

RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-24D-RWD-012

Reception No. : 2410003745

Applicant : INDIRAIN Co., LTD.

Address : 203, 62, Dosan-daero 1-gil, Gangnam-gu, Seoul, Korea

Manufacturer : INDIRAIN Co., LTD.

Address : 203, 62, Dosan-daero 1-gil, Gangnam-gu, Seoul, Korea

Type of Equipment : Galaxy Smart Keeper (GSK)

FCC ID. : 2BMI3-GSK-S202407

Model Name : GSK-S202407

Multiple Model Name : N/A

Serial number : N/A

Total page of Report : 40 pages (including this page)

Date of Incoming : October 17, 2024

Date of issue : December 04, 2024

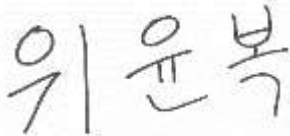
SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.



Tested by
Yun-Bok, Wi / Engineer
ONETECH Corp.

Reviewed by
Tae-Ho, Kim / Chief Engineer
ONETECH Corp.

Approved by
Jae-Ho, Lee / Chief Engineer
ONETECH Corp.

CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE	6
2. TEST SUMMARY.....	7
2.1 TEST ITEMS AND RESULTS	7
2.2 ADDITIONS, DEVIATIONS, EXCLUSIONS FROM STANDARDS.....	7
2.3 RELATED SUBMITTAL(S) / GRANT(S)	7
2.4 PURPOSE OF THE TEST	7
2.5 TEST METHODOLOGY.....	7
2.6 TEST FACILITY.....	7
3. GENERAL INFORMATION.....	8
3.1 PRODUCT DESCRIPTION.....	8
3.2 ALTERNATIVE TYPE(S)/MODEL(S); ALSO COVERED BY THIS TEST REPORT.....	8
4. EUT MODIFICATIONS.....	8
5. SYSTEM TEST CONFIGURATION	9
5.1 JUSTIFICATION.....	9
5.2 PERIPHERAL EQUIPMENT	9
5.3 MODE OF OPERATION DURING THE TEST	10
5.4 CONFIGURATION OF TEST SYSTEM.....	11
5.5 ANTENNA REQUIREMENT	11
6. MEASUREMENT UNCERTAINTY	11
7. PRELIMINARY TEST	12
7.1 AC POWER LINE CONDUCTED EMISSIONS TESTS.....	12
7.2 GENERAL RADIATED EMISSIONS TESTS	12
8. MINIMUM 6 dB BANDWIDTH.....	13
8.1 OPERATING ENVIRONMENT	13
8.2 TEST SET-UP	13
8.3 TEST DATE	13
8.4 TEST DATA FOR ANTENNA 1 (CC2640R2F).....	13
8.5 TEST DATA FOR ANTENNA 2 (CC2640R2F).....	13
8.6 TEST DATA FOR ANTENNA 3 (CC2642R1)	13
9. MAXIMUM CONDUCTED (PEAK) OUTPUT POWER.....	14
9.1 OPERATING ENVIRONMENT	14
9.2 TEST SET-UP	14

9.3 TEST DATE	14
9.4 TEST DATA FOR ANTENNA 1 (CC2640R2F)	15
9.5 TEST DATA FOR ANTENNA 2 (CC2640R2F)	15
9.6 TEST DATA FOR ANTENNA 3 (CC2642R1)	15
10. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND	16
10.1 OPERATING ENVIRONMENT	16
10.2 TEST SET-UP FOR CONDUCTED MEASUREMENT	16
10.3 TEST SET-UP FOR RADIATED MEASUREMENT	16
10.4 TEST DATE	16
10.5 TEST DATA FOR CONDUCTED EMISSION	16
10.6 TEST DATA FOR RADIATED EMISSION	17
10.6.1 Radiated Emission which fall in the Restricted Band	17
10.6.2 Spurious & Harmonic Radiated Emission	20
11. PEAK POWER SPECTRAL DENSITY	26
11.1 OPERATING ENVIRONMENT	26
11.2 TEST SET-UP	26
11.3 TEST DATE	26
11.4 TEST DATA FOR ANTENNA 1 (CC2640R2F)	27
11.5 TEST DATA FOR ANTENNA 2 (CC2640R2F)	27
11.6 TEST DATA FOR ANTENNA 3 (CC2642R1)	27
12. RADIATED EMISSION TEST	28
12.1 OPERATING ENVIRONMENT	28
12.2 TEST SET-UP	28
12.3 TEST DATE	28
12.4 TEST DATA FOR 30 MHz ~ 1 000 MHz	29
12.4.1 Test data for Antenna 1 (CC2640R2F)	29
12.4.2 Test data for Antenna 2 (CC2640R2F)	30
12.4.3 Test data for Antenna 3 (CC2642R1)	31
12.5 TEST DATA FOR BELOW 30 MHz	32
12.6 TEST DATA FOR ABOVE 1 GHz	32
13. CONDUCTED EMISSION TEST	33
13.1 OPERATING ENVIRONMENT	33
13.2 TEST SET-UP	33
13.3 MEASUREMENT UNCERTAINTY	33
13.4 TEST DATE	33
13.5 TEST DATA FOR ANTENNA 1 (CC2640R2F)	34

13.6 TEST DATA FOR ANTENNA 2 (CC2640R2F)	36
13.7 TEST DATA FOR ANTENNA 3 (CC2642R1)	38
14. LIST OF TEST EQUIPMENT	40

※ Please refer to the Annex section for All test plots

Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-24D-RWD-012	December 04, 2024	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : INDIRAIN Co., LTD.
Address : 203, 62, Dosan-daero 1-gil, Gangnam-gu, Seoul, Korea
Contact Person : Minju Kim / AE
Telephone No. : +82-2-514-3374
FCC ID : 2BMI3-GSK-S202407
Model Name : GSK-S202407
Brand Name : -
Serial Number : N/A
Date : December 04, 2024

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Galaxy Smart Keeper (GSK)
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 KDB 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247 (a) (2)	Minimum 6 dB Bandwidth	Met the Limit / PASS
15.247 (b) (3)	Maximum Peak Conducted Output Power	Met the Limit / PASS
15.247 (d)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.247 (d)	Radiated Emission which fall in the Restricted Band	Met the Limit / PASS
15.247 (e)	Peak Power Spectral Density	Met the Limit / PASS
15.209	Radiated Emission Limits	Met the Limit / PASS
15.207	Conducted Limits	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. GENERAL INFORMATION

3.1 Product Description

The INDIRAIN Co., LTD., Model GSK-S202407 (referred to as the EUT in this report) is a Galaxy Smart Keeper (GSK). The product specification described herein was obtained from product data sheet or user's manual.

Device Type	Galaxy Smart Keeper (GSK)	
Temperature Range	0 °C ~ +60 °C	
Operating Frequency	2 402 MHz ~ 2 480 MHz	
MAX. RF OUTPUT POWER	Antenna 1 (CC2640R2F)	11.11 dBm
	Antenna 2 (CC2460R2F)	11.02 dBm
	Antenna 3 (CC2642R1)	3.11 dBm
Number of Channel	40 Channels	
Modulation Type	GFSK	
Antenna Type	Antenna 1 (CC2640R2F)	PCB Antenna
	Antenna 2 (CC2460R2F)	Dipole Antenna
	Antenna 3 (CC2642R1)	PCB Antenna
Antenna Gain	Antenna 1 (CC2640R2F)	4.60 dBi
	Antenna 2 (CC2460R2F)	4.41 dBi
	Antenna 3 (CC2642R1)	4.60 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	32.768 kHz, 24 MHz, 48 MHz	
Rated Supply Voltage	DC 5.0 V	

Note: This Device use two RF Chipset(CC2640R2F, CC2642R1). and CC2640R2F works a Diversity Antenna.

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	GK CONTROL BOX V0.5	N/A
SUB Board	N/A	GK-LED_V02	N/A
PCB Antenna	N/A	N/A	N/A
Dipole Antenna	N/A	N/A	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
GSK-S202407	INDIRAIN Co., LTD.	Galaxy Smart Keeper (GSK) (EUT)	-
PROBOOK G7	HP	Notebook PC	EUT

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set at 2 402 MHz, 2 440 MHz, and 2 480 MHz to get a maximum emission levels from the EUT. The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis, but the worst data was recorded in this report.

