

FCC Test Report

Report No.: AGC04983200901FE02

FCC ID	:	2AQTVSMARTLOCKX
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Altro Smart Lock
BRAND NAME	:	Altro Smart
MODEL NAME		ModelX
APPLICANT	© :	ALTRO SMART INC
DATE OF ISSUE	:	Sep. 17, 2020
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION		V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

)	Report Version	Revise Time	Issued Date	Valid Version	Notes
,	V1.0		Sep. 17, 2020	Valid	Initial Release

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1. VERIFICATION OF COMPLIANCE

ALTRO SMART INC		
1551 McCarthy Blvd, Suite 212, Milpitas, CA 95035		
ALTRO SMART INC.		
1551 McCarthy Blvd, Suite 212, Milpitas, CA 95035		
VINROX TECHNOLOGIES PVT LTD		
336/22, GIDC, MAKARPURA, VADODARA-390010, GUJARAT, INDIA		
Altro Smart Lock		
Altro Smart		
ModelX		
Sep. 08, 2020 to Sep. 17, 2020		
No any deviation from the test method		
Normal		
Pass		
AGCRT-US-BLE/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.

Prepared By

sky dong

Sky Dong (Project Engineer)

Max Zhang

Sep. 17, 2020

Reviewed By

Max Zhang (Reviewer)

Sep. 17, 2020

Approved By

owa

Forrest Lei (Authorized Officer)

Sep. 17, 2020

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Altro Smart Lock". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz			
RF Output Power	0.830dBm(Max)			
Bluetooth Version	V 4.2			
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE ⊠GFSK 1Mbps □GFSK 2Mbps			
Number of channels	40 Channel			
Antenna Designation	PCB Antenna(Comply with requirements of the FCC part 15.203)			
Antenna Gain	1.6dBi			
Hardware Version	A			
Software Version	A			
Power Supply	DC 3.6V by battery			

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
No. 60	0	2402 MHz
	1	2404 MHz
2400~2483.5MHz		
	38	2478 MHz
	39	2480 MHz

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2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for FCC ID: 2AQTVSMARTLOCKX filing to comply with the FCC Part 15.247 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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3. MEASUREMENT UNCERTAINTY

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

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of total RF power, conducted, $Uc = \pm 0.8 dB$
- Uncertainty of RF power density, conducted, Uc = ±2.6 dB
- Uncertainty of spurious emissions, conducted, $Uc = \pm 2.7 \text{ dB}$
- Uncertainty of Occupied Channel Bandwidth: $Uc = \pm 2 \%$

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4. DESCRIPTION OF TEST MODES

NO. TEST MODE DESCRIPTION				
1	Low channel TX			
2	Middle channel TX			
3	High channel TX			

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.

2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

4. For battery operated equipment, the battery is full charged during test.

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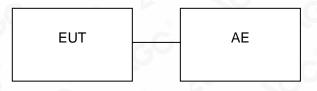
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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



5.2. EQUIPMENT USED IN TESTED SYSTEM

ltem	Equipment	Model No.	ID or Specification	Remark	
1	Altro Smart Lock	ModelX	2AQTVSMARTLOCKX	EUT	

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT	
15.247 (b)(3) Peak Output Power		Compliant	
15.247 (a)(2)	15.247 (a)(2) 6 dB Bandwidth		
15.247 (d) Conducted Spurious Emission		Compliant	
15.247 (e) Maximum Conducted Output Power Density		Compliant	
15.209 Radiated Emission		Compliant	
15.207	Conducted Emission	N/A	

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd				
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China				
Designation Number	CN1259				
FCC Test Firm Registration Number	975832				
A2LA Cert. No.	5054.02				
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA				

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 12, 2019	Dec. 11, 2020
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 09, 2019	Sep. 08, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 16, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A

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7. PEAK OUTPUT POWER

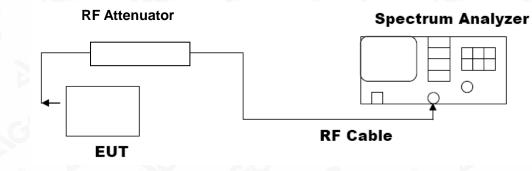
7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW > DTS bandwidth
- 3. VBW≥3*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP



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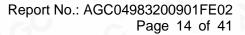
7.3. LIMITS AND MEASUREMENT RESULT

	PEAK OUTPUT POWER MEASUREMENT RESULT FOR GFSK MOUDULATION								
Frequency (GHz)	Frequency Peak Power Applicable Limits Pass or Fail								
2.402	0.027	30	Pass						
2.440	0.830	30	Pass						
2.480	0.294	30	Pass						

CH0

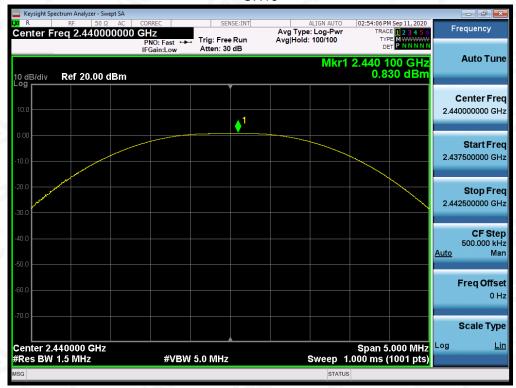
	ctrum Analyzer - Swep									_	
Center F	RF 50 Ω req 2.402000	AC CORI			VSE:INT	Avg Type	ALIGN AUTO	TRAC	4 Sep 11, 2020 E 1 2 3 4 5 6	F	requency
10 dB/div	Ref 20.00 dE	PN IFG	O: Fast ↔ ain:Low	Atten: 30		Avg Hold		2.402 0	er P NNNNN 90 GHz 27 dBm		Auto Tune
					▲1						Center Freq 2000000 GHz
-10.0										2.39	Start Freq 9500000 GHz
-20.0 -30.0										2.40	Stop Freq 04500000 GHz
-40.0										<u>Auto</u>	CF Step 500.000 kHz Man
-60.0											Freq Offset 0 Hz
Center 2.4	102000 GHz							Span 5	.000 MHz	Log	Scale Type <u>Lin</u>
#Res BW	T.5 WHZ		#vBW	5.0 MHz			SWeep 1		1001 pts)		

