KOSTEC Co., Ltd.
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TEST REPORT

Report No: KST-FCR-120001

Applicant	Name	Omron Automotive Electronics Korea Co.,Ltd.
	Address	492, Gayul-Ri, Bogye-Myeon, Anseong-City, Kyonggi-Do, Korea
Manufacturer	Name	Omron Automotive Electronics Korea Co.,Ltd.
	Address	492, Gayul-Ri, Bogye-Myeon, Anseong-City, Kyonggi-Do, Korea
Equipment	Name	RF Keyless Entry System(Transmitter)
	Model No	OKA-870T
	Usage	Car door remote controller
Test Standard	FCC Part15, Subpart C §15.231 RSS-210 A1.1 (Issue 8, December 2010), RSS-Gen (Issue 3, December 2010)	
Test Date(s)	2012. 4. 26 ~ 2012. 4. 30	
Issue Date	2012. 5. 02	
Test Result	Compliance	

Supplementary Information

The device bearing the brand name specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with measurement procedures specified in ANSI C 63.4-2009. within the scope of the FCC Rule. We attest to the accuracy of data and all measurements reported herein were performed by KOSTEC Co., Ltd. and were made under Chief Engineer's supervision. We assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested by	Mi Young, Lee	Approved by	Gyeong Hyeon, Park
Signature		Signature	

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1. GENERAL INFORMATION

1.1 Test Facility

Test laboratory and address

KOSTEC Co., Ltd.

180-254, Annyeong-dong, Hwaseong-si, Gyeonggi-do, South Korea

The open area field test site and conducted measurement facility are used for these testing. This site at was fully described in a reports submitted to the Federal Communications Commission (FCC).

The details of these reports have been found to be in complies with the requirements of Section 2.948 of the FCC Rules on November 14, 2002. The facility also complies with the radiated and conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission (FCC) has the reports on file and KOSTEC Co., Ltd. is listed under FCC Registration No.525762. The test site has been approved by the FCC for public use and is List in the FCC Public Access Link CORES (Commission Registration System)

Registration information

KCC (Korea Communications Commission) Number : KR0041

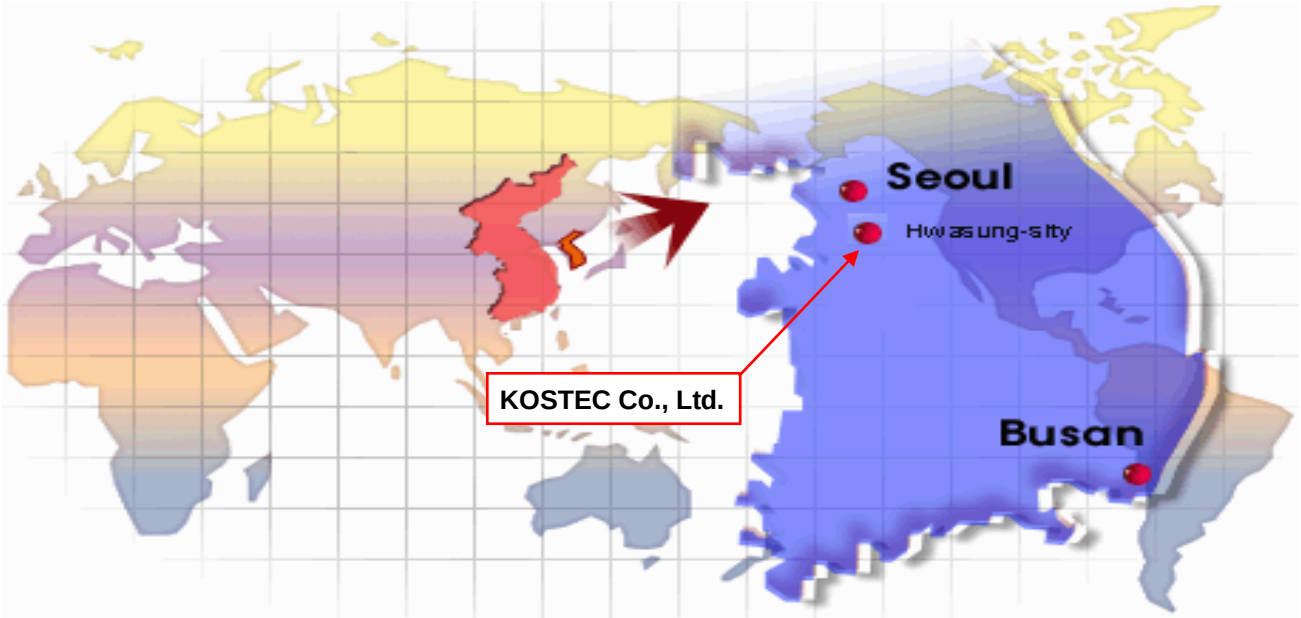
KOLAS(Korea laboratory accreditation Scheme) Number : 232

FCC Registration Number(FRN) : 525762

IC Company Number(C,N) : 8305A

VCCI Registration Number : R-1657 / C –1763

1.2 Location



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2. EQUIPMENT DESCRIPTION

The product specification described herein was declared by manufacturer. And refer to user's manual for the details.

