TEST REPORT

Product Name	:	Car wireless rear view system
Brand Mark	:	N/A
Model No.	:	W10
Extension Model	:	W10-I-FBA,W10-TO-FBA,RVS-W10, RVS-W10-FBA, W11,W11-FBA, W11-I-FBA, W11-TO-FBA, K10, K10-US, K10-US-FBA, K11,RVW-W10, FP-BW1, SP1, FP-BW1-FBA, SP1-FBA
FCC ID	:	IK4W10
Report Number	:	BLA-EMC-202111-A0602
Date of Sample Receipt	:	2021/11/1
Date of Test	:	2021/11/1 to 2021/12/13
Date of Issue	:	2021/12/13
Test Standard	:	47 CFR Part 15, Subpart C 15.247
Test Result	:	Pass

Prepared for:

Shenzhen Auto-vox Technology Co.,Ltd.
Building 501, Building F, No.10, East District, Shangxue Technology Industrial City, Xinxue Community, Bantian Street,Longgang District, Shenzhen, China

Prepared by:

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Compiled by: Tzason Review by: Sweets

Approved by: Blue Zhong Date: 2021/12/17

BlueAsia of Technical Services(Shenzhen) Co., Ltd. BLA

REPORT REVISE RECORD

Version No.	Date	Description
00	2021/12/13	Original

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1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Dwell Time	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Hopping Channel Number	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Carrier Frequencies Separation	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	NA
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass

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2 GENERAL INFORMATION

Applicant	Shenzhen Auto-vox Technology Co. Ltd
Address	Building 501, Building F, No.10, East District, Shangxue Technology Industrial City, Xinxue Community, Bantian Street,Longgang District, Shenzhen, China
Manufacturer	Shenzhen Auto-vox Technology Co. Ltd
Address	Building 501, Building F, No.10, East District, Shangxue Technology Industrial City, Xinxue Community, Bantian Street,Longgang District, Shenzhen, China
Factory	Shenzhen Auto-vox Technology Co. Ltd
Address	Building 401 and Building 501, Building F, No.10, East District, Shangxue Technology Industrial City, Xinxue Community, Bantian Street,Longgang District, Shenzhen, China
Product Name	Car wireless rear view system
Test Model No.	W10

3 GENERAL DESCRIPTION OF E.U.T.

Hardware Version	NA
Software Version	NA

Operation Frequency:	2406.501 MHz ~ 2473.001MHz
Modulation Type:	GFSK
Channel Spacing:	3.5MHz
Number of Channels:	20 (declared by the applicant)
Antenna Type:	external antenna
Antenna Gain:	2.0 dBi

Operation Frequency each of channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1CH	2406.501 MHz	15CH	2455.501 MHz		
2CH	2410.001 MHz	16CH	2459.001 MHz		
3CH	2413.501 MHz	17CH	2462.501 MHz		
4CH	2417.001 MHz	18CH	2466.001 MHz		
5CH	2420.501 MHz	19CH	2469.501 MHz		
6CH	2424.001 MHz	20CH	2473.001 MHz		
7CH	2427.501 MHz				
8CH	2431.001 MHz				
9CH	2434.501 MHz				
10CH	2438.001 MHz				
11CH	2441.501 MHz				
12CH	2445.001 MHz				

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13CH	2448.501 MHz				
14CH	2452.001 MHz				

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH1)	2406.5MHz
The Middle channel(CH3)	2441.5MHz
The Highest channel(CH1)	2473.0MHz

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4 TEST ENVIRONMENT

Environment	Temperature	Voltage
Normal	+25°C	12Vdc

5 TEST MODE

TEST MODE	TEST MODE DESCRIPTION
TX	Keep the EUT in transmitting mode with modulation
Remark:Only the data of the worst mode would be recorded in this report.	

6 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB

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7 DESCRIPTION OF SUPPORT UNIT

Device Type	Manufacturer	Model Name	Serial No.	Remark
PC	HASEE	K610D	N/A	N/A

8 LABORATORY LOCATION

All tests were performed at:
BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673
No tests were sub-contracted.

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9 TEST INSTRUMENTS LIST

Test Equipment Of Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Shield room	SKET	833	N/A	2020/11/25	2023/11/24
Receiver	R&S	ESPI3	101082	2021/10/12	2022/10/11
LISN	R&S	ENV216	3560.6550.15	2021/10/12	2022/10/11
LISN	AT	AT166-2	AKK1806000003	2021/10/12	2022/10/11
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A

Test Equipment Of Conducted Band Edges Measurement					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Spectrum	Agilent	N9020A	MY49100060	2021/10/12	2022/10/11
Signal Generator	Agilent	N5182A	MY49060650	2021/10/12	2022/10/11
Signal Generator	Agilent	E8257D	MY44320250	2021/10/12	2022/10/11

Test Equipment Of Radiated Spurious Emissions					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Chamber	SKET	966	N/A	2020/11/10	2023/11/9
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Receiver	R&S	ESR7	101199	2021/10/12	2022/10/11
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	2020/9/26	2022/9/25
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	2020/9/26	2022/9/25

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Amplifier	SKET	PA-000318G-45	N/A	2021/10/16	2022/10/15
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	2020/9/26	2022/9/25
Controller	SKET	N/A	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Test Equipment Of Radiated Emissions which fall in the restricted bands					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Chamber	SKET	966	N/A	2020/11/10	2023/11/9
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Receiver	R&S	ESR7	101199	2021/10/12	2022/10/11
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	2020/9/26	2022/9/25
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	2020/9/26	2022/9/25
Amplifier	SKET	PA-000318G-45	N/A	2021/10/16	2022/10/15
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	2020/9/26	2022/9/25
Controller	SKET	N/A	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Test Equipment Of Conducted Spurious Emissions					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11

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Spectrum	Agilent	N9020A	MY49100060	2021/10/12	2022/10/11
Signal Generator	Agilent	N5182A	MY49060650	2021/10/12	2022/10/11
Signal Generator	Agilent	E8257D	MY44320250	2021/10/12	2022/10/11

Test Equipment Of Power Spectrum Density

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Spectrum	Agilent	N9020A	MY49100060	2021/10/12	2022/10/11
Signal Generator	Agilent	N5182A	MY49060650	2021/10/12	2022/10/11
Signal Generator	Agilent	E8257D	MY44320250	2021/10/12	2022/10/11

Test Equipment Of Conducted Peak Output Power

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Spectrum	Agilent	N9020A	MY49100060	2021/10/12	2022/10/11
Signal Generator	Agilent	N5182A	MY49060650	2021/10/12	2022/10/11
Signal Generator	Agilent	E8257D	MY44320250	2021/10/12	2022/10/11

Test Equipment Of Minimum 6dB Bandwidth

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2021/10/12	2022/10/11
Spectrum	Agilent	N9020A	MY49100060	2021/10/12	2022/10/11
Signal Generator	Agilent	N5182A	MY49060650	2021/10/12	2022/10/11
Signal Generator	Agilent	E8257D	MY44320250	2021/10/12	2022/10/11

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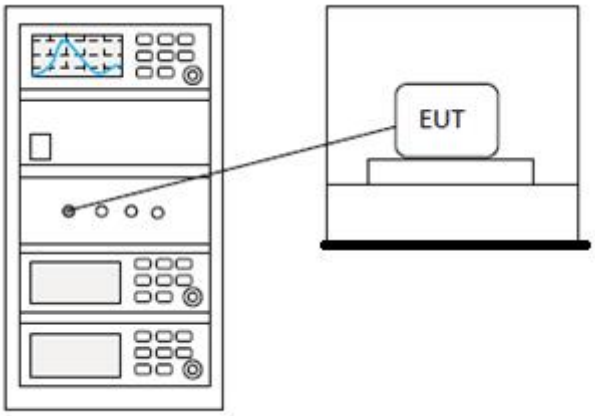
10 CONDUCTED BAND EDGES MEASUREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

10.1 LIMITS

Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

10.2 BLOCK DIAGRAM OF TEST SETUP



10.3 TEST DATA

Pass: Please Refer To Appendix: For Details

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11 RADIATED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	TX Low channel;TX middle channel;TX high channel
Test Mode (Final Test)	TX Low channel;TX middle channel;TX high channel
Tester	Sven
Temperature	25℃
Humidity	52%

11.1 LIMITS

Frequency(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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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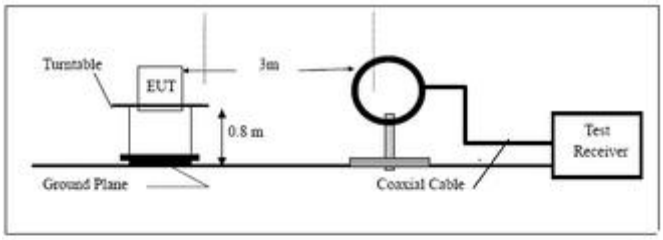
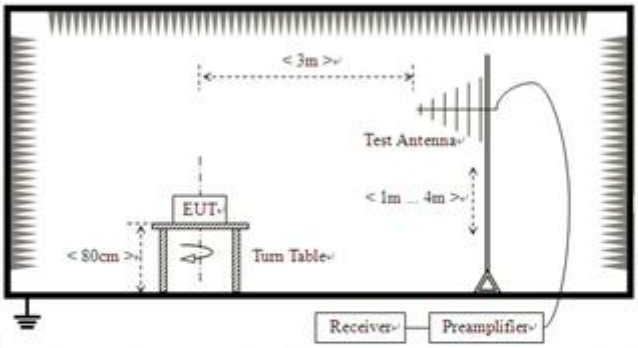
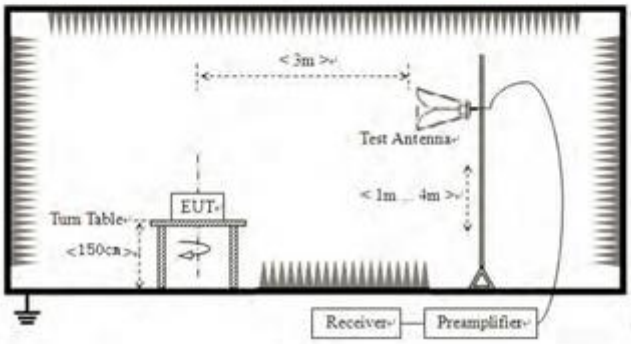
11.2 BLOCK DIAGRAM OF TEST SETUP







11.3 PROCEDURE

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.