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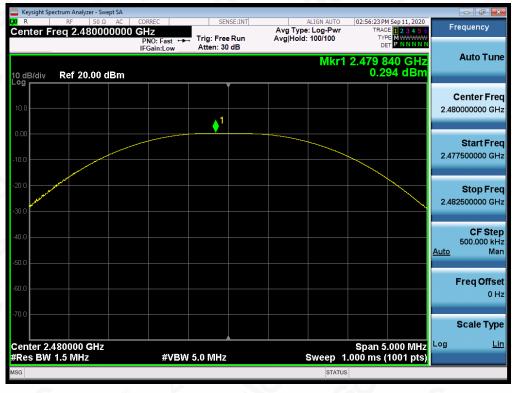




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8.6 DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW \ge 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

8.3. LIMITS AND MEASUREMENT RESULTS

LIMITS AND MEASUREMENT RESULT							
Applicable Limite		Applicable Limits					
Applicable Limits	Test Data	(kHz)	Criteria				
	Low Channel	666.8	PASS				
>500KHZ	Middle Channel	668.3	PASS				
	High Channel	671.3	PASS				



TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT								
Applicable Limite	Measurement Result							
Applicable Limits	Test Data	Criteria						
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS						

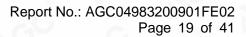
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TEST RESULT FOR ENTIRE FREQUENCY RANGE GFSK MODULATION IN LOW CHANNEL

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🔤 Keysight Sp	ectrum Analyzer -	Swept SA									
Center F	RF 50 req 13.74	Ω AC 175000	CORREC		NSE:INT		ALIGN AUTO	TRAC	M Sep 11, 2020 CE 1 2 3 4 5 6	F	requency
10 dB/div	Ref 20.00		PNO: Fast IFGain:Lov			Avg Holo		D 1 24.41	9 1 GHz 10 dBm		Auto Tune
											Center Freq 1750000 GHz
-20.0									DL1 -20.09 dBm	2.48	Start Freq 33500000 GHz
-50.0 -60.0				he an a the second data and the beams						25.00	Stop Freq
Start 2.48 #Res BW	100 kHz	X		'BW 300 kHz Y	FUN		Sweep 2	2.152 s (3	5.00 GHz 0000 pts) DN VALUE	2.25 <u>Auto</u>	CF Step 51650000 GHz Man
1 N - 2 3 4 5 6		24.	419 1 GHz	-44.110 d	Bm				=		Freq Offset 0 Hz
7 8 9 10 11										Log	Scale Type Lin
MSG				m			STATUS		Þ		

