TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0075 Page (1) of (28)	eurofins KCTL

1. Client

- Name : SHINHEE C&M.Co.,Ltd
- Address : 77, Barangongdan-ro 1-gil, Hyangnam-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea
- Date of Receipt : 2024-07-11

2. Use of Report : Certification

3. Name of Product / Model : SHCNM Controller / SHSC-WB001

4. Manufacturer / Country of Origin : SHINHEE C&M.Co.,Ltd / Korea

5. FCC ID : 2BOB2SHSC-WB001

5. Date of Test : 2025-03-01 to 2025-03-18

6. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

7. Test method used : FCC Part 15 Subpart C, 15.247

8. Test Result : Refer to the test result in the test report

Affirmation	Tested by Name : Minwoo Kim (Signature)	Technical Manager Name : Harim Lee (Signature)

2025-03-26

Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2025-03-26	Originally issued	-

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information

Client	:	SHINHEE C&M.Co.,Ltd
Address	:	77, Barangongdan-ro 1-gil, Hyangnam-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea
Manufacturer	:	SHINHEE C&M.Co.,Ltd
Address	:	77, Barangongdan-ro 1-gil, Hyangnam-eup, Hwaseong-si, Gyeonggi-do, Republic of Korea
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 CAB Identifier: KR0040 ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	SHCNM Controller			
Model	:	SHSC-WB001			
Modulation technique	:	Bluetooth(BDR/EDR)	:	GFSK, π/4DQPSK, 8DPSK	
		Bluetooth(BLE)	:	GFSK	
		WIFI(802.11a/b/g/n/ac)	:	DSSS, OFDM	
Number of channels	:	Bluetooth	:	79 ch	
		BLE	:	40 ch	
		2.4 ㎓ WLAN	:	13 ch (20 ㎒), 7 ch (40 ㎒)	
		UNII-1	:	4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒)	
		UNII-2A	:	4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒)	
Power source	:	100 ~ 240 V 50/60 ㎐			
Antenna specification	:	Dipole Antenna			
Antenna gain	:	BT/BLE/2.4 ㎓ WLAN	:	2.00 dBi	
		UNII-1	:	5.00 dBi	
		UNII-2A	:	5.00 dBi	
Frequency range	:	Bluetooth	:	2 402 ㎒ ~ 2 480 ㎒	(BDR/EDR/BLE)
		2.4 ㎓ WLAN	:	2 412 ㎒ ~ 2 472 ㎒	(802.11b/g/n_HT20)
				2 422 ㎒ ~ 2 452 ㎒	(802.11n_HT40)
		UNII-1	:	5 180 ㎒ ~ 5 240 ㎒	(802.11a/n/ac_HT20/VHT20)
				5 190 ㎒ ~ 5 230 ㎒	(802.11n/ac_HT40/VHT40)
				5 210 ㎒	(802.11ac_VHT80)
		UNII-2A	:	5 260 ㎒ ~ 5 320 ㎒	(802.11a/n/ac_HT20/VHT20)
				5 270 ㎒ ~ 5 310 ㎒	(802.11n/ac_HT40/VHT40)
				5 290 ㎒	(802.11ac_VHT80)
Software version	:	SH_SW 2.1			
Hardware version	:	SH_HW 1.4			
Test device serial No.	:	N/A			
Operation temperature	:	-20 ℃ ~ 50 ℃			

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
-	-	-	-	-

2.2. Frequency/channel operations

This device contains the following capabilities:
Bluetooth(BDR/EDR/BLE), WLAN 2.4 ㎓(802.11b/g/n_HT20/HT40)
WLAN 5 ㎓(802.11a/n_HT20/40/ac_VHT20/40/80)

Ch.	Frequency (㎒)
00	2 402
. .	. .
39	2 441
. .	. .
78	2 480

Table 2.2.1. Bluetooth(BDR/EDR) mode

15.247 Requirements for Bluetooth transmitter:

- This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:
    1) This system is hopping pseudo-randomly.
    2) Each frequency is used equally on the average by each transmitter.
    3) The receiver input bandwidths that match the hopping channel bandwidths of their corresponding transmitters
    4) The receiver shifts frequencies in synchronization with the transmitted signals.
- 15.247(g): The system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this Section 15.247 should the transmitter be presented with a continuous data (or information) stream.
- 15.247(h): The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3. Antenna requirement

Requirement of FCC part 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

- The transmitter has attached Dipole Antenna (external antenna) on the board.
- The E.U.T Complies with the requirement of §15.203, §15.247.

4. Summary of tests

FCC Part section(s)	Parameter	Test condition	Test results
15.207(a)	AC Conducted Emissions	Conducted	Pass
15.205(a), 15.209(a), 15.247(d)	Spurious emission	Radiated	Pass
	Band-edge, restricted band		Pass

Notes:

1. These test items were performed. Please refer to original module report.
   - Report No. RFBBUI-WTW-P21040655-2 issued on Apr. 20, 2021 by Bureau Veritas Consumer Products Services (H.K.) Ltd.,
     (FCC ID: TX2-RTL8852BE)
2. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
3. According to exploratory test no any obvious emission were detected from 9 ㎑ to 30 ㎒. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
4. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation.
5. The worst-case data rate were: BDR Packet type DH-5
   EDR Packet type 3DH-5
6. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
   - KDB 558074 D01 v05r02

5. 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 indicated a 95 % level of confidence. The measurement data shown herein meets of 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 (±)	
Radiated Emissions	Below 30 ㎒	2.3 ㏈
	30 ㎒ to 1 000 ㎒	2.6 ㏈
	1 000 ㎒ to 18 000 ㎒	4.8 ㏈
	Above 18 000 ㎒	4.8 ㏈
Conducted Emissions	150 ㎑ to 30 ㎒	2.9 ㏈

6. Measurement results explanation example

The offset level is set in the spectrum analyzer to compensate the RF cable loss factor between EUT conducted output port and spectrum analyzer.
With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	6.24	9 000	9.02
50	6.27	10 000	9.31
100	6.28	11 000	9.53
200	6.30	12 000	9.49
300	6.54	13 000	9.58
400	6.48	14 000	9.54
500	6.52	15 000	9.67
600	6.39	16 000	10.41
700	6.52	17 000	9.83
800	6.43	18 000	9.84
900	6.80	19 000	10.37
1 000	6.78	20 000	9.97
2 000	7.13	21 000	10.19
3 000	7.38	22 000	10.12
4 000	7.80	23 000	10.42
5 000	8.15	24 000	9.90
6 000	8.33	25 000	10.35
7 000	8.53	26 000	10.23
8 000	8.63	26 500	10.23