1) Equipment Name	RF Keyless Entry System(Transmitter)					
2) Equipment Class	Category Ⅰ(according to RSS-Gen 2.1.1)					
2) Model No	OKA-870T					
3) Usage	Remote transmitter for car door controller					
4) Type of unit	Portable device					
5) Serial Number	Proto type					
8) Oscillation type	X-TAL (Crystal)					
9) Modulation type	FSK(Frequency shift keying)					
10) Operated Frequency	313.850 ㎒					
11) Fundamental Field Strength	65.67 dB㎶/m @ 3 meter					
12) Number of channel	1 Ch.					
13) Communication type	Simplex					
14) Duty cycle	100 % (continuously signal)					
15) Bit transmission rate	1 000 bps					
16) CPU Type / Manufacturer	u PD78F0567MC(8bit) / RENESAS Corporation					
17) ROM / RAM	4 Kbytes / 128 bytes					
18) Clock frequency	8 ㎒					
19) Package	20pin SSOP					
20) Weight / Dimension	56g / 39.1(W) ㎜ x 70.9(L) ㎜ x 17.0(D) ㎜					
21) Operating temperature	- 20℃ ~ + 60℃					
22) Battery	Voltage: 3 Vdc,		Manufacturer : PANASONIC Battery Corp.			
	Type: Lithium cell coin (CR2032)					
23) Antenna Description	Antenna type	built in on PCB	Length	94 mm	Manufacturer	Omron

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3. SYSTEM CONFIGURATION FOR TEST

3.1 Device characteristics

The RF Keyless Entry is a system that it controls locking and unlocking the door and the trunk by wireless Remote controller. This system consists of three components. The TRANSMITTER is a device that transmits The signal when the button is pressed. The transmission signal consists of several synchronous codes, unique identification code

This system used for frequency is 313.850 ㎒ and supplied 3 Vdc from Lithium cell. the other detailed explanation is referred to the user manual

Remote Transmitter

3.2 Configuration of EUT

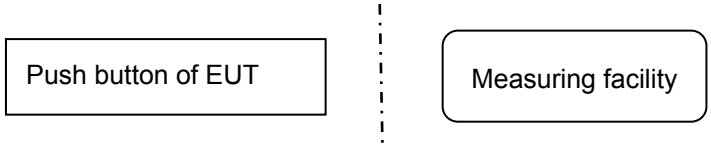
Description	Manufacturer	Model No.	Serial Number	Remark
Main controller board	Omron Automotive Elective Electronic Korea Electronics Korea S1	OKA-870T	prototype	
Lithium cell coin battery	PANASONIC Battery Corp.	CR2032	Z1	Made in Indonesia

3.3 Product Modification

N/A

3.4 Operating Mode

When deactive testing, were intended to normal RF signal and the other RF signal form EUT continuously.



※ Above configuration is differ from according the required test method procedure based on standard

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3.5 Used Test Equipment List

