



RF TEST REPORT

Report No.: SET2021-09178

Product Name: Dash Cam

FCC ID: NCI-M360-D700-1

Model No. : Mobile360 D700

Dates of Testing: 08/01/2020 —06/22/2021

Applicant: VIA Technologies, Inc.

Address: 8F, 535 Zhongzheng Rd. Xindian Dist. New Taipei City, Taiwan

Issued by: CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No. 43 Shahe Road, Xili Street,
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Test Report

Product Name : Dash Cam

Brand Name : VIA

Trade Name : VIA

Applicant : VIA Technologies, Inc

Applicant Address : 8F, 535 Zhongzheng Rd. Xindian Dist. New Taipei City,
Taiwan

Manufacturer : VIA Technologies, Inc

Manufacturer Address : 8F, 535 Zhongzheng Rd. Xindian Dist. New Taipei City,
Taiwan

Test Standards : 47 CFR Part 15 Subpart C
ANSI C63.10:2013

Test Result : PASS

Tested by : *Vincent*
2021.07.19

Vincent, Test Engineer

Reviewed by : *Chris You*
2021.07.19

Chris You, Senior Engineer

Approved by : *Shuangwen Zhang*
2021.07.19

Shuangwen Zhang, Manager

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Change History		
Issue	Date	Reason for change
1.0	2021.07.19	First edition

1. General Information

1.1. EUT Description

EUT Type	Dash Cam	
Hardware Version	RA	
Software Version	V2.1.0	
Frequency Range	Bluetooth LE	2402MHz~2480MHz
Channel Number	Bluetooth LE	40
Bit Rate of Transmitter	Bluetooth LE	1Mbps
Modulation Type	Bluetooth LE	GFSK
Antenna Type	Internal	
Antenna Gain	2.8dBi	

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Note 2: The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

1.2. Test Standards and Results

The objective of the report is to perform testing according to FCC and IC Certification:

This C2PC Report was based on original FCC ID: NCI-M360-D700-1, The device was change the ANT, and open LTE Band 71 via the software. Below is the test item

No.	Section in CFR 47	Description	Result
1	15.209 15.205 15.247(d)	Radiated Band Edges and Spurious Emission	PASS

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.10-2013.

These RF tests were performed according to the method of measurements prescribed in KDB 558074D01 v05r02.

40 channels are provided for Bluetooth LE

Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

1.3. Table for Supporting Units

No.	Equipment	Brand Name	Model Name	Manufacturer	Serial No.	Note
1	Notebook	DELL	PP11L	DELL	H5914A03	FCC DOC

1.4. Facilities and Accreditations

1.4.1. Facilities

CNAS-Lab Code: L1659

CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

FCC-Registration No.: CN1283

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CAB identifier: CN0064

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until April 19th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.4.2. Test Environment Conditions

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

Temperature (°C):	15 °C - 35 °C
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. Test Requirements

2.1. Radiated Band Edge and Spurious Emission

2.1.1. Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Note: Wireless charger configuration was evaluated.

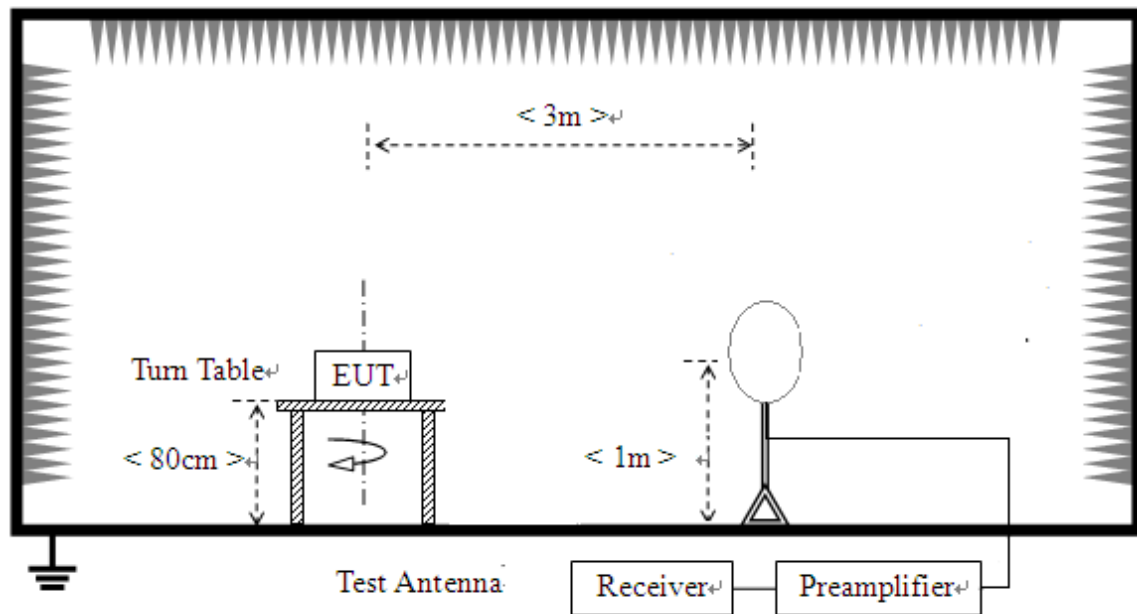
Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