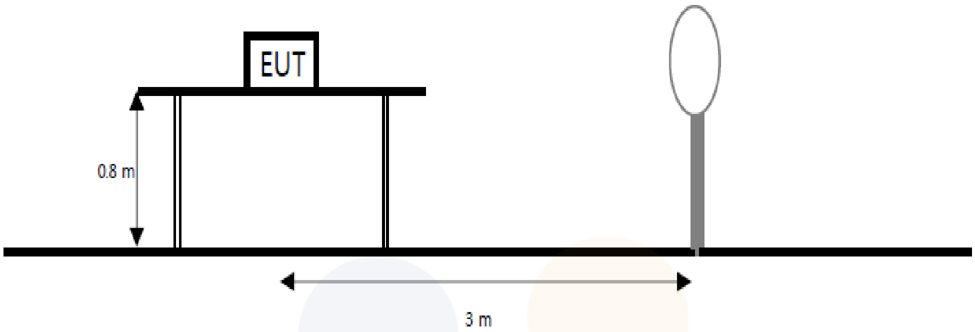
Note.
Offset(㏈) = RF cable loss(㏈) + Power Divider(㏈)

7 Test results

7.1. Radiated spurious emissions & band edge

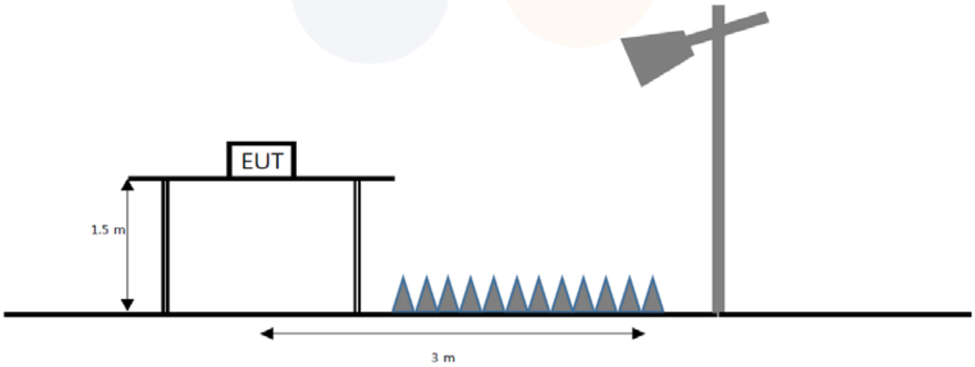
Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.

The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



Limit

According to section 15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (㎒)	Field strength (㎶/m)	Measurement distance (m)
0.009 - 0.490	2 400/F(㎑)	300
0.490 - 1.705	24 000/F(㎑)	30
1.705 - 30	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 ㎒, 76–88 ㎒, 174–216 ㎒ or 470–806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., Section15.231 and 15.241.

According to section 15.205(a) and (b), only spurious emissions are permitted in any of the frequency bands listed below:

㎒	㎒	㎒	㎓
0.009 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.694 75 - 16.695 25	608 - 614	5.35 - 5.46
2.173 5 - 2.190 5	16.804 25 - 16.804 75	960 – 1 240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1 300 – 1 427	8.025 - 8.5
4.177 25 - 4.177 75	37.5 - 38.25	1 435 – 1 626.5	9.0 - 9.2
4.207 25 - 4.207 75	73 - 74.6	1 645.5 – 1 646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1 660 – 1 710	10.6 - 12.7
6.267 75 - 6.268 25	108 - 121.94	1 718.8 – 1 722.2	13.25 - 13.4
6.311 75 - 6.312 25	123 - 138	2 200 – 2 300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2 310 – 2 390	15.35 - 16.2
8.362 - 8.366	156.524 75 - 156.525 25	2 483.5 – 2 500	17.7 - 21.4
8.376 25 - 8.386 75	156.7 - 156.9	2 690 – 2 900	22.01 - 23.12
8.414 25 - 8.414 75	162.012 5 - 167.17	3 260 – 3 267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3 332 – 3 339	31.2 - 31.8
12.519 75 - 12.520 25	240 - 285	3 345.8 – 3 358	36.43 - 36.5
12.576 75 - 12.577 25	322 - 335.4	3 600 – 4 400	Above 38.6
13.36 - 13.41			

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in section 15.209. At frequencies equal to or less than 1 000 ㎒, compliance with the limits in section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 ㎒, compliance with the emission limits in section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in section 15.35 apply to these measurements.

Test procedure

ANSI C63.10-2013

Test settings

Peak field strength measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in table
3. VBW ≥ (3×RBW)
4. Detector = peak
5. Sweep time = auto
6. Trace mode = max hold
7. Allow sweeps to continue until the trace stabilizes

Table. RBW as a function of frequency

Frequency	RBW
9 ㎑ to 150 ㎑	200 ㎐ to 300 ㎐
0.15 ㎒ to 30 ㎒	9 ㎑ to 10 ㎑
30 ㎒ to 1 000 ㎒	100 ㎑ to 120 ㎑
> 1 000 ㎒	1 ㎒

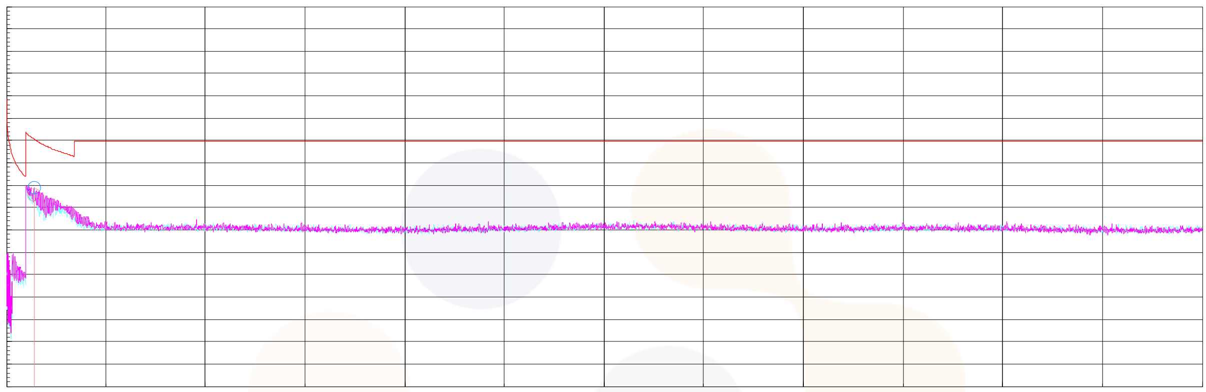
Average field strength measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1 ㎒
3. VBW = 1/T ≥ 1 ㎐
4. Averaging type was set to RMS to ensure that video filtering was applied in the power domain
5. Detector = peak
6. Sweep time = auto
7. Trace mode = max hold
8. Trace was allowed to run for at least 50 times(1/duty cycle) traces

