verify No.042223152615

위변조방지/진위확인
www.docuqr.com

TEST REPORT

KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

KCTL

1. Client

- Name : WINNERCOM CO,. LTD
- Address : 158-7, Golden root-ro, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, KOREA
- Date of Receipt : 2020-04-02

2. Use of Report : Certification

3. Name of Product and Model : NFC Touch Door / NX4

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

5. FCC ID : 2AU37NX4

6. Date of Test : 2020-04-17 to 2020-04-22

7. Test Standards : FCC Part 15 Subpart C, 15.225

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

Affirmation	Tested by Name : Taekyong Nam (Signature)	Technical Manager Name : Heesu Ahn (Signature)

2020-04-23

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

Report revision history

Date	Revision	Page No
2020-04-23	Initial report	-

This report shall not be reproduced except in full, without the written approval of KCTL Inc. This document may be altered or revised by KCTL Inc. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KCTL Inc. will constitute fraud and shall nullify the document. This test report is a general report that does not use the KOLAS accreditation mark and is not related to KOLAS accreditation.

CONTENTS

1. General information 4
2. Device information 4
2.1. Accessory information 4
2.2. Frequency/channel operations 5
3. Antenna requirement 5
4. Summary of tests 6
5. Measurement uncertainty 7
6. Test results 8
6.1. 20 dB Bandwidth & 99% Bandwidth 8
6.2. Frequency tolerance 11
6.3. Radiated spurious emissions 14
7. Measurement equipment 24

This test report shall not be reproduced, except in full, without the written approval

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	:	NX4
Frequency range	:	13.56 ㎒
Modulation technique	:	ASK
Power source	:	DC 12 ケ
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	-	-	-	-

This test report shall not be reproduced, except in full, without the written approval

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.

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

This test report shall not be reproduced, except in full, without the written approval

4. Summary of tests

FCC Part section(s)	Parameter	Test results
15.225(a)	In-band Fundamental Emission	Pass
15.225(b), (c)	In-band Spurious Emission	Pass
	In-band Spurious Emission	Pass
15.225(d) 15.209	Out-of–band Spurious Emission	Pass
15.225(e)	Frequency Stability Tolerance	Pass
15.215(c)	20 dB Bandwidth	Pass
-	Occupied Bandwidth	Pass
15.207(a)	AC Conducted emissions	N/A(Note5)

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.

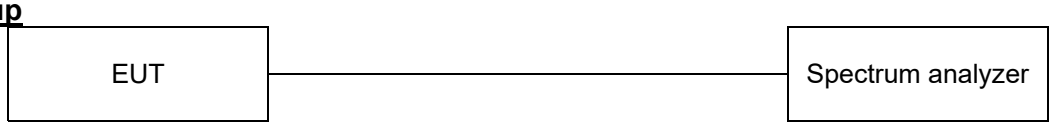
Parameter	Expanded uncertainty (±)	
Radiated spurious emissions	9 kHz ~ 30 MHz	2.28 dB
	30 MHz ~ 300 MHz	4.98 dB
	300 MHz ~ 1 000 MHz	5.14 dB
	1 GHz ~ 6 GHz	6.70 dB
	Above 6 GHz	6.60 dB
Conducted emissions	9 kHz ~ 150 kHz	3.66 dB
	150 kHz ~ 30 MHz	3.26 dB

This test report shall not be reproduced, except in full, without the written approval

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.

