TEST REPORT

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1. Client

- Name : WINNERCOM CO,. LTD
- Address : 158-7, Golden root-ro, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, KOREA
- Date of Receipt : 2019-11-05

2. Use of Report : -

3. Name of Product and Model : NFC Touch Door / CN7

4. Manufacturer and Country of Origin : WINNERCOM CO,. LTD / Korea

5. FCC ID : 2AU37CN7

6. IC Certificate No. : 25761-CN7

7. Date of Test : 2019-11-21 to 2019-11-24

8. Test Standards : FCC Part 15 Subpart C, 15.225
RSS-210 Issue 10 December 2019
RSS-Gen Issue 5 March 2019

9. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Taekyong Nam (Signature)	Technical Manager Name : Bobae Lee (Signature)

2020-02-04

KCTL Inc.

Report revision history

Date	Revision	Page No
2020-01-28	Initial report	-
2020-02-04	Updated version	-

CONTENTS

1. General information

Client	:	WINNERCOM CO,. LTD
Address	:	158-7, Golden root-ro, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, KOREA
Manufacturer	:	WINNERCOM CO,. LTD
Address	:	158-7, Golden root-ro, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, KOREA
Laboratory	:	KCTL Inc.
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
		Industry Canada Registration No. : 8035A
		KOLAS No.: KT231

2. Device information

Equipment under test	:	NFC Touch Door
Model	:	CN7
Frequency range	:	13.56 ㎒
Modulation technique	:	ASK
Power source	:	DC 12 V
Antenna specification	:	Loop Coil Antenna (NFC)
Software version	:	HCNLJ-Z000A_1.00
Hardware version	:	HCNLJ-ZM01A_2002
Test device serial No.	:	N/A
Operation temperature	:	-40 ℃ ~ 80 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
N/A	-	-	-	-

2.2. Frequency/channel operations

This device contains the following capabilities:

Frequency (㎒)
13.56

Table 2.2.1. NFC mode

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.

Requirement of RSS-Gen Section 6.8:
The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.
Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

The transmitter has permanently attached Loop coil Antenna (internal antenna) on board.

4. Summary of tests

FCC Part section(s)	IC Rule reference	Parameter	Test results
15.225(a)	RSS-210 B.6 (Ⅰ)	In-band Fundamental Emission	Pass
15.225(b)	RSS-210 B.6 (Ⅱ)	In-band Spurious Emission	Pass
15.225(c)	RSS-210 B.6 (Ⅲ)	In-band Spurious Emission	Pass
15.225(d) 15.209	RSS-210 B.6 (Ⅳ) RSS-Gen Issue 9 (8.9)	Out-of–band Spurious Emission	Pass
15.225(e)	RSS-210 B.6 (b)	Frequency Stability Tolerance	Pass
15.215(c)	-	20 ㏈ Bandwidth	Pass
-	RSS-Gen Issue 5 (6.7)	Occupied Bandwidth	Pass
15.207(a)	RSS-Gen Issue 5 (8.8)	AC Conducted emissions	N/A(note4)

Notes:

1. 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.
2. The fundamental of the EUT was investigated in three orthogonal orientations X, Y, Z It was determined that X orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in X orientation
3. The radiated test was performed with and without passive tag. The test results shown in the following sections represent the worst case emissions.
   - Worst Case : Without passive tag
4. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
5. This test is not applicable because the EUT falls into the automotive device and it's not to be connected to the public utility (AC) power line.

5. Measurement uncertainty

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

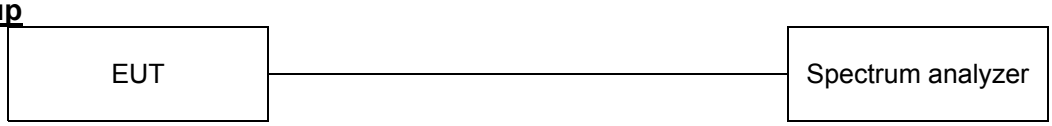
All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Radiated spurious emissions	9 ㎑ ~ 30 ㎒	2.28 ㏈
	30 ㎒ ~ 300 ㎒	4.98 ㏈
	300 ㎒ ~ 1 000 ㎒	5.14 ㏈
	1 ㎓ ~ 6 ㎓	6.70 ㏈
	Above 6 ㎓	6.60 ㏈
Conducted emissions	9 ㎑ ~ 150 ㎑	3.66 ㏈
	150 ㎑ ~ 30 ㎒	3.26 ㏈

6. Test results

6.1. 20 dB Bandwidth & 99% Bandwidth

Test setup



Limit

According to §15.215(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

According to RSS-Gen Issue 5 (6.7) The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