No.	Instrument	Model	Serial No.	Manufacturer	Due to Cal. Date	Used
1	Temperature & Humidity Chamber	EY-101	90E14260	TABAI ESPEC	2012.10.06	☐
2	Spectrum Analyzer	8563E	3846A10662	Agilent Technology	2013.01.27	☐
3	Spectrum Analyzer	FSP	100083	Rohde & Schwarz	2013.03.02	☐
4	Vector signal Analyzer	89441A	3416A02620	Agilent Technology	2012.05.18	☐
5	Radio communication Analyzer	MT8815A	6200429622	ANRITSU	2013.03.02	☐
6	CDMA Mobile Station Test Set	E8285A	US40081298	Agilent Technology	2013.03.02	☐
7	Test Receiver	ESPI3	100109	Rohde & Schwarz	2013.03.02	☒
8	EMI Test receiver	ESCS30	100111	Rohde & Schwarz	2012.05.08	☒
9	Modulation analyzer	8901A	3538A07071	Agilent Technology	2012.05.18	☐
10	Audio analyzer	8903B	3514A16919	Agilent Technology	2012.05.18	☐
11	EPM Series Power meter	E4418B	GB39512547	Agilent Technology	2012.05.18	☐
12	RF Power Sensor	ECP-E18A	US37181768	Agilent Technology	2012.05.18	☐
13	Microwave Frequency Counter	5352B	2908A00480	Agilent Technology	2012.05.18	☐
14	Digital storage Oscilloscope	TDS3052	B015962	Tektronix	2012.10.06	☐
15	Multi meter	DM-313	S60901832	LG Precision Co.,Ltd.	2012.05.18	☐
16	Digital Signal Generator	E4436B	US39260458	H.P	2012.05.18	☐
17	Digital Signal Generator	E4438C	MY42083133	Agilent Technology	2012.10.06	☐
18	Signal Generator	SML03	100692	Agilent Technology	2013.03.13	☐
19	Tracking CW Signal Source	85645A	070521-A1	H.P	2012.05.18	☒
20	Ultra broadband Antenna	HL562	100075	Rohde & Schwarz	2014.04.13	☒
21	Ultra broadband Antenna	HL562	100076	Rohde & Schwarz	2012.12.08	☐
22	Dipole Antenna	HZ-12	100005	Rohde & Schwarz	2014.04.19	☐
23	Dipole Antenna	HZ-13	100007	Rohde & Schwarz	2014.04.05	☐
24	Horn Antenna	3115	2996	EMCO	2012.07.14	☐
25	Horn Antenna	3115	9605-4834	EMCO	2012.07.14	☒
26	Loop Antenna	6502	9203-0493	EMCO	2013.06.13	☐
27	Dummy Load	8173	3780	Bird Electronic	2012.05.18	☐
28	RF Power Amplifier	8347A	3307A01571	H.P	2012.05.18	☒
29	Microwave Amplifier	8349B	2627A01037	H.P	2012.05.18	☒
30	Attenuator	8498A	3318A09485	H.P	2012.05.18	☐
31	Attenuator	50FH-030-500	1404109433	JEW Industries Inc.	2012.05.18	☐
32	Attenuator	UFA-20NPJ-20	IF836	TAMAGAWA Electronic	2012.05.18	☐
33	Band rejection filter	3TNF-0006	26	Dover Tech	2012.05.18	☐
34	Band rejection filter	3TNF-0007	311	Dover Tech	2012.05.18	☐
35	Band rejection filter	3TNF-0008	317	Dover Tech	2012.05.18	☐
36	High pass filter	WHJS1100-10EF	1	Wainwright Instrument Gmbh.	2012.05.18	☒
37	High pass filter	WHJS3000-10EF	1	Wainwright Instrument Gmbh.	2012.05.18	☐
38	Directional coupler	779D	07271	H.P	2012.05.18	☐
39	3 Way power divider	KPDSU3W	00070365	KMW	2013.03.02	☐

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40	SLIDAC	None	0207-4	Myoung-Sung Electronic Co., Ltd.	2012.05.18	☐
41	DC Power supply	DRP-5030	9028029	Digital Electronic Co.,Ltd	2012.05.18	☐
42	DC Power supply	UP-3005T	68	Unicon Co.,Ltd	2012.05.18	☐
43	DC Power supply	E3610A	KR24104505	Agilent Technology	2012.05.18	☐
44	Thermo Hygrometer	PC-7800W	None	SATO	2012.10.06	☒
45	HYGRO-Thermograph	NSII-Q	1611545	SATO	2012.10.06	☒
46	Barometer	7612	81134	SATO	2012.12.12	☒

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4. SUMMARY TEST RESULTS

Description of Test	Reference Section	Standard Section		Test Result
		FCC Rule	IC Rule	
20 dB and 99% Bandwidth	Clause 5.1	Part15.231(c)	RSS-210 A1.1.3	Compliance
Limited transmitting time	Clause 5.2	Part15.231(1)of (a)	RSS-210 A1.1.1	Compliance
Fundamental E-field strength emissions	Clause 5.3	Part15.231(b)	RSS-210 A1.1	Compliance
Spurious E-field strength emissions	Clause 5.4	Part15.231(b)	RSS-210 A1.1	Compliance
Antenna Requirements	Clause 5.5	Part15.203	Clause 4.2.1.4	Compliance

Compliance : The EUT complies with the essential requirements in the standard.
N/C(Not Compliance) : The EUT does not comply with the essential requirements in the standard.
N/A(Not application) : The test was not applicable in the standard.

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5. MEASUREMENT RESULTS

5.1 20 dB and 99% Occupied bandwidth

5.1.1 Standard Applicable [§15.231(c) and RSS-210 A1.1.3]

The emission of 20 ㏈ and 99% bandwidth shall be no wider than 0.25 % of the center frequency for devices operating above 70 ㎒ and below 900 ㎒. Bandwidth is determined at the points 20 ㏈ down from the modulated carrier.

5.1.2 Test environmental conditions

• Ambient temperature : 20 ℃ • Relatively humidity : 57 % R.H

5.1.3 Measurement Procedure

20 ㏈ and 99% frequency bandwidth was measured with a spectrum analyzer, while EUT had its continuously function enabled. after the trace being stable, determined bandwidth at the points 20 ㏈ down and 99% from the modulated carrier was recorded as the measurement results.

