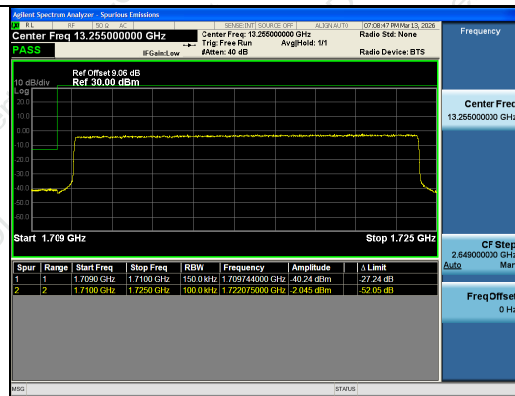
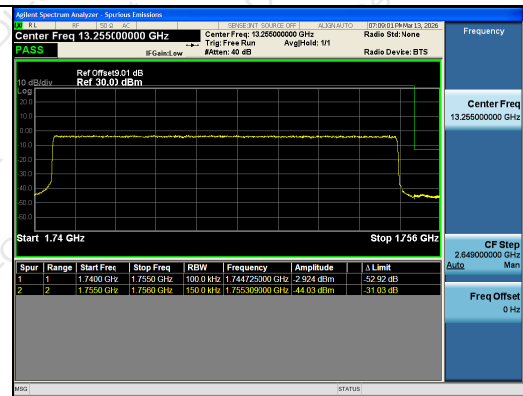
FDD Band 4-10MHz Channel Bandwidth Band Edge Compliance

QPSK

50RB#0
Low Channel50RB#0
High Channel

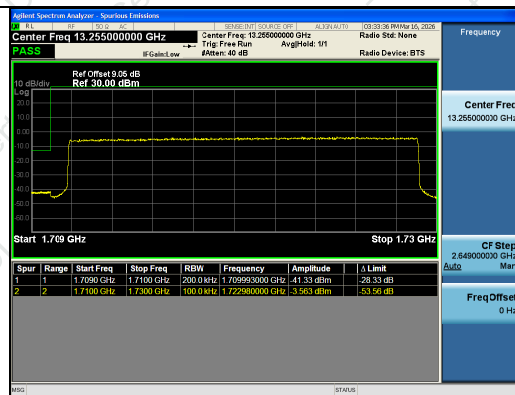
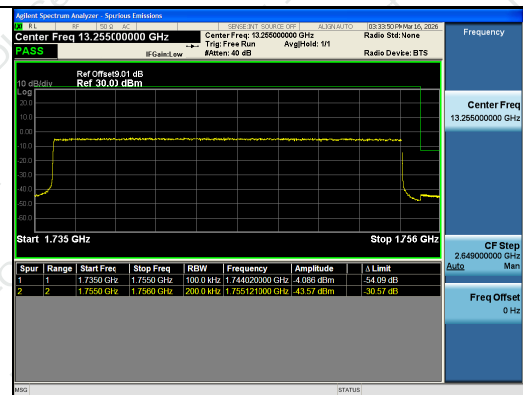
FDD Band 4-15MHz Channel Bandwidth Band Edge Compliance

QPSK

75RB#0
Low Channel75RB#0
High Channel

FDD Band 4-20MHz Channel Bandwidth Band Edge Compliance

QPSK

100RB#0
Low Channel100RB#0
High Channel



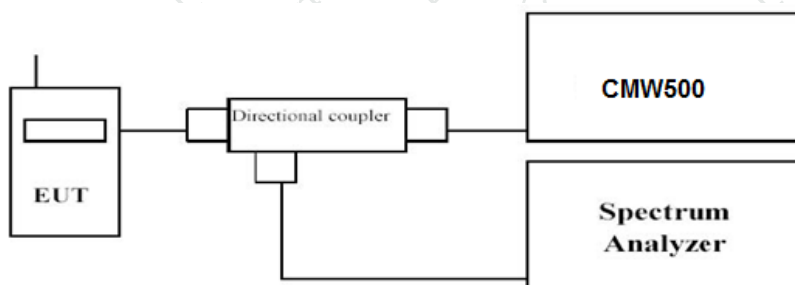
3.5 Spurious Emission

LIMIT

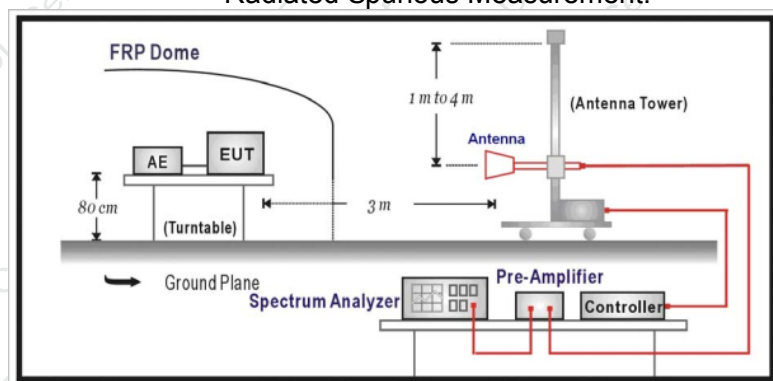
According to §27.53 (h): For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



TEST PROCEDURE

The EUT was setup according to ANSI/TIA-603-E.