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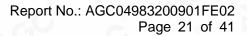
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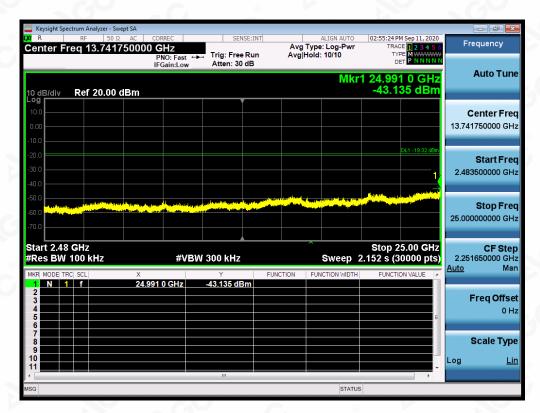
- K	· · · · ·				
Keysight Spectrum Analyzer -	• Swept SA 0 Ω AC CORREC	SENSE:INT	ALIGN AUTO	02:54:50 PM Sep 11, 2020	
Center Freq 2.440	000000 GHz		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Hold: 10/10		
			Mkr1 2	.440 252 4 GHz	Auto Tune
10 dB/div Ref 20.0	0 dBm			0.684 dBm	
		Ť			
10.0			<u>1</u>		Center Freq
0.00			Ҳ		2.440000000 GHz
-10.0					
-20.0					Otoret Error
-30.0					Start Freq
-40.0					2.438500000 GHz
-50.0					
				100 million (100 m	Stop Freq
-60.0					2.441500000 GHz
-70.0					
Center 2.440000 GH	lz			Span 3.000 MHz	CF Step
#Res BW 100 kHz		3W 300 kHz	Sweep 2.0	000 ms (30000 pts)	300.000 kHz
MKR MODE TRC SCL	Х	Y F	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.440 252 4 GHz	0.684 dBm			
2					Freq Offset
4					0 Hz
5 6				E	
7 8					Scale Type
9					
10					Log <u>Lin</u>
•				۱.	
MSG					
			STATUS		
Kevsight Spectrum Analyzer -	Swept SA		STATUS		
	0 Ω AC CORREC	SENSE:INT	ALIGN AUTO	02:54:59 PM Sep 11, 2020	Eroquepey
	0 Ω AC CORREC	Tring Free Dura	ALIGN AUTO	02:54:59 PM Sep 11, 2020 TRACE 1 2 3 4 5 6 TYPE Maanaaaaa	Frequency
LXI R RF 5	0 Ω AC CORREC	Tring Free Dura	ALIGN AUTO	02:54:59 PM Sep 11, 2020 TRACE 1 2 3 4 5 6	Frequency
LXI R RF 5	0 Ω AC CORREC 0000000 GHz PNO: Fast		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNN	
07 R R SE 50 Center Freq 1.215	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 1 2 3 4 5 6 TYPE Maanaaaaa	Frequency
00 R R SI Center Freq 1.215 10 dB/div Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 2 3 4 5 6 TYPE MWWWWW DET P NNNN N 1 2.393 68 GHz	Frequency Auto Tune
W R R SI Center Freq 1.215 SI SI SI 10 dB/div Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 2 3 4 5 6 TYPE MWWWWW DET P NNNN N 1 2.393 68 GHz	Frequency Auto Tune Center Freq
W R R SI Center Freq 1.215 SI SI SI 10 dB/div Ref 20.0 Ref 20.0 Ref 20.0 10.0 Ref 20.0 Ref 20.0 Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 2 3 4 5 6 TYPE MWWWWW DET P NNNN N 1 2.393 68 GHz	Frequency Auto Tune
W R R SI Center Freq 1.215 SI SI SI 10 dB/div Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq
W R R SI Center Freq 1.215 SI SI SI 10 dB/div Ref 20.0 Ref 20.0 Ref 20.0 10.0 Ref 20.0 Ref 20.0 Ref 20.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 2 3 4 5 6 TYPE MWWWWW DET P NNNN N 1 2.393 68 GHz	Frequency Auto Tune Center Freq 1.215000000 GHz
W R R SI Center Freq 1.215 SI SI SI 10 dB/div Ref 20.0 0.0 0.00 0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq
W R R SI Center Freq 1.215 10 dB/div Ref 20.0 10 dB/div 10	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq
OW R R5 SI Center Freq 1.215 10 dB/div Ref 20.0 Log 0.00 0.00 -10.0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq 30.00000 MHz
OX R R5 SI 10 dB/div Ref 20.0 0	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq
W R R5 SI Center Freq 1.215 10 dB/div Ref 20.0 Log	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq
W R R5 SI Center Freq 1.215 10 dB/div Ref 20.0 Log	0 Ω AC CORREC 0000000 GHz PNO: Fast IFGain:Low		ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:54:59 PM Sep 11, 2020 TRACE 11 2: 3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 0L1 -19.32 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq
DX RF SI Center Freq 1.215 Center Freq 1.215 10 B/div Ref 20.0 10.0 Center Freq 1.215 -20.0 Center Freq 1.215 -30.0 Center Freq 1.215 -40.0 Center Freq 1.215 -50.0 Center Freq 1.215 -60.0 Center Freq 1.215 50.0 Center Freq 1.215 -70.0 Center Freq 1.215 Start 0.030 GHz Center Freq 1.215	0 Ω AC CORREC 000000 GHz PNO: Fast IFGain:Low 0 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 0L1 -19.32 dBm 1 1 4 5 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz
W R R S Center Freq 1.215 S 10 B/div Ref 20.0 000 0 0 10.0 0 0 10.0 0 0 10.0 0 0 -0.0 0 0 -0.0 0 0 -0.0 0 0 -0.0 0 0 -0.0 0 0 -0.0 0 0 -0.0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0 0 -0.0 0 0 0	0 Ω AC CORREC 000000 GHz PNO: Fast IFGain:Low 0 dBm	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WINNINN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 1 1 Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz
W RF SI 10 dB/div Ref 20.0 Log 10.0 0.00 10.0 0.00 10.0 -20.0 10.0 -40.0 10.0 -50.0 10.0 -50.0 10.0 Start 0.030 GHz #Res BW 100 kHz	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 3 4 5 6 TYPE WWWWW DET WWWWW 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 0L1 -19.32 dBm 1 1 4 5 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6 4 6	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz
Image: Wirely and the second	Ω AC CORREC ODODOO GHZ PN0: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WINNING 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 1 1 Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man
W R R5 S Center Freq 1.215 Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 Center Freq 1.215 -0 dV	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WINNING 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 1 1 Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset
W R RF SI Center Freq 1.215 Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 Center Freq 1.215 -0 d0	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2:3 4 5 6 TYPE WINNING 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBm 1 1 Stop 2.400 GHz 8.0 ms (30000 pts)	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man
W R R S 10 dB/div Ref 20.0 10 0 0 10 0 0 10 0 0 10 0 0 10 0 0 10.0 0 0 10.0 0 0 20.0 0 0 20.0 0 0 20.0 0 0 30.0 0 0 40.0 0 0 50.0 0 0 50.0 0 0 50.0 0 0 70.0 0 0 Start 0.030 GHz # #RR MODE TRC SCL 1 1 N 1 2 3 0 4 0 0	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 34 5 G TYPE WINNINN 0 ET WINNINN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBn 0L1 -19.32 dBn 1 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz
W R R S 10 dB/div Ref 20.0 10.0<	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 34 5 G TYPE WINNINN 0 ET WINNINN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBn 0L1 -19.32 dBn 1 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset
Image: Second state in the second state in	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 34 5 G TYPE WINNINN 0 ET WINNINN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBn 0L1 -19.32 dBn 1 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz Scale Type
W RF SI 10 dB/div Ref 20.0 Log	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 34 5 G TYPE WINNINN 0 ET WINNINN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBn 0L1 -19.32 dBn 1 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz
Image: Second state in the second state in	Ω AC CORREC ODUOUO GHZ PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mkr	02:54:59 PM Sep 11, 2020 TRACE 11 2: 34 5 G TYPE WINNIN 1 2.393 68 GHz -53.339 dBm 0L1 -19.32 dBn 0L1 -19.32 dBn 1 Stop 2.400 GHz 8.0 ms (30000 pts) FUNCTION VALUE	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz Scale Type

GFSK MODULATION IN MIDDLE CHANNEL

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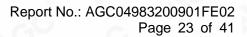
 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com