Remark:
1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor ¨C Preamplifier Factor
3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. fundamental frequency is blocked by filter, and only spurious emission is shown.
4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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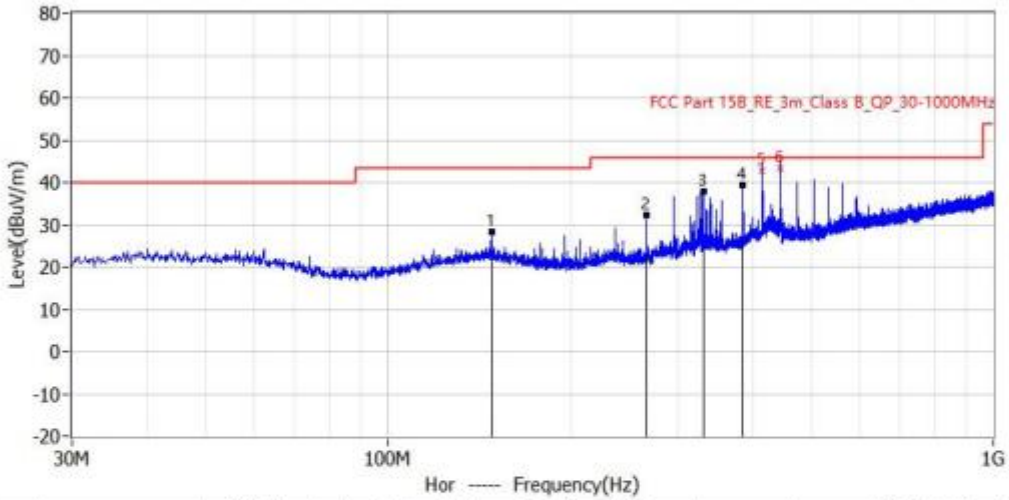
11.4 TEST DATA

Below 1GHz:

[TestMode: TX]; [Polarity: Horizontal]

Test Lab: BlueAsia EMC Lab（RE #1）	Project: BLA-EMC-202111-A06
EUT: Car wireless rear view system	Test Engineer: York
M/N: W10	Temperature:
S/N:	Humidity:
Test Mode: TX mode	Test Voltage:
Note:	Test Data: 2021-12-09 17:31:38

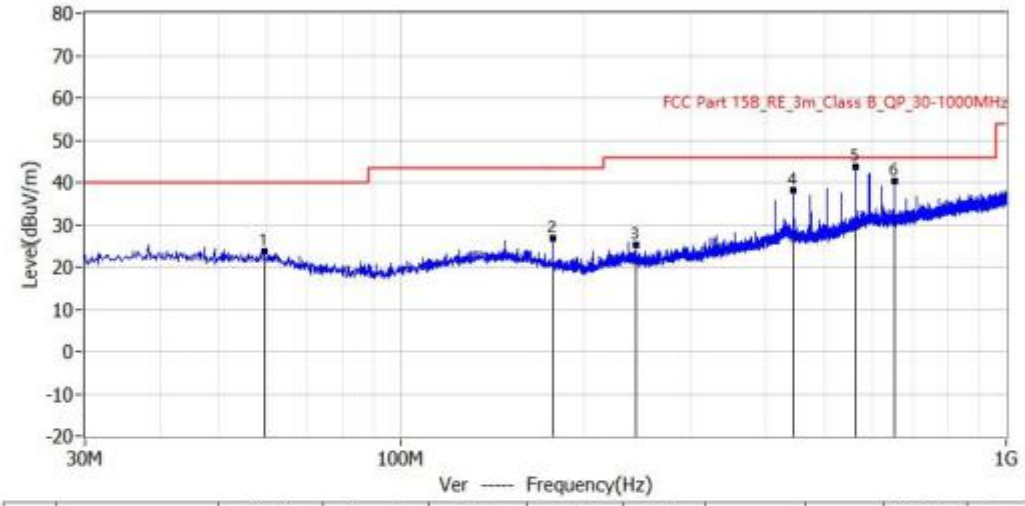


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	148.340MHz	43.5	28.2	-15.3	4.7	23.5	QP	Hor	100.0	188.0
2*	267.044MHz	46.0	32.3	-13.7	9.3	23.0	QP	Hor	100.0	315.0
3*	332.034MHz	46.0	37.9	-8.1	12.8	25.1	QP	Hor	100.0	42.0
4*	385.748MHz	46.0	39.5	-6.5	12.7	26.8	QP	Hor	100.0	138.0
5	415.472MHz	46.0	42.9	-3.1	15.4	27.5	QP	Hor	100.0	132.0
6	445.129MHz	46.0	43.3	-2.7	15.5	27.8	QP	Hor	100.0	201.0

Test Result: Pass

[TestMode: TX]; [Polarity: Vertical]

Test Lab: BlueAsia EMC Lab（RE #1）	Project: BLA-EMC-202111-A06
EUT: Car wireless rear view system	Test Engineer: York
M/N: W10	Temperature:
S/N:	Humidity:
Test Mode: TX mode	Test Voltage:
Note:	Test Data: 2021-12-09 17:35:15

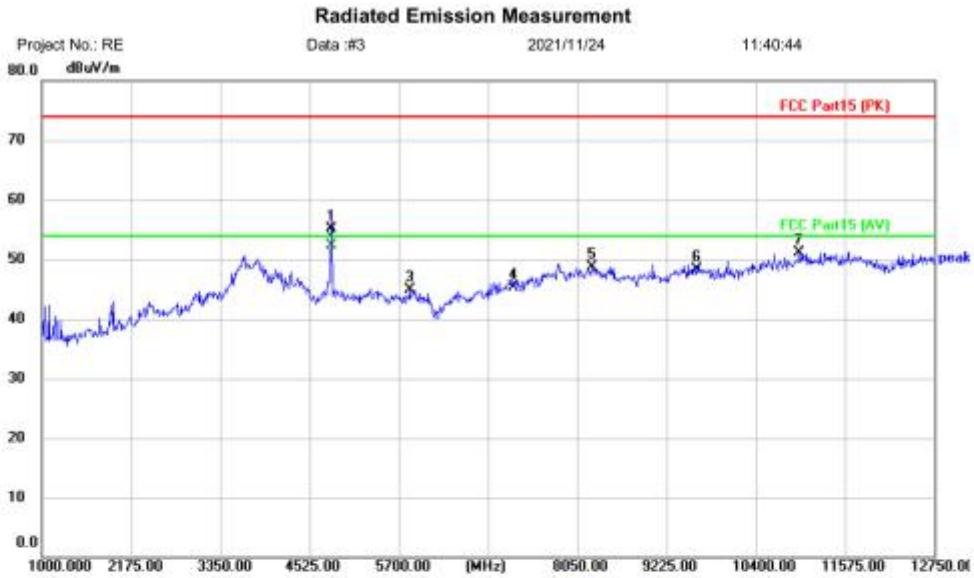


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	59.221MHz	40.0	23.8	-16.2	0.3	23.5	QP	Ver	100.0	10.0
2*	178.046MHz	43.5	26.9	-16.6	5.2	21.7	QP	Ver	100.0	35.0
3*	244.128MHz	46.0	25.2	-20.8	2.4	22.8	QP	Ver	100.0	291.0
4*	445.160MHz	46.0	38.2	-7.8	10.4	27.8	QP	Ver	100.0	0.0
5*	563.864MHz	46.0	43.8	-2.2	13.6	30.2	QP	Ver	100.0	179.0
6*	652.861MHz	46.0	40.3	-5.7	8.7	31.6	QP	Ver	100.0	186.0

Test Result: Pass

Above 1GHz:

[TestMode: TX Low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-L
Note:

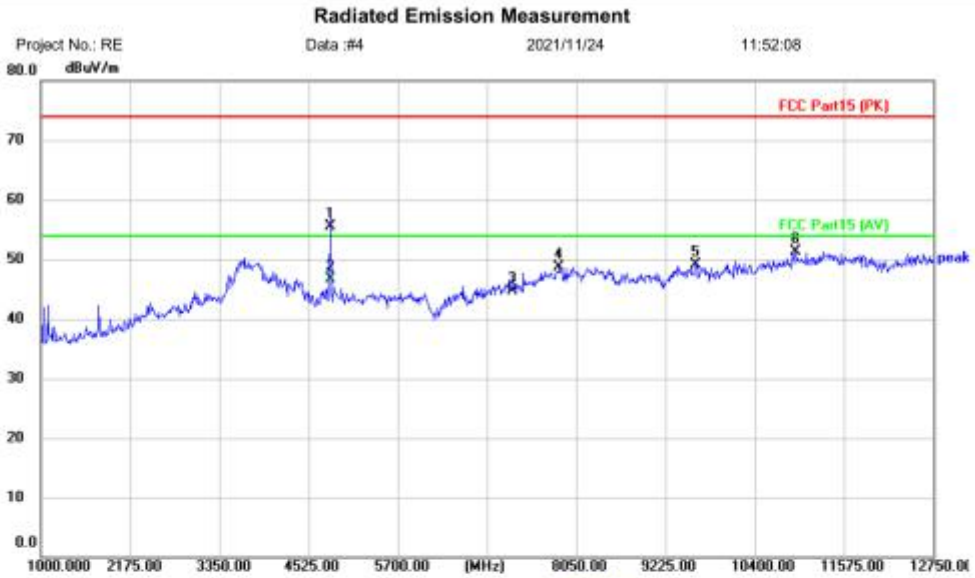
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		4813.002	51.46	3.68	55.14	74.00	-18.86	peak	
2	*	4813.002	48.66	3.68	52.34	54.00	-1.66	AVG	
3		5841.000	40.99	3.88	44.87	74.00	-29.13	peak	
4		7219.503	39.22	6.01	45.23	74.00	-28.77	peak	
5		8238.000	40.56	8.22	48.78	74.00	-25.22	peak	
6		9626.004	38.99	9.33	48.32	74.00	-25.68	peak	
7		10975.750	39.05	11.97	51.02	74.00	-22.98	peak	

Test Result: Pass

[TestMode: TX Lowest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-L
Note:

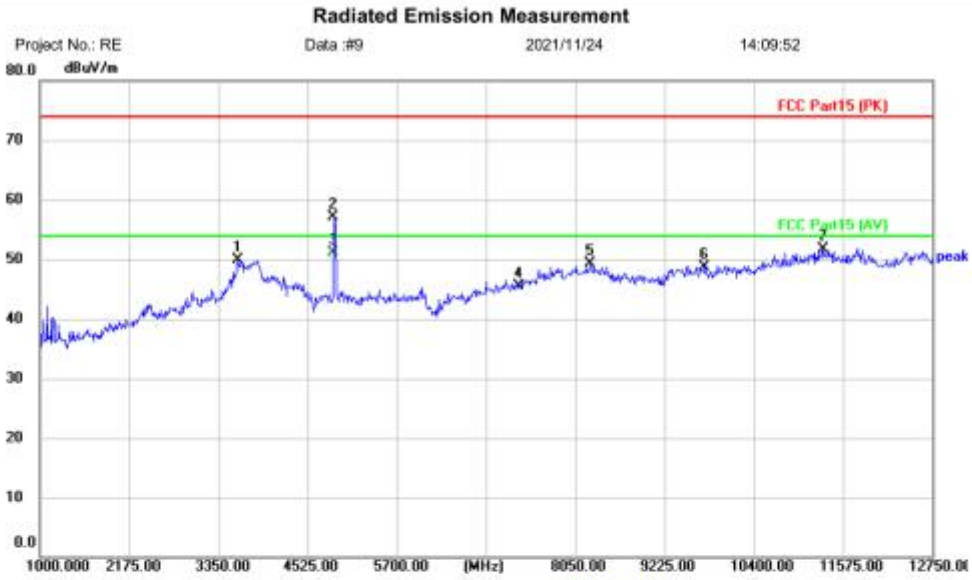
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		4813.002	51.81	3.68	55.49	74.00	-18.51	peak	
2	*	4813.002	43.10	3.68	46.78	54.00	-7.22	AVG	
3		7219.000	38.78	6.01	44.79	74.00	-29.21	peak	
4		7826.750	40.96	7.73	48.69	74.00	-25.31	peak	
5		9626.000	39.79	9.33	49.12	74.00	-24.88	peak	
6		10940.500	39.45	11.93	51.38	74.00	-22.62	peak	

Test Result: Pass

[TestMode: TX middle channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-M
Note:

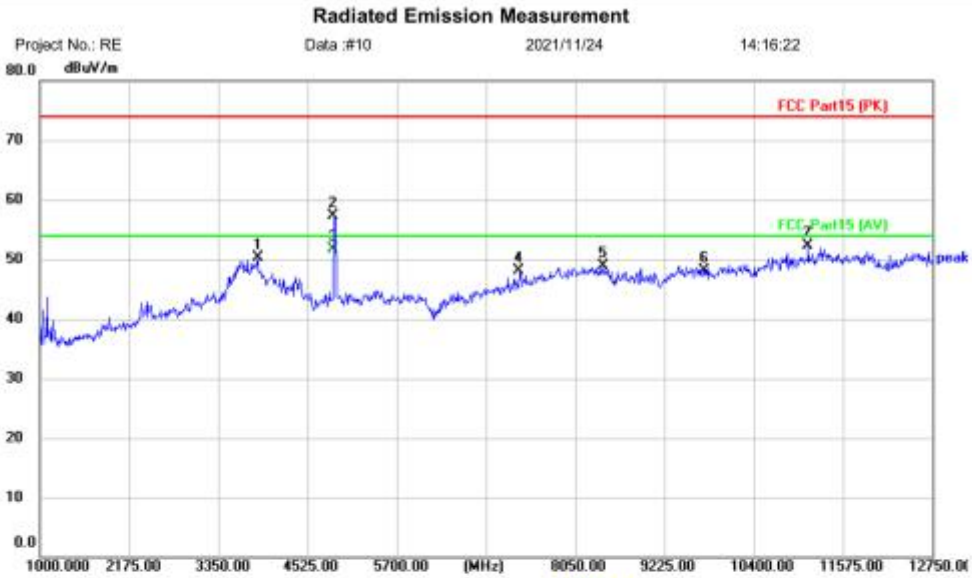
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3608.500	42.06	7.80	49.86	74.00	-24.14	peak	
2		4876.002	53.65	3.38	57.03	74.00	-16.97	peak	
3	*	4876.002	47.76	3.38	51.14	54.00	-2.86	AVG	
4		7314.003	39.10	6.40	45.50	74.00	-28.50	peak	
5		8238.000	41.05	8.22	49.27	74.00	-24.73	peak	
6		9752.004	39.16	9.60	48.76	74.00	-25.24	peak	
7		11316.500	39.76	11.88	51.64	74.00	-22.36	peak	

Test Result: Pass

[TestMode: TX Middle channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-M
Note:

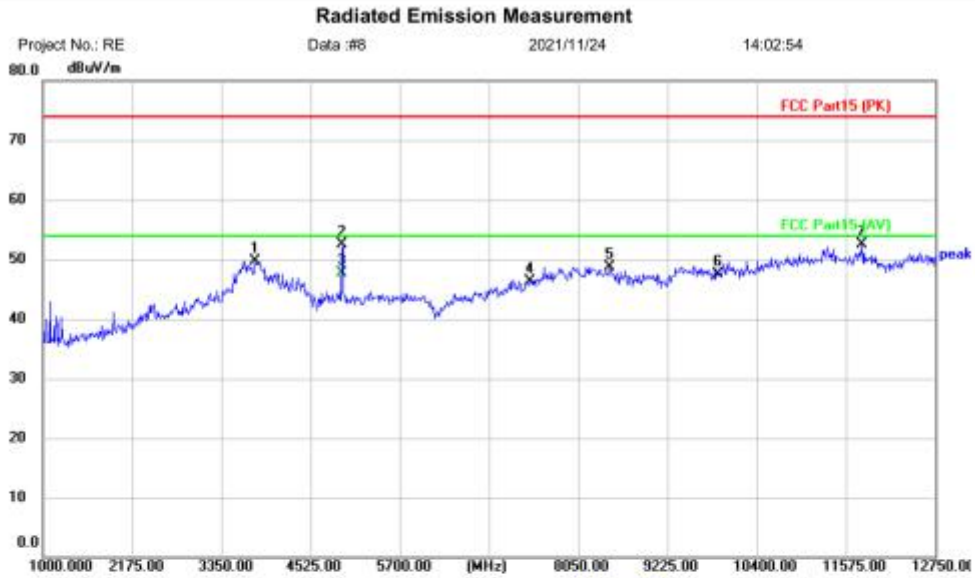
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3867.000	43.53	6.82	50.35	74.00	-23.65	peak	
2		4876.002	53.99	3.38	57.37	74.00	-16.63	peak	
3	*	4876.002	48.30	3.38	51.68	54.00	-2.32	AVG	
4		7314.003	41.61	6.40	48.01	74.00	-25.99	peak	
5		8414.250	40.58	8.26	48.84	74.00	-25.16	peak	
6		9752.004	38.57	9.60	48.17	74.00	-25.83	peak	
7		11116.750	40.25	12.02	52.27	74.00	-21.73	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Horizontal]