Conducted Spurious Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Coupler.
- EUT Communicate with CMW500, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.
- The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.
- Please refer to following tables for test antenna conducted emissions.

Working Frequency	Sub range (GHz)	RBW	VBW	Sweep time (s)
FDD Band 4	0.000015~0.03	10KHz	30KHz	Auto
	0.03~1	100KHz	300KHz	Auto
	1~20	1 MHz	3 MHz	Auto

**Radiated Spurious Measurement:**

- a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.
- c. The output of the test antenna shall be connected to the measuring receiver.
- d. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.
- r. Test site anechoic chamber refer to ANSI C63.

TEST RESULTS**Remark:**

1. *We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of FDD Band 4; recorded worst case for each Channel Bandwidth of FDD Band 4.*

Conducted Measurement:

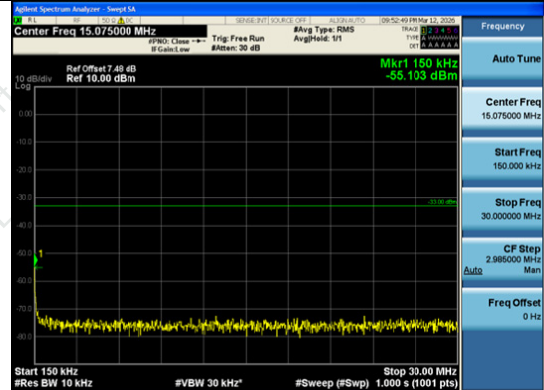
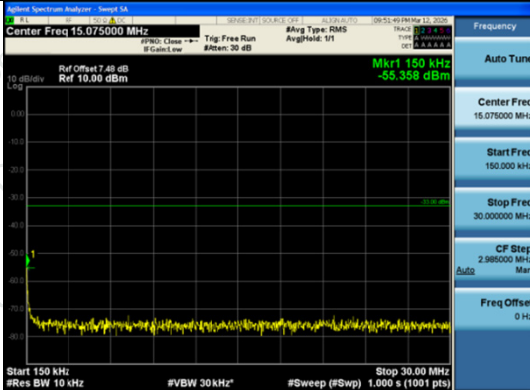


FDD Band 4-1.4MHz Channel Bandwidth

Low Channel

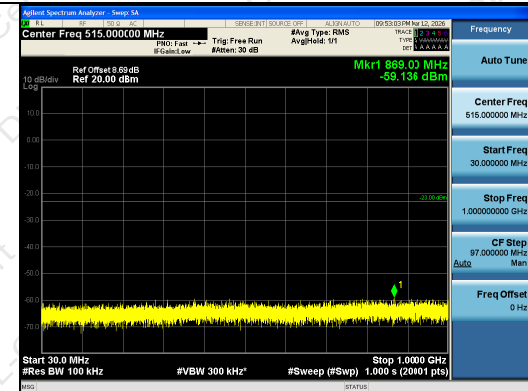
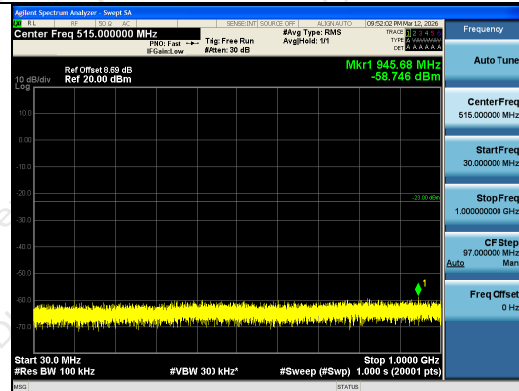
QPSK

16QAM



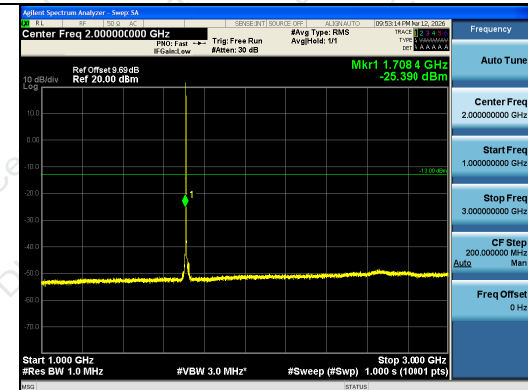
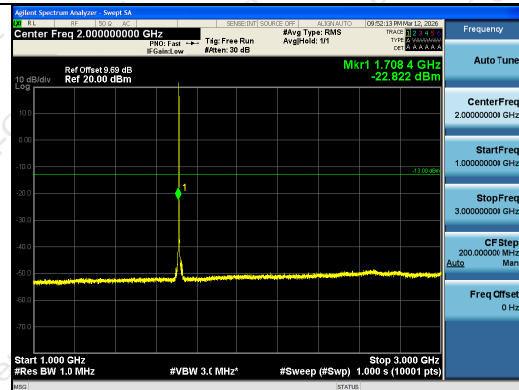
0.15MHz~30MHz