Test procedure

ANSI C63.10-2013 - Section 6.9.2

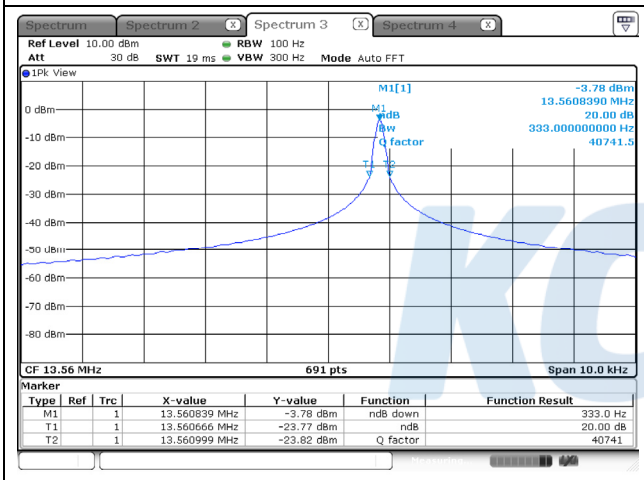
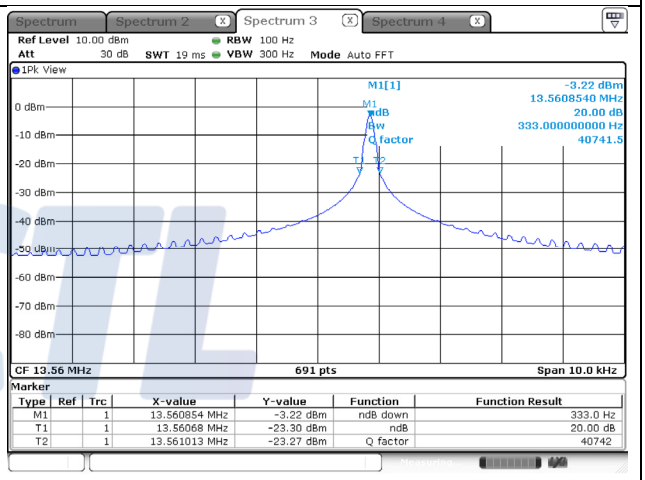
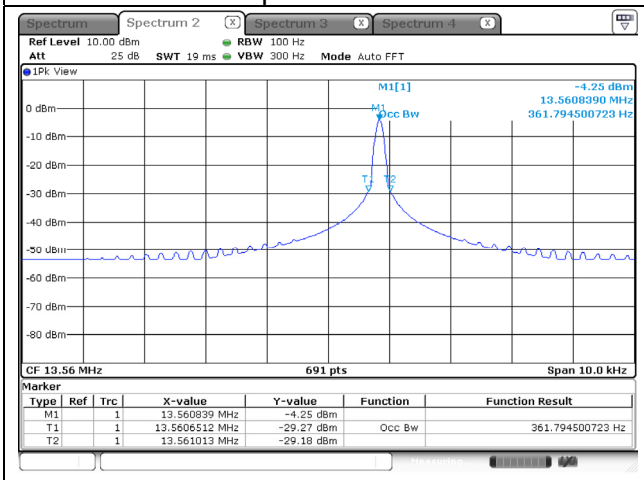
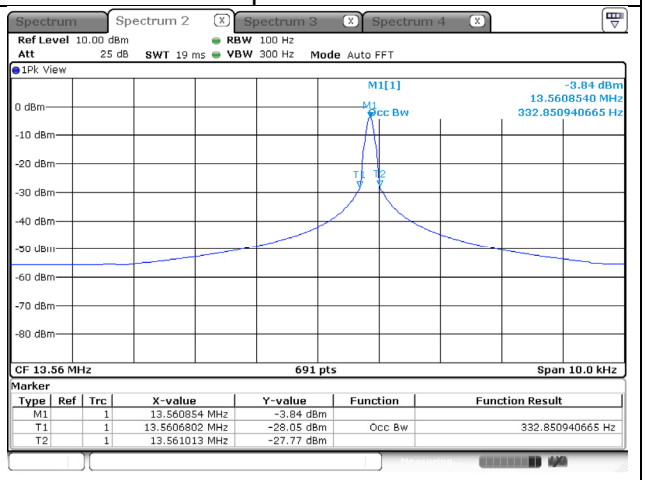
Test settings

The occupied bandwidth is measured as the width of the spectral envelope of the modulated signal, at an amplitude level reduced from a reference value by a specified ratio (or in decibels, a specified number of dB down from the reference value). Typical ratios, expressed in dB, are −6 dB, −20 dB, and −26 dB, corresponding to 6 dB BW, 20 dB BW, and 26 dB BW, respectively. In this subclause, the ratio is designated by "−xx dB." The reference value is either the level of the unmodulated carrier or the highest level of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements might specify a specific maximum or minimum value for the "−xx dB" bandwidth; other requirements might specify that the "−xx dB" bandwidth be entirely contained within the authorized or designated frequency band.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
b) Span: Two times and five times the OBW.
c) RBW = 1 % to 5 % of the OBW and VBW ≥ 3 x RBW
d) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
f) Detector: peak
g) Trace mode: max hold.
h) Allow the trace to stabilize.
i) Determine the "−xx dB down amplitude" using ((reference value) − xx). Alternatively, this calculation may be made by using the marker-delta function of the instrument.
j) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j)
k) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