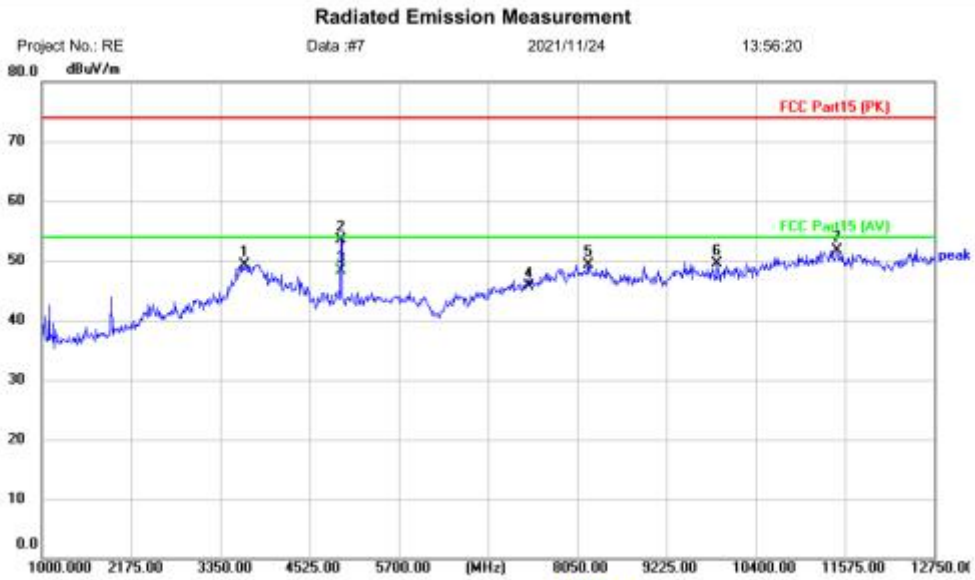


Site
Polarization: *Horizontal*
Temperature: (C)
Limit: FCC Part15 (PK)
Power:
Humidity: %RH
EUT: Car wireless rear view system
M/N: W10
Mode: TX-H
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3796.500	42.05	7.65	49.70	74.00	-24.30	peak	
2		4946.002	48.90	3.64	52.54	74.00	-21.46	peak	
3	*	4946.002	44.08	3.64	47.72	54.00	-6.28	AVG	
4		7419.003	39.53	6.80	46.33	74.00	-27.67	peak	
5		8461.250	40.60	8.19	48.79	74.00	-25.21	peak	
6		9892.004	37.40	10.05	47.45	74.00	-26.55	peak	
7		11786.500	40.98	11.57	52.55	74.00	-21.45	peak	

Test Result: Pass

[TestMode: TX highest channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3667.250	41.64	7.75	49.39	74.00	-24.61	peak	
2		4946.002	49.92	3.64	53.56	74.00	-20.44	peak	
3	*	4946.002	44.74	3.64	48.38	54.00	-5.62	AVG	
4		7419.003	38.89	6.80	45.69	74.00	-28.31	peak	
5		8191.000	41.14	8.20	49.34	74.00	-24.66	peak	
6		9892.004	39.45	10.05	49.50	74.00	-24.50	peak	
7		11469.250	39.93	11.86	51.79	74.00	-22.21	peak	

Test Result: Pass

12 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX Low channel;TX high channel
Test Mode (Final Test)	TX Low channel;TX high channel
Tester	Sven
Temperature	25℃
Humidity	52%

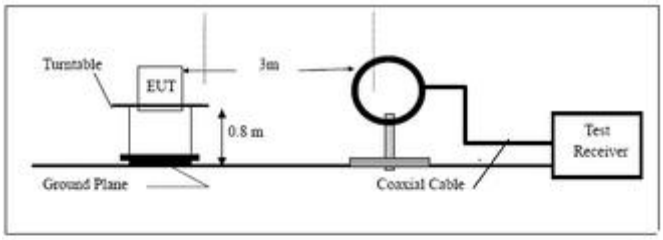
12.1 LIMITS

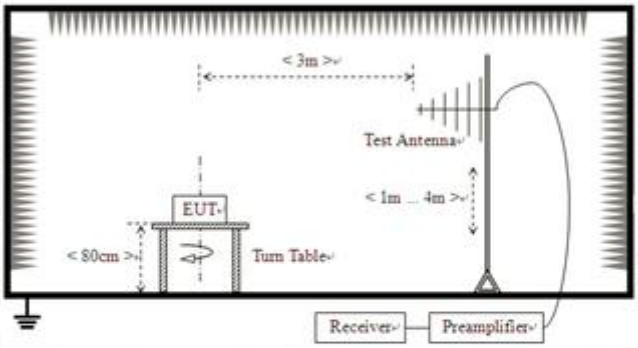
Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

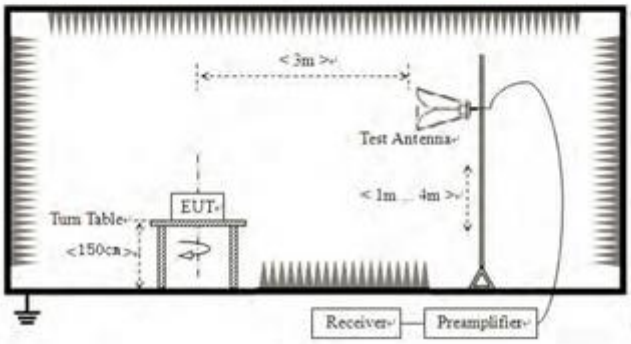
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

BlueAsia

12.2 BLOCK DIAGRAM OF TEST SETUP







12.3 PROCEDURE

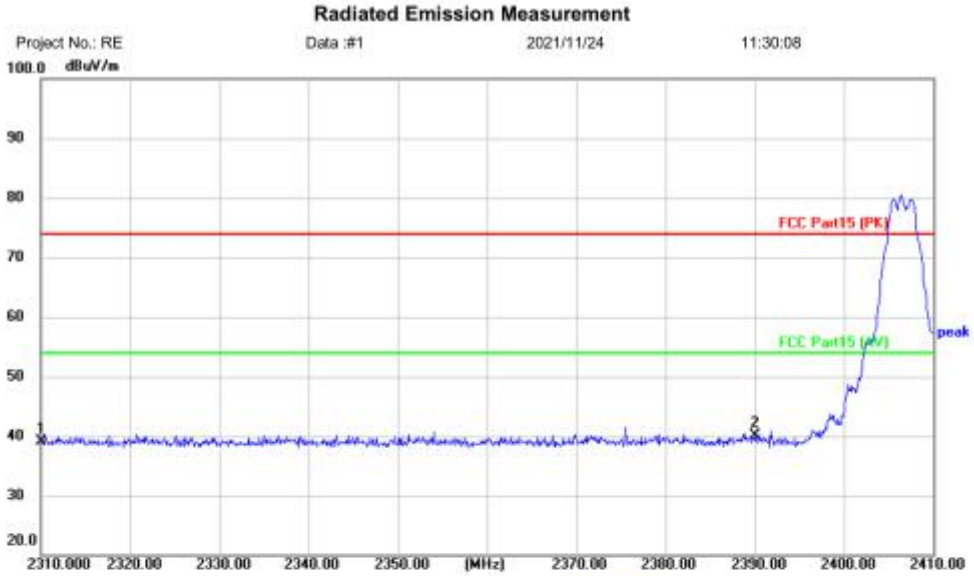
a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

BlueAsia

12.4 TEST DATA

[TestMode: TX Low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-L
Note:

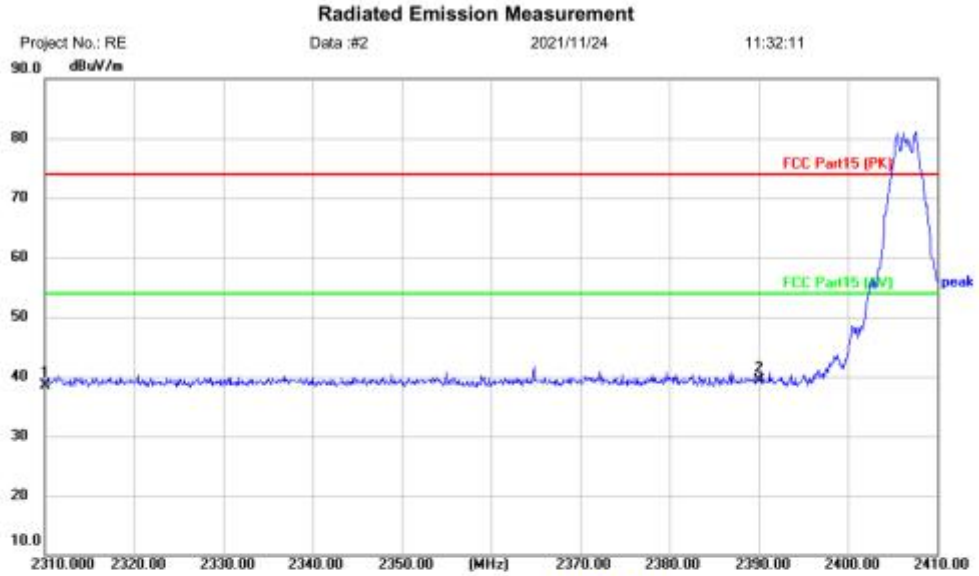
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	43.12	-3.93	39.19	74.00	-34.81	peak	
2	*	2390.000	43.74	-3.58	40.16	74.00	-33.84	peak	

Test Result: Pass

[TestMode: TX Low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-L
Note:

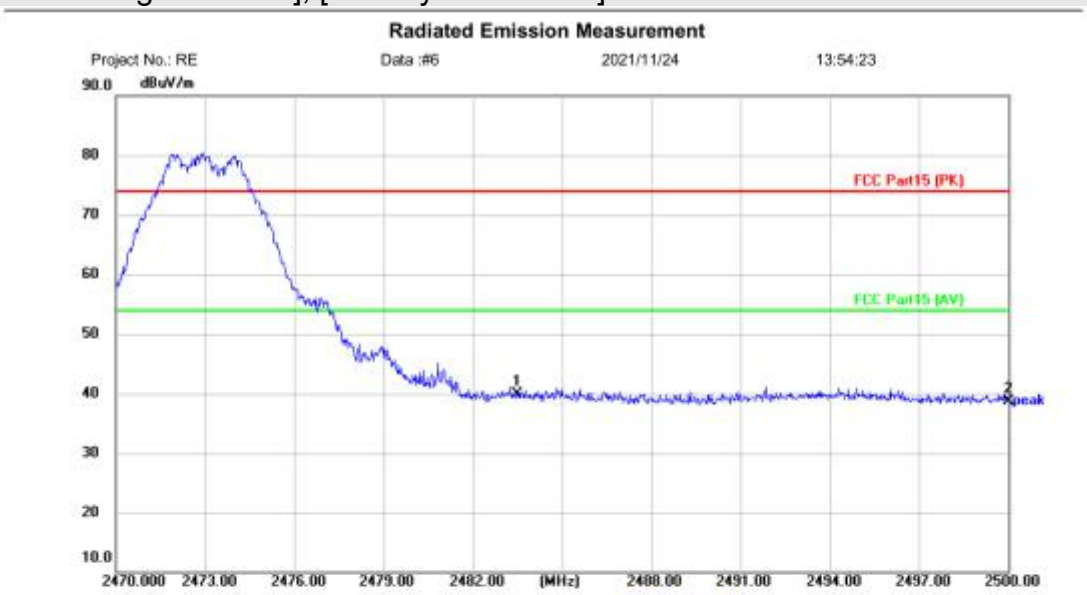
Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	42.41	-3.93	38.48	74.00	-35.52	peak	
2	*	2390.000	42.81	-3.58	39.23	74.00	-34.77	peak	

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-H
Note:

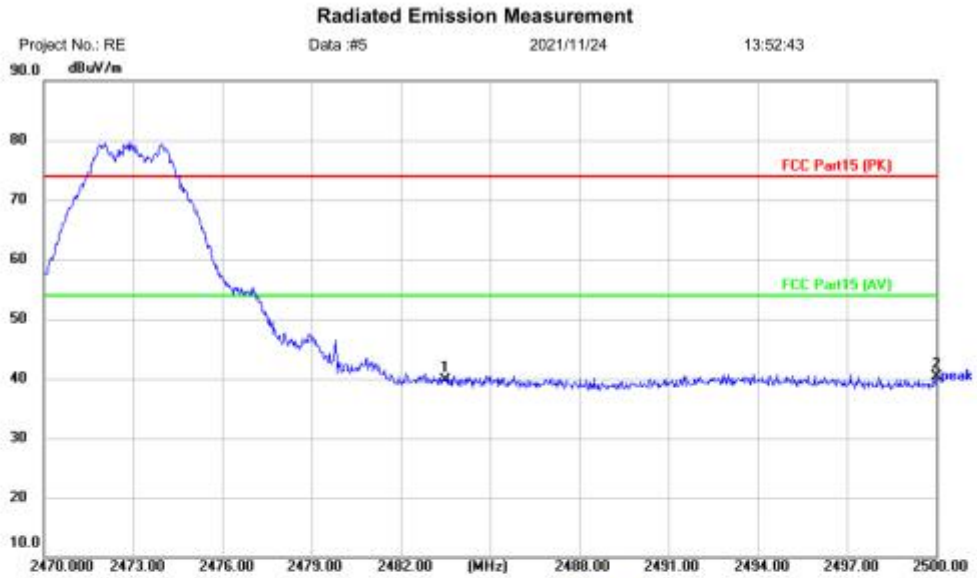
Polarization: *Horizontal*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	43.03	-3.14	39.89	74.00	-34.11	peak	
2		2500.000	41.84	-3.08	38.76	74.00	-35.24	peak	

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Car wireless rear view system
M/N: W10
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2483.500	42.94	-3.14	39.80	74.00	-34.20	peak	
2	*	2500.000	43.36	-3.08	40.28	74.00	-33.72	peak	

Test Result: Pass

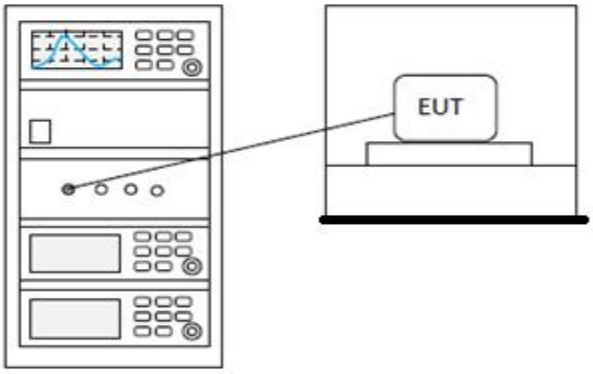
13 CONDUCTED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

13.1 LIMITS

Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

13.2 BLOCK DIAGRAM OF TEST SETUP



13.3 TEST DATA

Pass: Please Refer To Appendix: For Details

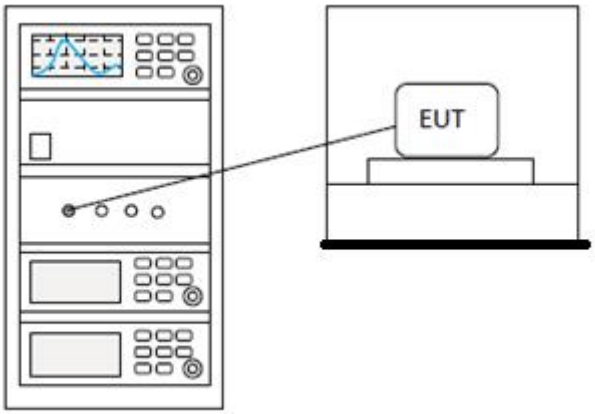
14 POWER SPECTRUM DENSITY

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.10.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

14.1 LIMITS

Limit:	≤8dBm in any 3 kHz band during any time interval of continuous transmission

14.2 BLOCK DIAGRAM OF TEST SETUP



14.3 TEST DATA

Pass: Please Refer To Appendix: For Details

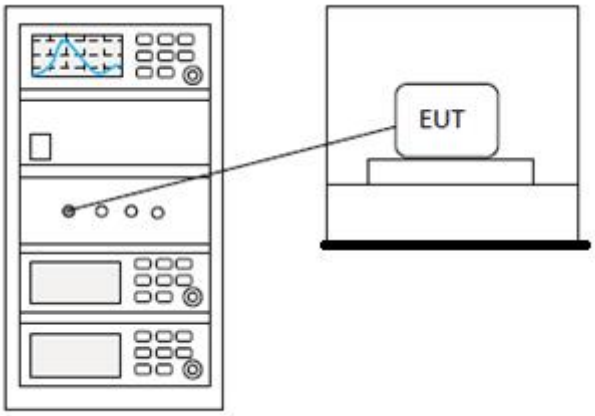
15 CONDUCTED PEAK OUTPUT POWER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

15.1 LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

15.2 BLOCK DIAGRAM OF TEST SETUP



15.3 EST DATA

Pass: Please Refer To Appendix: For Details

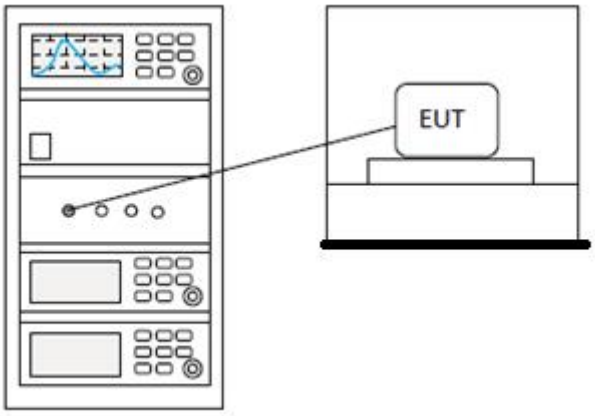
16 MINIMUM 6DB BANDWIDTH

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.8.1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

16.1 LIMITS

Limit:	≥500 kHz

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 TEST DATA

Pass: Please Refer To Appendix: For Details

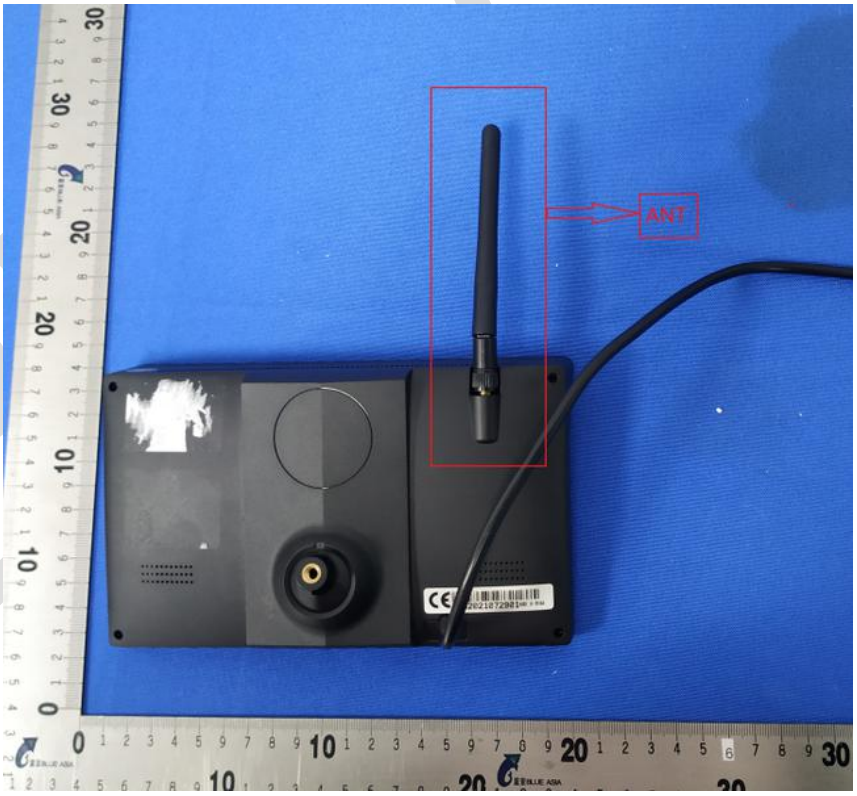
17 ANTENNA REQUIREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	N/A

CONCLUSION

Standard Requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:
The antenna is fixed external antenna and no consideration of replacement. The best case gain of the antenna is 2 dBi.