0.15MHz~30MHz



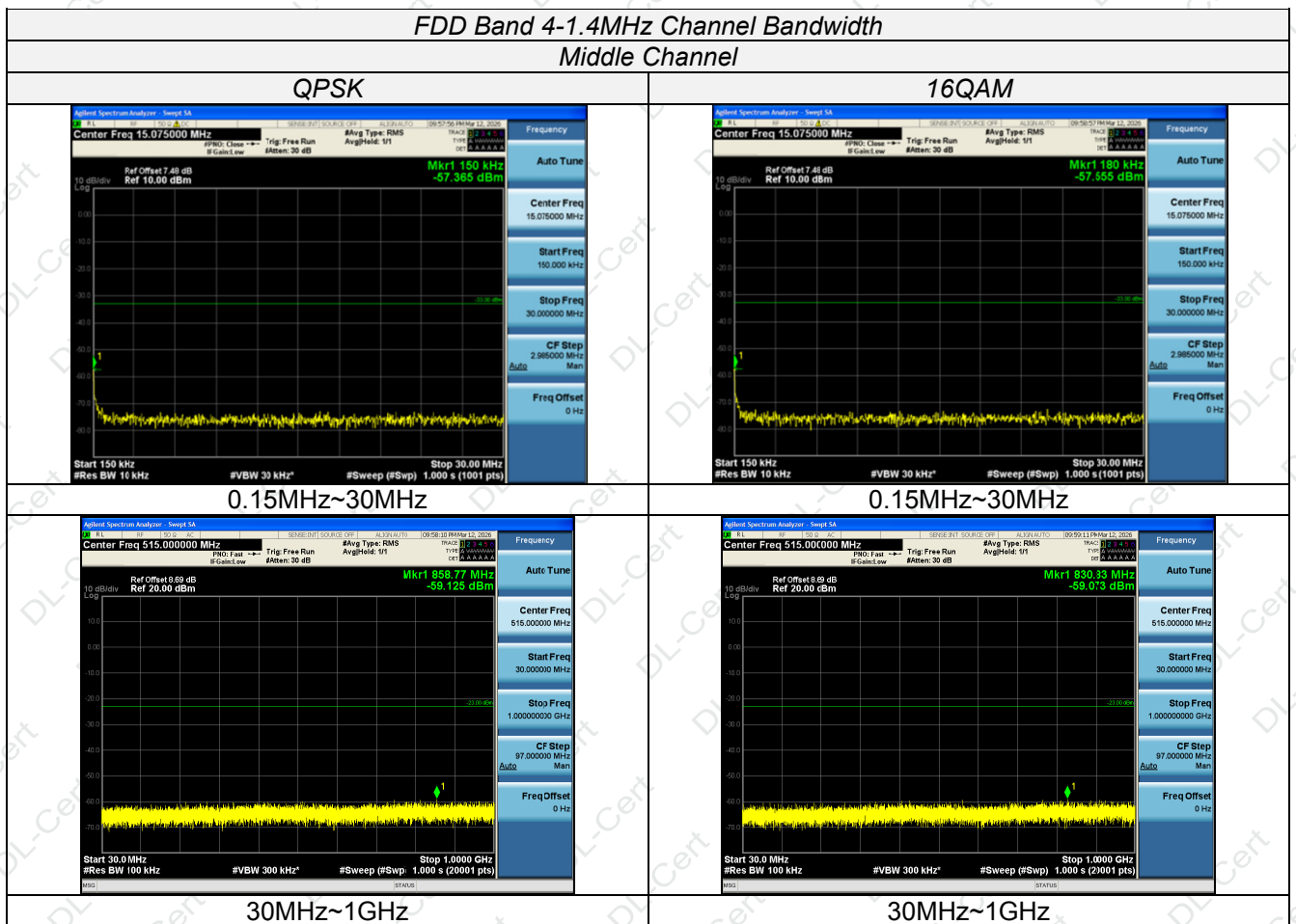
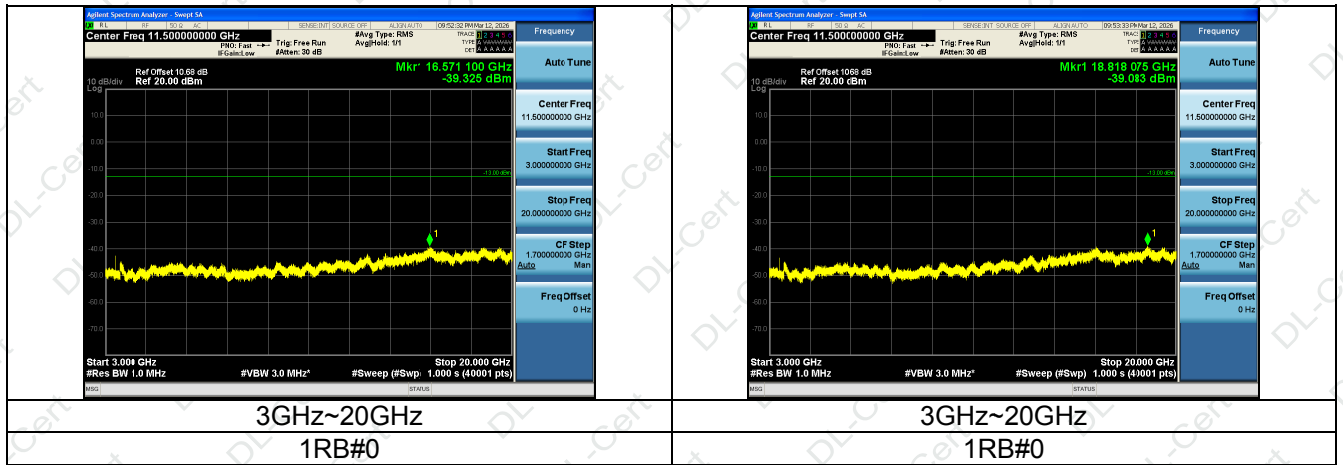
30MHz~1GHz