-. Frequency / Channel Operations

Channel	Frequency
0	2 402
19	2 440
39	2 480

-. Duty Cycle

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
Antenna 1 (CC2640R2F)	-	-	100	-
Antenna 2 (CC2640R2F)	-	-	100	-
Antenna 3 (CC2642R1)	-	-	100	-

Note – Duty Cycle : $(\text{Tx On Time} / (\text{Tx On Time} + \text{Tx Off Time})) * 100$

Correction Factor : $10 * \text{Log}(1 / (\text{Duty Cycle} / 100))$

5.4 Configuration of Test System

Line Conducted Test: The EUT was connected to adaptor and the power of adaptor was connected to LISN. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

For intentional device, according to section 15.203, 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.

Antenna Construction:

The antenna of the EUT is a PCB Antenna and Dipole Antenna on the main board in the EUT, so no consideration of replacement by the user.

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Output Power	1.20
Conducted Spurious Emission < 26.5 GHz	1.26
Power Spectral Density	1.20
Radiated Disturbance (9 kHz ~ 30 MHz)	3.30
Radiated Disturbance (30 MHz ~ 1 GHz)	4.42
Radiated Disturbance (1 GHz ~ 18 GHz)	5.10
Radiated Disturbance (18 GHz ~ 40 GHz)	5.65

7. PRELIMINARY TEST

7.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

7.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

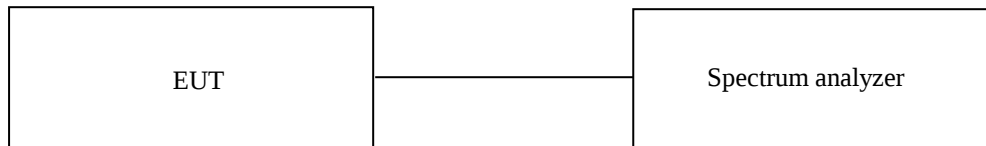
8. MINIMUM 6 dB BANDWIDTH

8.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



8.3 Test Date

October 18, 2024 ~ November 04, 2024

8.4 Test data for Antenna 1 (CC2640R2F)

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	724.22	500.00	224.22
Middle	2 440.00	714.24	500.00	214.24
High	2 480.00	714.24	500.00	214.24

Remark. Margin = Measured Value - Limit

8.5 Test data for Antenna 2 (CC2640R2F)

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	704.26	500.00	204.26
Middle	2 440.00	714.24	500.00	214.24
High	2 480.00	734.21	500.00	234.21

Remark. Margin = Measured Value - Limit

8.6 Test data for Antenna 3 (CC2642R1)

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (kHz)	LIMIT (kHz)	MARGIN (kHz)
Low	2 402.00	679.42	500.00	179.42
Middle	2 440.00	689.41	500.00	189.41
High	2 480.00	709.38	500.00	209.38

Remark. Margin = Measured Value - Limit

9. MAXIMUM CONDUCTED (PEAK) OUTPUT POWER

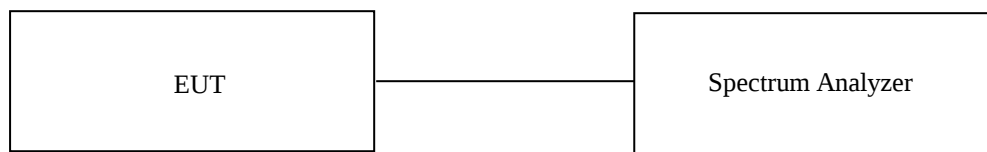
9.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

9.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to $\geq$ DTS Bandwidth, the video bandwidth is set to 3 times the resolution bandwidth.



9.3 Test Date

October 18, 2024 ~ November 04, 2024

9.4 Test data for Antenna 1 (CC2640R2F)

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	11.11	30.00	18.89
MIDDLE	2 440.00	9.74	30.00	20.26
HIGH	2 480.00	8.24	30.00	21.76

Remark. Margin = Limit – Measured Value

9.5 Test data for Antenna 2 (CC2640R2F)

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	11.02	30.00	18.98
MIDDLE	2 440.00	9.68	30.00	20.32
HIGH	2 480.00	8.25	30.00	21.75

Remark. Margin = Limit – Measured Value

9.6 Test data for Antenna 3 (CC2642R1)

-. Test Result : Pass

CHANNEL	FREQUENCY (MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
LOW	2 402.00	3.11	30.00	26.89
MIDDLE	2 440.00	3.00	30.00	27.00
HIGH	2 480.00	2.64	30.00	27.36

Remark. Margin = Limit – Measured Value

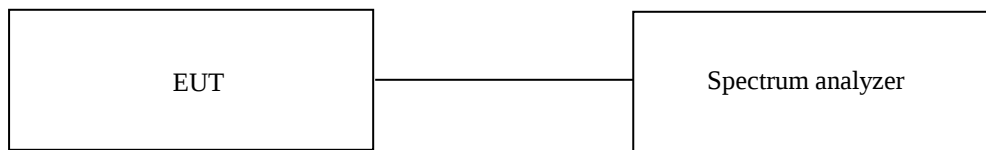
10. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

10.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

10.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, the video bandwidth is set to 3 times the resolution bandwidth and peak detection was used.



10.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

10.4 Test Date

October 18, 2024 ~ November 04, 2024

10.5 Test data for conducted emission

For Test data for conducted emission, please refer to the Annex.

10.6 Test data for radiated emission

10.6.1 Radiated Emission which fall in the Restricted Band

10.6.1.1 Test data for Antenna 1 (CC2640R2F)

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	ATT (dB)	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel											
2 377.87	57.97	Peak	H	27.59	4.65	41.74	6.12	-	54.59	74.00	19.41
2 378.06	50.70	Average	H	27.59	4.65	41.74	6.12	-	47.32	54.00	6.68
2 384.95	56.67	Peak	V	27.56	4.65	41.74	6.12	-	53.26	74.00	20.74
2 377.97	48.45	Average	V	27.59	4.65	41.74	6.12	-	45.07	54.00	8.93
Test Data for High Channel											
2 484.27	58.71	Peak	H	27.40	4.83	41.73	6.13	-	55.34	74.00	18.66
2 483.59	48.27	Average	H	27.40	4.83	41.73	6.13	-	44.90	54.00	9.10
2 483.73	57.00	Peak	V	27.40	4.83	41.73	6.13	-	53.63	74.00	20.37
2 483.53	46.41	Average	V	27.40	4.83	41.73	6.13	-	43.04	54.00	10.96

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – AMP Gain + ATT + Duty Factor

10.6.1.2 Test data for Antenna 2 (CC2640R2F)

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Measurement distance : 3 m
- . Duty Cycle : 100 %
- . Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	ATT (dB)	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel											
2 377.69	58.01	Peak	H	27.59	4.65	41.74	10.42	-	58.93	74.00	15.07
2 378.15	51.29	Average	H	27.59	4.65	41.74	10.42	-	52.21	54.00	1.79
2 377.69	56.47	Peak	V	27.59	4.65	41.74	10.42	-	57.39	74.00	16.61
2 378.15	48.58	Average	V	27.59	4.65	41.74	10.42	-	49.50	54.00	4.50
Test Data for High Channel											
2 483.57	57.97	Peak	H	27.40	4.83	41.73	10.45	-	58.92	74.00	15.08
2 483.53	48.67	Average	H	27.40	4.83	41.73	10.45	-	49.62	54.00	4.38
2 499.19	56.83	Peak	V	27.40	4.93	41.73	10.44	-	57.87	74.00	16.13
2 483.51	46.30	Average	V	27.40	4.83	41.73	10.45	-	47.25	54.00	6.75

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{AMP Gain} + \text{ATT} + \text{Duty Factor}$$