18 APPENDIX

18.1 APPENDIX : BANDWIDTH

Test Result

TestMode	Antenna	Channel	BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
TX	Ant1	2406.5	4.122	2405.32	2407.48	>=0.5	PASS
		2441.5	3.588	2440.33	2442.49	>=0.5	PASS
		2473	3.486	2467.43	2473.01	>=0.5	PASS

BlueAsia

Test Graphs

TX_Ant1_2406.5

TX_Ant1_2441.5

TX_Ant1_2473

18.2 APPENDIX : OCCUPIED CHANNEL BANDWIDTH

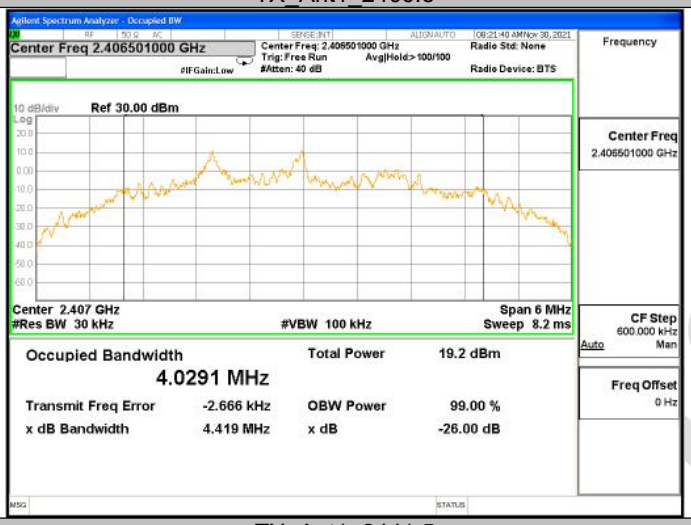
Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
TX	Ant1	2406.5	4.029	2404.456	2408.551	---	PASS
		2441.5	4.060	2439.556	2443.632	---	PASS
		2473	4.023	2468.267	2475.014	---	PASS

BlueAsia

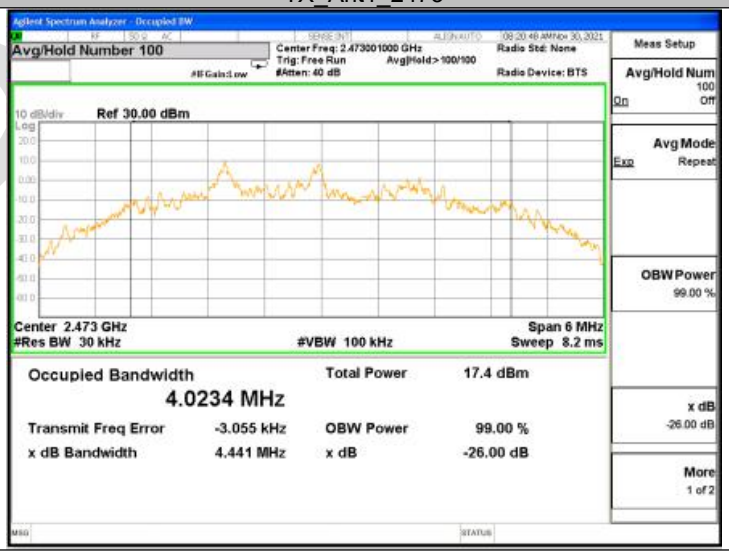
Test Graphs

TX_Ant1_2406.5



TX_Ant1_2441.5

TX_Ant1_2473



18.3 APPENDIX : MAXIMUM CONDUCTED OUTPUT POWER

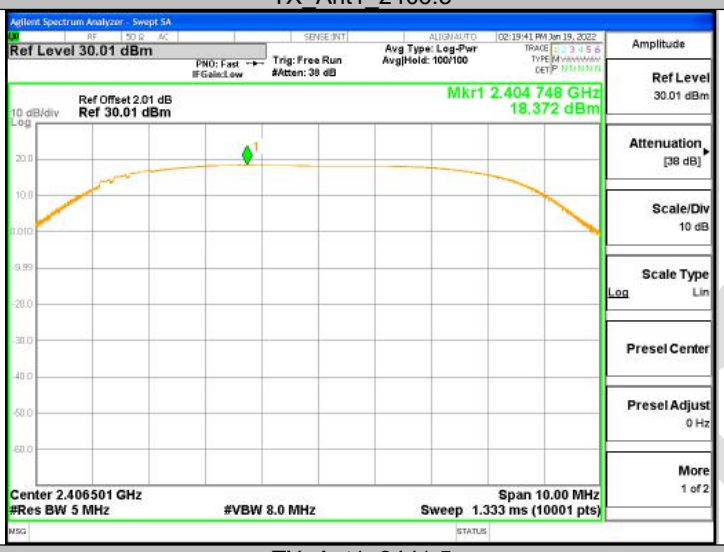
Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
TX	Ant1	2406.5	18.37	<=30	PASS
		2441.5	18.27	<=30	PASS
		2473	18.51	<=30	PASS

BlueAsia

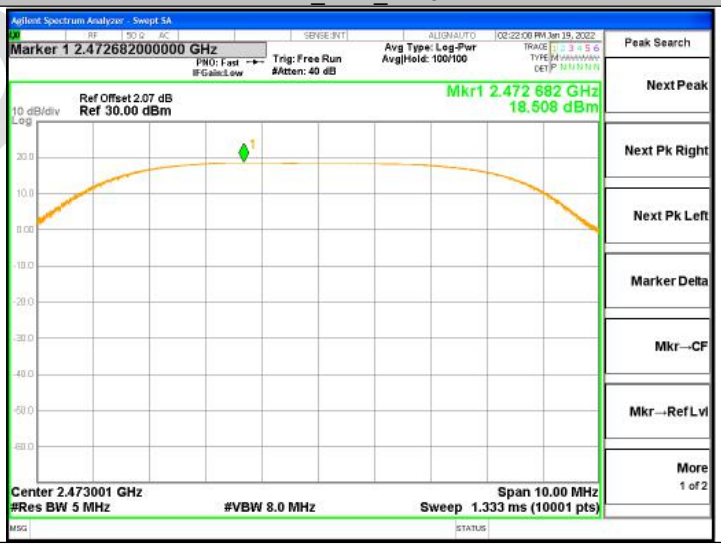
Test Graphs

TX_Ant1_2406.5



TX_Ant1_2441.5

TX_Ant1_2473



18.4 APPENDIX : BAND EDGE MEASUREMENTS(NO HOPPING)

Test Result

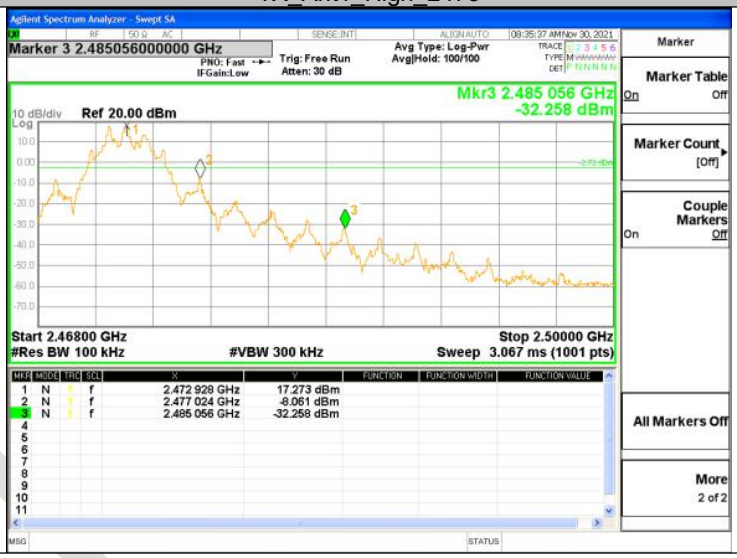
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
TX	Ant1	Low	2406.5	18.75	-48.88	<=-3.45	PASS
		High	2473	17.27	-32.33	<=-5.10	PASS