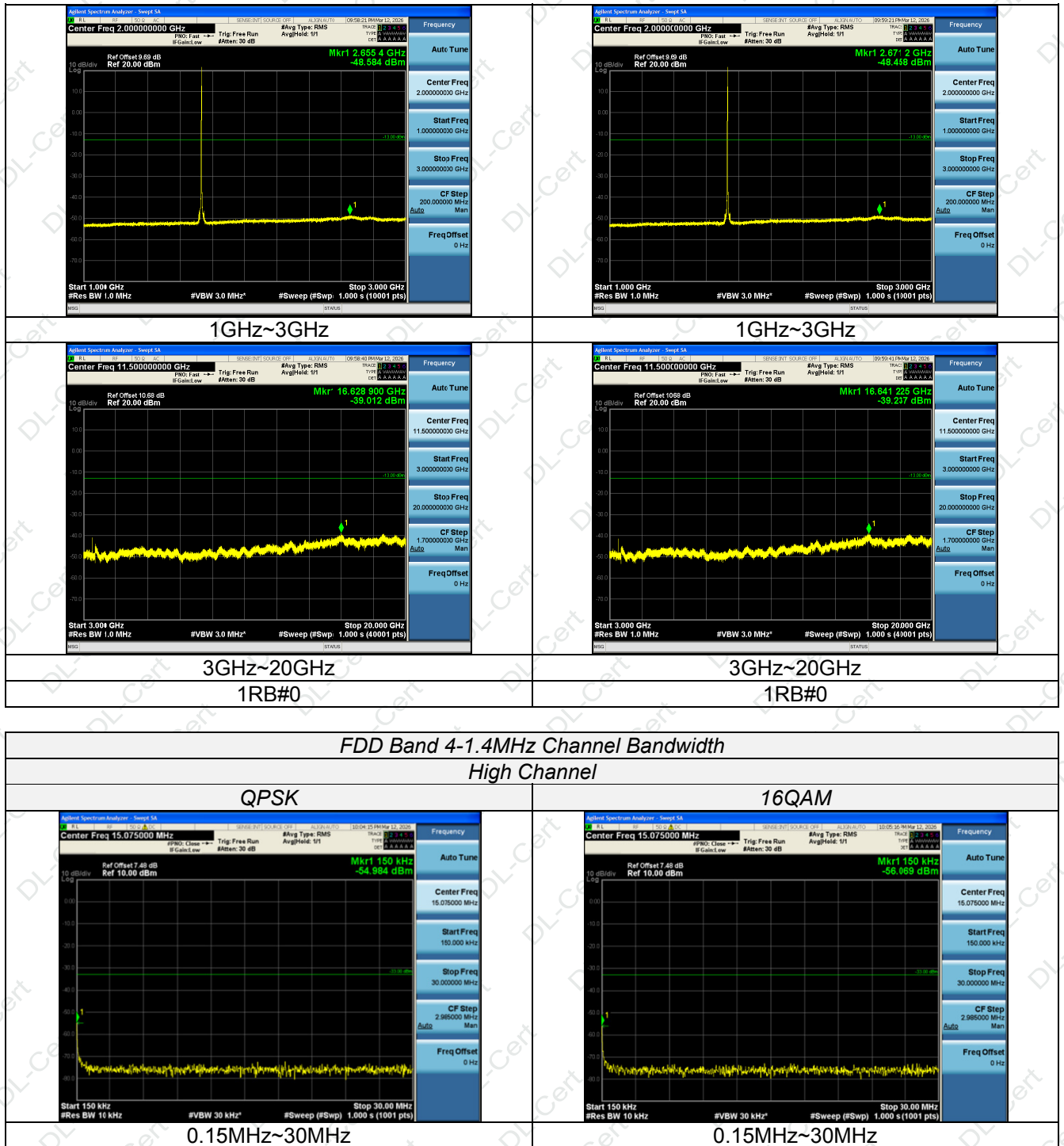
30MHz~1GHz

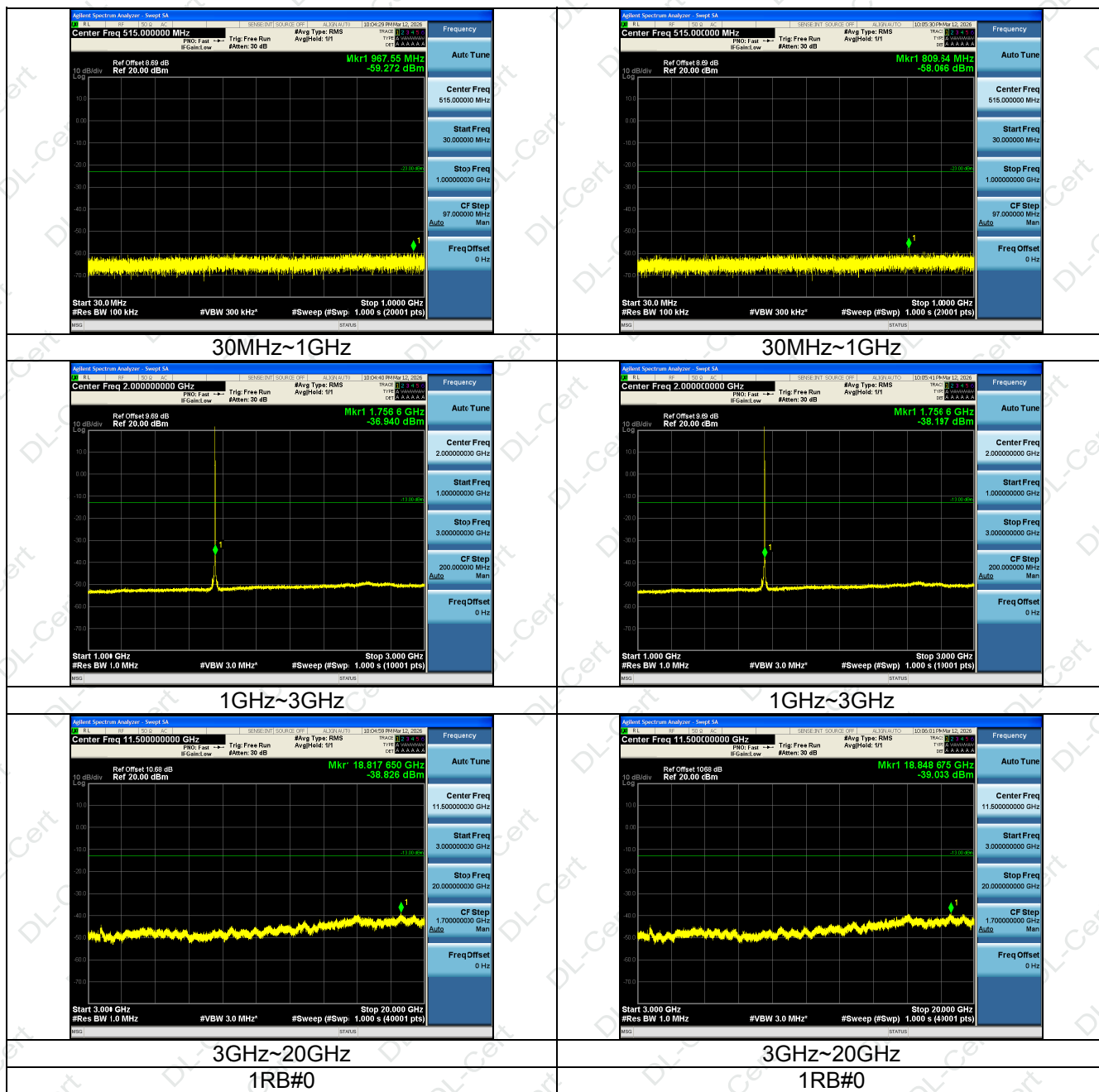


1GHz~3GHz

1GHz~3GHz





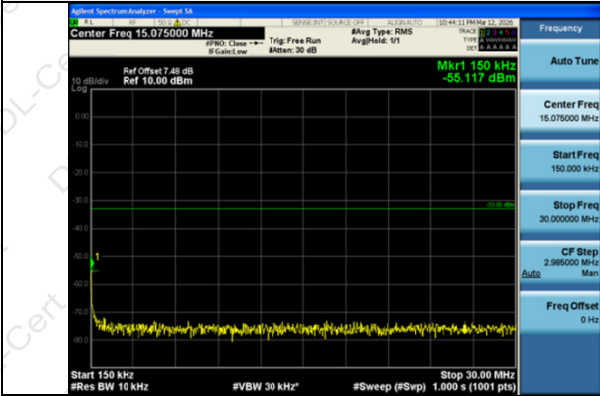