Keysight Spectrum Analyzer - Keysight Spectrum Analyzer - Keysight Spectrum Analyzer -	- Swept SA 50 Ω AC CORRE	EC	SENSE:INT	ALIGN AUTO	02:57:31 PM	Sep 11, 2020	
Center Freq 2.480	0000000 GHz			Avg Type: Log-Pwr	TRACE	123456	Frequency
			g: Free Run ten: 30 dB	Avg Hold: 10/10	DET	PNNNN	
				Mkr1 1	2.480 253	7 GHz	Auto Tune
10 dB/div Ref 20.0	0 dBm				0.04	2 dBm	
Log							
10.0				1			Center Freq
0.00							2.480000000 GHz
-10.0							
-20.0							04
-30.0							Start Freq 2.478500000 GHz
-40.0							2.478500000 GH2
-50.0							
						And Address of the other	Stop Freq
-60.0							2.481500000 GHz
-70.0							
Center 2.480000 GI	Hz				Span 3.0	000 MHz	CF Step
#Res BW 100 kHz		#VBW 300	kHz	Sweep 2	.000 ms (30	000 pts)	300.000 kHz
MKR MODE TRC SCL	x		r Fu	NCTION FUNCTION WIDTH	FUNCTION	VALUE	<u>Auto</u> Man
1 N 1 f	2.480 253 7 (GHz 0.(042 dBm				
2							Freq Offset
4							0 Hz
5						=	
7 8							Scale Type
9							ocule Type
10							Log <u>Lin</u>
			m			•	
MSG				STATU	IS		
Keyright Spectrum Analyzer	- Swent SA						
	0Ω AC CORRE		SENSE:INT	ALIGN AUTO	02:57:39 PM		
	0Ω AC CORRE	T		ALIGN AUTO Avg Type: Log-Pwr	02:57:39 PM TRACE	1 2 3 4 5 6	Frequency
LXI R RF 5	0 Ω AC CORRE 0000000 GHZ PNO	:Fast +++ Trig	SENSE:INT g: Free Run ten: 30 dB	ALIGN AUTO	02:57:39 PM TRACE	1 2 3 4 5 6	Frequency
LXI R RF 5	0 Ω AC CORRE 0000000 GHZ PNO	:Fast 🛶 Tri	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DET	123456 MWWWWW PNNNNN	
Center Freq 1.215	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Tri	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DET r1 2.044 (123456 MWWWWW PNNNNN	Frequency
K RF 5 Center Freq 1.215 10 dB/div Ref 20.0 Log 10 dB/div Ref 20.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DET r1 2.044 (Frequency Auto Tune
Image: Window Ref Ref 5 Center Freq 1.215 10 dB/div Ref 20.0 10.0 10.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DET r1 2.044 (Frequency Auto Tune Center Freq
Image: Window Ref Ref S 10 dB/div Ref 20.0 10.0 0.00	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DET r1 2.044 (Frequency Auto Tune
Image: Window Ref Ref 5 Center Freq 1.215 10 dB/div Ref 20.0 10.0 10.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq
Image: Window Ref Ref S 10 dB/div Ref 20.0 10.0 0.00	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29		Frequency Auto Tune Center Freq 1.215000000 GHz
IX RF S Center Freq 1.215 10 dB/div Ref 20.0 Log 0.0 0.0 10.0 0.00 0.00	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq
IX R RF S 10 dB/div Ref 20.0 10.0 0.00 -10.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq
IX R RF S Center Freq 1.215 10 dB/div Ref 20.0 10.0 0.00 0.00 -10.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq 30.000000 MHz
IX RF S Center Freq 1.215 10 dB/div Ref 20.0 Log 0.00 0.00 10.0 0.00 0.00 -20.0 0.00 0.00 -30.0 0.00 0.00	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq
IX RF S Center Freq 1.215 10 dB/div Ref 20.0 Log 10.0 10.0 10.0 10.0 10.0 -20.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39PM TRACE TYPE DET r1 2.044 (-53.29	123456 MWWWWW PNNNNN 01 GHz 5 dBm	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq 30.000000 MHz
IX RF S Center Freq 1.215 10 dB/div Ref 20.0 -30.0	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	:Fast 🛶 Trig	g: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29	12 23 4 5 6 MWWWNNNN 91 GHz 5 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz
Image: Non-State information of the state inform	50 Ω AC CORRE COOOOOO GHZ PNO IFGai	East →→ Tri In:Low Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE Type Det 71 2.044 (-53.29	12 34 5 6 12 4 5 6 12 4 5 6 13 6 14 6 14 19 96 dBm 14 19 96 dBm 14 19 96 dBm 14 19 96 dBm	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz
Image: Non-State Normal State Ref S 10 dB/div Ref 20.0 10 0 0 0 10 0 0 0 10 0 0 0 10 0 0 0 -00 0 0 0 -30.0 0 0 0 -40.0 0 0 0 -60.0 0 0 0 -70.0 0 0 0 Start 0.030 GHz #Res BW 100 kHz 0	50 Ω AC CORRE 3000000 GHz PNC IFGal 10 dBm	:Fast 🛶 Trig	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 23 4 5 6 H	Frequency Auto Tune Center Freq 1.21500000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz CF Step 237.000000 MHz
IM RF S 10 dB/div Ref 20.0 Log 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 20.0 10.0 -30.0 10.0 -40.0 10.0 -50.0 10.0 -70.0 10.0 Start 0.030 GHz #Res BW 100 kHz MKR_MODE TRC SCL	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (0 -53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 23 4 5 6 H	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz
Image: Non-State Normal State Ref S 10 dB/div Ref 20.0 10 0 0 0 10 0 0 0 10 0 0 0 10 0 0 0 -00 0 0 0 -30.0 0 0 0 -40.0 0 0 0 -60.0 0 0 0 -70.0 0 0 0 Start 0.030 GHz #Res BW 100 kHz 0	50 Ω AC CORRE 3000000 GHz PNC IFGal 10 dBm	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 23 4 5 6 H	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man
IX RF S Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 10.0 Center Freq 1.215 20.0 Center Freq 1.215 -20.0 Center Freq 1.215 -30.0 Center Freq 1.215 -40.0 Center Freq 1.215 -40.0 Center Freq 1.215 -30.0 Center Freq 1.215 -40.0 Center Freq 1.215 -30.0	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 23 4 5 6 H	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset
IX RF S Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 20 db/div Ref 20.0 -20.0	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 23 4 5 6 H	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man
IX R RF S Center Freq 1.215 Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 10.0 Center Freq 1.215 10.0 Center Freq 1.215 10.0 Center Freq 1.215 10.0 Center Freq 1.215 20.0 Center Freq 1.215 -20.0 Center Freq 1.215 -30.0 Center Freq 1.215 -40.0 Center Freq 1.215 -40.0 Center Freq 1.215 -50.0 Center Freq 1.215 -70.0 Center Freq 1.215 Start 0.030 GHz Freq 2.215 #Res BW 100 kHz MKR MODE TRC SCL 1 N f 2 Center Freq 2.215 Center Freq 2.215 1 N f 3 Center Freq 2.215	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 3 4 5 6 14 4 5 6 14 4 5 6 14 4 19 90 dBm 14 19 19 19 19 19 19 19 19 19 19 19 19 19	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset 0 Hz
IX RF S Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 10.0	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29	12 3 4 5 6 14 4 5 6 14 4 5 6 14 4 19 90 dBm 14 19 19 19 19 19 19 19 19 19 19 19 19 19	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset
IM RF S Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 00 0 10 0 0 10 0 0 10 0 0 10 0 0 10 0 0 10 0 0 -10 0 0 -20.0 0 -30.0 0 -40.0 0 -60.0 0 -70.0 0 Start 0.030 GHz #Res BW 100 kHz MKR MODE TRCI SCL 1 1 2 0 3 0 4 0 5 0 70.0 1	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 100 dBm Image: Additional statements of the stateme	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29	12 3 4 5 6 14 4 5 6 14 4 5 6 14 4 19 90 dBm 14 19 19 19 19 19 19 19 19 19 19 19 19 19	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz Scale Type
IX RF S Center Freq 1.215 Center Freq 1.215 10 dB/div Ref 20.0 10.0	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 10 dBm Image: State St	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE DeT r1 2.044 (-53.29	12 3 4 5 6 14 4 5 6 14 4 5 6 14 4 19 90 dBm 14 19 19 19 19 19 19 19 19 19 19 19 19 19	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz 2.400000000 GHz 2.400000000 GHz 237.000000 MHz Auto Man Freq Offset 0 Hz
Image: New Section 1.2 Ref S 10 dB/div Ref 20.0 10.0 0.00 0.00 0.00 10.0 0.00 0.00 0.00 10.0 0.00 0.00 0.00 -10.0 0.00 0.00 0.00 -20.0 0.00 0.00 0.00 -30.0 0.00 0.00 0.00 -50.0 0.00 0.00 0.00 -50.0 0.00 0.00 0.00 50.0 0.00 0.00 0.00 50.0 0.00 0.00 0.00 50.0 0.00 0.00 0.00 50.0 0.00 0.00 0.00 7.00 0.00 0.00 0.00 Start 0.030 GHz #Res BW 100 kHz 0.00 10 1 1 1 10 0.00 0.00 0.00	50 Ω AC CORRE 50000000 GHz PNO PNO BMD PNO 10 dBm Image: State St	*Fast + Trink in:Low Trink Att	g: Free Run ten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold: 10/10 Mk	02:57:39 PM TRACE TYPE 12.044 (-53.29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 3 4 5 6 14 4 5 6 14 4 5 6 14 4 19 90 dBm 14 19 19 19 19 19 19 19 19 19 19 19 19 19	Frequency Auto Tune Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.400000000 GHz 2.400000000 GHz CF Step 237.000000 MHz Auto Man Freq Offset 0 Hz Scale Type