Test procedure

ANSI C63.10-2013 - Section 6.9.2

KCTL

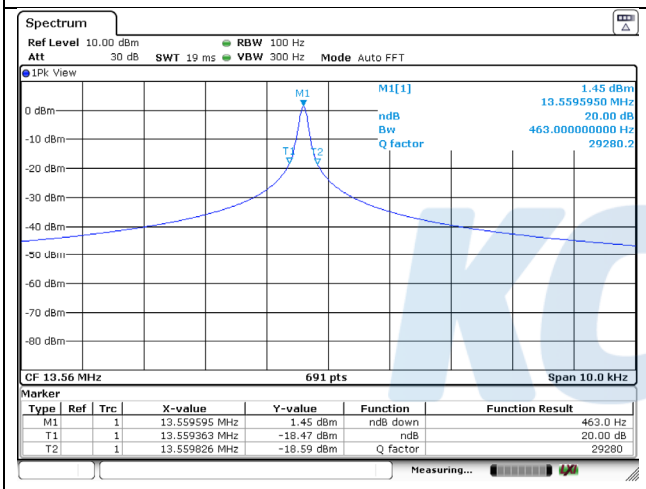
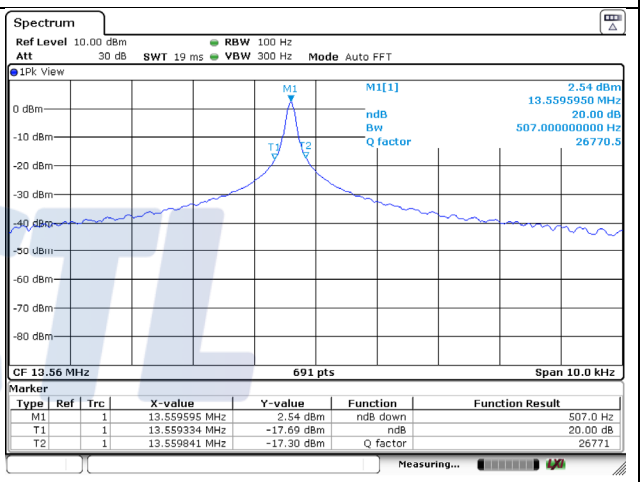
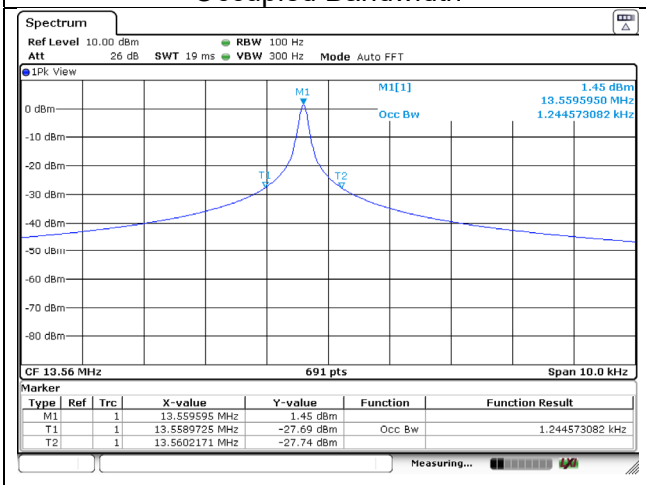
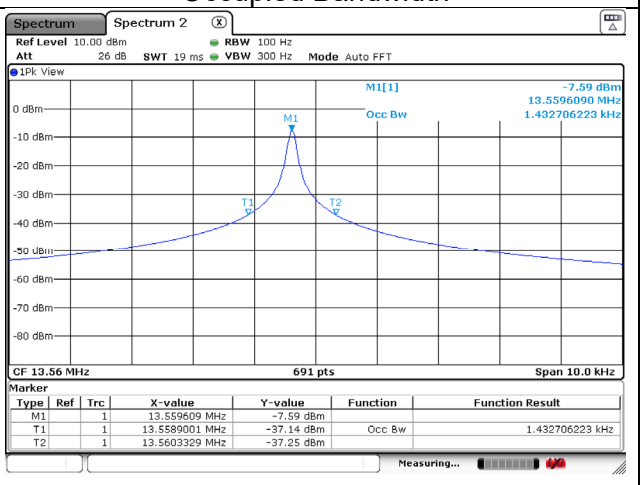
Test settings

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

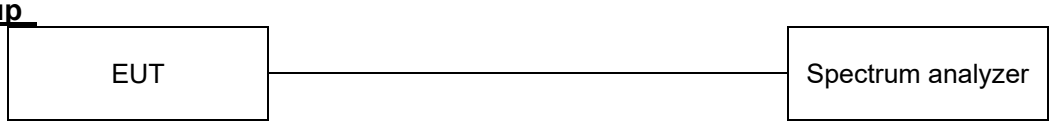
Case	Frequency [MHz]	20 dB Bandwidth [MHz]		Limit [MHz]	20 dB Bandwidth [kHz]	Occupied Bandwidth (99 % BW) [kHz]
Right	13.56	Lowest Frequency	13.559 363	13.110 000	0.463	1.245
		Highest Frequency	13.559 826	14.010 000		
Left	13.56	Lowest Frequency	13.559 334	13.110 000	0.507	1.433
		Highest Frequency	13.559 841	14.010 000		

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 approximately twice the RBW.