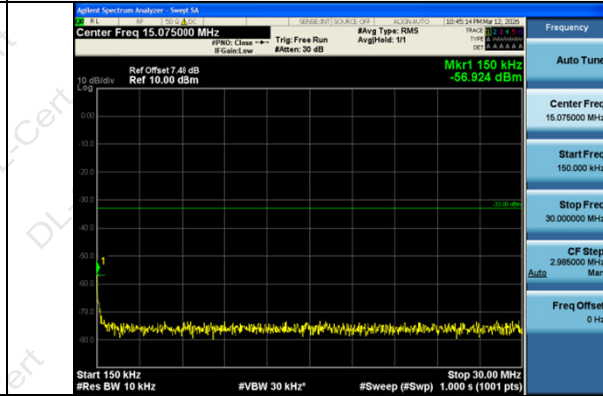
FDD Band 4-3MHz Channel Bandwidth

Low Channel

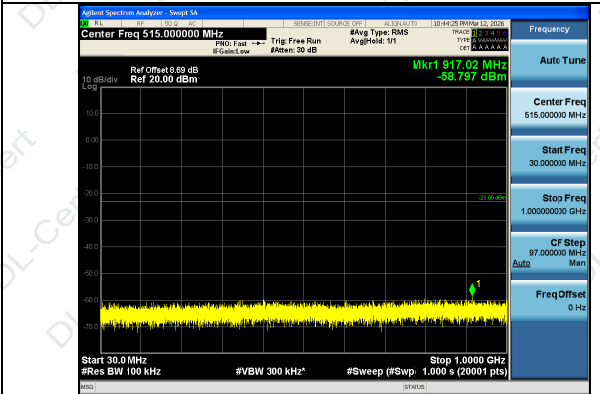