Test results

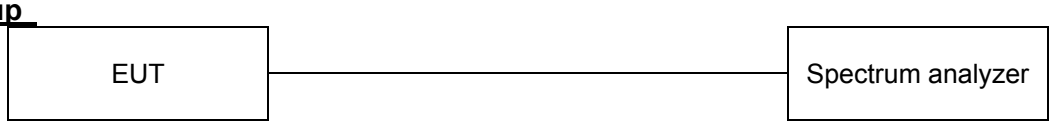
Case	Frequency [MHz]	20 dB Bandwidth [MHz]		Limit [MHz]	20 dB Bandwidth [kHz]	Occupied Bandwidth (99 % BW) [kHz]
Right	13.56	Lowest Frequency	13.560 7	13.110 0	0.333	0.362
		Highest Frequency	13.561 0	14.010 0		
Left	13.56	Lowest Frequency	13.560 7	13.110 0	0.333	0.333
		Highest Frequency	13.561 0	14.010 0		

Right	Left
20 dB Bandwidth	20 dB Bandwidth
	
Occupied Bandwidth	Occupied Bandwidth
	

Note:
Because the measured signal is CW/CW-like, adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be aproximately twice the RBW

6.2. Frequency tolerance

Test setup



Limit

15.225 (e), RSS-210 B.6.(b) The frequency tolerance of the carrier signal shall be maintained within ±0.01 % of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test procedure

ANSI C63.10-2013 - Section 6.8.1

Test results

- Right

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	12.00	20	Startup	13 560 837	-837.0	0.006 17
			2 minutes	13 560 837	-837.0	0.006 17
			5 minutes	13 560 837	-837.0	0.006 17
			10 minutes	13 560 837	-837.0	0.006 17
		-20	Startup	13 561 902	-1902.0	0.014 03
			2 minutes	13 561 902	-1902.0	0.014 03
			5 minutes	13 561 901	-1901.0	0.014 02
			10 minutes	13 561 902	-1902.0	0.014 03
		-10	Startup	13 561 001	-1001.0	0.007 38
			2 minutes	13 561 002	-1002.0	0.007 39
			5 minutes	13 561 001	-1001.0	0.007 38
			10 minutes	13 561 001	-1001.0	0.007 38
		0	Startup	13 560 970	-970.0	0.007 15
			2 minutes	13 560 970	-970.0	0.007 15
			5 minutes	13 560 970	-970.0	0.007 15
			10 minutes	13 560 970	-970.0	0.007 15
		10	Startup	13 560 811	-811.0	0.005 98
			2 minutes	13 560 811	-811.0	0.005 98
			5 minutes	13 560 811	-811.0	0.005 98
			10 minutes	13 560 811	-811.0	0.005 98
		25	Startup	13 560 737	-737.0	0.005 44
			2 minutes	13 560 737	-737.0	0.005 44
			5 minutes	13 560 737	-737.0	0.005 44
			10 minutes	13 560 737	-737.0	0.005 44
		30	Startup	13 560 899	-899.0	0.006 63
			2 minutes	13 560 898	-898.0	0.006 62
			5 minutes	13 560 899	-899.0	0.006 63
			10 minutes	13 560 897	-897.0	0.006 62
		40	Startup	13 561 016	-1016.0	0.007 49
			2 minutes	13 561 016	-1016.0	0.007 49
			5 minutes	13 561 014	-1014.0	0.007 48
			10 minutes	13 561 016	-1016.0	0.007 49
		50	Startup	13 561 260	-1260.0	0.009 29
			2 minutes	13 561 260	-1260.0	0.009 29
			5 minutes	13 561 260	-1260.0	0.009 29
			10 minutes	13 561 260	-1260.0	0.009 29
85	10.20	20	Startup	13 560 801	-801.0	0.005 91
			2 minutes	13 560 801	-801.0	0.005 91
			5 minutes	13 560 801	-801.0	0.005 91
			10 minutes	13 560 801	-801.0	0.005 91
115	13.80	20	Startup	13 560 880	-880.0	0.006 49
			2 minutes	13 560 797	-797.0	0.005 88
			5 minutes	13 560 880	-880.0	0.006 49
			10 minutes	13 560 880	-880.0	0.006 49