6.2. Frequency tolerance

Test setup



Limit

15.225 (e) 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

KCTL

Test results

- Right

Voltage [%]	Voltage [V]	Temperature [℃]	Maintaining time	Measure frequency [Hz]	Frequency deviation [Hz]	Deviation [%]
100	12.00	20	Startup	13 559 634	366.0	-0.002 70
			2 minutes	13 559 618	382.0	-0.002 82
			5 minutes	13 559 624	376.0	-0.002 77
			10 minutes	13 559 645	355.0	-0.002 62
		-20	Startup	13 559 811	189.0	-0.001 39
			2 minutes	13 559 821	179.0	-0.001 32
			5 minutes	13 559 841	159.0	-0.001 17
			10 minutes	13 559 827	173.0	-0.001 28
		-10	Startup	13 559 814	186.0	-0.001 37
			2 minutes	13 559 825	175.0	-0.001 29
			5 minutes	13 559 824	176.0	-0.001 30
			10 minutes	13 559 828	172.0	-0.001 27
		0	Startup	13 559 841	159.0	-0.001 17
			2 minutes	13 559 824	176.0	-0.001 30
			5 minutes	13 559 821	179.0	-0.001 32
			10 minutes	13 559 825	175.0	-0.001 29
		10	Startup	13 559 745	255.0	-0.001 88
			2 minutes	13 559 741	259.0	-0.001 91
			5 minutes	13 559 745	255.0	-0.001 88
			10 minutes	13 559 745	255.0	-0.001 88
		25	Startup	13 559 752	248.0	-0.001 83
			2 minutes	13 559 754	246.0	-0.001 81
			5 minutes	13 559 742	258.0	-0.001 90
			10 minutes	13 559 758	242.0	-0.001 79
		30	Startup	13 559 748	252.0	-0.001 86
			2 minutes	13 559 741	259.0	-0.001 91
			5 minutes	13 559 765	235.0	-0.001 73
			10 minutes	13 559 748	252.0	-0.001 86
		40	Startup	13 559 741	259.0	-0.001 91
			2 minutes	13 559 749	251.0	-0.001 85
			5 minutes	13 559 748	252.0	-0.001 86
			10 minutes	13 559 725	275.0	-0.002 03
		50	Startup	13 559 415	585.0	-0.004 31
			2 minutes	13 559 445	555.0	-0.004 09
			5 minutes	13 559 425	575.0	-0.004 24
			10 minutes	13 559 484	516.0	-0.003 81
85	10.20	20	Startup	13 559 641	359.0	-0.002 65
			2 minutes	13 559 624	376.0	-0.002 77
			5 minutes	13 559 617	383.0	-0.002 83
			10 minutes	13 559 644	356.0	-0.002 63
115	13.80	20	Startup	13 559 622	378.0	-0.002 79
			2 minutes	13 559 624	376.0	-0.002 77
			5 minutes	13 559 614	386.0	-0.002 85
			10 minutes	13 559 637	363.0	-0.002 68

This test report shall not be reproduced, except in full, without the written approval

- Left

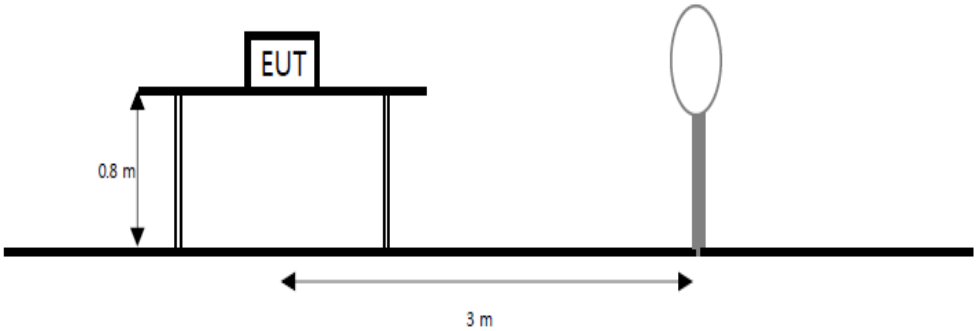
Voltage [%]	Voltage [V]	Temperature [℃]	Maintaining time	Measure frequency [Hz]	Frequency deviation [Hz]	Deviation [%]
100	12.00	20	Startup	13 559 614	386.0	-0.002 85
			2 minutes	13 559 625	375.0	-0.002 77
			5 minutes	13 559 641	359.0	-0.002 65
			10 minutes	13 559 651	349.0	-0.002 57
		-20	Startup	13 559 701	299.0	-0.002 21
			2 minutes	13 559 724	276.0	-0.002 04
			5 minutes	13 559 725	275.0	-0.002 03
			10 minutes	13 559 714	286.0	-0.002 11
		-10	Startup	13 559 754	246.0	-0.001 81
			2 minutes	13 559 745	255.0	-0.001 88
			5 minutes	13 559 742	258.0	-0.001 90
			10 minutes	13 559 828	172.0	-0.001 27
		0	Startup	13 559 824	176.0	-0.001 30
			2 minutes	13 559 834	166.0	-0.001 22
			5 minutes	13 559 854	146.0	-0.001 08
			10 minutes	13 559 841	159.0	-0.001 17
		10	Startup	13 559 714	286.0	-0.002 11
			2 minutes	13 559 724	276.0	-0.002 04
			5 minutes	13 559 754	246.0	-0.001 81
			10 minutes	13 559 741	259.0	-0.001 91
		25	Startup	13 559 741	259.0	-0.001 91
			2 minutes	13 559 756	244.0	-0.001 80
			5 minutes	13 559 748	252.0	-0.001 86
			10 minutes	13 559 745	255.0	-0.001 88
		30	Startup	13 559 741	259.0	-0.001 91
			2 minutes	13 559 758	242.0	-0.001 79
			5 minutes	13 559 725	275.0	-0.002 03
			10 minutes	13 559 753	247.0	-0.001 82
		40	Startup	13 559 745	255.0	-0.001 88
			2 minutes	13 559 747	253.0	-0.001 87
			5 minutes	13 559 748	252.0	-0.001 86
			10 minutes	13 559 758	242.0	-0.001 79
		50	Startup	13 559 474	526.0	-0.003 88
			2 minutes	13 559 456	544.0	-0.004 01
			5 minutes	13 559 484	516.0	-0.003 81
			10 minutes	13 559 453	547.0	-0.004 03
85	10.20	20	Startup	13 559 610	390.0	-0.002 88
			2 minutes	13 559 621	379.0	-0.002 80
			5 minutes	13 559 644	356.0	-0.002 63
			10 minutes	13 559 651	349.0	-0.002 57
115	13.80	20	Startup	13 559 611	389.0	-0.002 87
			2 minutes	13 559 624	376.0	-0.002 77
			5 minutes	13 559 644	356.0	-0.002 63
			10 minutes	13 559 658	342.0	-0.002 52