QPSK



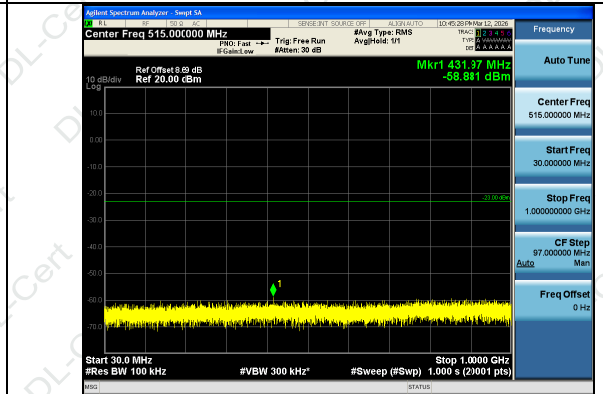
16QAM



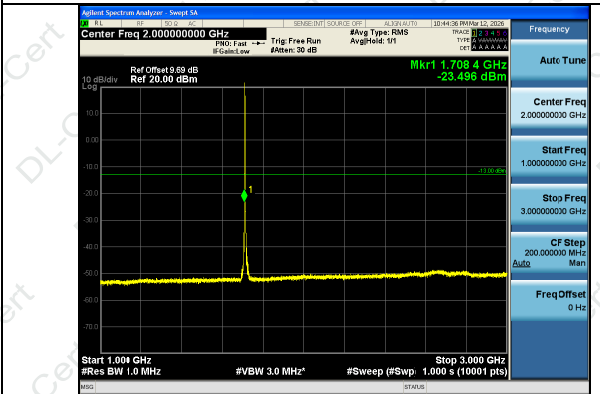
0.15MHz~30MHz



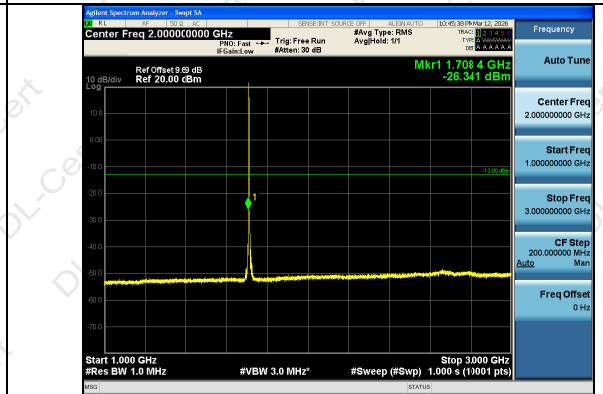