2.1.2. Measuring Instruments

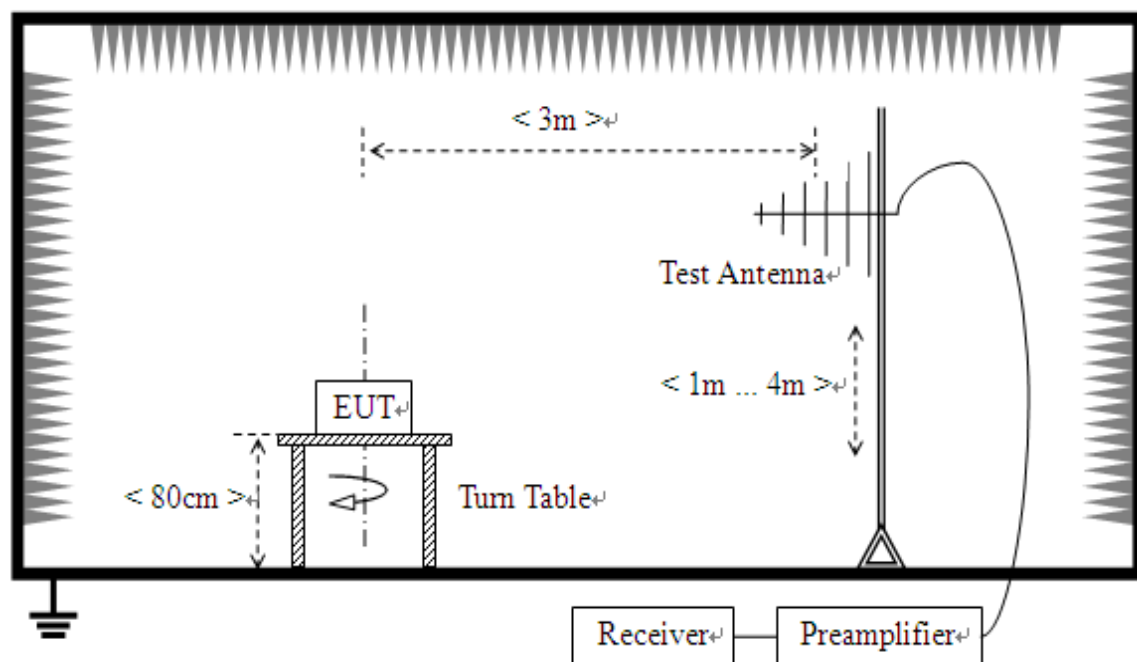
The measuring equipment is listed in the section 3 of this test report.