10.6.1.3 Test data for Antenna 3 (CC2642R1)

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Measurement distance : 3 m
- . Duty Cycle : 100 %
- . Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	ATT (dB)	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel											
2 345.52	56.49	Peak	H	27.72	4.58	41.74	6.09	-	53.14	74.00	20.86
2 354.07	44.27	Average	H	27.68	4.62	41.74	6.09	-	40.92	54.00	13.08
2 356.92	55.43	Peak	V	27.67	4.63	41.74	6.11	-	52.10	74.00	21.90
2 360.04	43.97	Average	V	27.66	4.63	41.74	6.11	-	40.63	54.00	13.37
Test Data for High Channel											
2 486.90	56.57	Peak	H	27.40	4.88	41.73	6.11	-	53.23	74.00	20.77
2 484.23	44.70	Average	H	27.40	4.83	41.73	6.13	-	41.33	54.00	12.67
2 486.22	56.61	Peak	V	27.40	4.83	41.73	6.13	-	53.24	74.00	20.76
2 483.73	44.78	Average	V	27.40	4.83	41.73	6.13	-	41.41	54.00	12.59

Tabulated test data for Restricted Band

Remark: “H”: Horizontal, “V”: Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{AMP Gain} + \text{ATT} + \text{Duty Factor}$$

10.6.2 Spurious & Harmonic Radiated Emission

10.6.2.1 Test data for Antenna 1 (CC2640R2F)

- Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	51.35	Peak	H	31.20	6.60	41.29	-	47.86	74.00	26.14
4 804.00	41.91	Average	H	31.20	6.60	41.29	-	38.42	54.00	15.58
4 804.00	51.64	Peak	V	31.20	6.60	41.29	-	48.15	74.00	25.85
4 804.00	42.96	Average	V	31.20	6.60	41.29	-	39.47	54.00	14.53
7 206.00	51.74	Peak	H	36.11	8.06	41.38	-	54.53	74.00	19.47
7 206.00	39.53	Average	H	36.11	8.06	41.38	-	42.32	54.00	11.68
7 206.00	51.19	Peak	V	36.11	8.06	41.38	-	53.98	74.00	20.02
7 206.00	39.87	Average	V	36.11	8.06	41.38	-	42.66	54.00	11.34
9 608.00	52.21	Peak	H	38.61	9.54	41.98	-	58.38	74.00	15.62
9 608.00	40.01	Average	H	38.61	9.54	41.98	-	46.18	54.00	7.82
9 608.00	55.07	Peak	V	38.61	9.54	41.98	-	61.24	74.00	12.76
9 608.00	45.84	Average	V	38.61	9.54	41.98	-	52.01	54.00	1.99

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Middle Channel										
4 880.00	50.66	Peak	H	31.26	6.70	41.27	-	47.35	74.00	26.65
4 880.00	38.13	Average	H	31.26	6.70	41.27	-	34.82	54.00	19.18
4 880.00	50.50	Peak	V	31.26	6.70	41.27	-	47.19	74.00	26.81
4 880.00	41.18	Average	V	31.26	6.70	41.27	-	37.87	54.00	16.13
7 320.00	51.37	Peak	H	36.30	8.62	41.36	-	54.93	74.00	19.07
7 320.00	39.37	Average	H	36.30	8.62	41.36	-	42.93	54.00	11.07
7 320.00	52.30	Peak	V	36.30	8.62	41.37	-	55.85	74.00	18.15
7 320.00	39.34	Average	V	36.30	8.62	41.36	-	42.90	54.00	11.10
9 760.00	50.98	Peak	H	39.11	9.56	42.06	-	57.59	74.00	16.41
9 760.00	38.95	Average	H	39.11	9.56	42.06	-	45.56	54.00	8.44
9 760.00	51.23	Peak	V	39.12	9.56	42.06	-	57.85	74.00	16.15
9 760.00	38.99	Average	V	39.11	9.56	42.06	-	45.60	54.00	8.40
Test Data for High Channel										
4 960.00	50.31	Peak	H	31.54	6.71	41.25	-	47.31	74.00	26.69
4 960.00	38.20	Average	H	31.54	6.71	41.25	-	35.20	54.00	18.80
4 960.00	50.53	Peak	V	31.54	6.71	41.25	-	47.53	74.00	26.47
4 960.00	39.24	Average	V	31.54	6.71	41.25	-	36.24	54.00	17.76
7 440.00	52.22	Peak	H	36.40	8.22	41.35	-	55.49	74.00	18.51
7 440.00	39.36	Average	H	36.40	8.22	41.35	-	42.63	54.00	11.37
7 440.00	52.01	Peak	V	36.40	8.22	41.35	-	55.28	74.00	18.72
7 440.00	39.39	Average	V	36.40	8.22	41.35	-	42.66	54.00	11.34
9 920.00	51.92	Peak	H	39.20	9.49	42.14	-	58.47	74.00	15.53
9 920.00	39.67	Average	H	39.20	9.49	42.14	-	46.22	54.00	7.78
9 920.00	51.93	Peak	V	39.20	9.49	42.14	-	58.48	74.00	15.52
9 920.00	39.71	Average	V	39.20	9.49	42.14	-	46.26	54.00	7.74

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – AMP Gain + Duty Factor

10.6.2.2 Test data for Antenna 2 (CC2640R2F)

- Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	50.74	Peak	H	31.20	6.60	41.29	-	47.25	74.00	26.75
4 804.00	38.21	Average	H	31.20	6.60	41.29	-	34.72	54.00	19.28
4 804.00	50.62	Peak	V	31.20	6.60	41.29	-	47.13	74.00	26.87
4 804.00	40.65	Average	V	31.20	6.60	41.29	-	37.16	54.00	16.84
7 206.00	51.48	Peak	H	36.10	8.06	41.38	-	54.26	74.00	19.74
7 206.00	39.06	Average	H	36.12	8.06	41.38	-	41.86	54.00	12.14
7 206.00	51.32	Peak	V	36.12	8.06	41.38	-	54.12	74.00	19.88
7 206.00	39.12	Average	V	36.11	8.06	41.38	-	41.91	54.00	12.09
9 608.00	51.92	Peak	H	38.61	9.54	41.98	-	58.09	74.00	15.91
9 608.00	39.93	Average	H	38.61	9.54	41.98	-	46.10	54.00	7.90
9 608.00	52.20	Peak	V	38.61	9.54	41.98	-	58.37	74.00	15.63
9 608.00	39.93	Average	V	38.61	9.54	41.98	-	46.10	54.00	7.90

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Middle Channel										
4 880.00	49.58	Peak	H	31.26	6.70	41.27	-	46.27	74.00	27.73
4 880.00	37.94	Average	H	31.26	6.70	41.27	-	34.63	54.00	19.37
4 880.00	49.51	Peak	V	31.27	6.70	41.27	-	46.21	74.00	27.79
4 880.00	38.14	Average	V	31.26	6.70	41.27	-	34.83	54.00	19.17
7 320.00	51.39	Peak	H	36.30	8.62	41.37	-	54.94	74.00	19.06
7 320.00	39.30	Average	H	36.30	8.62	41.36	-	42.86	54.00	11.14
7 320.00	51.60	Peak	V	36.30	8.62	41.36	-	55.16	74.00	18.84
7 320.00	39.29	Average	V	36.30	8.62	41.36	-	42.85	54.00	11.15
9 760.00	51.39	Peak	H	39.11	9.56	42.06	-	58.00	74.00	16.00
9 760.00	38.91	Average	H	39.11	9.56	42.06	-	45.52	54.00	8.48
9 760.00	51.17	Peak	V	39.11	9.56	42.06	-	57.78	74.00	16.22
9 760.00	39.06	Average	V	39.11	9.56	42.06	-	45.67	54.00	8.33
Test Data for High Channel										
4 960.00	49.80	Peak	H	31.55	6.71	41.25	-	46.81	74.00	27.19
4 960.00	37.98	Average	H	31.54	6.71	41.25	-	34.98	54.00	19.02
4 960.00	50.54	Peak	V	31.53	6.71	41.25	-	47.53	74.00	26.47
4 960.00	38.16	Average	V	31.53	6.71	41.25	-	35.15	54.00	18.85
7 440.00	52.07	Peak	H	36.40	8.22	41.35	-	55.34	74.00	18.66
7 440.00	39.26	Average	H	36.40	8.22	41.35	-	42.53	54.00	11.47
7 440.00	51.23	Peak	V	36.40	8.22	41.35	-	54.50	74.00	19.50
7 440.00	39.53	Average	V	36.40	8.22	41.35	-	42.80	54.00	11.20
9 920.00	51.58	Peak	H	39.20	9.49	42.14	-	58.13	74.00	15.87
9 920.00	39.59	Average	H	39.20	9.49	42.14	-	46.14	54.00	7.86
9 920.00	52.06	Peak	V	39.20	9.49	42.14	-	58.61	74.00	15.39
9 920.00	39.69	Average	V	39.20	9.49	42.14	-	46.24	54.00	7.76