Test results (Below 30 ㎒) –– Worst case: 8DPSK_2 441 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
0.70	H	57.80	20.24	-32.35	40.00	5.69	30.70	25.01

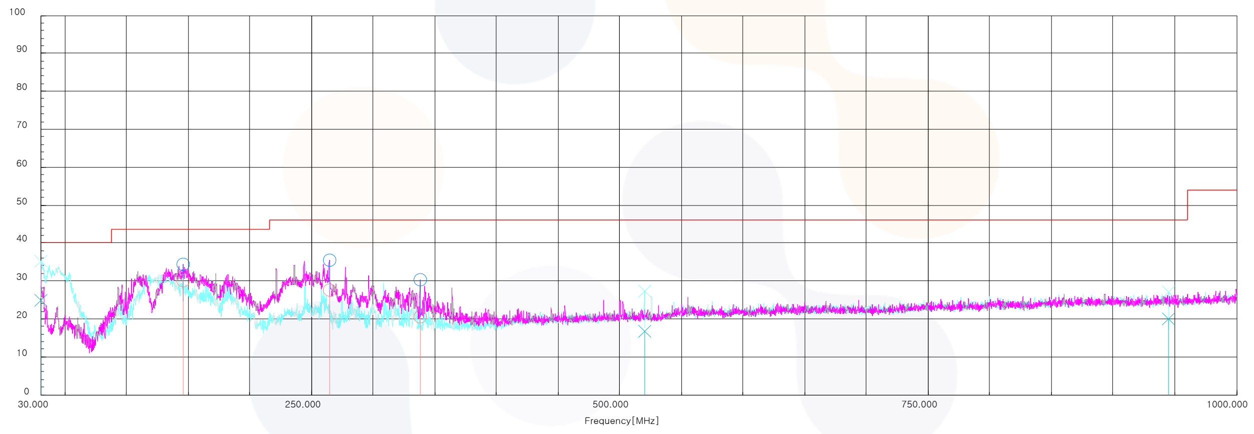
Horizontal/Vertical



Test results (Below 1 000 ㎒) – Worst case: 8DPSK_2 441 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
30.12	V	32.20	24.75	-32.02	-	24.93	40.00	15.07
146.04	H	44.10	17.00	-31.24	-	29.86	43.50	13.64
264.26[1)]	H	39.10	19.55	-30.94	-	27.71	46.00	18.29
337.85	H	31.50	19.80	-30.79	-	20.51	46.00	25.49
519.85	V	23.80	23.40	-30.42	-	16.78	46.00	29.22
944.83	V	21.60	26.70	-28.39	-	19.91	46.00	26.09

Horizontal/Vertical



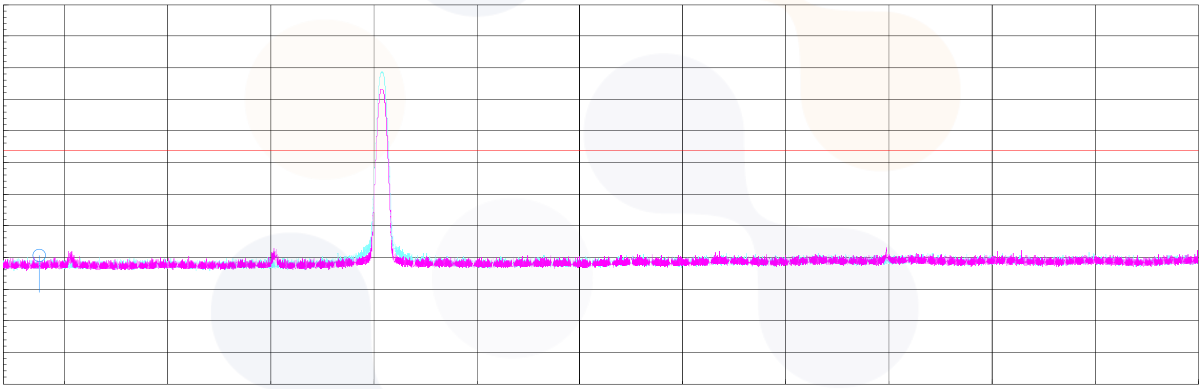
Test results (Above 1 000 ㎒)

GFSK

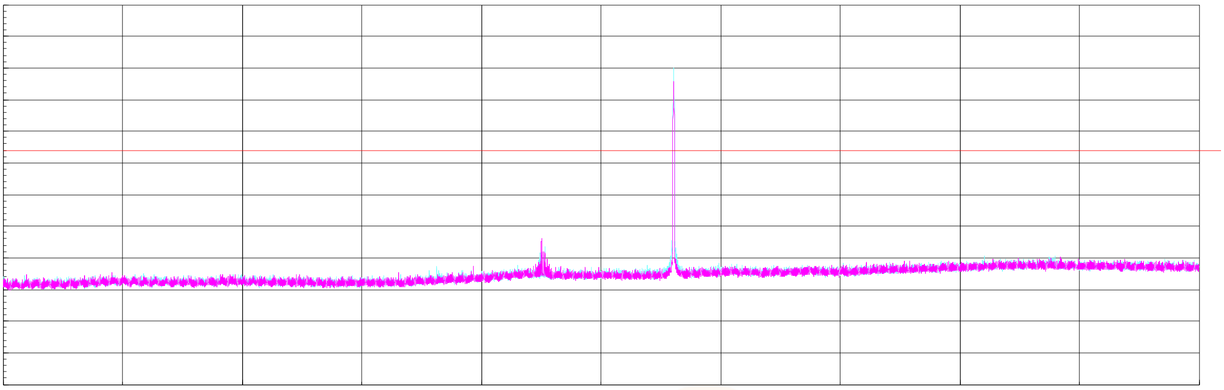
2 402 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 318.84 1)	H	44.00	27.10	-30.50	-	40.60	74.00	33.40
4 806.45 1)	V	56.20	32.24	-46.12	-	42.32	74.00	31.68
7 201.85	H	53.60	37.01	-44.30	-	46.31	74.00	27.69
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