2.1.3. Test Setup

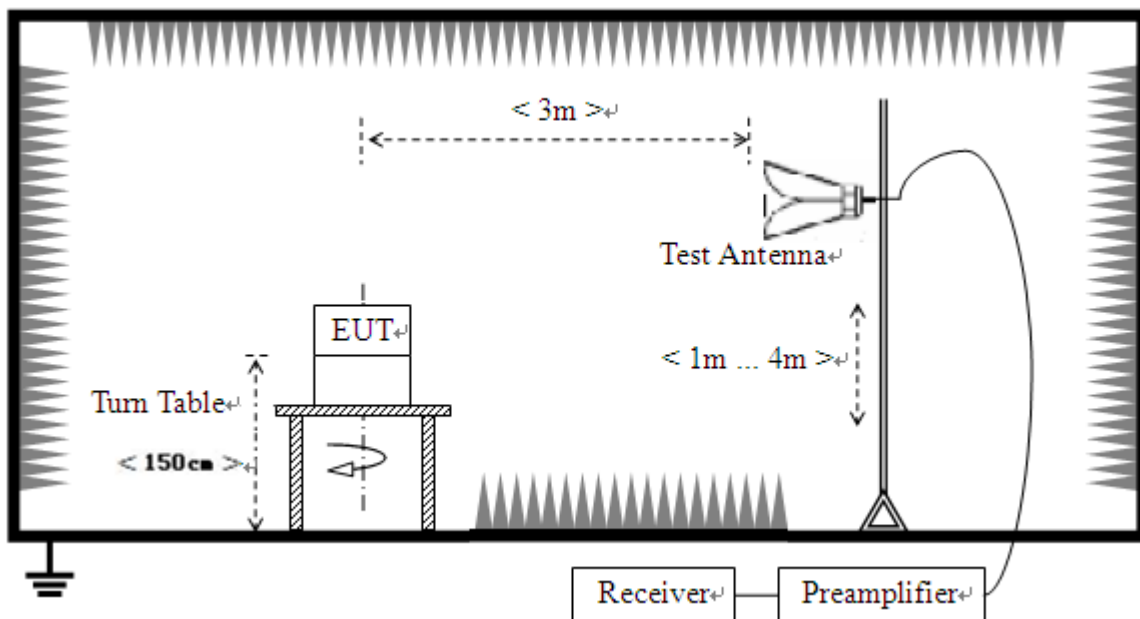
For radiated emissions from 9 KHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.1.4. Test Procedures

1. The EUT was placed on a turntable 0.8m below 1GHz and 1.5m above 1GHz above ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. Height of receiving antenna 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.
4. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

6. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.

Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

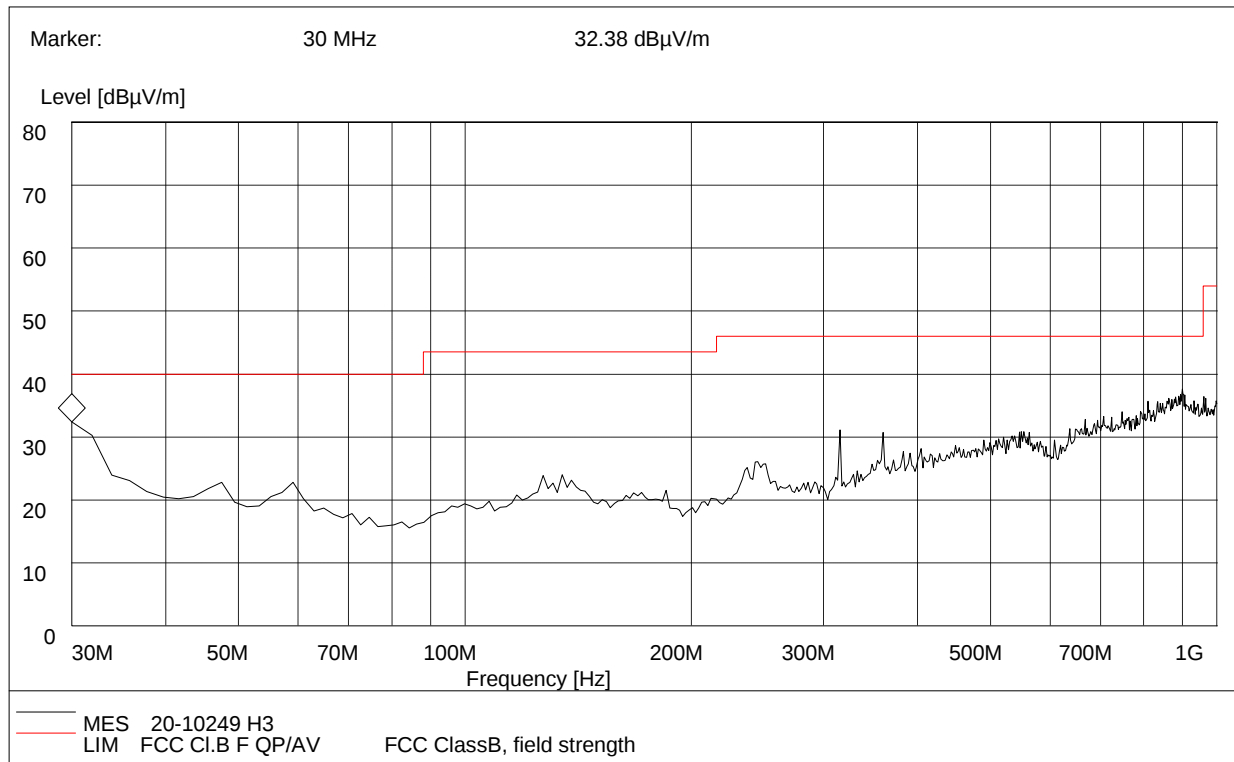
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