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – AMP Gain + Duty Factor

10.6.2.3 Test data for Antenna 3 (CC2642R1)

- Resolution bandwidth : 1 MHz for Peak and Average Mode for the emissions fall in restricted band,
1 MHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel										
4 804.00	53.25	Peak	H	31.20	6.60	41.29	-	49.76	74.00	24.24
4 804.00	46.30	Average	H	31.20	6.60	41.29	-	42.81	54.00	11.19
4 804.00	55.87	Peak	V	31.20	6.60	41.29	-	52.38	74.00	21.62
4 804.00	50.35	Average	V	31.20	6.60	41.29	-	46.86	54.00	7.14
7 206.00	51.99	Peak	H	36.12	8.06	41.38	-	54.79	74.00	19.21
7 206.00	39.21	Average	H	36.11	8.06	41.38	-	42.00	54.00	12.00
7 206.00	52.94	Peak	V	36.11	8.06	41.38	-	55.73	74.00	18.27
7 206.00	41.99	Average	V	36.11	8.06	41.38	-	44.78	54.00	9.22
9 608.00	52.51	Peak	H	38.61	9.54	41.98	-	58.68	74.00	15.32
9 608.00	39.90	Average	H	38.61	9.54	41.98	-	46.07	54.00	7.93
9 608.00	52.48	Peak	V	38.62	9.54	41.98	-	58.66	74.00	15.34
9 608.00	40.02	Average	V	38.61	9.54	41.98	-	46.19	54.00	7.81

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	Duty Factor (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Middle Channel										
4 880.00	50.62	Peak	H	31.26	6.70	41.27	-	47.31	74.00	26.69
4 880.00	41.12	Average	H	31.26	6.70	41.27	-	37.81	54.00	16.19
4 880.00	53.74	Peak	V	31.26	6.70	41.27	-	50.43	74.00	23.57
4 880.00	47.83	Average	V	31.26	6.70	41.27	-	44.52	54.00	9.48
7 320.00	52.06	Peak	H	36.30	8.62	41.37	-	55.61	74.00	18.39
7 320.00	40.04	Average	H	36.30	8.62	41.37	-	43.59	54.00	10.41
7 320.00	52.71	Peak	V	36.30	8.62	41.37	-	56.26	74.00	17.74
7 320.00	41.96	Average	V	36.30	8.62	41.37	-	45.51	54.00	8.49
9 760.00	51.26	Peak	H	39.12	9.56	42.06	-	57.88	74.00	16.12
9 760.00	38.90	Average	H	39.11	9.56	42.06	-	45.51	54.00	8.49
9 760.00	50.96	Peak	V	39.12	9.56	42.06	-	57.58	74.00	16.42
9 760.00	38.92	Average	V	39.11	9.56	42.06	-	45.53	54.00	8.47
Test Data for High Channel										
4 960.00	49.90	Peak	H	31.54	6.71	41.25	-	46.90	74.00	27.10
4 960.00	38.81	Average	H	31.54	6.71	41.25	-	35.81	54.00	18.19
4 960.00	51.85	Peak	V	31.54	6.71	41.25	-	48.85	74.00	25.15
4 960.00	43.28	Average	V	31.54	6.71	41.25	-	40.28	54.00	13.72
7 440.00	51.58	Peak	H	36.40	8.22	41.35	-	54.85	74.00	19.15
7 440.00	39.50	Average	H	36.40	8.22	41.35	-	42.77	54.00	11.23
7 440.00	52.20	Peak	V	36.40	8.22	41.35	-	55.47	74.00	18.53
7 440.00	40.56	Average	V	36.40	8.22	41.35	-	43.83	54.00	10.17
9 920.00	52.05	Peak	H	39.20	9.49	42.14	-	58.60	74.00	15.40
9 920.00	39.60	Average	H	39.20	9.49	42.14	-	46.15	54.00	7.85
9 920.00	51.54	Peak	V	39.20	9.49	42.14	-	58.09	74.00	15.91
9 920.00	39.68	Average	V	39.20	9.49	42.14	-	46.23	54.00	7.77

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – AMP Gain + Duty Factor

11. PEAK POWER SPECTRAL DENSITY

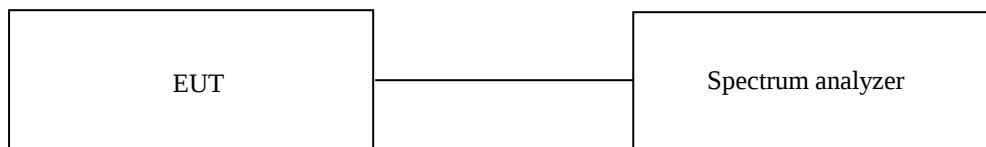
11.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

11.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$, the video bandwidth is set to 3 times the resolution bandwidth.



11.3 Test Date

October 18, 2024 ~ November 04, 2024

11.4 Test data for Antenna 1 (CC2640R2F)

-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-0.93	8.00	8.93
Middle	2 440.00	-1.98	8.00	9.98
High	2 480.00	-3.68	8.00	11.68

Remark. Margin = Limit –Measured Value

11.5 Test data for Antenna 2 (CC2640R2F)

-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-0.60	8.00	8.60
Middle	2 440.00	-2.09	8.00	10.09
High	2 480.00	-3.83	8.00	11.83

Remark. Margin = Limit –Measured Value

11.6 Test data for Antenna 3 (CC2642R1)

-. Test Result : Pass

CHANNEL	FREQUENCY(MHz)	MEASURED VALUE (dBm)	LIMIT (dBm)	MARGIN (dB)
Low	2 402.00	-8.04	8.00	16.04
Middle	2 440.00	-8.23	8.00	16.23
High	2 480.00	-8.76	8.00	16.76

Remark. Margin = Limit –Measured Value

12. RADIATED EMISSION TEST

12.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

12.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

12.3 Test Date

October 18, 2024 ~ November 04, 2024

12.4 Test data for 30 MHz ~ 1 000 MHz

12.4.1 Test data for Antenna 1 (CC2640R2F)

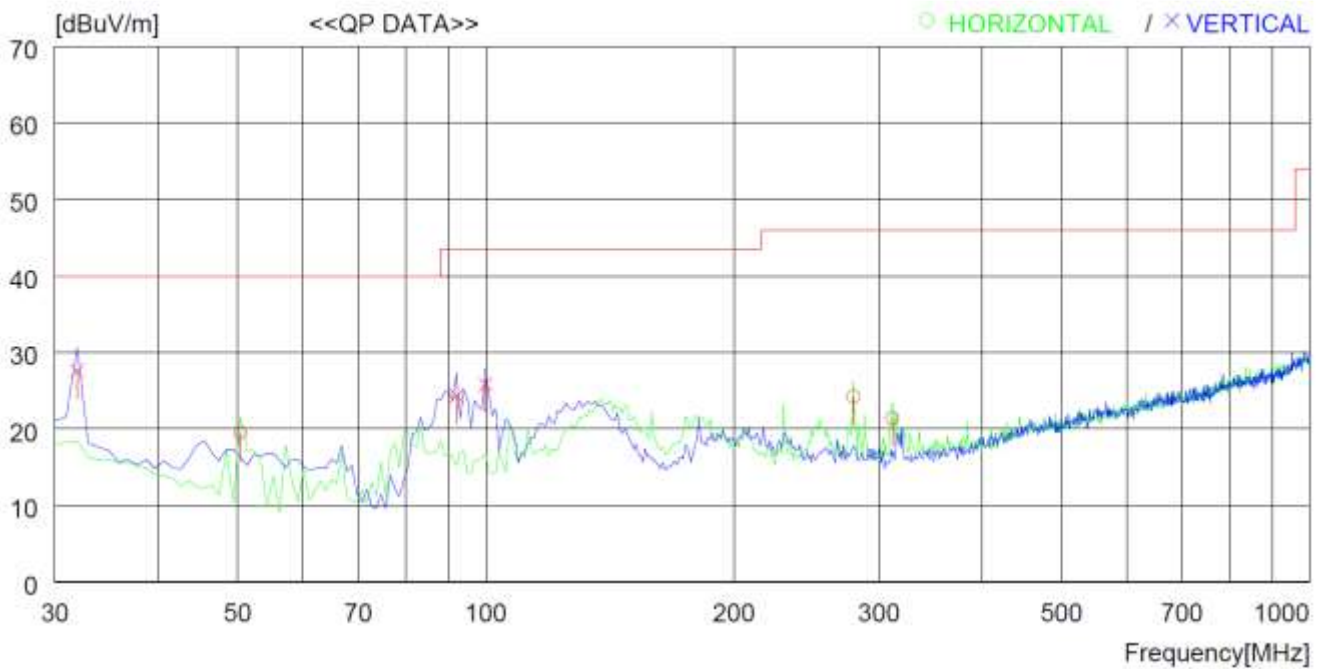
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Galaxy Smart Keeper (GSK)