This test report shall not be reproduced, except in full, without the written approval

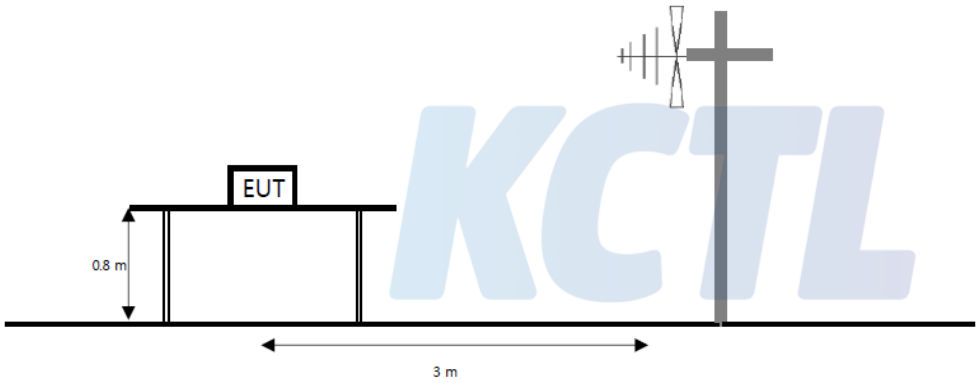
6.3. Radiated spurious emissions

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) 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) 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) 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) 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 ㏈㎶/m)	30
30.0-88.0	100(40 ㏈㎶/m)	3
88-216	150(43.5 ㏈㎶/m)	3
216-960	200 (46 ㏈㎶/m)	3
Above 960	500 (53.98 ㏈㎶/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 ㏈/decade of distance. F_d = 40log(D_m/Ds)
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. F_d = 20log(D_m/Ds)
   Where:
   F_d= Distance factor in ㏈
   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 ㏈/decade) as specified in § 15.31(f)(2). Extrapolation Factor = 40 log10(30/3) = 40 ㏈.
3. (㏈) = Antenna factor(㏈/m) + Cable loss(㏈) + or Amp. gain(㏈) + or F_d(㏈)
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 ㏈ 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 MHz