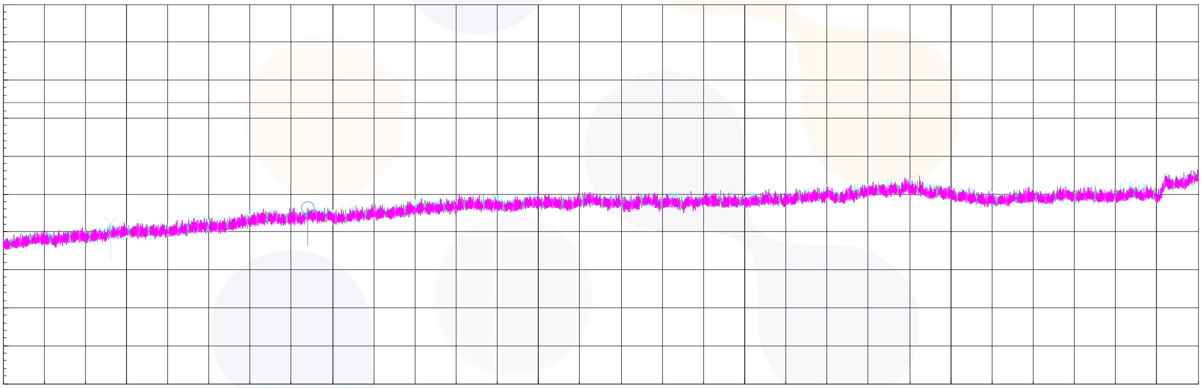
Horizontal/Vertical for Band-edge



Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓



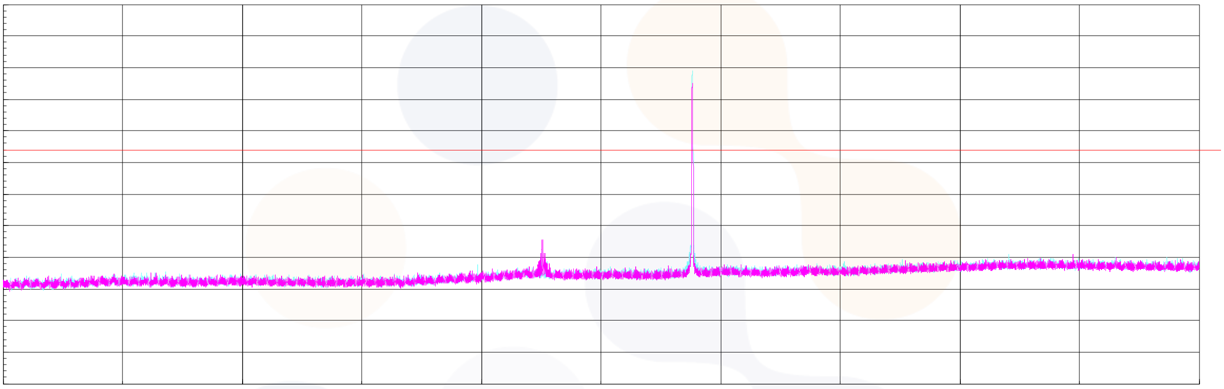
Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓



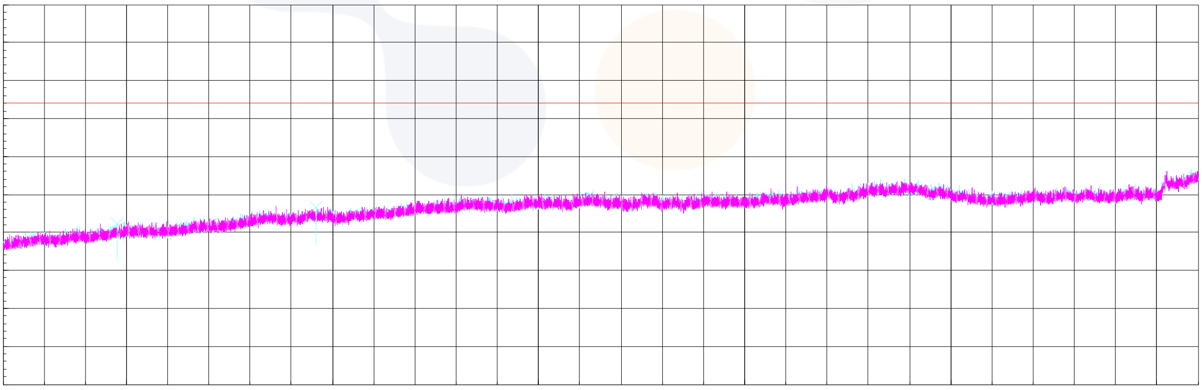
2 441 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
4 884.75 1)	V	55.40	32.71	-45.77	-	42.34	74.00	31.66
7 303.83 1)	V	53.90	36.88	-44.33	-	46.45	74.00	27.55
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓



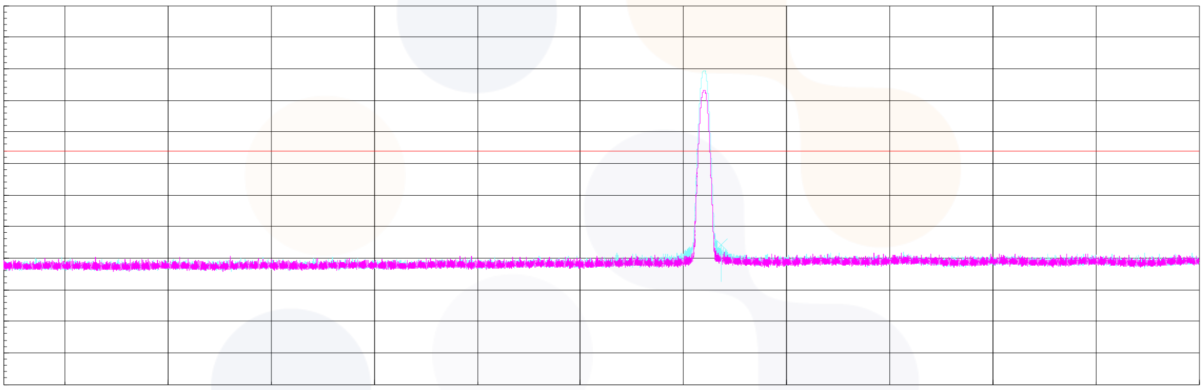
Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓

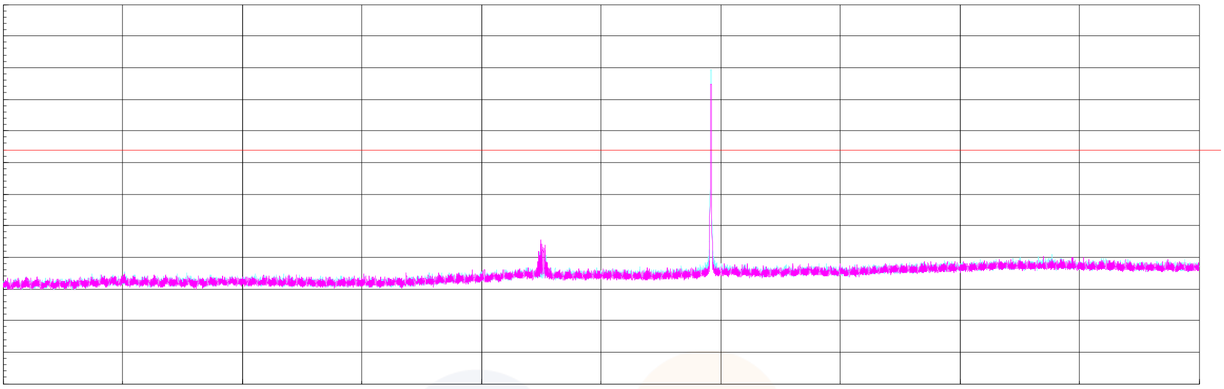
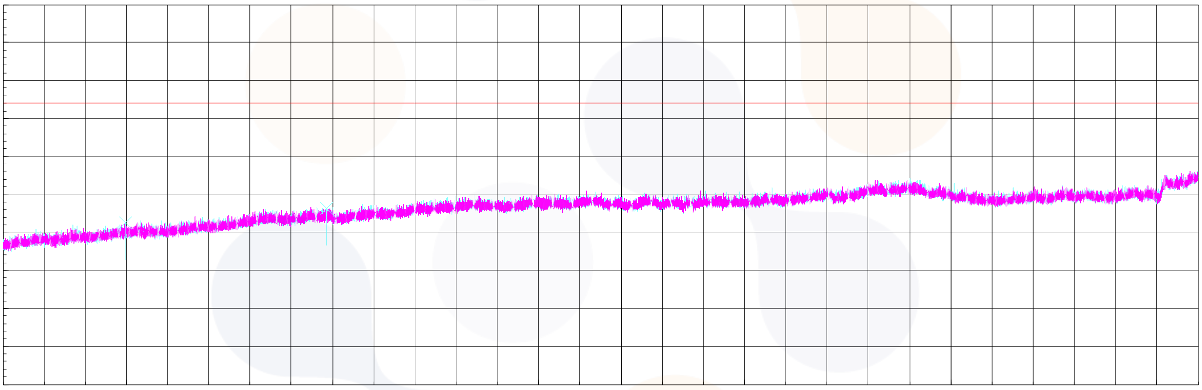


2 480 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 484.01[1)]	V	46.60	27.84	-30.24	-	44.20	74.00	29.80
4 985.28[1)]	V	54.90	33.04	-45.32	-	42.62	74.00	31.38
7 429.50[1)]	V	53.90	36.64	-44.11	-	46.43	74.00	27.57
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for Band-edge



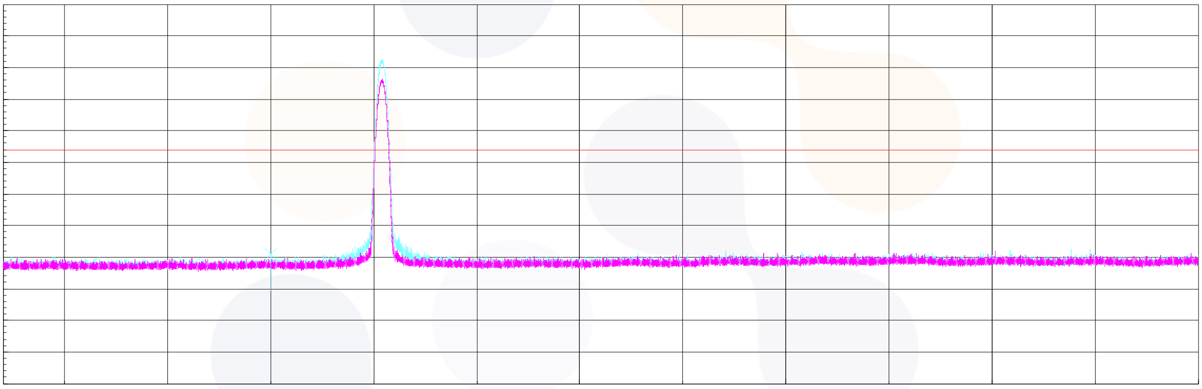
Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓

Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓


8DPSK

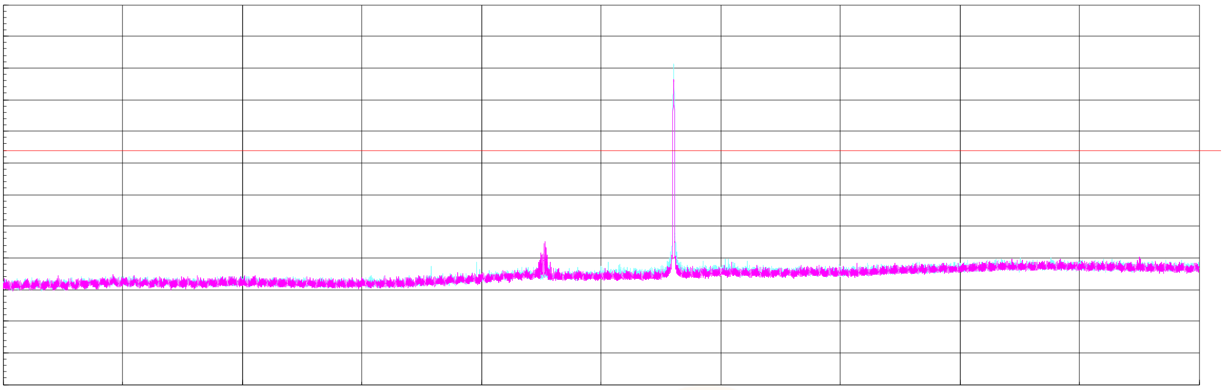
2 402 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 374.97[1)]	V	44.10	27.15	-30.41	-	40.84	74.00	33.16
4 811.77[1)]	V	55.30	32.27	-46.09	-	41.48	74.00	32.52
7 216.83	H	53.60	37.07	-44.34	-	46.33	74.00	27.67
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