Test mode : Transmitting mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	50.370	38.5	13.1	0.9	33.0	19.5	40.0	20.5	200	88
2	279.290	36.7	18.4	2.1	33.0	24.2	46.0	21.8	100	333
3	311.300	32.9	19.3	2.2	33.0	21.4	46.0	24.6	100	359
----- Vertical -----										
4	31.940	39.3	20.6	0.7	33.0	27.6	40.0	12.4	200	359
5	92.080	42.0	14.1	1.2	33.0	24.3	43.5	19.2	100	263
6	99.840	42.0	15.5	1.3	33.0	25.8	43.5	17.7	100	286

12.4.2 Test data for Antenna 2 (CC2640R2F)

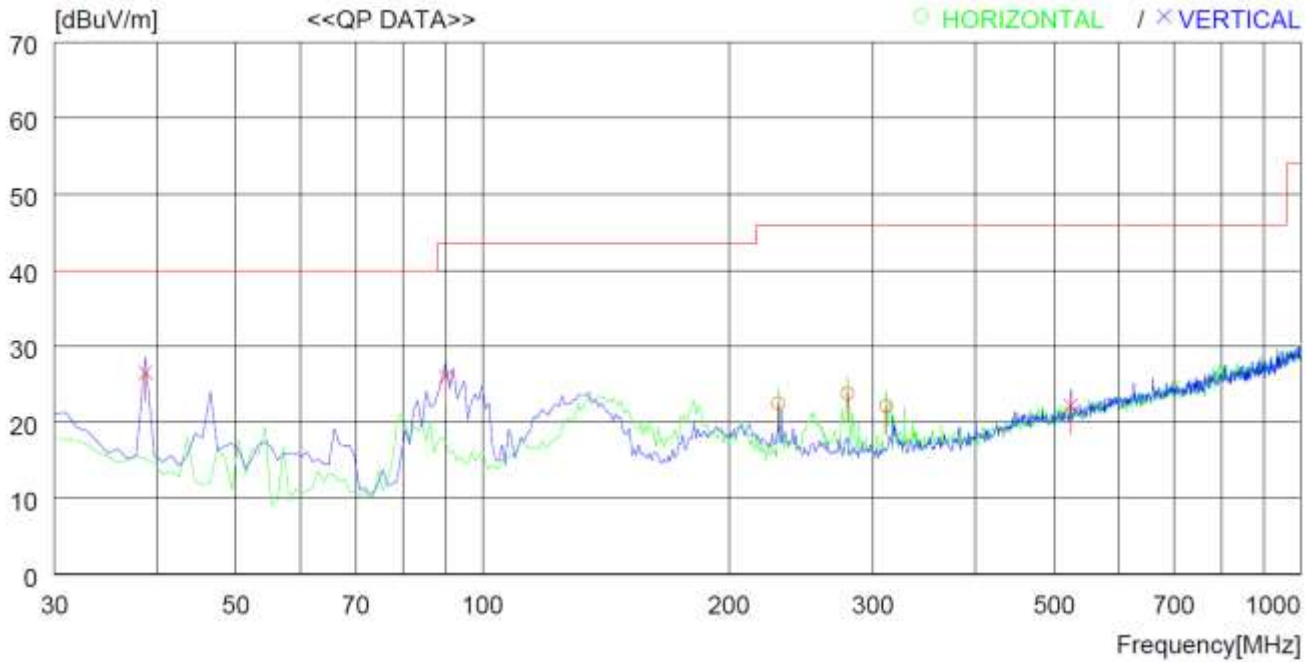
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Galaxy Smart Keeper (GSK)

Test mode : Transmitting mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	229.820	36.9	16.7	1.9	33.0	22.5	46.0	23.5	100	231
2	279.290	36.3	18.4	2.1	33.0	23.8	46.0	22.2	100	152
3	311.300	33.6	19.3	2.2	33.0	22.1	46.0	23.9	100	120
----- Vertical -----										
4	38.730	41.2	17.5	0.8	33.0	26.5	40.0	13.5	100	0
5	90.140	44.0	13.8	1.2	33.0	26.0	43.5	17.5	100	236
6	522.760	29.1	23.4	2.9	33.2	22.2	46.0	23.8	400	40

12.4.3 Test data for Antenna 3 (CC2642R1)

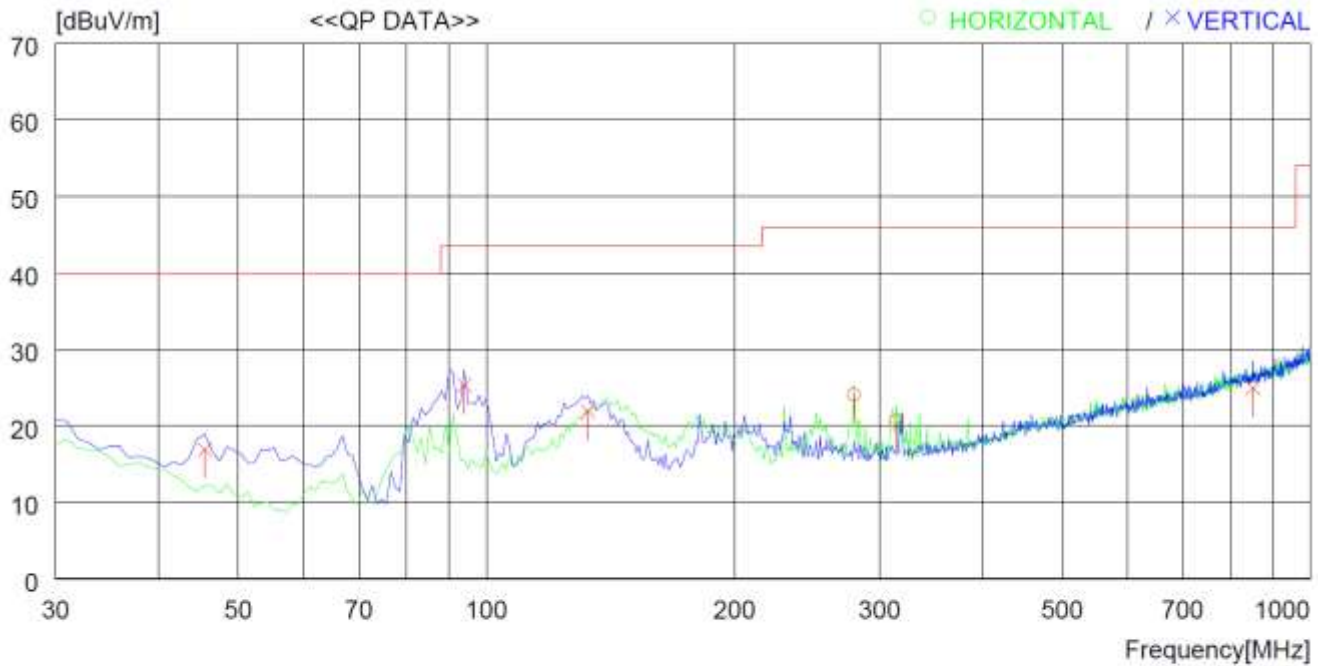
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : Galaxy Smart Keeper (GSK)

Test mode : Transmitting mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QF [dBuV]	FACTOR [dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	279.290	36.6	18.4	2.1	33.0	24.1	46.0	21.9	100	0
2	314.210	32.2	19.3	2.2	33.0	20.7	46.0	25.3	100	0
----- Vertical -----										
3	45.520	34.4	14.7	0.8	33.0	16.9	40.0	23.1	100	359
4	94.020	42.7	14.4	1.2	33.0	25.3	43.5	18.2	100	280
5	132.820	34.2	19.2	1.5	33.0	21.9	43.5	21.6	100	165
6	851.580	26.8	27.0	3.8	32.7	24.9	46.0	21.1	100	359

12.5 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

12.6 Test data for above 1 GHz

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
Emission from the EUT more than 20 dB below the limit in each frequency range.									