BlueAsia

Test Graphs

TX_Ant1_Low_2406.5

TX_Ant1_High_2473



18.5 APPENDIX : BAND EDGE MEASUREMENTS(HOPPING)

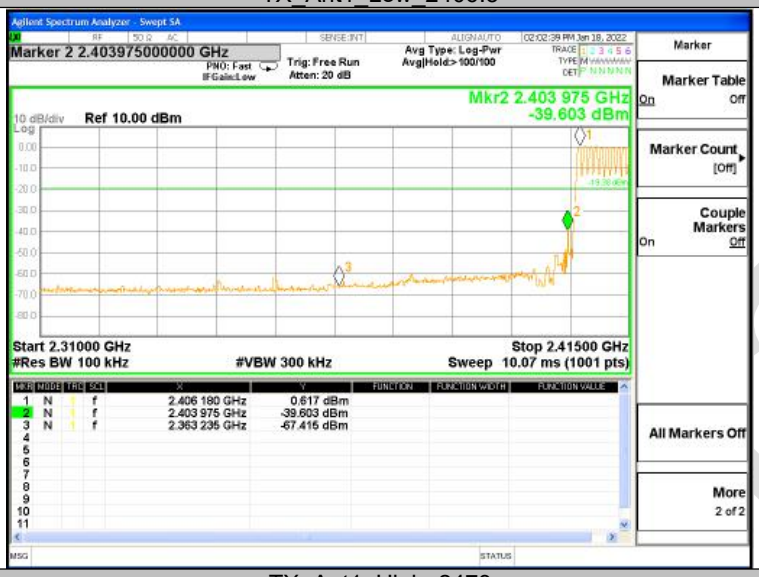
Test Result

TestMode	Antenna	ChName	Channel	Verdict
TX	Ant1	Low	2406.5	PASS
		High	2473	PASS

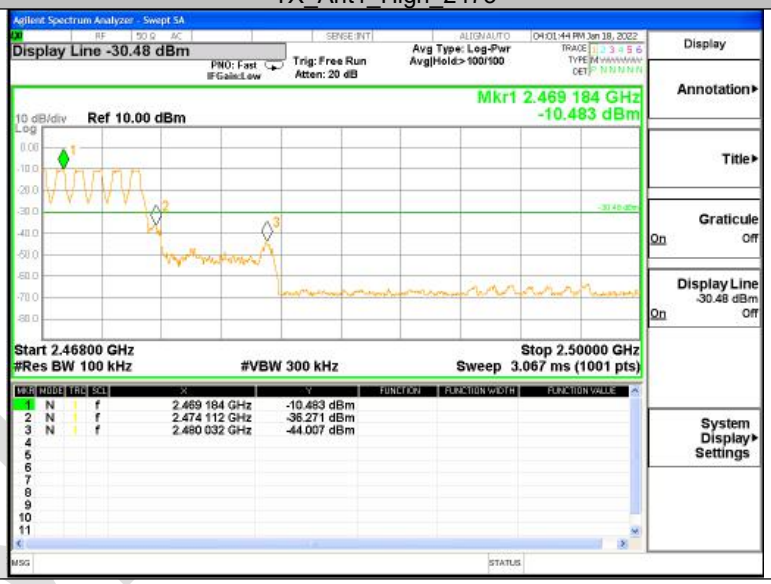
BlueAsia

Test Graphs

TX_Ant1_Low_2406.5



TX_Ant1_High_2473



18.6 APPENDIX : CONDUCTED SPURIOUS EMISSION

Test Result

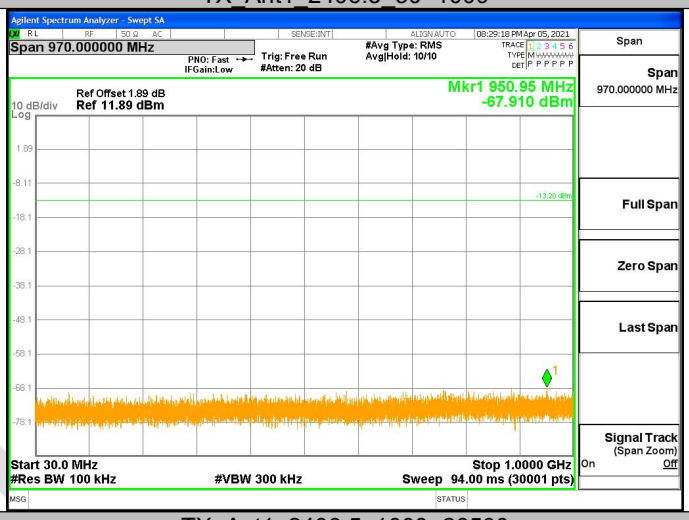
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
TX	Ant1	2406.5	Reference	16.80	16.803	---	PASS
			30~1000	30~1000	-67.910	<=-13.197	PASS
			1000~26500	1000~26500	-48.350	<=-13.197	PASS
		2441.5	Reference	15.88	15.879	---	PASS
			30~1000	30~1000	-66.871	<=-14.121	PASS
			1000~26500	1000~26500	-45.609	<=-14.121	PASS
		2473	Reference	15.21	15.208	---	PASS
			30~1000	30~1000	-68.568	<=-14.792	PASS
			1000~26500	1000~26500	-46.584	<=-14.792	PASS