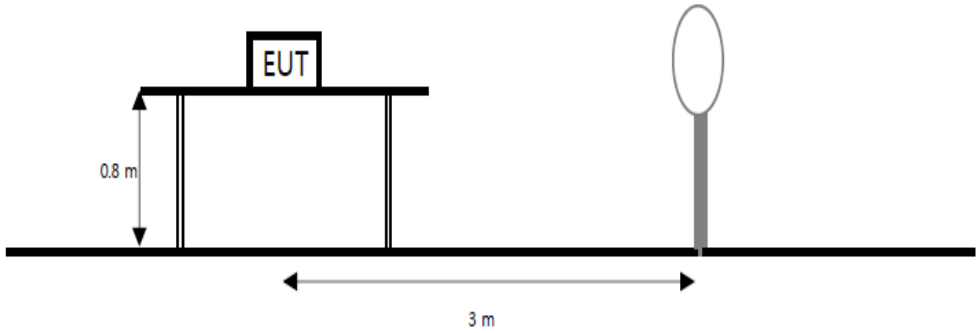
- Left

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	12.00	20	Startup	13 560 899	-899.0	0.006 63
			2 minutes	13 560 899	-899.0	0.006 63
			5 minutes	13 560 899	-899.0	0.006 63
			10 minutes	13 560 899	-899.0	0.006 63
		-20	Startup	13 561 112	-1112.0	0.008 20
			2 minutes	13 561 112	-1112.0	0.008 20
			5 minutes	13 561 112	-1112.0	0.008 20
			10 minutes	13 561 113	-1113.0	0.008 21
		-10	Startup	13 560 978	-978.0	0.007 21
			2 minutes	13 560 978	-978.0	0.007 21
			5 minutes	13 560 978	-978.0	0.007 21
			10 minutes	13 560 978	-978.0	0.007 21
		0	Startup	13 560 912	-912.0	0.006 73
			2 minutes	13 560 911	-911.0	0.006 72
			5 minutes	13 560 912	-912.0	0.006 73
			10 minutes	13 560 912	-912.0	0.006 73
		10	Startup	13 560 775	-775.0	0.005 72
			2 minutes	13 560 771	-771.0	0.005 69
			5 minutes	13 560 773	-773.0	0.005 70
			10 minutes	13 560 775	-775.0	0.005 72
		25	Startup	13 560 855	-855.0	0.006 31
			2 minutes	13 560 855	-855.0	0.006 31
			5 minutes	13 560 855	-855.0	0.006 31
			10 minutes	13 560 855	-855.0	0.006 31
		30	Startup	13 560 786	-786.0	0.005 80
			2 minutes	13 560 786	-786.0	0.005 80
			5 minutes	13 560 786	-786.0	0.005 80
			10 minutes	13 560 786	-786.0	0.005 80
		40	Startup	13 561 630	-1630.0	0.012 02
			2 minutes	13 561 630	-1630.0	0.012 02
			5 minutes	13 561 630	-1630.0	0.012 02
			10 minutes	13 561 630	-1630.0	0.012 02
		50	Startup	13 562 456	-2456.0	0.018 11
			2 minutes	13 562 456	-2456.0	0.018 11
			5 minutes	13 562 456	-2456.0	0.018 11
			10 minutes	13 562 456	-2456.0	0.018 11
85	10.20	20	Startup	13 560 852	-852.0	0.006 28
			2 minutes	13 560 852	-852.0	0.006 28
			5 minutes	13 560 852	-852.0	0.006 28
			10 minutes	13 560 852	-852.0	0.006 28
115	13.80	20	Startup	13 560 839	-839.0	0.006 19
			2 minutes	13 560 837	-837.0	0.006 17
			5 minutes	13 560 837	-837.0	0.006 17
			10 minutes	13 560 839	-839.0	0.006 19

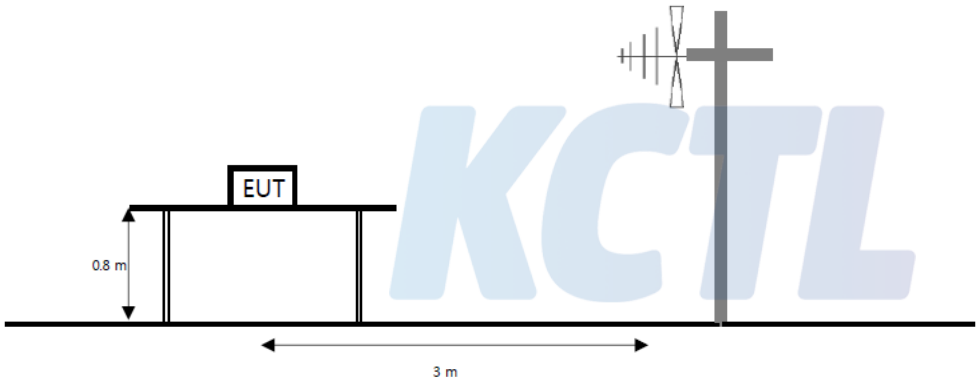
6.3. Radiated spurious emissions

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.



Limit

15.225 (a), RSS-210 B.6.(a).(ⅰ) The field strength of any emission within the band 13.553-13.567 ㎒ shall not exceed 15, 848 microvolts/meter at 30 meters.

15.225 (b), RSS-210 B.6.(a).(ⅱ) With in the bands 13.410-13.553 ㎒ and 13.567-13.710 ㎒, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

15.225 (c), RSS-210 B.6 (a).(ⅲ) With in the bands 13.110-13.410 ㎒ and 13.710-14.010 ㎒, the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

15.225 (d), RSS-210 B.6.(a).(ⅳ) RSS-Gen Issue 9 (8.9) The Field Strength of any emissions appearing outside of the 13.110-14.010 ㎒ band shall not exceed the general radiated emission limits in 15.209.