GFSK MODULATION IN HIGH CHANNEL

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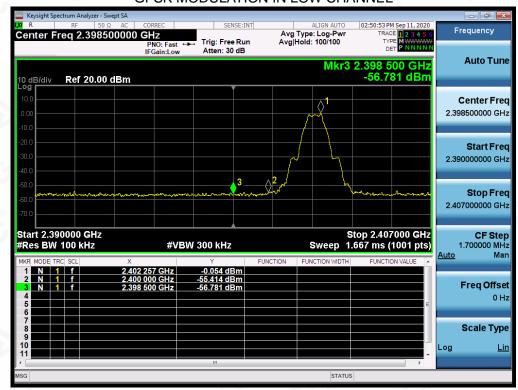


Keysight Spectrum Analyzer - Swept SA				
R RF 50 Ω AC CORREC Center Freq 13.7500000000 GH: GH:	7	ALIGN AUTO	02:58:04 PM Sep 11, 2020 TRACE 1 2 3 4 5 6	Frequency
PNO:	: Fast ↔ Trig: Free Run n:Low Atten: 30 dB	Avg Hold: 10/10	TYPE MWWWWW DET P NNNNN 1 24.433 0 GHz	Auto Tune
10 dB/div Ref 20.00 dBm			-43.315 dBm	
10.0 0.00 -10.0				Center Freq 13.750000000 GHz
-20.0			DL1 -19.96 dBm	Start Freq 2.500000000 GHz
-50.0				Stop Freq 25.00000000 GHz
Start 2.50 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 2	Stop 25.00 GHz 2.152 s (30000 pts)	CF Step 2.25000000 GHz <u>Auto</u> Man
1 N 1 f 24.433 0 G 2 3 4 4 5 6 6 6 6 6 6 6	GHz -43.315 dBm		E	Freq Offset 0 Hz
7 8 9				Scale Type
10			-	Log <u>Lin</u>
MSG	m	STATUS	•	

Note: The peak emissions without marker on the above plots are fundamental wave and need not to compare with the limit.