13. CONDUCTED EMISSION TEST

13.1 Operating environment

Temperature : 23 °C
Relative humidity : 49 % R.H.

13.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a $50\ \Omega$ / $50\ \mu\text{H}$ + $5\ \Omega$ Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

13.3 Measurement uncertainty

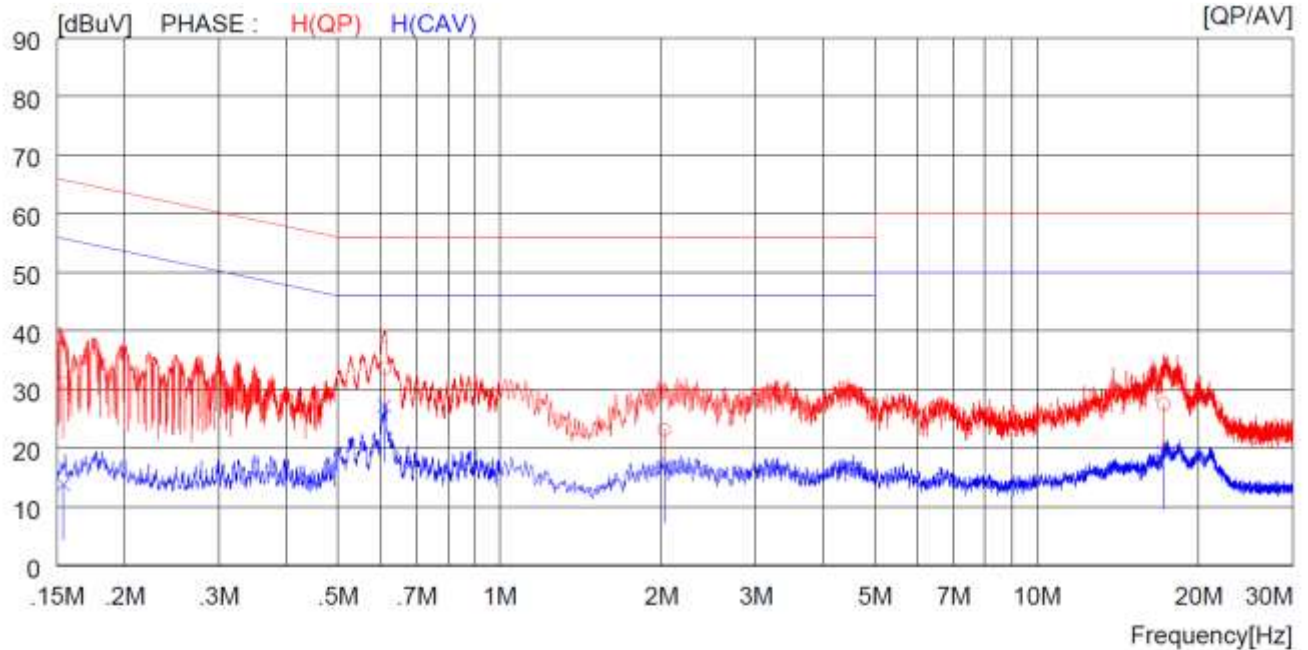
The uncertainty for Conducted emission test is $\pm 1.26\ \text{dB}$

13.4 Test date

October 18, 2024 ~ November 04, 2024

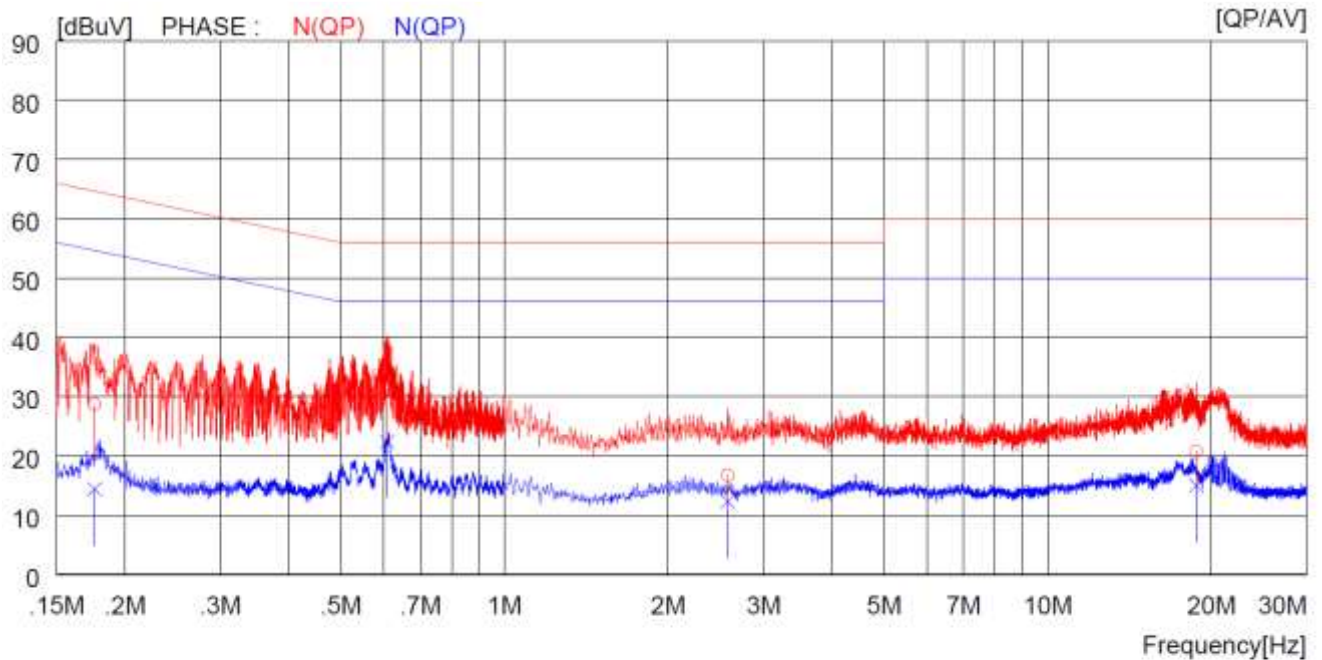
13.5 Test data for Antenna 1 (CC2640R2F)

- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15400	21.0	----	10.1	31.1	----	65.8	----	34.7	----	H (QP)
2	0.61000	23.5	----	10.1	33.6	----	56.0	----	22.4	----	H (QP)
3	2.02400	13.0	----	10.2	23.2	----	56.0	----	32.8	----	H (QP)
4	17.25000	16.9	----	10.6	27.5	----	60.0	----	32.5	----	H (QP)
5	0.15400	----	3.7	10.1	----	13.8	----	55.8	----	42.0	H (CAV)
6	0.61000	----	17.1	10.1	----	27.2	----	46.0	----	18.8	H (CAV)
7	2.02400	----	6.6	10.2	----	16.8	----	46.0	----	29.2	H (CAV)
8	17.25000	----	8.6	10.6	----	19.2	----	50.0	----	30.8	H (CAV)