BlueAsia

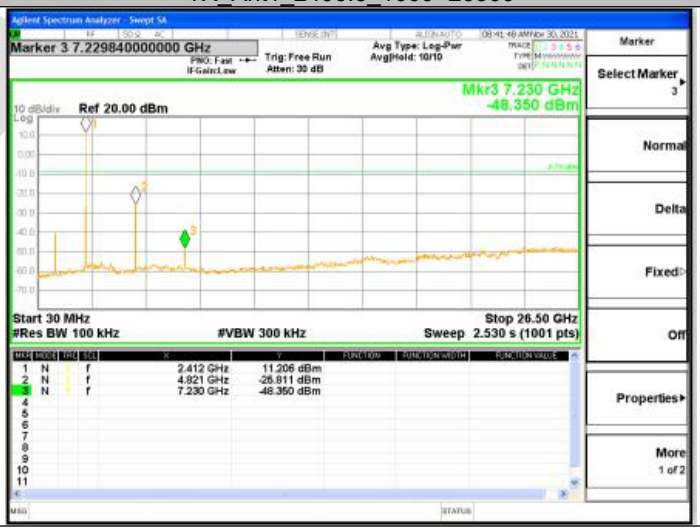
Test Graphs

TX_Ant1_2406.5_0~Reference

TX_Ant1_2406.5_30~1000

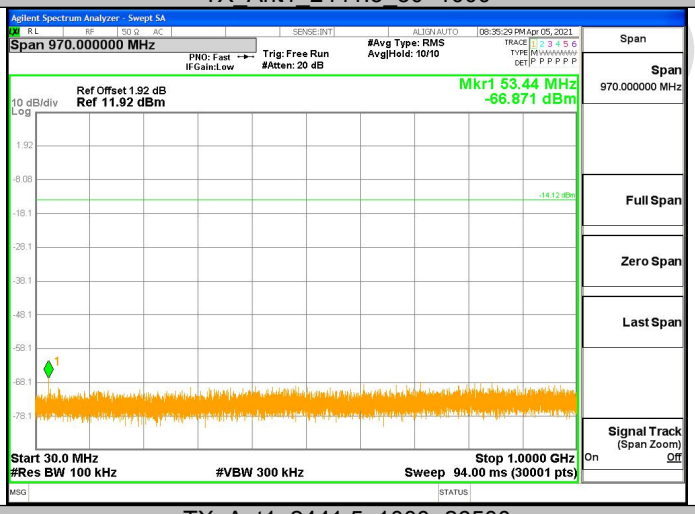


TX_Ant1_2406.5_1000~26500

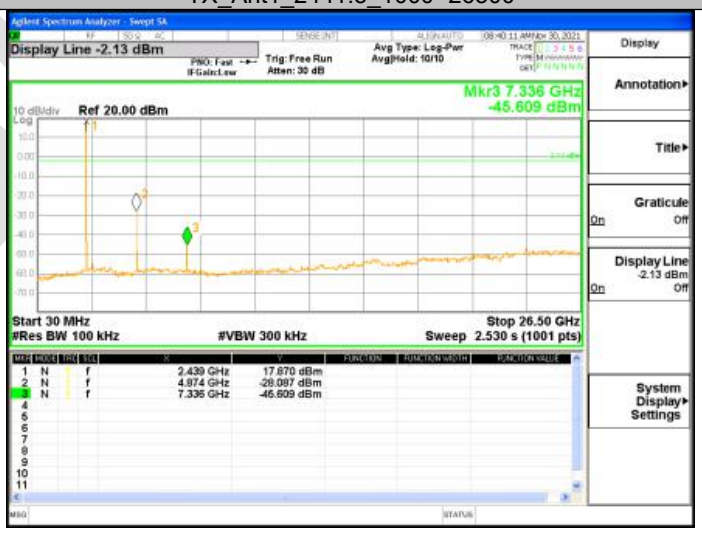


TX_Ant1_2441.5_0~Reference

TX_Ant1_2441.5_30~1000

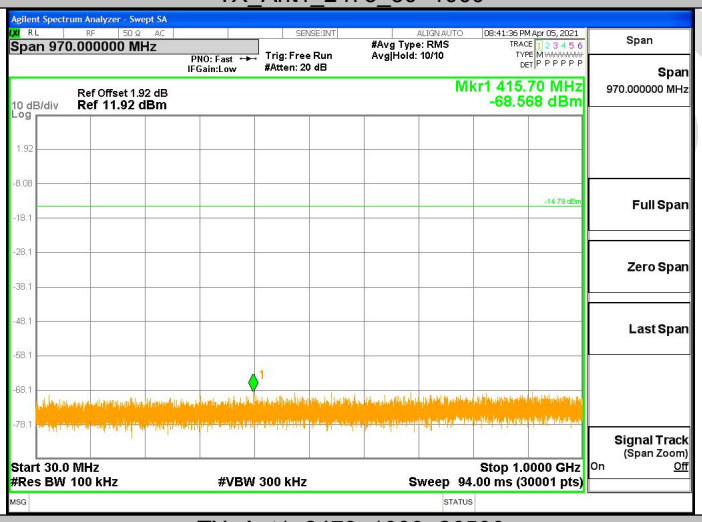


TX_Ant1_2441.5_1000~26500

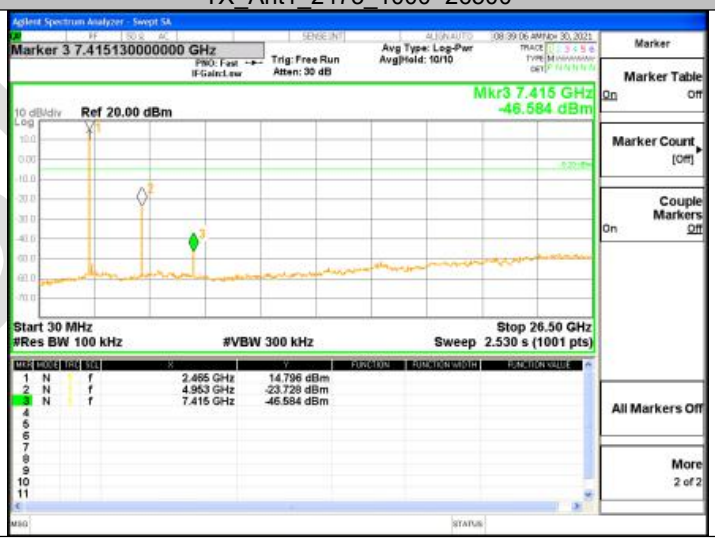


TX_Ant1_2473_0~Reference

TX_Ant1_2473_30~1000



TX_Ant1_2473_1000~26500

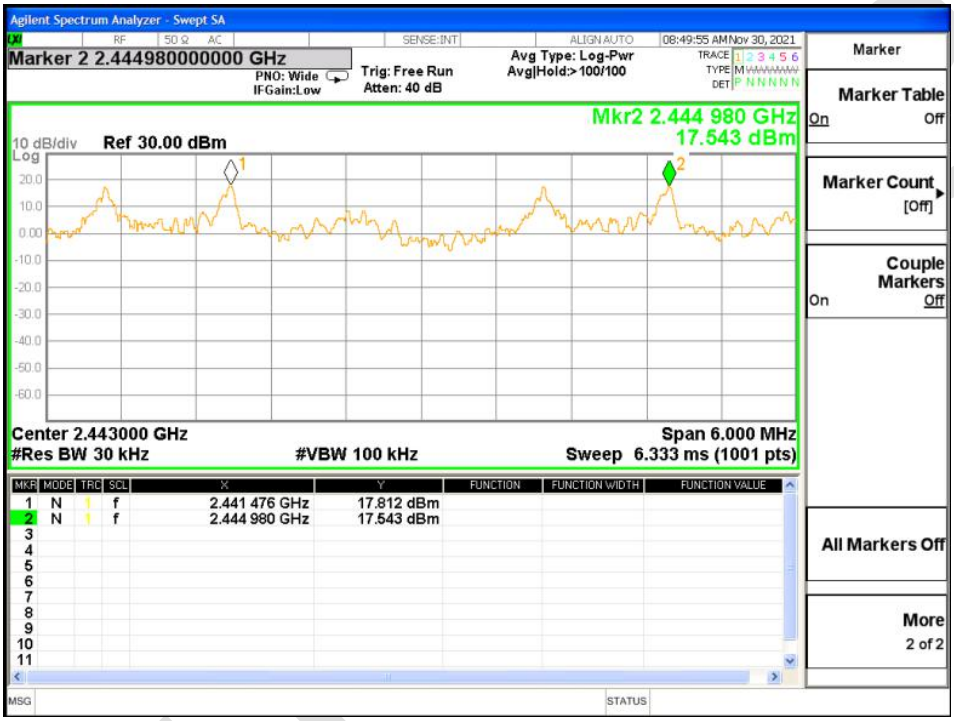


18.7 CARRIER FREQUENCIES SEPARATION

Test Result

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	TX	Ant1	2441.476	2444.980	3.5	2.75	Pass

Test Graphs



18.8 NUMBER OF HOPPING CHANNEL

Test Result

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	TX	Ant1	20	15	Pass

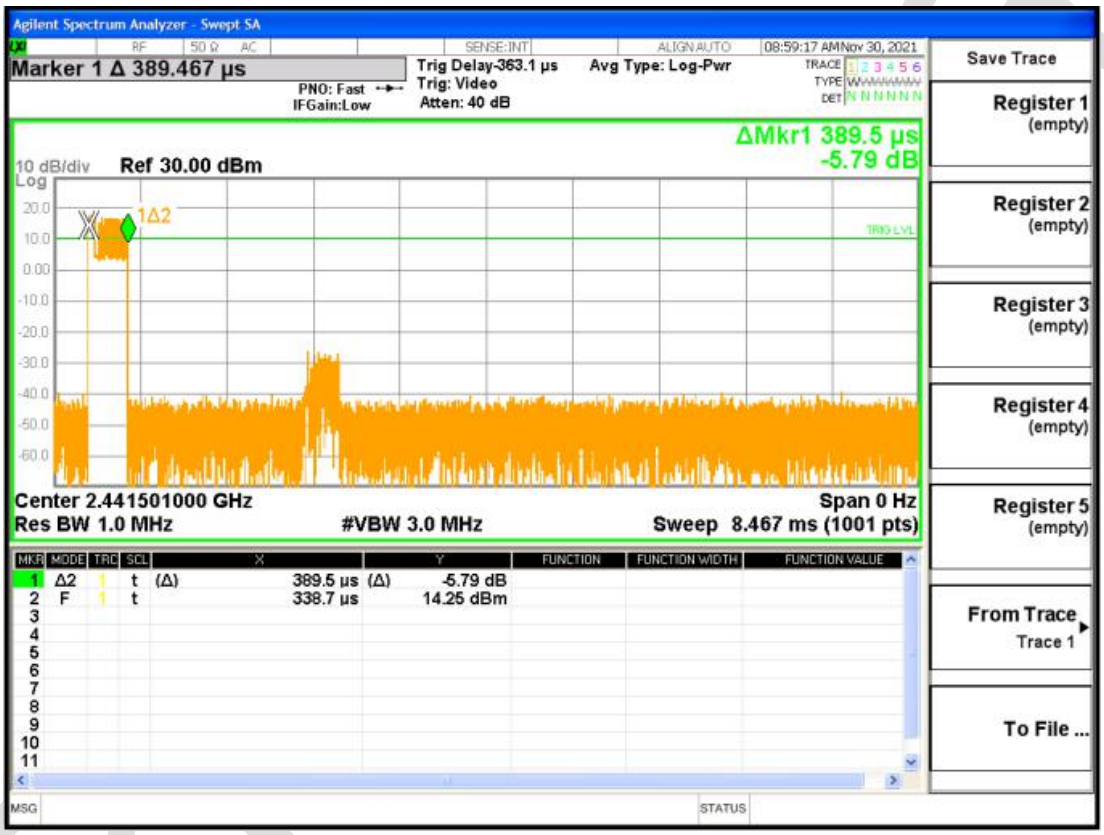
Test Graphs

18.9 DWELL TIME

Test Result

Condition	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	2441.501	Ant1	0.389	72	184	8000	400	Pass

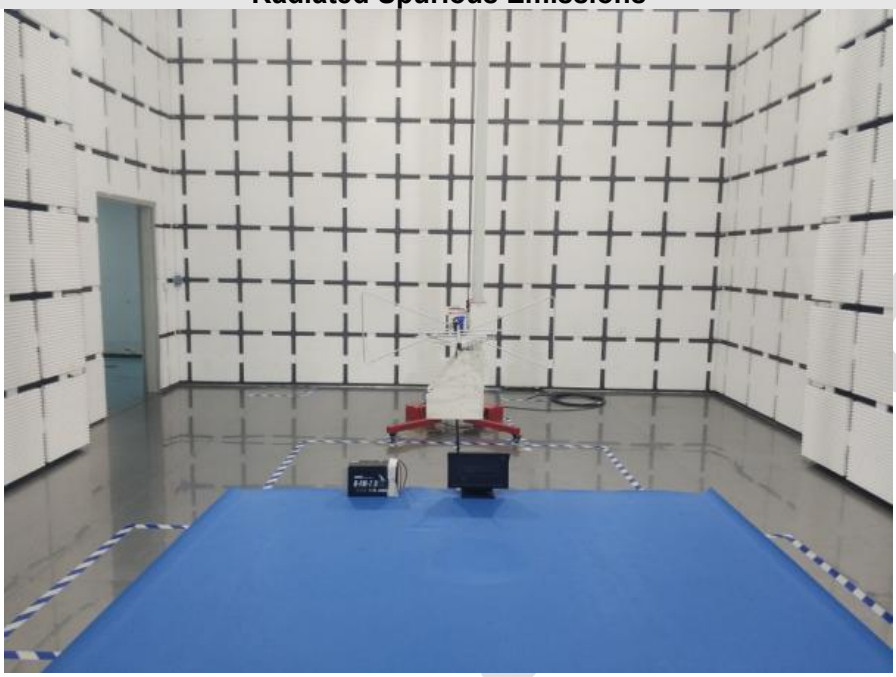
Test Graphs



Agilent Spectrum Analyzer - Swept SA
Average/Hold Number 1
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 1/1
01:19:02 PM Jan 18, 2022
10 dB/div
Log
Ref 20.00 dBm
Center 2.441501000 GHz
Res BW 510 kHz
#VBW 50 MHz
Span 0 Hz
Sweep 914.0 ms (1001 pts)
Meas Setup
Avg/Hold Num
1
Avg Type
Log-Pwr (Video)
Auto
Man
Limits
N dB Points
-3.01 dB
On
Off
PhNoise Opt
Fast Tuning
Auto
Man
ADC Dither
Medium
Auto
Man
More
1 of 2

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Radiated Spurious Emissions



APPENDIX B: PHOTOGRAPHS OF EUT

Reference to the test report No. BLA-EMC-202111-A0601

----END OF REPORT----

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