2.1.5. Test Results of Radiated Band Edge and Spurious Emission

For 9KHz to 30MHz

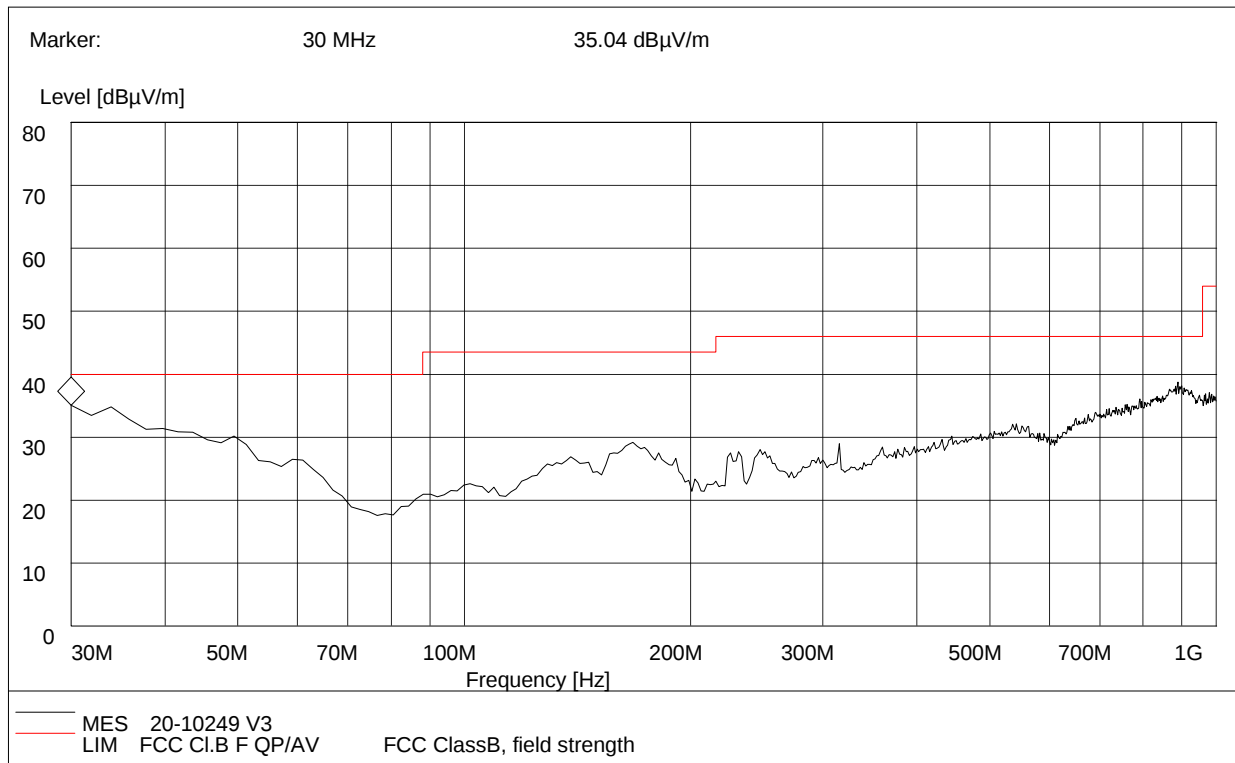
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