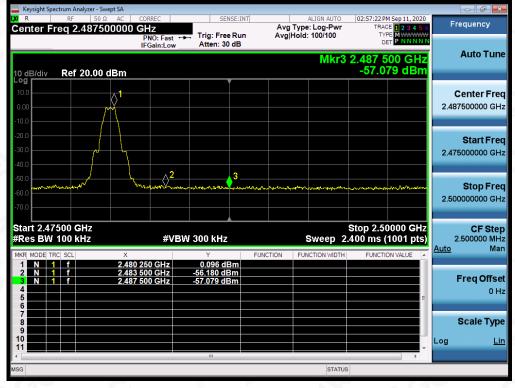
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TEST RESULT FOR BAND EDGE GFSK MODULATION IN LOW CHANNEL

GFSK MODULATION IN HIGH CHANNEL



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10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 10.2 was used in this testing.

10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 7.2.

10.3. MEASUREMENT EQUIPMENT USED

Refer to Section 6.

10.4. LIMITS AND MEASUREMENT RESULT

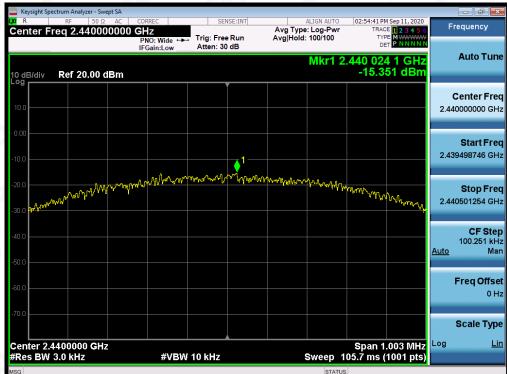
Channel No.	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-16.204	8	Pass
Middle Channel	-15.351	8	Pass
High Channel	-15.931	8	Pass

TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



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TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

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11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

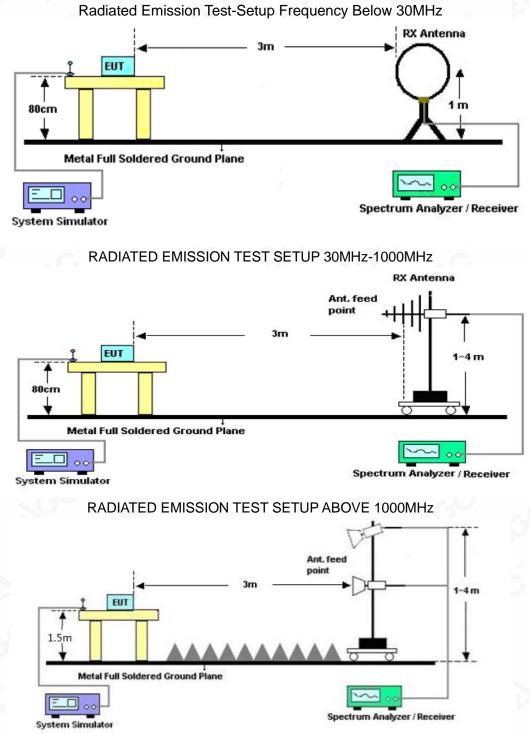
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

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11.2. TEST SETUP



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11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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RADIATED EMISSION BELOW 1GHZ

EUT		Altro Smart Lock				Model	Model Name ModelX			x		
Temperature			1.8°C		0		e Humid		58%			
Pressure			50hPa		_	Test Vo				Voltag		
						-			Normal Voltage		6	
Test Mode		M	ode 1			Antenr	Antenna		Horizontal			
66.9 dBuV/m										imit: 1argin:		•
		<u>ر</u>										
27						4 *	a here wheth	1 million	MAMM	h/W/Wh	MAM	M
	Å.	Ja Mark	3 1	nyanyullun	janna dan da	M.M.M.	n/www.ml/M	k Www.h WWW WWW W	MAMMA	NAM-WA	MM	k
27 1 1 13 30.000 127.00			3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	418.00	1000 515.00	4 10 10 10 612.00	709.00	3 1////////////////////////////////////			00.00	
1 M/ M/ M/		4.00										
1 M/ M/ M/	0 22	4.00	321.00	418.00 Reading	515.00 Correct	612.00 Measure-	709.00	806.0		10 		
1 M/ M/ M/	0 22	4.00 Mk.	321.00 Freq.	418.00 Reading Level	515.00 Correct Factor	612.00 Measure- ment	709.00 Limit	806.0 Over	DO	10 		
1 M/ M/ M/	0 22	4.00 Mk.	321.00 Freq. MHz	418.00 Reading Level dBuV	515.00 Correct Factor dB	612.00 Measure- ment dBuV/m	709.00 Limit dBuV/m	806.0 Over dB	00 Detecto	10 		
1 M/ M/ M/	0 22 No.	4.00 Mk. 6 15	321.00 Freq. MHz 33.9500	418.00 Reading Level dBuV -1.09	515.00 Correct Factor dB 16.36	612.00 Measure- ment dBuV/m 15.27	709.00 Limit dBuV/m 40.00 43.50	806.0 Over dB -24.73	Detecto peak peak			
1 M/ M/ M/	No.	4.00 Mk. 6 15 27	321.00 Freq. MHz 63.9500 69.3333	418.00 Reading Level dBuV -1.09 -4.04	515.00 Correct Factor dB 16.36 19.02	612.00 Measure- ment dBuV/m 15.27 14.98	709.00 Limit dBuV/m 40.00 43.50 46.00	806.0 Over dB -24.73 -28.52	Detecto peak peak peak			
1 M/ M/ M/	No.	4.00 Mk. 15 27 56	321.00 Freq. MHz 33.9500 59.3333 74.1167	418.00 Reading Level dBuV -1.09 -4.04 0.75	515.00 Correct Factor dB 16.36 19.02 19.46	612.00 Measure- ment dBuV/m 15.27 14.98 20.21	709.00 Limit dBuV/m 40.00 43.50 46.00	806.0 Over dB -24.73 -28.52 -25.79	Detecto peak peak peak peak			