Frequency (㎒)	Field Strength (㎶/m)	Measurement distance (meters)
0.009-0.490	2400/F(㎑)	300
0.490-1.705	24000/F(㎑)	30
1.705-30.0	30(29.54 dB㎶/m)	30
30.0-88.0	100(40 dB㎶/m)	3
88-216	150(43.5 dB㎶/m)	3
216-960	200 (46 dB㎶/m)	3
Above 960	500 (53.98 dB㎶/m)	3

Test procedure
ANSI C63.10-2013 - Section 6.4, 6.5

Test settings
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 x RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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 ㎒

Notes:
1. *f* <30 ㎒, extrapolation factor of 40 dB/decade of distance. F_d = 40log(D_m/Ds)
   f ≥30 ㎒, extrapolation factor of 20 dB/decade of distance. F_d = 20log(D_m/Ds)
   Where:
   F_d= Distance factor in dB
   D_m= Measurement distance in meters
   D_s= Specification distance in meters
2. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in § 15.31(f)(2). Extrapolation Factor = 40 log10(30/3) = 40 dB.
3. (dB) = Antenna factor(dB/m) + Cable loss(dB) + or Amp. gain(dB) + or F_d(dB)
4. Result = Reading + Cable loss + Amp gain + Ant. factor - Distance factor
5. The worst-case emissions are reported however emissions whose levels were not within 20 dB of respective limits were not reported.
6. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.
7. Below 30 ㎒ frequency range, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported and the worse orientations of Face-on and Face-off were set for final test.
8. Face-on = Parallel, Face-off = Perpendicular

Test results for fundamental

15.225 (a) 13.553-13.567 ㎒

-Right

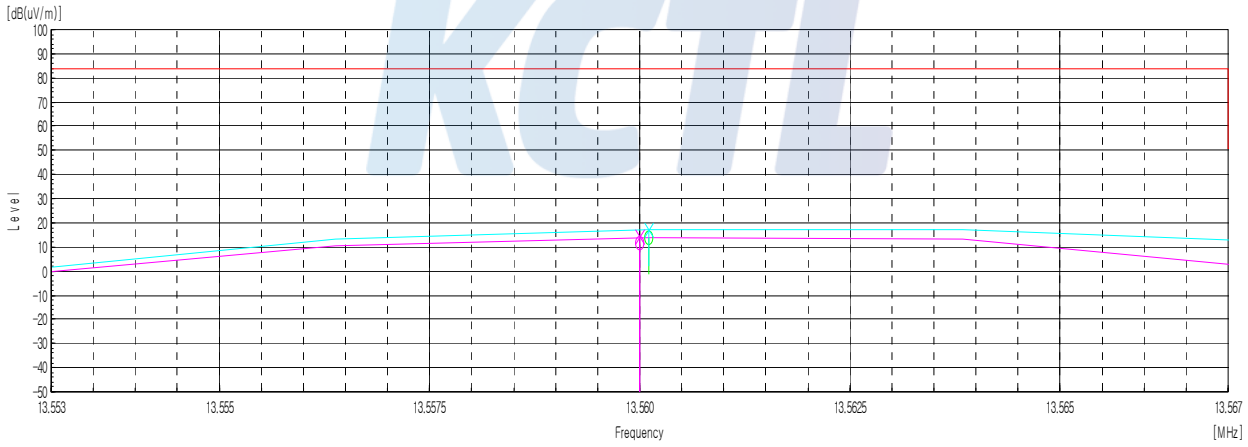
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	62.70	20.27	-31.27	40.00	11.70	84.00	72.30

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	65.40	20.27	-31.27	40.00	14.40	84.00	69.60

Face-on/Face-off



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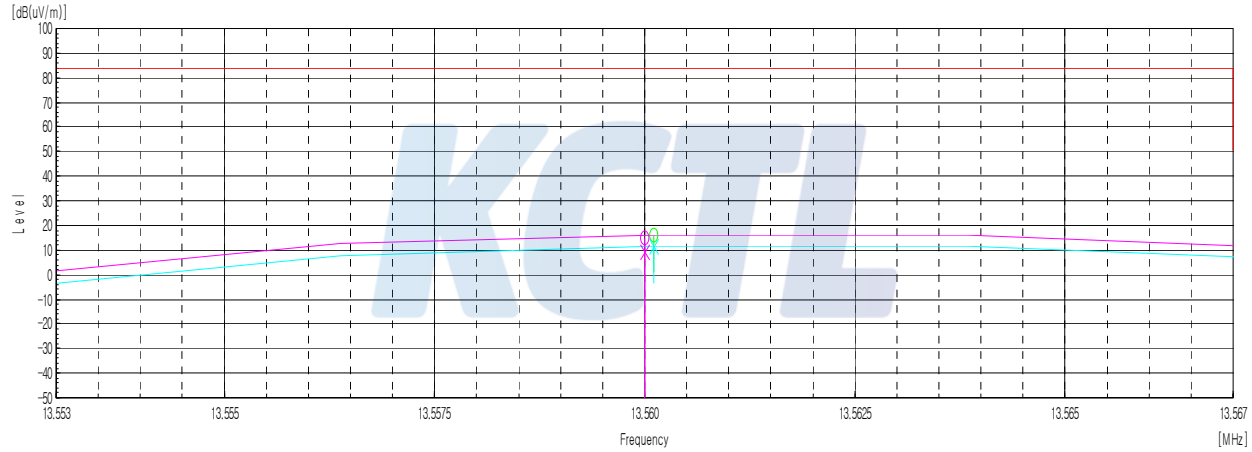
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	65.70	20.27	-31.27	40.00	14.70	84.00	69.30

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.56	60.20	20.27	-31.27	40.00	9.20	84.00	74.80

Face-on/Face-off



Test results for in-band & out-band (9 ㎑ to 30 ㎒)