Plot A: 30MHz to 1GHz, Antenna Horizontal

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Corr. Factor (dB/m)	Antenna height (cm)	Limit (dB μ V/m)	Margin	Antenna	Verdict
30.000000	28.12	120.000	17.9	100.0	40.0	11.88	Horizontal	Pass
46.520000	22.63	120.000	8.7	100.0	40.0	17.37	Horizontal	Pass
135.220000	23.54	120.000	12.9	100.0	43.5	19.96	Horizontal	Pass
856.340000	34.55	120.000	23.9	100.0	46.0	11.45	Horizontal	Pass
899.930000	35.24	120.000	24.8	100.0	46.0	10.76	Horizontal	Pass
921.450000	35.82	120.000	24.8	100.0	46.0	10.18	Horizontal	Pass



Plot B: 30MHz to 1GHz, Antenna Vertical

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Corr. Factor (dBμV/m)	Antenna height (cm)	Limit (dB μ V/m)	Margin	Antenna	Verdict
30.000000	33.79	120.000	17.9	100.0	40.0	6.21	Vertical	Pass
33.440000	34.25	120.000	17.9	100.0	40.0	5.75	Vertical	Pass
41.220000	30.25	120.000	10.8	100.0	40.0	9.75	Vertical	Pass
165.340000	28.70	120.000	11.8	100.0	43.5	14.8	Vertical	Pass
889.930000	35.44	120.000	24.8	100.0	46.0	10.56	Vertical	Pass
901.450000	36.38	120.000	24.8	100.0	46.0	9.62	Vertical	Pass

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. Margin value = Limit value - Emission Level
4. The other emission levels were very low against the limit.

For 1GHz to 25GHz
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (0CH_2402MHz)

No.	Fre. (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	2390	47.58	PK	74.00	-26.42	1.5	180	46.28	5.2	28.60	32.5	1.3
2	2390	37.10	AV	54.00	-16.9	1.5	180	35.8	5.2	28.60	32.5	1.3
3	4804	48.52	PK	74.00	-25.48	1.5	180	42.12	7.4	30.40	31.4	6.4
4	4804	37.74	AV	54.00	-16.26	1.5	180	31.34	7.4	30.40	31.4	6.4
5	7206	50.68	PK	74.00	-23.32	1.5	180	41.38	9.9	31.50	32.1	9.3
6	7206	40.20	AV	54.00	-13.8	1.5	180	30.9	9.9	31.50	32.1	9.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (0CH_2402MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	2390	48.95	PK	74.00	-25.05	1.6	210	47.65	5.2	28.60	32.5	1.3
2	2390	38.84	AV	54.00	-15.16	1.6	210	37.54	5.2	28.60	32.5	1.3
3	4804	51.62	PK	74.00	-22.38	1.6	210	45.22	7.4	30.40	31.4	6.4
4	4804	41.54	AV	54.00	-12.46	1.6	210	35.14	7.4	30.40	31.4	6.4
5	7206	52.06	PK	74.00	-21.94	1.6	210	42.76	9.9	31.50	32.1	9.3
6	7206	41.74	AV	54.00	-12.26	1.6	210	32.44	9.9	31.50	32.1	9.3

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (19CH_2440MHz)

No.	Fre. (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	4880	48.57	PK	74	-25.43	1.5	120	42.55	6.7	31.2	31.5	6.4
2	4880	38.08	AV	54	-15.92	1.5	120	32.18	6.7	31.2	31.5	6.4
3	7320	50.36	PK	74	-23.64	1.5	120	45.94	6.7	31.2	31.5	6.4
4	7320	40.25	AV	54	-13.75	1.5	120	35.75	6.7	31.2	31.5	6.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (19CH_2440MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	4880	49.58	PK	74	-24.42	1.6	160	44.77	6.7	31.2	31.5	6.4
2	4880	39.36	AV	54	-14.64	1.6	160	34.53	6.7	31.2	31.5	6.4
3	7320	51.57	PK	74	-22.43	1.6	160	45.97	6.7	31.2	31.5	6.4
4	7320	41.48	AV	54	-12.52	1.6	160	35.68	6.7	31.2	31.5	6.4