RESULT: PASS

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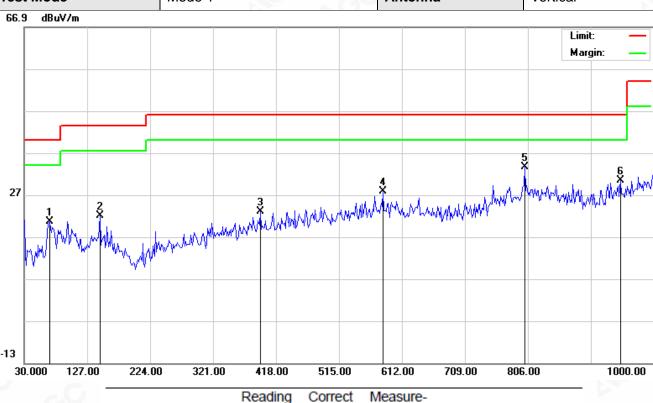
Attestation of Global Compliance(Shenzhen)Co., Ltd Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



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1000.00 MHz

EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
	68.8000	3.73	16.96	20.69	40.00	-19.31	peak
	146.4000	2.72	19.22	21.94	43.50	-21.56	peak
	393.7500	0.29	22.76	23.05	46.00	-22.95	peak
	582.9000	1.25	26.61	27.86	46.00	-18.14	peak
*	801.1500	3.32	30.38	33.70	46.00	-12.30	peak
	948.2667	0.26	30.05	30.31	46.00	-15.69	peak
		MHz 68.8000 146.4000 393.7500 582.9000 * 801.1500	Mk. Freq. Level MHz dBuV 68.8000 3.73 146.4000 2.72 393.7500 0.29 582.9000 1.25 * 801.1500 3.32	Mk. Freq. Level Factor MHz dBuV dB 68.8000 3.73 16.96 146.4000 2.72 19.22 393.7500 0.29 22.76 582.9000 1.25 26.61 * 801.1500 3.32 30.38	Mk. Freq. Level Factor ment MHz dBuV dB dBuV/m 68.8000 3.73 16.96 20.69 146.4000 2.72 19.22 21.94 393.7500 0.29 22.76 23.05 582.9000 1.25 26.61 27.86 * 801.1500 3.32 30.38 33.70	Mk. Freq. Level Factor ment Limit MHz dBuV dB dBuV/m dBuV/m 68.8000 3.73 16.96 20.69 40.00 146.4000 2.72 19.22 21.94 43.50 393.7500 0.29 22.76 23.05 46.00 582.9000 1.25 26.61 27.86 46.00 * 801.1500 3.32 30.38 33.70 46.00	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB dBuV/m dBuV/m dB dBuV/m dB 68.8000 3.73 16.96 20.69 40.00 -19.31 146.4000 2.72 19.22 21.94 43.50 -21.56 393.7500 0.29 22.76 23.05 46.00 -22.95 582.9000 1.25 26.61 27.86 46.00 -18.14 * 801.1500 3.32 30.38 33.70 46.00 -12.30

RESULT: PASS Note:

- 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
- 2. All test modes had been tested. The mode 1 is the worst case and recorded in the report.

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RADIATED EMISSION ABOVE 1GHZ

EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.000	42.59	0.08	42.67	74	-31.33	peak
4804.000	32.48	0.08	32.56	54	-21.44	AVG
7206.000	39.15	2.21	41.36	74	-32.64	peak
7206.000	30.62	2.21	32.83	54 💿	-21.17	AVG
- C.	3			- 6	®	
3		® .				8
emark:			0			- G
actor = Anter	nna Factor + Cable	e Loss – Pre-	amplifier.			

EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	[⊙] (dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	44.27	0.08	44.35	74	-29.65	peak
4804.000	35.19	0.08	35.27	54 🔍	-18.73	AVG
7206.000	40.16	2.21	42.37	74	-31.63	peak
7206.000	30.47	2.21	32.68	54	-21.32	AVG
		<u> </u>				69
emark:						

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

ter Reading (dBµV)	Factor	Emission Level	Limits	Margin	SALL T
(dBuV)	(Value Type
(p /	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
44.39	0.14	44.53	74	[©] -29.47	peak
34.78	0.14	34.92	54	-19.08	AVG
39.57	2.36	41.93	74	-32.07	peak
30.12	2.36	32.48	54	-21.52	AVG
			. ©		
0			C.	®	
C.				- 6	®

EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	45.17	0.14	45.31	74	-28.69	peak
4880.000	36.47	0.14	36.61	54 💿	-17.39	AVG
7320.000	41.07	2.36	43.43	74	-30.57	peak
7320.000	39.54	2.36	41.9	54	-12.1	AVG
		<u> </u>				69
emark:				(3)		

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4960.000	44.29	0.22	44.51	74	-29.49	peak
4960.000	34.17	0.22	34.39	54	-19.61	AVG
7440.000	38.25	2.64	40.89	74	-33.11	peak
7440.000	29.13	2.64	31.77	54	-22.23	AVG
®				0		
	8				8	
emark:	G	8			C.	®
actor = Anter	nna Factor + Cable	Loss – Pre-	amplifier.		~0~	- 6

(8)			
EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	43.97	0.22	44.19	74	-29.81	peak
4960.000	34.17	0.22	34.39	54	-19.61	AVG
7440.000	38.16	2.64	40.8	74	-33.2	peak
7440.000	29.44	2.64	32.08	54	-21.92	AVG
mark:		-G	(6)		60	6.0