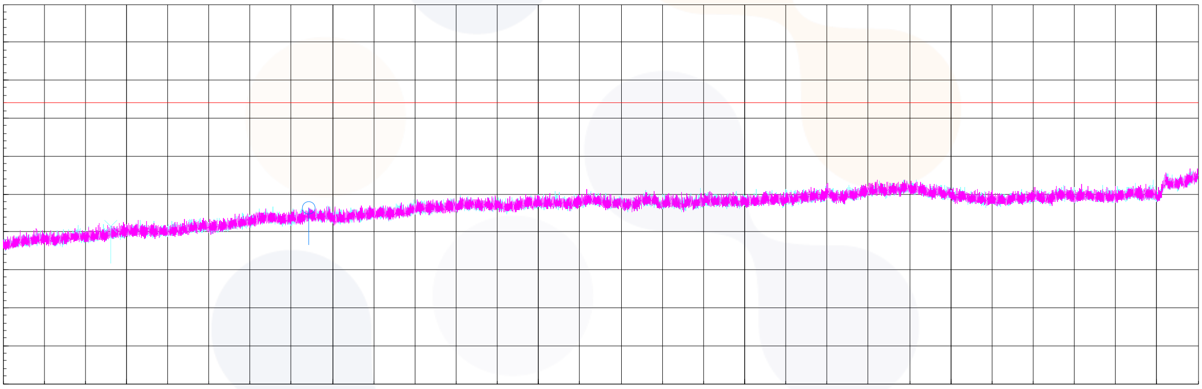
Horizontal/Vertical for Band-edge



Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓



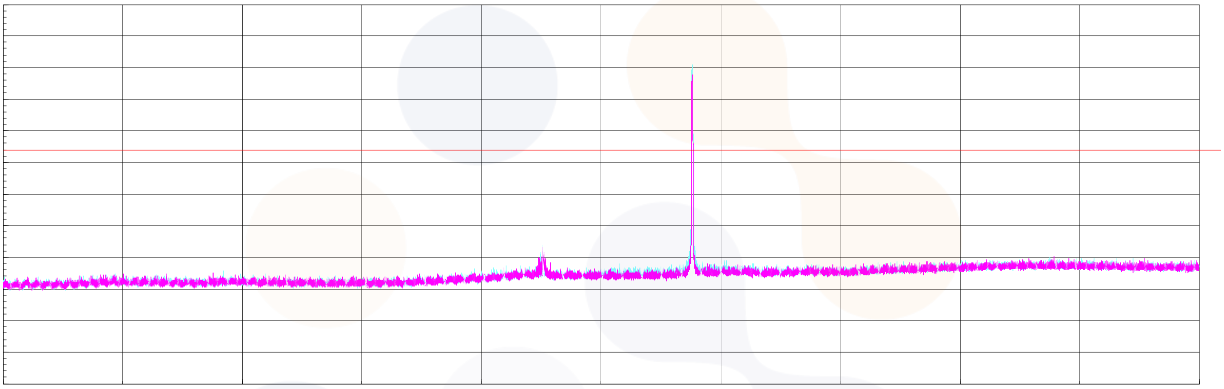
Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓



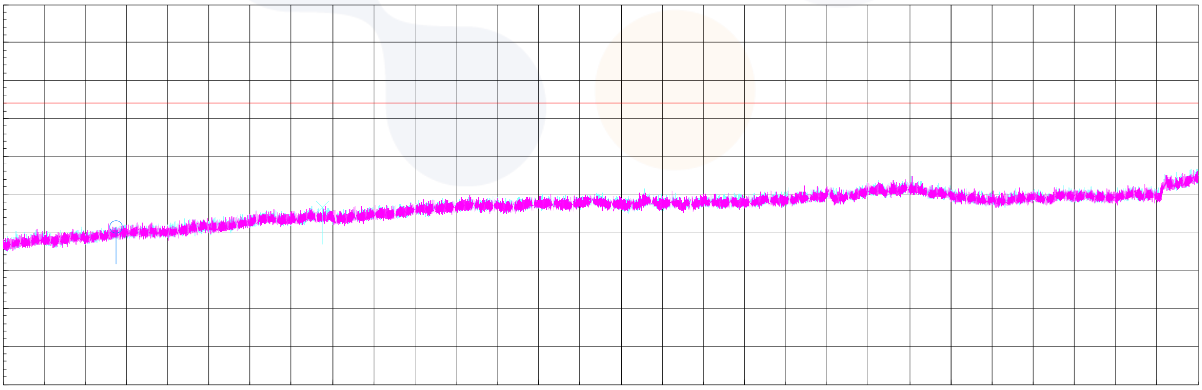
2 441 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
4 877.02 1)	H	54.70	32.66	-45.80	-	41.56	74.00	32.44
7 379.72 1)	V	54.00	36.74	-44.20	-	46.54	74.00	27.46
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓



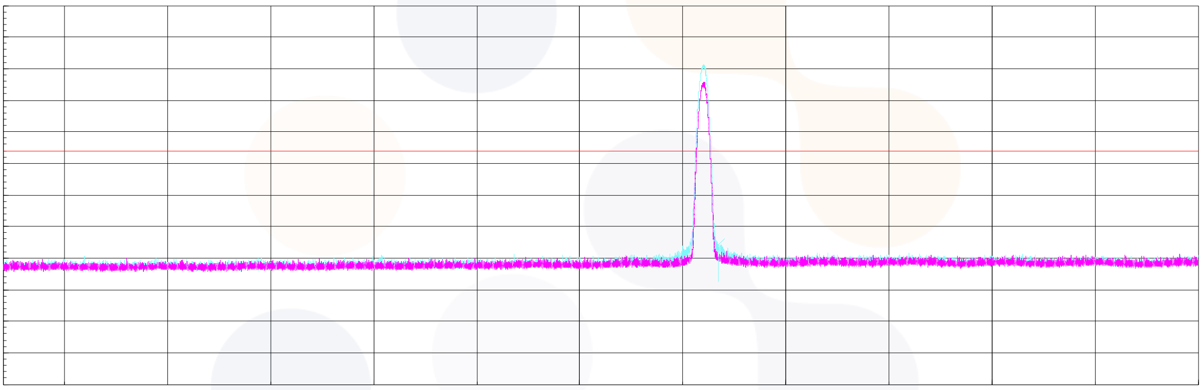
Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓



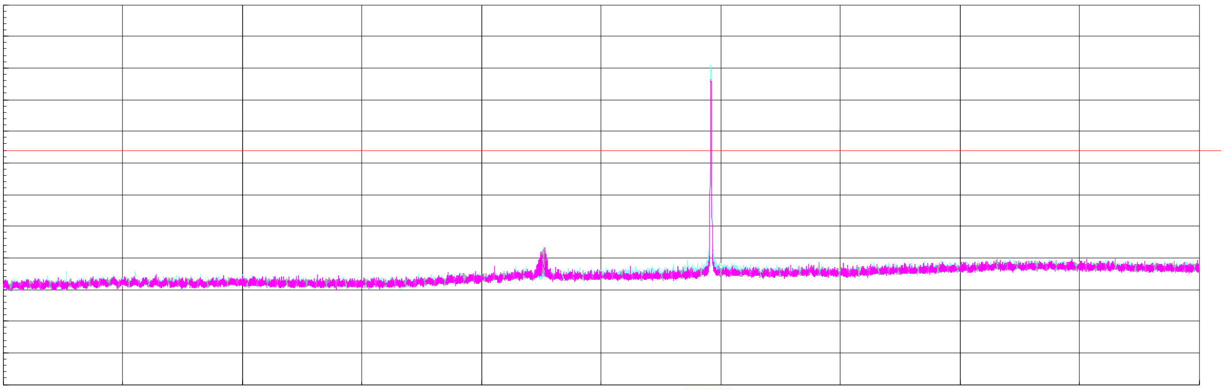
2 480 ㎒

Frequency	Pol.	Reading	Ant. Factor	Amp. + Cable	DCCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
2 483.62[1)]	V	46.70	27.84	-30.24	-	44.30	74.00	29.70
4 983.35[1)]	H	54.40	33.03	-45.32	-	42.11	74.00	31.89
7 433.85[1)]	V	53.70	36.63	-44.10	-	46.23	74.00	27.77
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

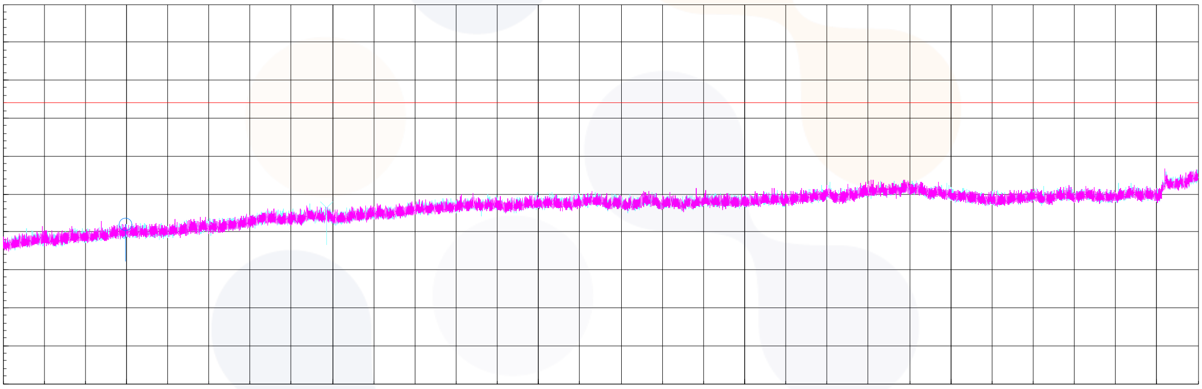
Horizontal/Vertical for Band-edge



Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓

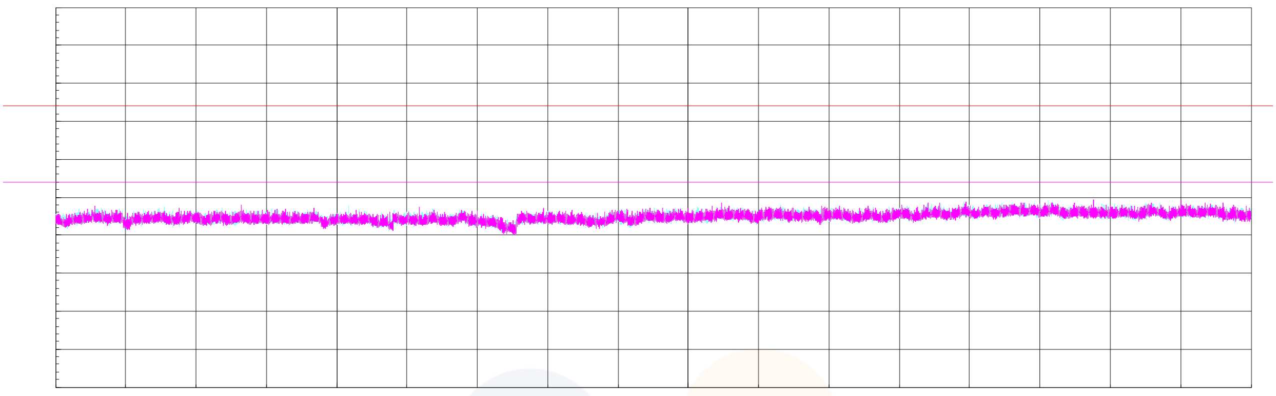


Horizontal/Vertical for 3.5 ㎓ ~ 18 ㎓



Test results (Above 18 ㎓) – Worst Case : 8DPSK_2 441 ㎒

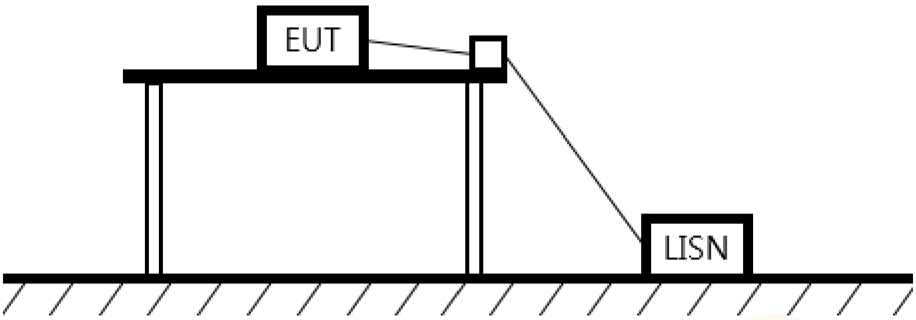
Horizontal/Vertical for 18 ㎓ ~ 26.5 ㎓



Note: The Worst case was based on the lowest margin condition considering Harmonic and Spurious Emission.

7.2. AC Conducted Emission

Test setup



Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

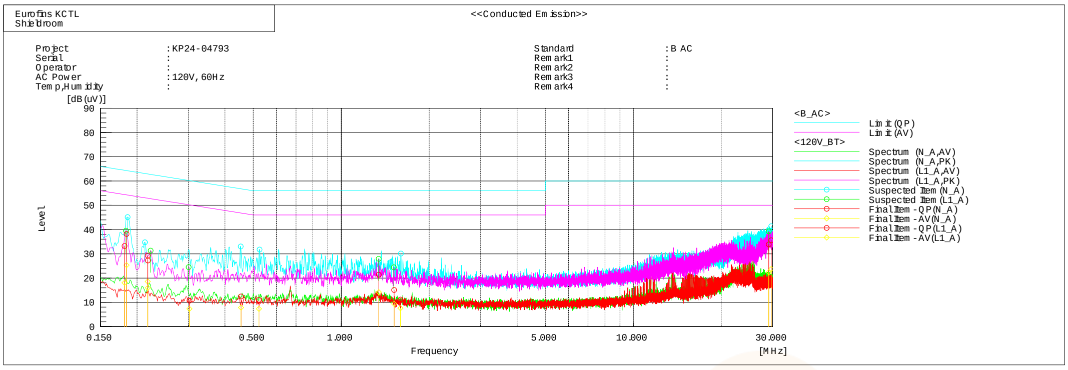
Frequency of Emission (㎒)	Conducted limit (㏈㎶/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 ㎝ in which is located 40 ㎝ away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity — Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 ㎒ to 30 ㎒.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 ㎑ or to quasi-peak and average within a bandwidth of 9 ㎑. The EUT was in transmitting mode during the measurements.