15.225 (b,c) 13.110-14.010 ㎒

-Right

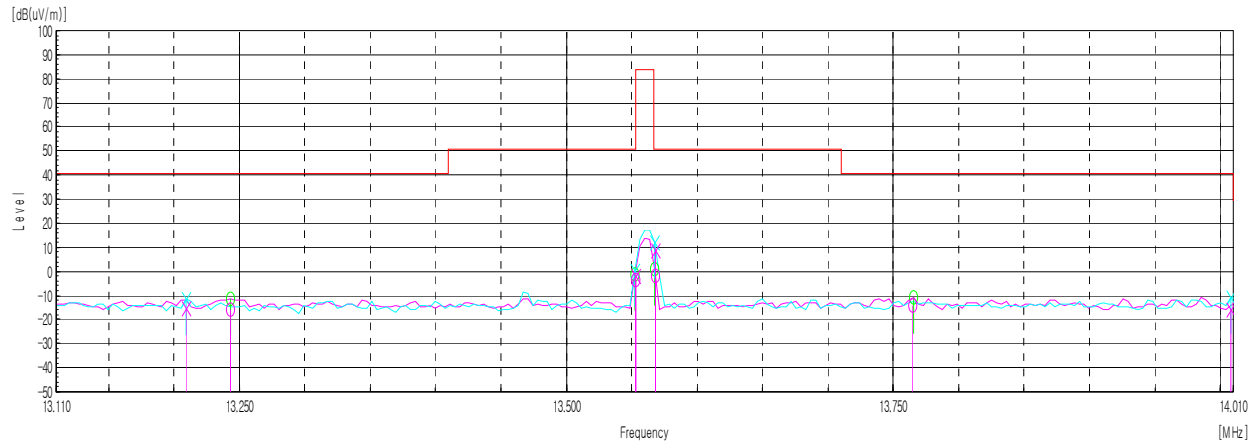
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.24	35.40	20.26	-31.26	40.00	-15.60	40.51	56.11
13.55	47.20	20.27	-31.27	40.00	-3.80	50.47	54.27
13.57	49.10	20.27	-31.27	40.00	-1.90	50.47	52.37
13.77	36.70	20.28	-31.28	40.00	-14.30	40.51	54.81

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.21	35.50	20.26	-31.26	40.00	-15.50	40.51	56.01
13.55	49.00	20.27	-31.27	40.00	-2.00	50.47	52.47
13.57	60.50	20.27	-31.27	40.00	9.50	50.47	40.97
14.01	35.30	20.28	-31.18	40.00	-15.60	40.51	56.11

Face-on/Face-off



-Left

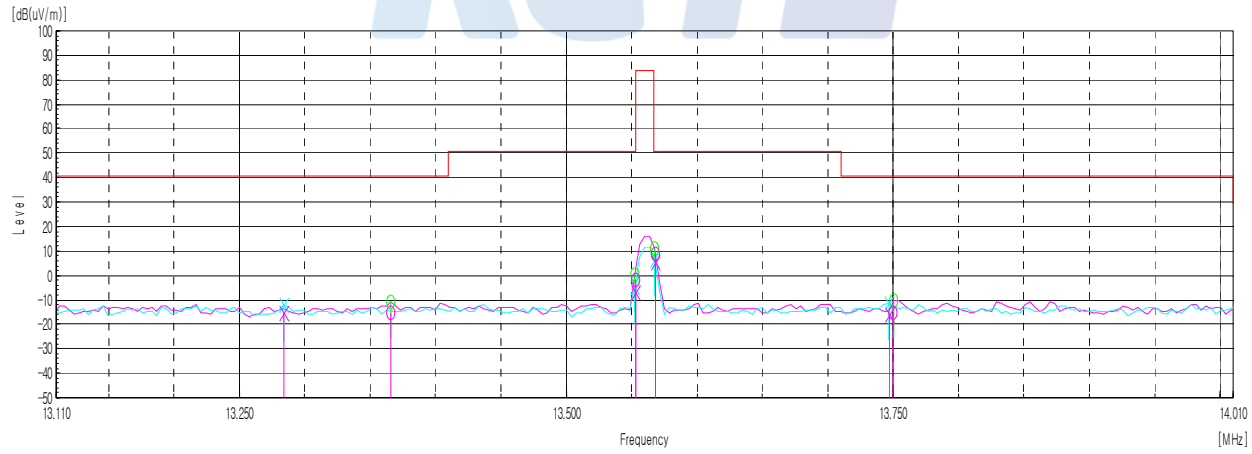
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.37	35.80	20.27	-31.27	40.00	-15.20	40.51	55.71
13.55	48.90	20.27	-31.27	40.00	-2.10	50.47	52.57
13.57	59.90	20.27	-31.27	40.00	8.90	50.47	41.57
13.75	35.60	20.28	-31.28	40.00	-15.40	40.51	55.91

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.28	35.70	20.27	-31.27	40.00	-15.30	40.51	55.81
13.55	44.10	20.27	-31.27	40.00	-6.90	50.47	57.37
13.57	56.50	20.27	-31.27	40.00	5.50	50.47	44.97
13.75	35.10	20.28	-31.28	40.00	-15.90	40.51	56.41

Face-on/Face-off



Test results (9 ㎑ to 30 ㎒)