RESULT: PASS

Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

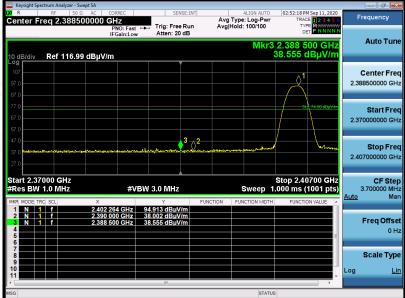
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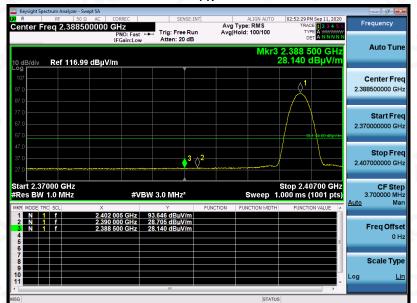
EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

FEST RESULT FOR RESTRICTED BANDS REQUIREMENTS

PK



AV



RESULT: PASS

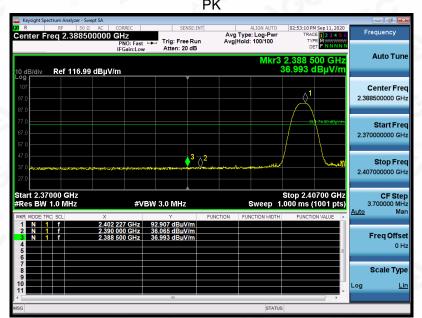
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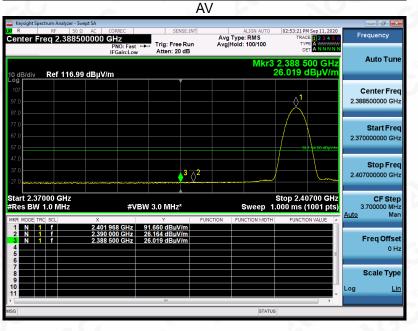
Attestation of Global Compliance(Shenzhen)Co., Ltd Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd Tel: +86-755 2523 4088 E-mail: agc@agc-cert.com Web: http://cn.agc-cert.com/



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EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical
		DI	





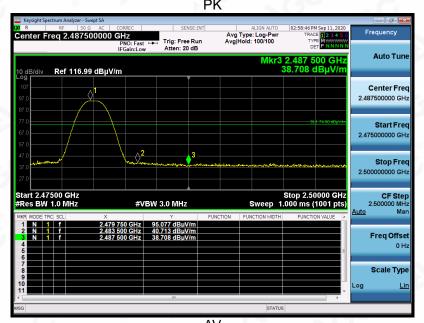
RESULT: PASS

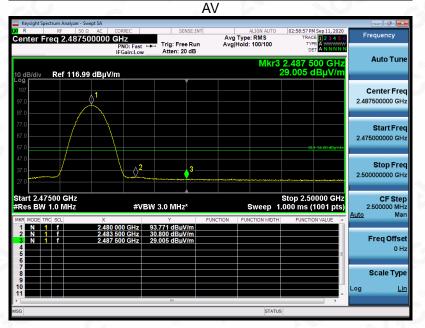
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EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal





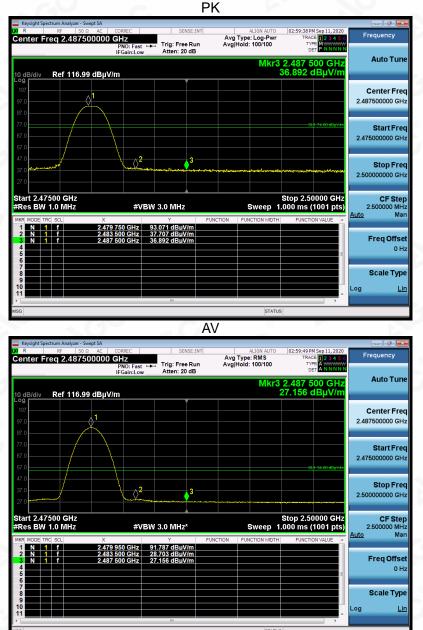
RESULT: PASS

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EUT	Altro Smart Lock	Model Name	ModelX
Temperature	21.8° C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



RESULT: PASS Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer.

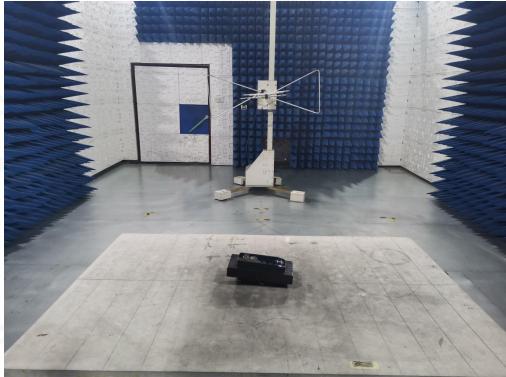
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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1GHZ



RADIATED EMISSION TEST SETUP ABOVE 1GHZ



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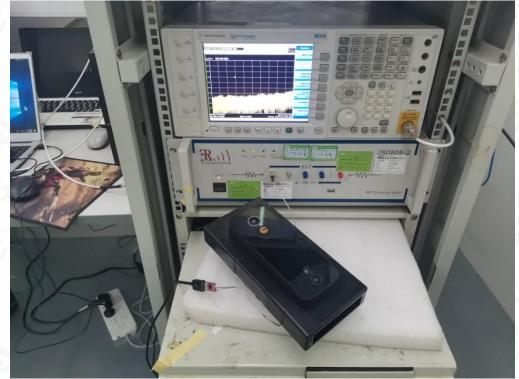
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CONDUCTED TEST SETUP



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APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC04983200901AP01

----END OF REPORT----

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