Test results

- Worst case: 8DPSK_2 441 ㎒ AC 120 V



Final Result

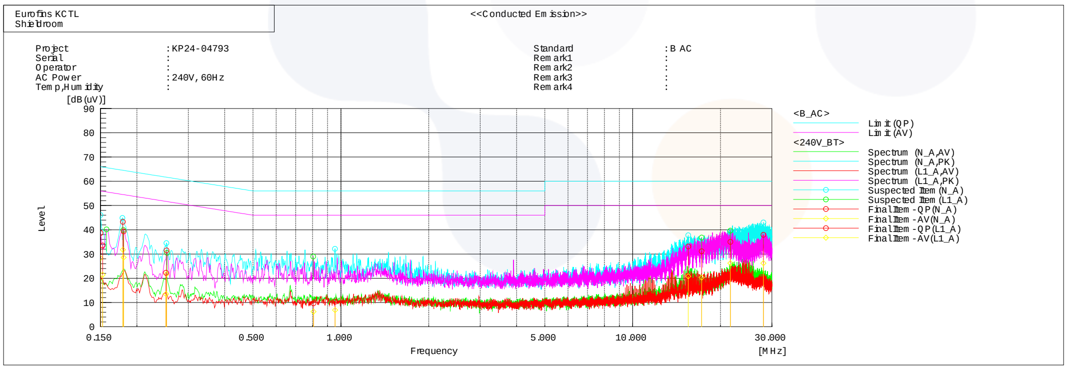
--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18413	28.1	15.3	10.1	38.2	25.4	64.3	54.3	26.1	28.9
2	0.21759	19.4	8.7	9.9	29.3	18.6	62.9	52.9	33.6	34.3
3	0.4537	2.3	-2.3	10.1	12.4	7.8	56.8	46.8	44.4	39.0
4	0.52274	0.9	-2.8	10.1	11.0	7.3	56.0	46.0	45.0	38.7
5	1.59581	1.3	-2.3	9.9	11.2	7.6	56.0	46.0	44.8	38.4
6	29.6872	24.4	12.6	11.2	35.6	23.8	60.0	50.0	24.4	26.2

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18122	23.0	7.9	10.2	33.2	18.1	64.4	54.4	31.2	36.3
2	0.21766	17.4	6.1	9.9	27.3	16.0	62.9	52.9	35.6	36.9
3	0.30213	0.8	-2.6	9.9	10.7	7.3	60.2	50.2	49.5	42.9
4	1.3446	11.5	4.3	9.9	21.4	14.2	56.0	46.0	34.6	31.8
5	1.51675	5.2	-0.6	9.9	15.1	9.3	56.0	46.0	40.9	36.7
6	29.10572	22.7	11.2	11.2	33.9	22.4	60.0	50.0	26.1	27.6

- Worst case: 8DPSK_2 441 ㎒ AC 240 V



Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15002	28.7	18.4	9.9	38.6	28.3	66.0	56.0	27.4	27.7
2	0.17898	33.1	21.6	10.2	43.3	31.8	64.5	54.5	21.2	22.7
3	0.25273	21.7	11.9	9.8	31.5	21.7	61.7	51.7	30.2	30.0
4	0.95521	0.3	-3.1	10.0	10.3	6.9	56.0	46.0	45.7	39.1
5	15.49842	22.3	10.0	10.8	33.1	20.8	60.0	50.0	26.9	29.2
6	28.05418	26.8	15.0	11.2	38.0	26.2	60.0	50.0	22.0	23.8

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.15253	23.6	11.6	9.9	33.5	21.5	65.9	55.9	32.4	34.4
2	0.18002	29.2	18.4	10.2	39.4	28.6	64.5	54.5	25.1	25.9
3	0.2513	12.5	3.7	9.8	22.3	13.5	61.7	51.7	39.4	38.2
4	0.80539	-0.3	-3.7	10.0	9.7	6.3	56.0	46.0	46.3	39.7
5	17.23201	20.2	9.4	10.9	31.1	20.3	60.0	50.0	28.9	29.7
6	21.61646	23.9	15.1	11.1	35.0	26.2	60.0	50.0	25.0	23.8

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Controller	INNCO SYSTEMS	CO3000	1441/54370322/P	-
Antenna Mast	INNCO SYSTEMS	MA4640-XP-ET	AM003	-
Turn Device	INNCO SYSTEMS	DS1200-S-1t	0003	-
Spectrum Analyzer	R&S	FSVA40	101575	25.04.24
Spectrum Analyzer	R&S	FSV40	100988	25.05.27
Amplifier	SONOMA INSTRUMENT	310N	421821	25.10.11
Bilog Antenna	Teseq GmbH	CBL 6112D	63756	26.12.11
Loop Antenna	R&S	HFH2-Z2	100355	26.06.25
Vector Signal Generator	R&S	SMBV100A	257566	25.07.01
Broadband PreAmplifier	SCHWARZBECK	BBV9718D	57	26.01.16
Low Noise Amplifier	TESTEK	TK-PA18H	220124-L	25.10.11
Low Noise Amplifier	TESTEK	TK-PA1840H	220133-L	25.10.14
Horn Antenna	SCHWARZBECK	BBHA9120D	2763	25.10.24
Horn Antenna	SCHWARZBECK	BBHA9170	1267	25.10.15
High Pass Filter	QOTANA TECHNOLOGIES	DBHF0508004000A	23041800061	25.06.24
High Pass Filter	Wainwright Instruments GmbH	WHKX12-2805-3000-18000-40SS	SN58	25.10.15
Signal Generator	R&S	SMB100A	176206	26.01.17
Band Reject Filter	Wainwright Instruments GmbH	WTRCJV8-5100-5850-20-100-50SSK	62	25.10.10
TWO-LINE V - NETWORK	R&S	ENV216	101358	25.10.13
EMI TEST RECEIVER	R&S	ESCI3	101428	25.08.12

End of test report