15.225 (d) 0.009-30 ㎒

-Right

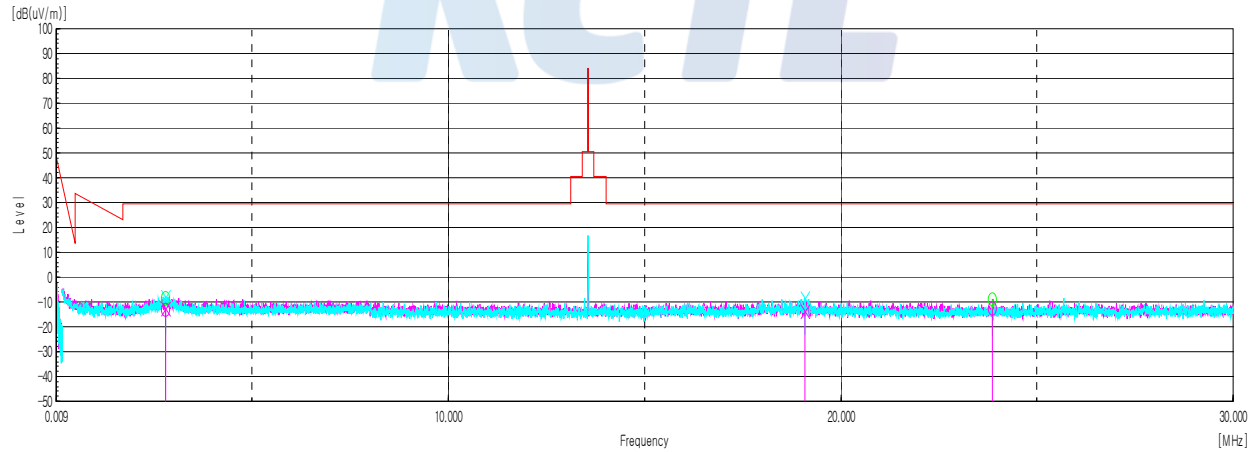
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
2.79	38.80	20.13	-31.93	40.00	-13.00	29.54	42.54
23.87	37.40	20.93	-30.83	40.00	-12.50	29.54	42.04

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
2.80	39.10	20.14	-31.94	40.00	-12.70	29.54	42.24
19.09	36.70	20.63	-31.03	40.00	-13.70	29.54	43.24

Face-on/Face-off



-Left

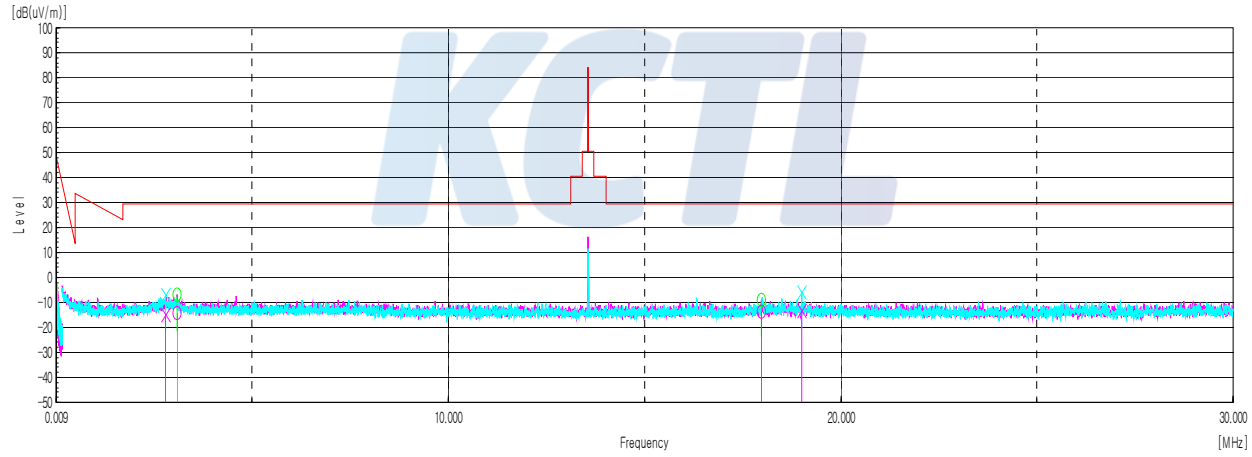
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
3.09	37.60	20.16	-31.96	40.00	-14.20	29.54	43.74
17.97	36.90	20.54	-31.04	40.00	-13.60	29.54	43.14

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
2.80	37.10	20.14	-31.94	40.00	-14.70	29.54	44.24
19.00	37.50	20.62	-31.02	40.00	-12.90	29.54	42.44