The spectrum analyzer is set to the as follows :

- Span : approximately 2 or 3 times of the bandwidth
- RBW : 3 ㎑ (≥ 1% of the of the emission bandwidth)
- VBW : 10 ㎑ (≥ RBW)
- Sweep : auto
- Detector function : RMS
- Trace : max hold

5.1.4 Measurement Result

Operating frequency (㎒)	20 dB Bandwidth (㎑)	99% Occupied bandwidth(㎑)	Limit (㎑)**	Result
313.850	91.803	90.500	784.6	Compliance

** The limit value formula is as follows ;

Operating frequency x 0.25 % = 313.850 x 0.0025 = 784.6 ㎑

- where is operating frequency in ㎒:

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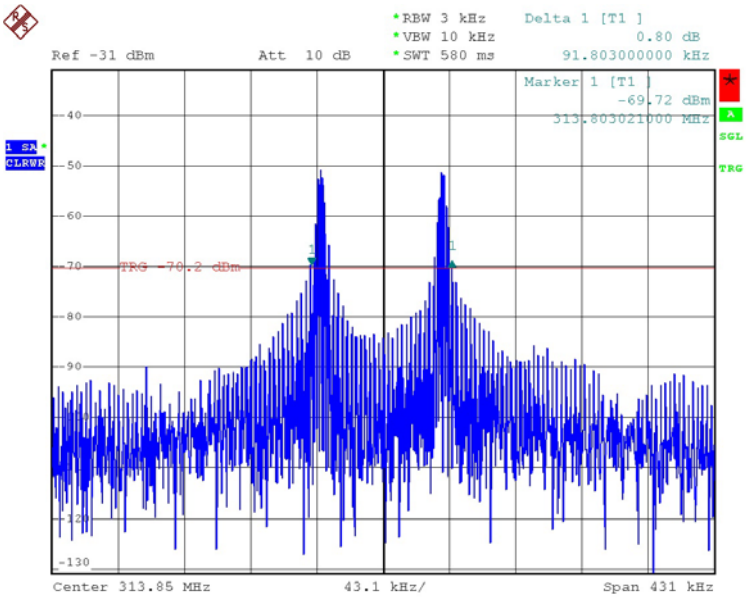
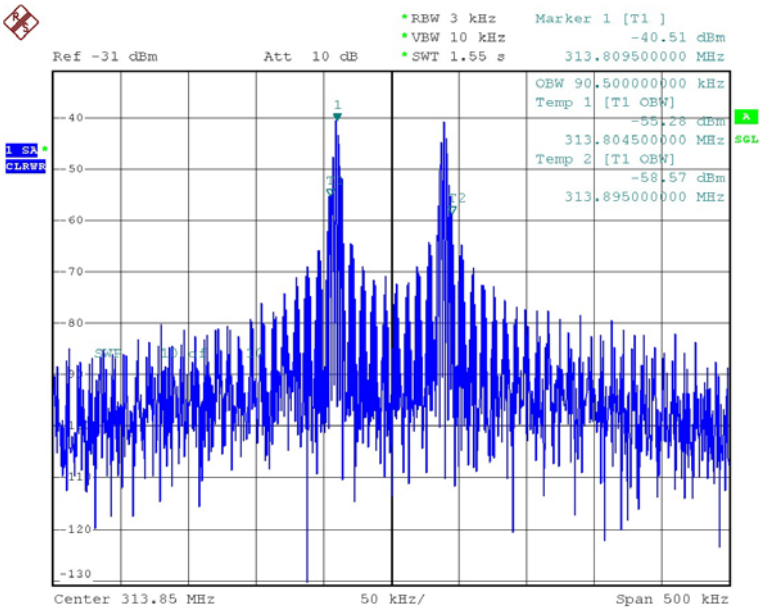
5.1.5 Test Plot

▣ 20 dB Occupied bandwidth



▣ 99 % Occupied bandwidth



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5.2 Limited transmitting time

5.2.1 Standard Applicable [§15.231(1)of (a) and RSS-210 A1.1.1(a)]

A manually operated Transmitter shall employ a switch that will automatically deactivate the Transmitter within not more than 5 seconds of being released.

5.2.2 Test environmental conditions

• Ambient temperature : 20 ℃ • Relatively humidity : 57 % R.H

5.2.3 Measurement Procedure

The automatically deactivate time of the transmitter was measured with a spectrum analyzer, while EUT had its normal function enabled.

After the trace being stable, determined automatically deactivate time was recorded as the measurement results.