-Right

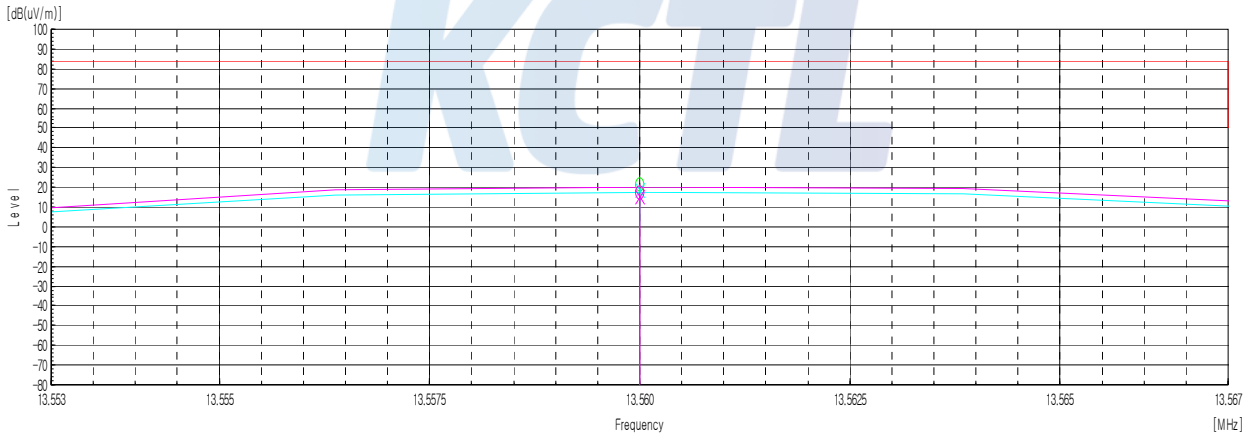
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.56	68.60	20.27	-31.12	40.00	17.75	84.00	66.25

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.56	66.00	20.27	-31.12	40.00	15.15	84.00	68.85

Face-on/Face-off



-Left

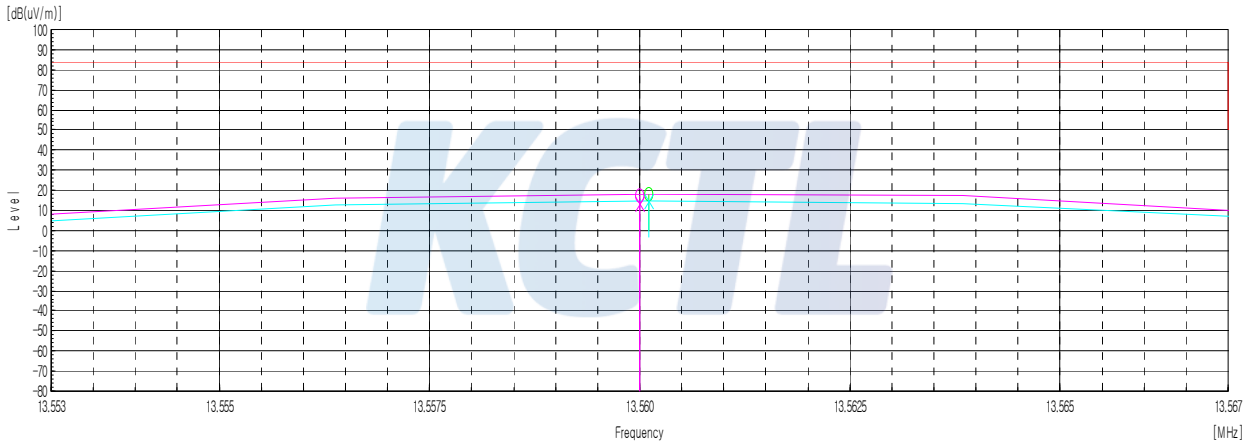
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.56	68.10	20.27	-31.12	40.00	17.25	84.00	66.75

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.56	64.10	20.27	-31.12	40.00	13.25	84.00	70.75

Face-on/Face-off



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

15.225 (b,c) 13.110-14.010 ㎒

-Right

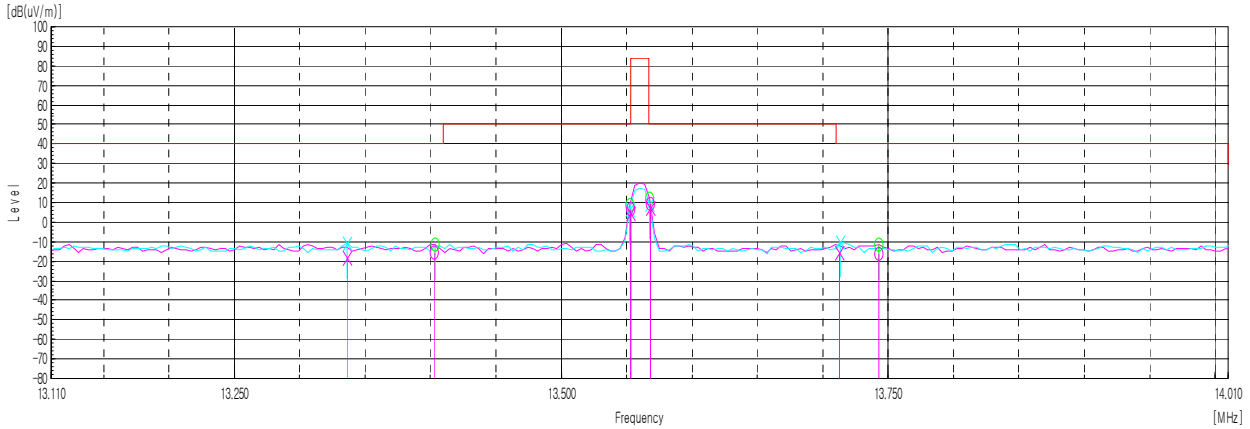
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(㎒)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data							
13.40	35.10	20.27	-31.13	40.00	-15.76	40.50	56.26
13.55	57.40	20.27	-31.12	40.00	6.55	50.50	43.95
13.57	60.40	20.27	-31.12	40.00	9.55	50.50	40.95
13.74	34.50	20.27	-31.10	40.00	-16.33	40.50	56.83