-. Tested Line : NEUTRAL LINE



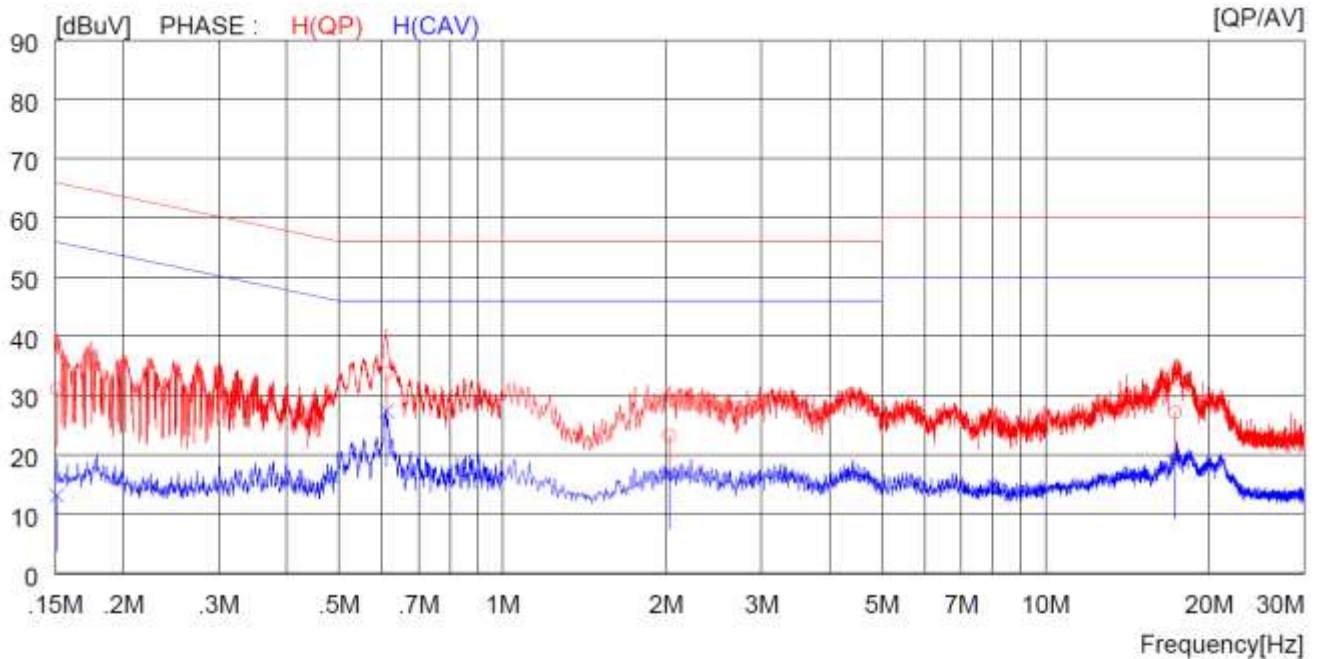
NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.17600	18.6	----	10.1	28.7	----	64.7	----	36.0	----	N (QP)
2	0.60900	21.1	----	10.1	31.2	----	56.0	----	24.8	----	N (QP)
3	2.57600	6.5	----	10.2	16.7	----	56.0	----	39.3	----	N (QP)
4	18.78000	10.2	----	10.6	20.8	----	60.0	----	39.2	----	N (QP)
5	0.17600	----	4.3	10.1	----	14.4	----	54.7	----	40.3	N (CAV)
6	0.60900	----	12.3	10.1	----	22.4	----	46.0	----	23.6	N (CAV)
7	2.57600	----	2.1	10.2	----	12.3	----	46.0	----	33.7	N (CAV)
8	18.78000	----	4.4	10.6	----	15.0	----	50.0	----	35.0	N (CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

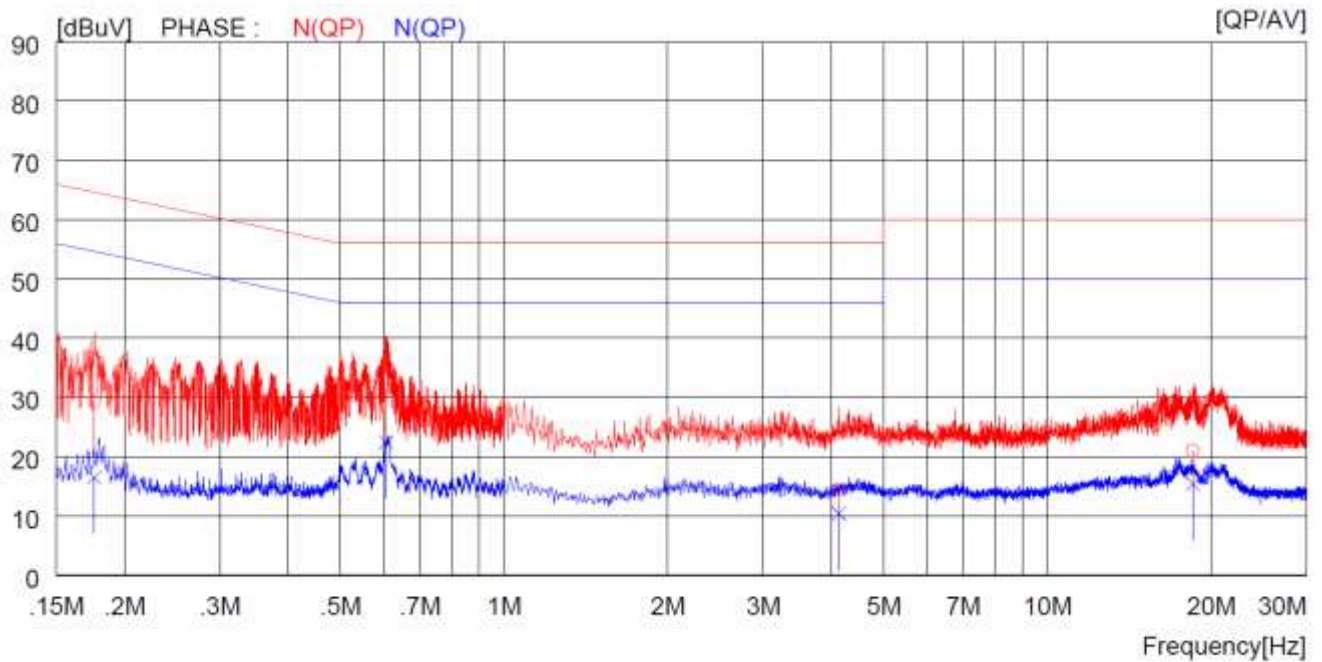
13.6 Test data for Antenna 2 (CC2640R2F)

- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15100	20.9	----	10.1	31.0	----	65.9	----	34.9	----	H (QP)
2	0.61100	23.7	----	10.1	33.8	----	56.0	----	22.2	----	H (QP)
3	2.02800	13.1	----	10.2	23.3	----	56.0	----	32.7	----	H (QP)
4	17.31000	16.6	----	10.6	27.2	----	60.0	----	32.8	----	H (QP)
5	0.15100	----	3.1	10.1	----	13.2	----	55.9	----	42.7	H (CAV)
6	0.61100	----	17.3	10.1	----	27.4	----	46.0	----	18.6	H (CAV)
7	2.02800	----	6.8	10.2	----	17.0	----	46.0	----	29.0	H (CAV)
8	17.31000	----	8.1	10.6	----	18.7	----	50.0	----	31.3	H (CAV)