0.15MHz~30MHz



30MHz~1GHz



30MHz~1GHz

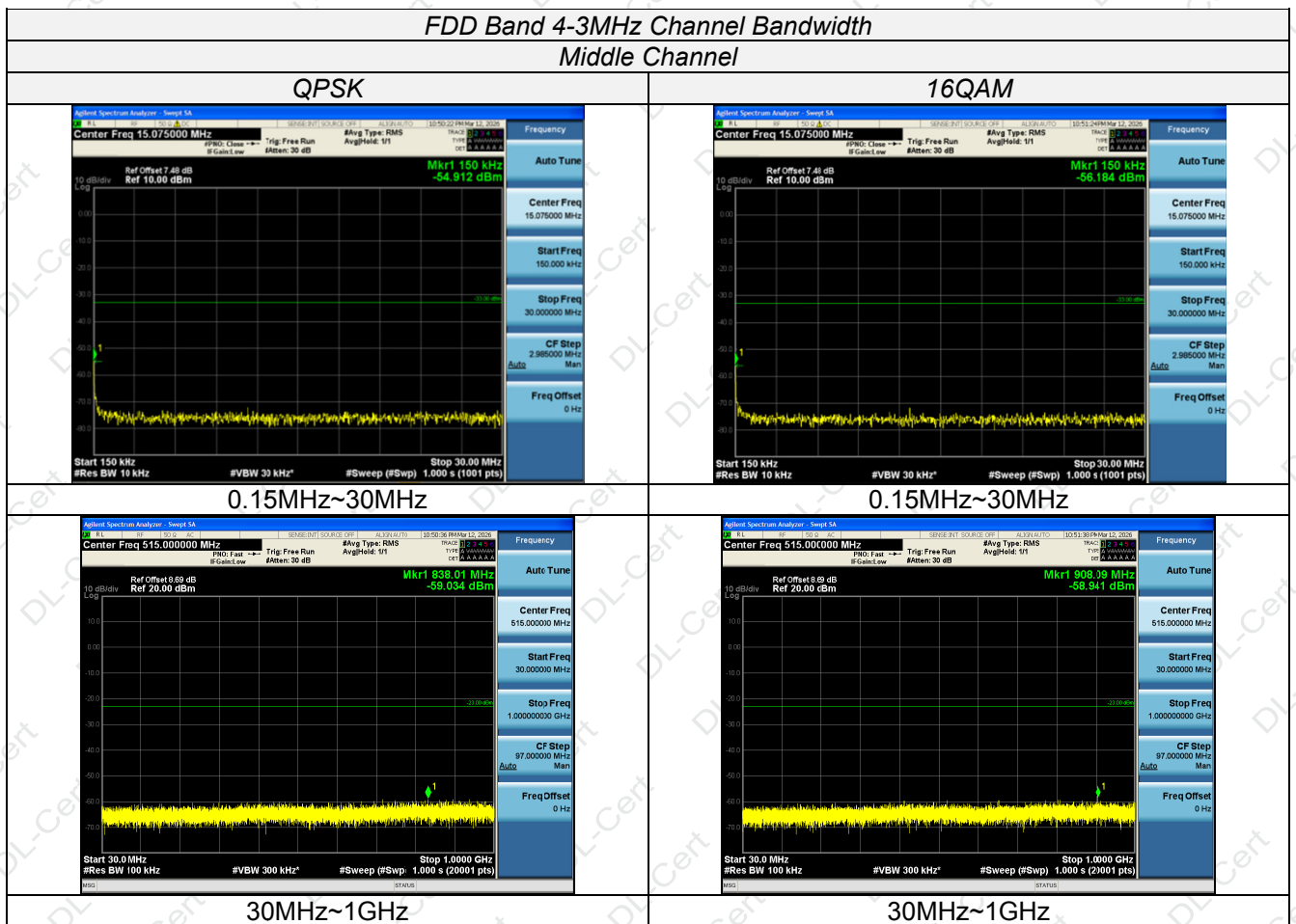
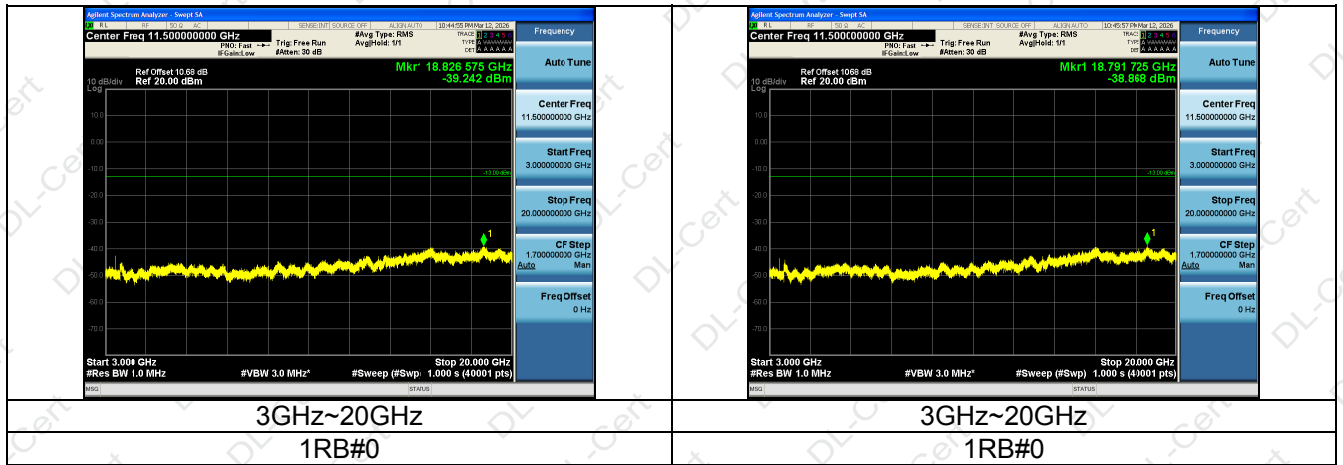