[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							
13.34	32.40	20.27	-31.14	40.00	-18.47	40.50	58.97
13.55	55.40	20.27	-31.12	40.00	4.55	50.50	45.95
13.57	58.10	20.27	-31.12	40.00	7.25	50.50	43.25
13.71	35.40	20.27	-31.10	40.00	-15.43	40.50	55.93

Face-on/Face-off



-Left

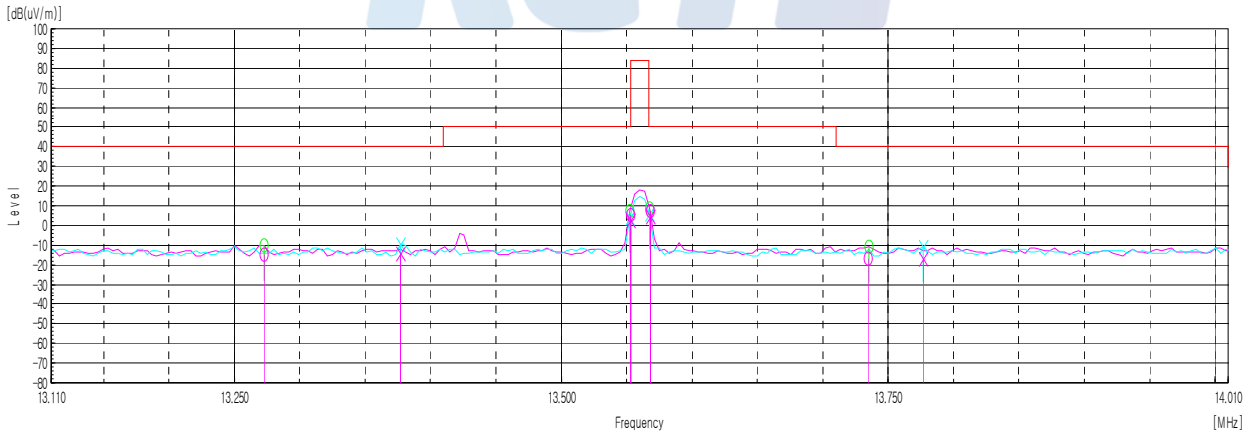
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.27	35.80	20.27	-31.14	40.00	-15.07	40.50	55.57
13.55	56.10	20.27	-31.12	40.00	5.25	50.50	45.25
13.57	58.10	20.27	-31.12	40.00	7.25	50.50	43.25
13.74	34.10	20.27	-31.10	40.00	-16.73	40.50	57.23

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
13.38	36.70	20.27	-31.13	40.00	-14.16	40.50	54.66
13.55	53.40	20.27	-31.12	40.00	2.55	50.50	47.95
13.57	55.70	20.27	-31.12	40.00	4.85	50.50	45.65
13.78	34.10	20.28	-31.09	40.00	-16.71	40.50	57.21

Face-on/Face-off



Test results (9 kHz to 30 MHz)