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (39CH_2480MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	2483.5	50.36	PK	74	-23.64	1.8	200	46.45	5.7	29.5	31.8	3.4
2	2483.5	39.06	AV	54	-14.94	1.8	200	36.23	5.7	29.5	31.8	3.4
3	4960	49.58	PK	74	-24.42	1.8	200	45.92	7	30.05	31.5	5.55
4	4960	39.34	AV	54	-14.66	1.8	200	35.74	7	30.05	31.5	5.55
5	7440	50.36	PK	74	-23.64	1.8	200	37.44	16	31.2	32	15.2
6	7440	40.01	AV	54	-13.99	1.8	200	27.19	16	31.2	32	15.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (39CH_2480MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Cab. Loss (dB)	Ant. Factor (dB)	Pre. Amp. (dB)	Cor. Factor (dB/m)
1	2483.5	48.57	PK	74	-25.43	1.8	320	45.25	5.7	29.5	31.8	3.4
2	2483.5	36.51	AV	54	-17.49	1.8	320	35.1	5.7	29.5	31.8	3.4
3	4960	51.62	PK	74	-22.38	1.8	320	45.89	7	30.05	31.5	5.55
4	4960	40.62	AV	54	-13.38	1.8	320	35.07	7	30.05	31.5	5.55
5	7440	52	PK	74	-22	1.8	320	38.42	16	31.2	32	15.2
6	7440	41.63	AV	54	-12.37	1.8	320	28.07	16	31.2	32	15.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
- Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level - Limit value

3. List of measuring equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI TEST RECEIVER	KEYSIGHT	N9038A	A141202036	2020.09.21	2021.09.20
2	Power Meter	R&S	NRP-Z31	102872	2021.04.26	2022.04.25
3	TURNTABLE	ETS	2088	2149	N/A	N/A
4	ANTENNA MAST	ETS	2075	2346	N/A	N/A
5	EMI TEST Software	R&S	ESK1	N/A	N/A	N/A
6	Horn antenna (18GHz~26.5GHz)	AR	AT4003A	325306	2020.09.16	2022.09.15
7	Amplifier 30M~1GHz	MILMEGA	80RF1000-10004	A140101634	2021.01.26	2022.01.25
8	Amplifier 1G~18GHz	MILMEGA	AS0104R-800/40 0	A160302517	2021.01.26	2022.01.25
9	High pass filter	Compliance Direction systems	BSU-6	34202	2020.11.10	2021.11.09
10	Horn Antenna	R&S	HF906	A0304225	2019.04.17	2022.04.16
11	Horn Antenna	R&S	ESIB7	A0501375	2020.06.24	2022.06.22
12	ULTRA-BROADBAND ANTENNA	SCHWARZBEC K	VULB9160	A0805560	2019.05.24	2022.05.23
13	Passive Loop Antenna	R&S	HFH2-Z2	100047	2019.04.26	2022.04.25
14	Temperature chamber	TABAI	PS-232	A8708054	2020.10.30	2021.10.29
15	Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2021.04.26	2022.04.25
16	Power Supply	R&S	ESIB26	A0304218	2021.01.04	2022.01.03
17	LISN	ROHDE&SCH WARZ	ENV216	A140701847	2020.09.22	2021.09.21
18	Test software	ECIT	Eagle	V2.0	N/A	N/A

4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence . The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Emission Measurement (150KHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%($U=2U_c(y)$)	2.8dB
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Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

Measuring Uncertainty for a level of confidence of 95%($U=2U_c(y)$)	3.91dB
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Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

Measuring Uncertainty for a level of confidence of 95%($U=2U_c(y)$)	4.5dB
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Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%($U=2U_c(y)$)	4.9dB
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**** END OF REPORT ****