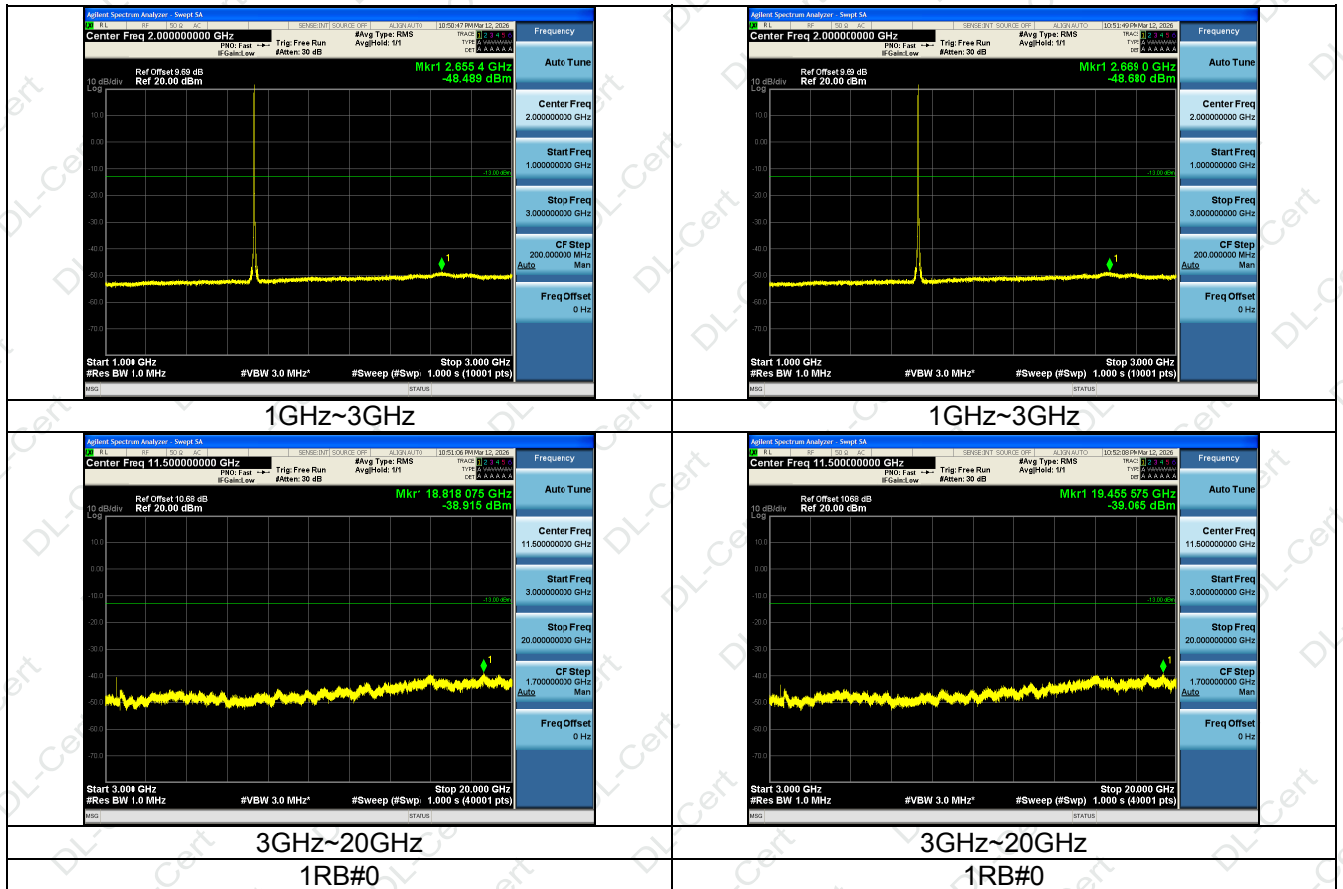
1GHz~3GHz



1GHz~3GHz







FDD Band 4-3MHz Channel Bandwidth
High Channel