15.225 (d) 0.009-30 MHz

-Right

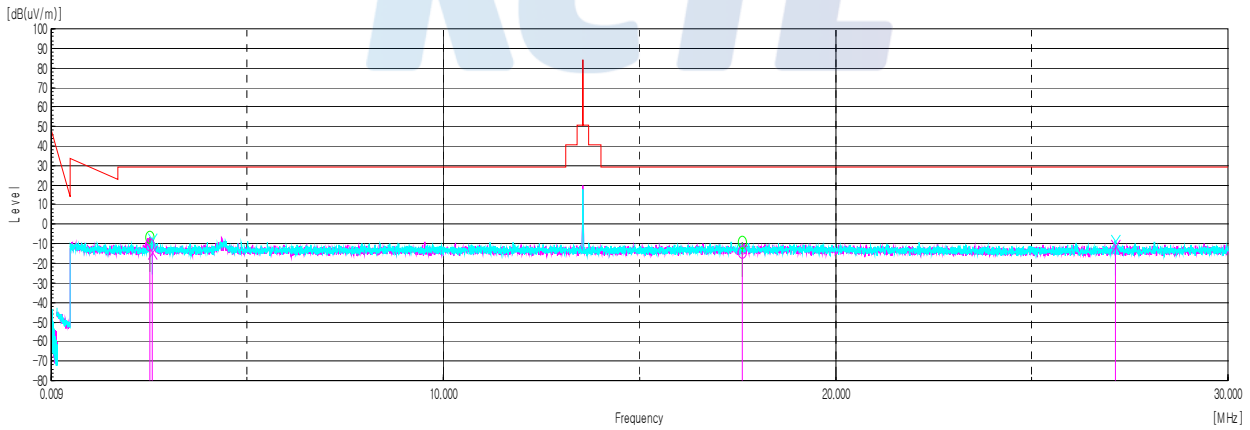
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
2.53	41.10	20.08	-31.96	40.00	-10.78	29.50	40.28
17.63	35.90	20.51	-30.98	40.00	-14.57	29.50	44.07

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
2.58	37.50	20.08	-31.95	40.00	-14.37	29.50	43.87
27.12	38.90	20.70	-30.67	40.00	-11.07	29.50	40.57

Face-on/Face-off



-Left

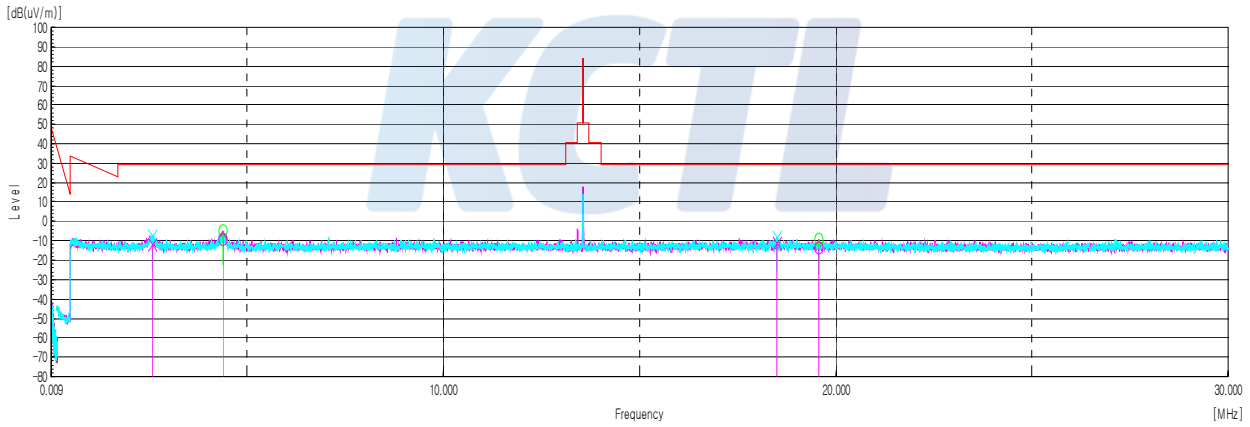
[Face-on]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
4.39	42.10	20.24	-31.78	40.00	-9.44	29.50	38.94
19.56	36.80	20.67	-30.88	40.00	-13.41	29.50	42.91

[Face-off]

Frequency	Reading	Antenna Factor	Amp. + Cable	Distance Factor	Result	Limit	Margin
(MHz)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Quasi peak data							
2.59	40.10	20.08	-31.94	40.00	-11.76	29.50	41.26
18.50	39.40	20.58	-30.94	40.00	-10.96	29.50	40.46

Face-on/Face-off



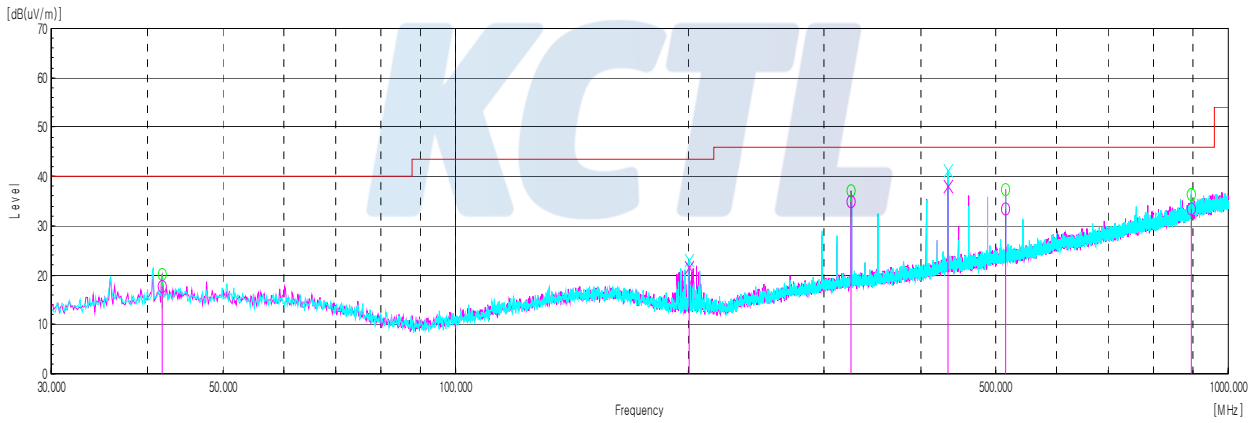
Test results (Below 1 000 ㎒)