The spectrum analyzer is set to the as follows :

- Span : Zero (time domain state)
- RBW : 100 ㎑ (≥ 20 dB bandwidth)
- VBW : 300 ㎑ (≥ RBW)
- Sweep : 520 msec.
- Detector function : peak
- Trace : max hold

5.2.4 Measurement Result

Operating frequency (㎒)	Tx time (msec)	Limit **	Result
313.850	256.880	≤ 5 sec.	Compliance

** please refer to 5.2.1 standard applicable

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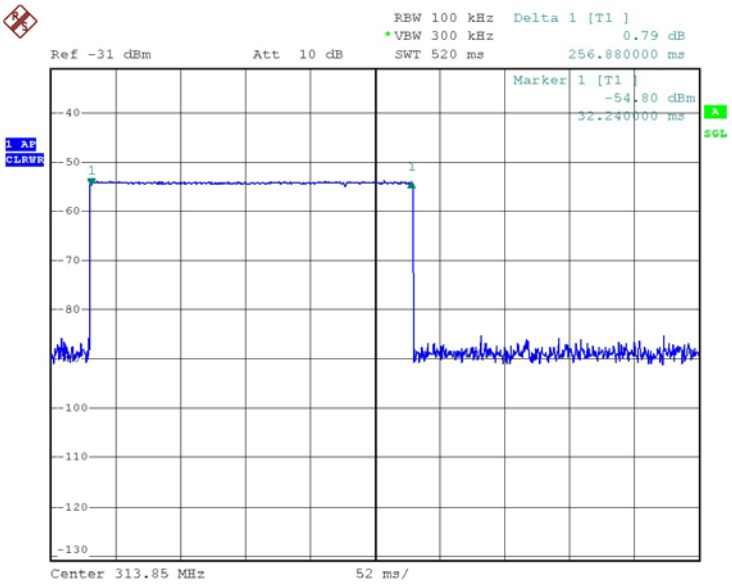
5.2.5 Test Plot



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5.3 Fundamental E-field strength emissions

5.3.1 Standard Applicable [§15.231(b) and RSS-210 A1.1]

The fundamental field strength of emissions from intentional radiators operated under this Section shall not exceed the Following:

Fundamental Frequency (㎒)	Field strength of Fundamental (microvolts /m)	Field strength of spurious emissions (microvolts /m)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750 **	125 to 375 **
174-260	3,750	375
260-470	3,750 to 12,500 **	375 to 1 250 **
Above 470	12,500	1 250
** Linear interpolations		

- Note: fundamental and spurious field strength of 40.66-40.70 ㎒ is refer to RSS-210 A2.7

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply the bandedges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector.

The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 and RSS-Gen 7.2.2. shall be demonstrated using the measurement instrumentation specified in that section

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

5.3.2 Test environmental conditions

• Relatively humidity : (46 ~ 49) % R.H • Climate pressure : 100.4 ㎪

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5.3.3 Measurement Procedure

The measurements procedure of the transmitter radiated E-field is as following describe method.

The test is performed in a Shield chamber to determine the accurate frequencies, after maximum emissions level will be checked on a test chamber and measuring distance is 3 m from EUT to test antenna.
(The chamber is ensured that comply with at least 6 ㏈ above the ambient noise level)

① The EUT was powered ON with continuously operating mode and placed on a 0.8 meter high non-conductive table on the reference ground plane.

② The test antenna is used on Horn antenna for above 1 ㎓, and if the below 1 ㎓, broad-band antenna were used and it's antenna positioned in both the horizontal and vertical plane was location at EUT during the test for maximized the emission measurement.

③ The output of the test antenna will be connected to a measuring receiver, and it is set to tuned over the frequency range according to required standard

④ The measuring detector type of the measurement receiver is based on average value of measurement instrumentation employing a CISPR Quasi Peak detector according to required standard and for above 1 ㎓, set the spectrum analyzer on a average and peak detector for the provisions in §15.35 or RSS-Gen 4.9(b) and investigated frequency range is set the spectrum analyzer according to §15.33 and RSS-Gen 4.9(a)(b)

⑤ The fundamental frequency at which a relevant radiated signal component is detected, the test antenna will be raised and lowered through the specified range of heights in horizontal and vertical polarized orientation, until an maximum signal level is detected on the measuring receiver.

⑥ The transmitter is position x, y, z axis on rotating through 360 degrees, until the maximum signal level is detected by the measuring receiver.

⑦ The receiver is scanned from requested measuring frequency band and then the maximum meter reading is recorded. The radiated emissions were measured with required standard.

• The measurement results are obtained as described below:

Result(㏈㎶/m) = Reading(㏈㎶) + Antenna factor(㏈/m)+ CL(㏈) + other applicable factor (㏈)

※ if necessary, additionally receiver is adopted high-pass filter and preamp because lower radiated signal

▣ Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are test receiver, Cable loss, Antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, Antenna frequency interpolation, measurement distance variation, Site imperfection, mismatch, and system repeatability based on NIS 80,81, The measurement uncertainty level with a 95 % confidence level were apply to Uncertainty of a radiation emissions measurement at Chamber of KOSTEC is ± 6.0 ㏈