Face-on/Face-off



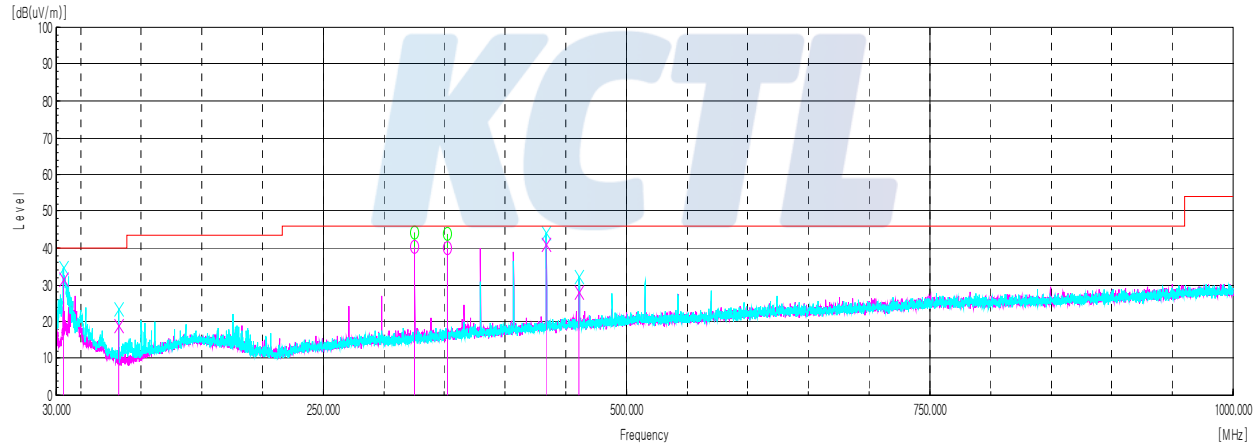
Test results (Below 1 000 ㎒)

15.225 (d) 30-1000 ㎒

-Right

Frequency	Pol.	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
35.82	V	44.70	17.56	-30.53	-	31.73	40.00	8.27
81.29	V	34.40	14.25	-29.66	-	18.99	40.00	21.01
325.49	H	48.20	19.86	-27.61	-	40.45	46.00	5.55
352.65	H	47.10	20.38	-27.42	-	40.06	46.00	5.94
434.01	V	45.30	22.68	-26.81	-	41.17	46.00	4.83
461.04	V	31.60	23.11	-26.60	-	28.11	46.00	17.89

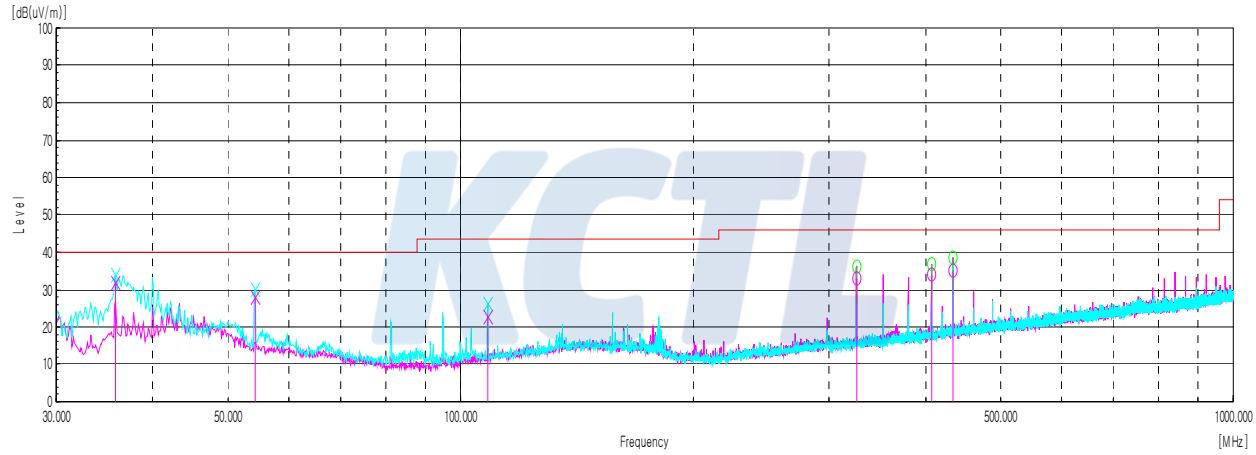
Horizontal/Vertical



-Left

Frequency	Pol.	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
35.82	V	45.10	17.56	-30.53	-	32.13	40.00	7.87
54.25	V	39.70	18.32	-30.18	-	27.84	40.00	12.16
108.45	V	35.80	16.18	-29.26	-	22.72	43.50	20.78
325.49	H	40.80	19.86	-27.61	-	33.05	46.00	12.95
406.85	H	39.20	21.84	-27.03	-	34.01	46.00	11.99
433.884	H	39.30	22.68	-26.81	-	35.17	46.00	10.83

Horizontal/Vertical



7. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100808	20.07.30
Temp & Humid Chamber	ESPEC CORP.	SH-641	92005476	20.07.30
EMI TEST RECEIVER	R&S	ESCI7	100732	20.08.22
Bi-Log Antenna	SCHWARZBECK	VULB 9168	583	20.05.04
Amplifier	SONOMA INSTRUMENT	310N	284608	20.08.22
COAXIAL FIXED ATTENUATOR	Agilent	8491B-003	2708A18758	20.05.04
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33 -8P	2000997	20.08.01
LOOP Antenna	R&S	HFH2-Z2	100355	20.08.24
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
Vector Signal Generator	R&S	SMBV100A	257566	20.07.16
Signal Generator	R&S	SMB100A	176206	20.01.25

End of test report