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								
41.76	H	28.40	19.57	-30.30	-	17.67	40.00	22.33
200.72	V	33.40	15.99	-27.77	-	21.62	43.50	21.88
325.37	H	41.20	20.11	-26.48	-	34.83	46.00	11.17
433.88	V	40.90	22.78	-25.57	-	38.11	46.00	7.89
515.24	H	34.20	24.10	-24.92	-	33.38	46.00	12.62
895.00	H	25.80	29.45	-21.85	-	33.40	46.00	12.60

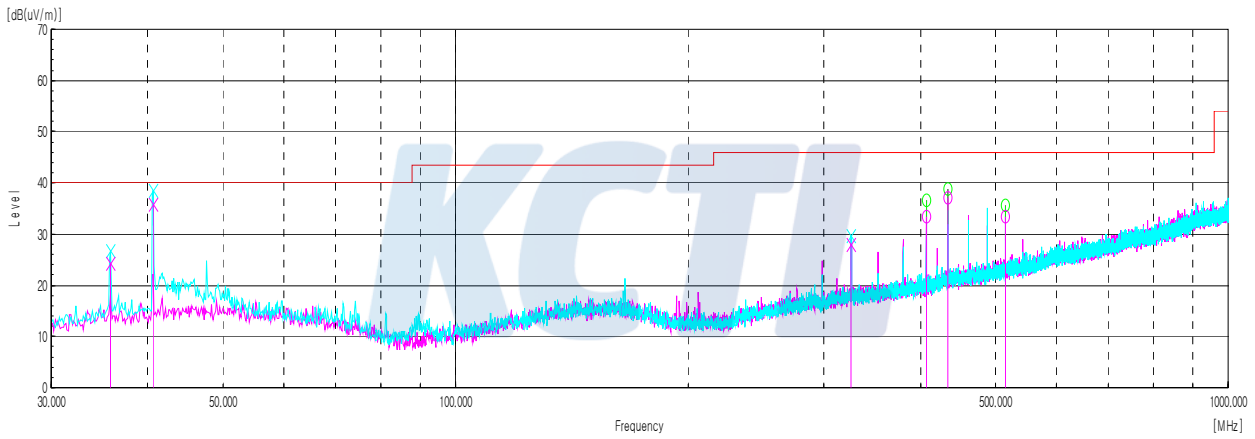
Horizontal/Vertical



-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	35.70	18.91	-30.47	-	24.14	40.00	15.86
40.67	V	46.60	19.53	-30.31	-	35.82	40.00	4.18
325.37	V	34.20	20.11	-26.48	-	27.83	46.00	18.17
406.72	H	37.50	21.70	-25.79	-	33.41	46.00	12.59
433.88	H	39.90	22.78	-25.57	-	37.11	46.00	8.89
515.24	H	34.10	24.10	-24.92	-	33.28	46.00	12.72

Horizontal/Vertical



7. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100808	2020-07-30
DC Power Supply	AGILENT	E3632A	MY40008800	2020-07-30
Signal Generator	R&S	SMB100A	176206	2021-01-21
Vector Signal Generator	R&S	SMBV100A	257566	2020-07-16
Temp & Humid Chamber	Myeongseong R&P	CTHC-50P-DT	20150824-2	2020-07-31
EMI Test Receiver	R&S	ESCI7	100732	2020-08-22
Loop Antenna	R&S	HFH2-Z2	100355	2020-08-24
Bilog Antenna	SCHWARZBECK	VULB9168	583	2020-05-04
Coaxial Fixed Attenuator	Agilent	8491B-003	2708A18758	2020-05-04
Amplifier	SONOMA	310N	284608	2020-08-22
Antenna Mast	Innco Systems	MA4000-EP	303	-
Turn Table	Innco Systems	DT2000	79	-

End of test report

This test report shall not be reproduced, except in full, without the written approval