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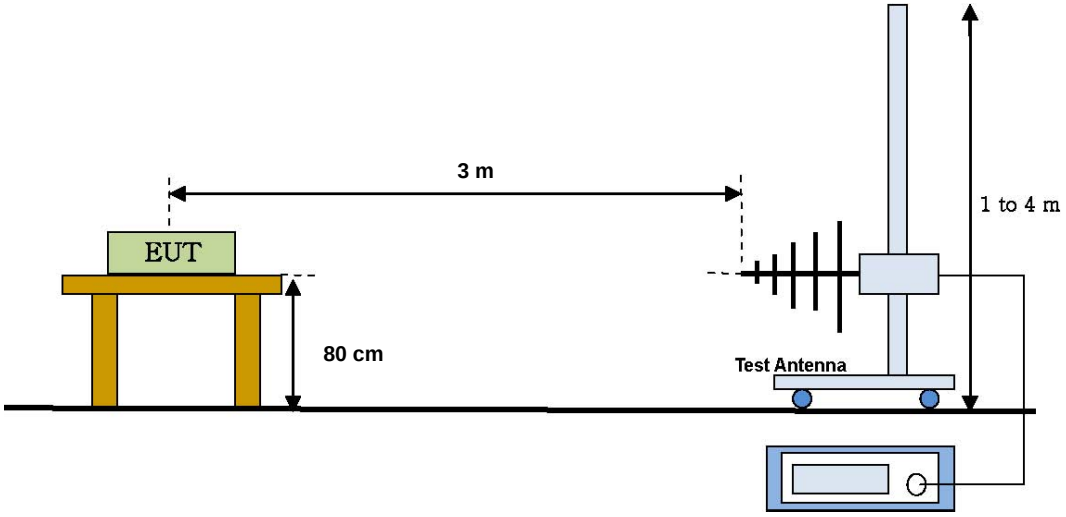
5.3.4 Test Configuration



※ In case of above 1 ㎓ is using the Horn antenna instead of Broad-band Antenna

[Radiated emission setup]

5.3.5 Measurement Result

Measured frequency (㎒)	Reading (dB㎶/m)	Table (Deg)	Pstn. (axis)	Antenna			Cable (dB)	Meas. Result (dB㎶/m)	Detector Mode & limit	Limit (dB㎶/m)	Margin (dB)	Result
				Height (m)	Pol. (H/V)	Fctr. (dB/m)						
313.850	46.99	156	Y	1.9	V	12.01	6.65	65.65	Average	75.55**	9.90	Pass
313.850	48.12	185	Y	2.1	V	12.01	6.65	66.78	Peak	95.55	28.77	Pass

Freq.(㎒) : Measurement frequency
Reading(dB㎶/m) : Indicated value for test receiver
Table (Deg) : Directional degree of Turn table
Pstn.(axis) : Location axis of EUT
Antenna (Height, Pol, Fctr) : Antenna Height, Polarization and Factor
Cable(dB) : Cable loss
Meas. Result (dB㎶/m) : Reading(dB㎶)+ Antenna factor.(dB/m)+ CL(dB)
Detector mode & limit : according to the rule of FCC part 15.35(b)
Limit(dB㎶/m) : Limit value specified with FCC and IC Rule
Margin(dB) : Limit (dB㎶/m) – Meas. Result(dB㎶/m)

** The limit value formula is as follows ;

- Linear interpolation with frequency in ㎒:
  For the band 260 - 470 ㎒, ㎶/m at 3meter = 41.67(F) – 7083
  This device frequency is 313.850 ㎒, So, 41.67(313.850) – 7083 = 5 995 ㎶/m (75.55 dB㎶/m)

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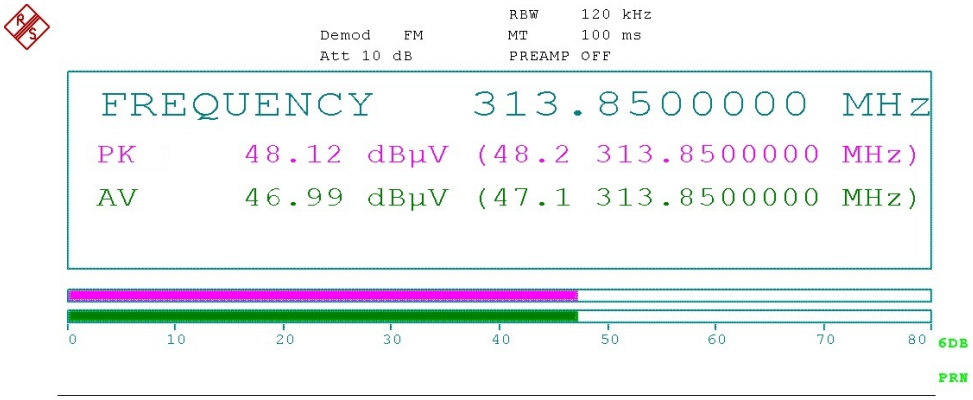
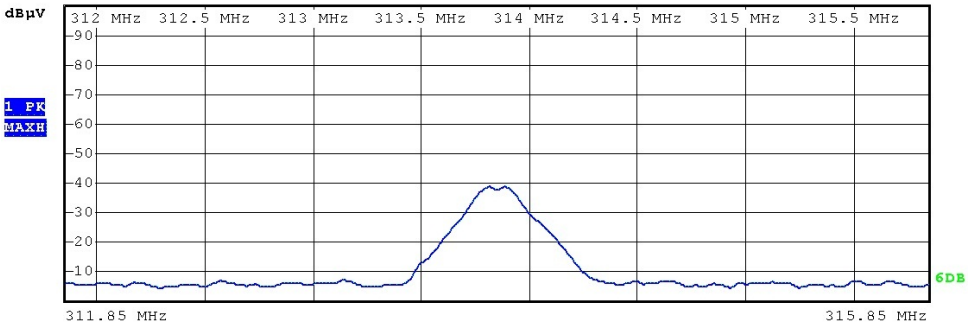
5.3.6 Test Plot