-. Tested Line : NEUTRAL LINE



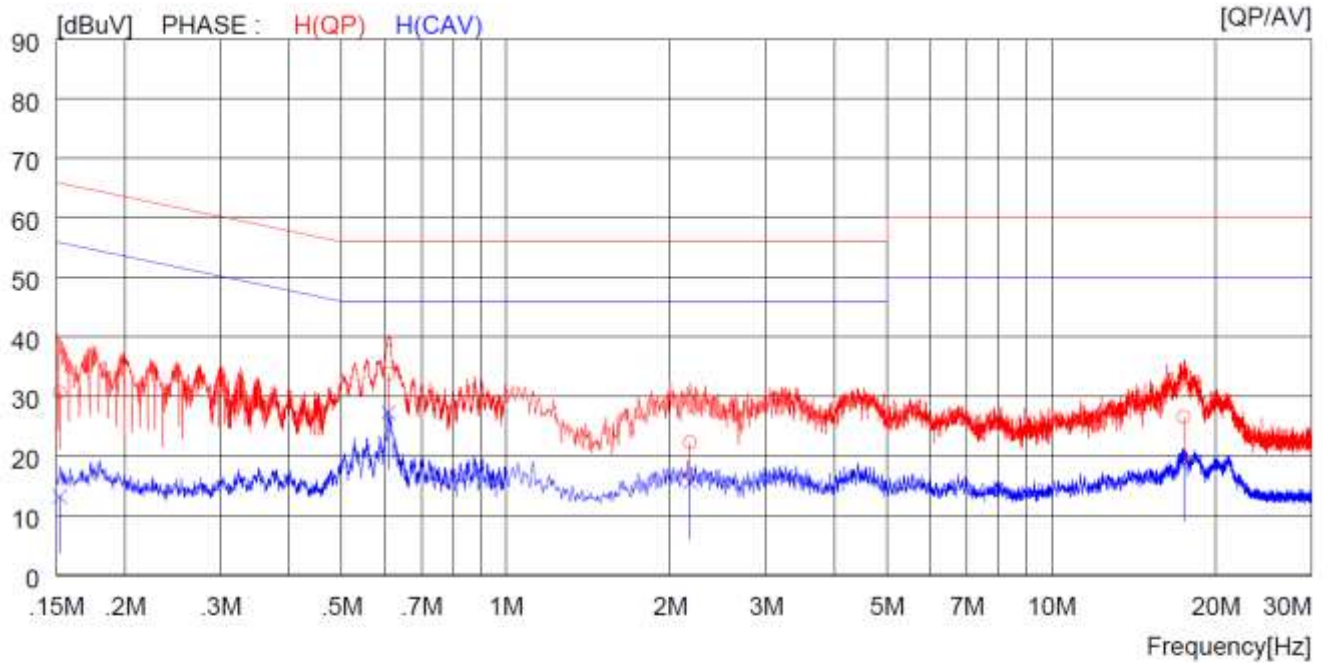
NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.17600	19.2	----	10.1	29.3	----	64.7	----	35.4	----	N (QP)
2	0.60600	21.1	----	10.1	31.2	----	56.0	----	24.8	----	N (QP)
3	4.12800	4.4	----	10.2	14.6	----	56.0	----	41.4	----	N (QP)
4	18.53000	10.4	----	10.6	21.0	----	60.0	----	39.0	----	N (QP)
5	0.17600	----	6.4	10.1	----	16.5	----	54.7	----	38.2	N (CAV)
6	0.60600	----	12.3	10.1	----	22.4	----	46.0	----	23.6	N (CAV)
7	4.12800	----	0.2	10.2	----	10.4	----	46.0	----	35.6	N (CAV)
8	18.53000	----	4.8	10.6	----	15.4	----	50.0	----	34.6	N (CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

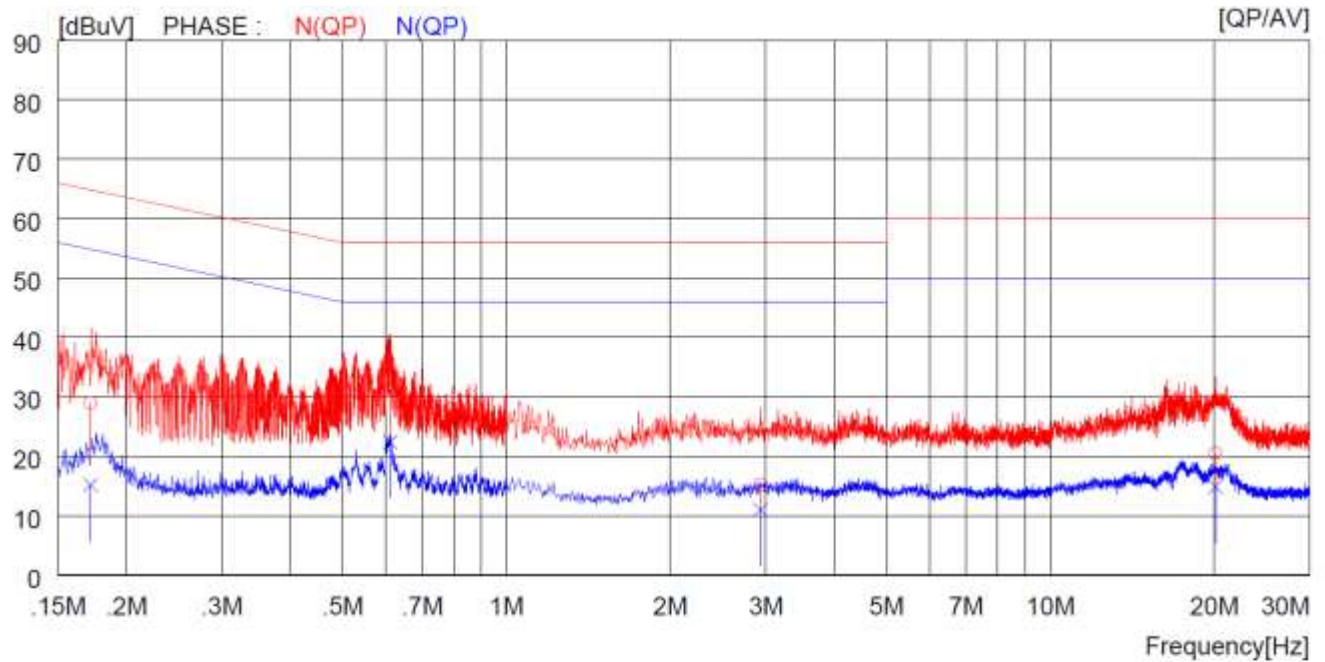
13.7 Test data for Antenna 3 (CC2642R1)

- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15200	20.6	----	10.1	30.7	----	65.9	----	35.2	----	H(QP)
2	0.60900	23.7	----	10.1	33.8	----	56.0	----	22.2	----	H(QP)
3	2.17600	12.1	----	10.2	22.3	----	56.0	----	33.7	----	H(QP)
4	17.47000	16.0	----	10.6	26.6	----	60.0	----	33.4	----	H(QP)
5	0.15200	----	3.1	10.1	----	13.2	----	55.9	----	42.7	H(CAV)
6	0.60900	----	17.2	10.1	----	27.3	----	46.0	----	18.7	H(CAV)
7	2.17600	----	5.4	10.2	----	15.6	----	46.0	----	30.4	H(CAV)
8	17.47000	----	7.9	10.6	----	18.5	----	50.0	----	31.5	H(CAV)

-. Tested Line : NEUTRAL LINE



NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.17200	18.9	----	10.1	29.0	----	64.9	----	35.9	----	N(QP)
2	0.61100	21.0	----	10.1	31.1	----	56.0	----	24.9	----	N(QP)
3	2.93200	5.0	----	10.2	15.2	----	56.0	----	40.8	----	N(QP)
4	20.12000	9.9	----	10.6	20.5	----	60.0	----	39.5	----	N(QP)
5	0.17200	----	5.1	10.1	----	15.2	----	54.9	----	39.7	N(CAV)
6	0.61100	----	12.3	10.1	----	22.4	----	46.0	----	23.6	N(CAV)
7	2.93200	----	0.8	10.2	----	11.0	----	46.0	----	35.0	N(CAV)
8	20.12000	----	4.3	10.6	----	14.9	----	50.0	----	35.1	N(CAV)

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

14. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV40-N	Rohde & Schwarz	Signal Analyzer	101651	Jan. 15, 2024 (1Y)
ESCI	Rohde & Schwarz	Test Receiver	101013	Mar. 12, 2024 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 11, 2024 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 04, 2024 (1Y)
SCU40A	Rohde & Schwarz	Signal Conditioning unit	100436	Jan. 23, 2024 (1Y)
HPF 3GHz	Rohde & Schwarz	High Pass Filter (1-3 GHz)	N/A	Jan. 15, 2024 (1Y)
WT-A3882-R10	Microwave	Cavity Band Rejection Filter	WT22040502-1	Jan. 16, 2024 (1Y)
FMZB 1513	Schwarzbeck	Loop Antenna	1513-235	Mar. 20, 2024 (2Y)
HLP-2008	TDK	Hybrid Antenna	131313	Apr. 05, 2023 (2Y)
BBHA9120D	Schwarzbeck	Horn Antenna	9120D-1349	Jul. 02, 2024 (1Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 04, 2024 (1Y)
ESCI	Rohde & Schwarz	Test Receiver	101012	Sep. 26, 2024 (1Y)
ESH3-Z2	Rohde & Schwarz	Pulse Limiter	100655	Mar. 12, 2024 (1Y)
NSLK8128	Schwarzbeck	LISN	8128216	Mar. 12, 2024 (1Y)
DT3000	Innco System	Turn Table	DT3000/093	N/A
MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
CO3000	Innco System	Controller	CO3000/904	N/A