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5.4 Spurious E-field strength emissions

5.4.1 Standard Applicable [FCC §15.231(b) and RSS-210 A1.1]

(b) In addition to the provisions of §15.205 and RSS-Gen 7.2.2 the field strength of emissions from intentional radiators operated.

Under this section shall not exceed the following:

Fundamental Frequency (㎒)	Field strength of Fundamental (microvolts /m)	Field strength of spurious emissions (microvolts /m)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750 **	125 to 375 **
174-260	3,750	375
260-470	3,750 to 12,500 **	375 to 1250 **
Above 470	12,500	1250
** Linear interpolations		

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply the bandedges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector.

The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 and RSS-Gen 4.9(b) for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 and RSS Gen 7.2.2 shall be demonstrated using the measurement instrumentation specified in that section

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209 and RSS-Gen 7.2.5 whichever limit permits a higher field strength.

§15.205 Table 2 and RSS-Gen 7.2.2 Table3. Restrict Band of Operation

Only spurious emissions are permitted in any of the frequency bands listed below ;			
[㎒]	[㎒]	[㎒]	[㎓]
0.090 - 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.
4.177 25 - 4.177 75	37.5 -38.25	1 435 – 1 626.5	9.0 - 9.2

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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.
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 - 8.38 6 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

** Until February 1, 1999, this restricted band shall be 0.490-0.510

§15.209. Table 1 and RSS-Gen 7.2.5 Table5 limits for radiated emissions measurements (distance at 3m)

Frequency Band [㎒]	Limit [㎶/m]	Limit [dB㎶/m]	Detector
30 - 88	100 **	40.00	Quasi peak
88 - 216	150 **	43.52	Quasi peak
216 - 960	200 **	46.02	Quasi peak
Above 960	500	54.00	Average

** fundamental emissions from intentional radiators operation 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 Section 15.231 and 15.241 or RSS-Gen A1.

5.4.2 Test environmental conditions

• Relatively humidity : (44 ~ 47) % R.H • Climate pressure : 100.2 ㎪

5.4.3 Measurement Result

Measured frequency (㎒)	Reading (dB㎶)	Table (Deg)	Pstn. (axis)	Antenna			Cable (dB)	Amp (dB)	Meas. Result (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)	Result
				Height (m)	Pol. (H/V)	Fctr. (dB/m)						
47.400	46.85	125	Y	2.4	V	9.51	0.8	25	32.16	47.04	14.88	Pass
627.600	35.79	105	Y	2.1	V	18.22	3.2	25	32.21	61.94	29.73	Pass
941.440	39.22	90	Y	1.8	H	21.70	3.8	25	39.72	61.94	22.22	Pass
1 255.600	46.22	132	Y	3.0	V	24.96	4.7	25	50.88	61.94	11.06	Pass
1 569.200	36.79	85	Y	2.7	V	25.42	5.2	25	42.41	54.00	11.59	Pass
1 883.600	39.96	90	Y	1.9	H	26.59	5.8	25	47.35	61.94	14.59	Pass
2 169.800	34.68	110	Y	2.3	V	27.41	6.1	25	43.19	61.94	18.75	Pass
Above 2 169.800	The signal is not detected											

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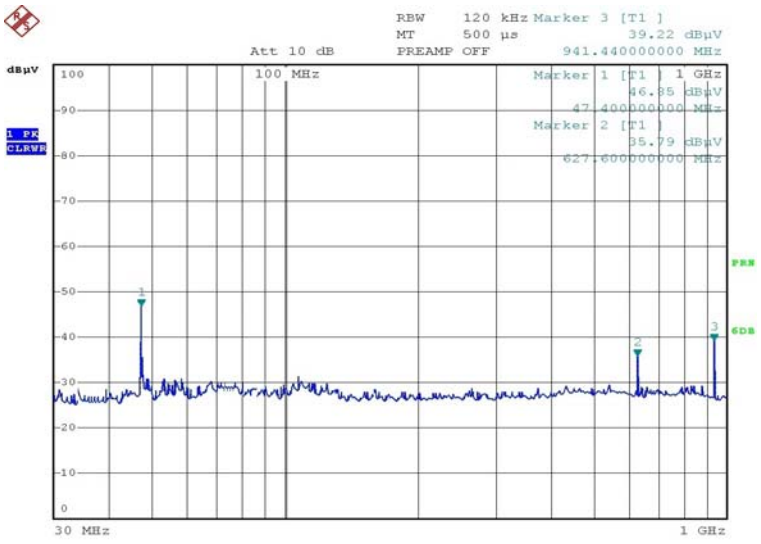
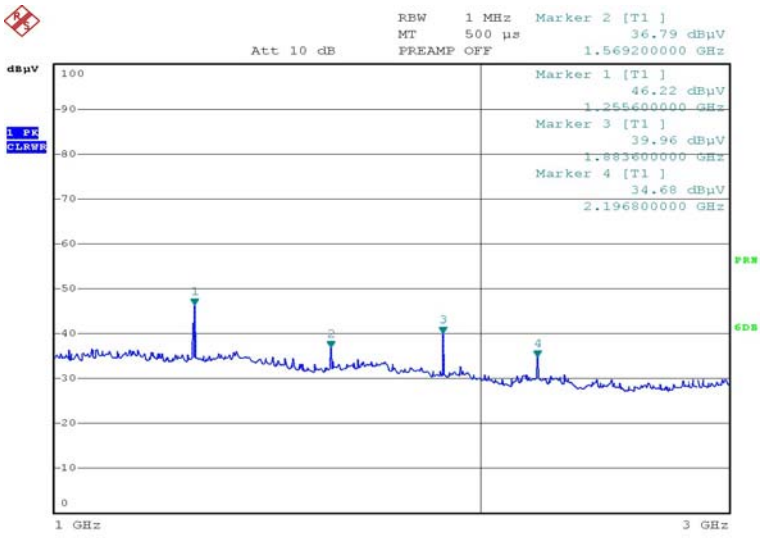
Freq.(㎒) : Measurement frequency
Reading(㏈㎶) : Indicated value for test receiver
Table (Deg) : Directional degree of Turn table
Pstn.(axis) : Location axis of EUT
Antenna (Height, Pol, Fctr) : Antenna Height, Polarization and Factor
Cable(㏈) : Cable loss
Meas. Result (㏈㎶/m) :Reading(㏈㎶)+ Antenna factor.(㏈/m)+ CL(㏈)
Limit(㏈㎶/m): Limit value required standard
Margin(㏈) : Limit (㏈㎶/m) – Meas. Result(㏈㎶/m)

5.4.4 Test Plot



- Frequency Range : 30 ㎒ ~ 1 ㎓



- Frequency Range : 1 ㎓ ~ 3 ㎓

※ Above frequency range set in accordance with §15.33 and RSS-Gen 4.9

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5.5 Antenna requirement

5.5.1 Standard applicable [FCC §15.203 and RSS-Gen 7.1.2]

For intentional device, according to §15.203 and RSS-Gen 7.1.2 an intentional radiator shall be designed to a standard antenna jack or electrical connector is prohibited.

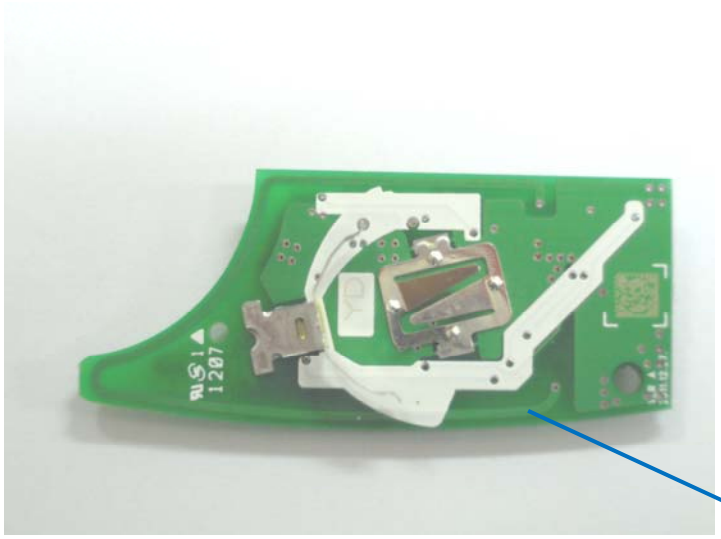
ensure that no antenna other than furnished by responsible party shall be used with the device.

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

The manufacturer may design the unit So that broken antenna can be replaced by the user, but the Use of This device antenna is built in on PCB. So, this antenna type is meet to comply with required this standard

5.5.2 Antenna Specification

Type	Connector type	Length	Results
Built in on PCB	Fixed	90 mm	Compliance



(Internal photo in PCB)

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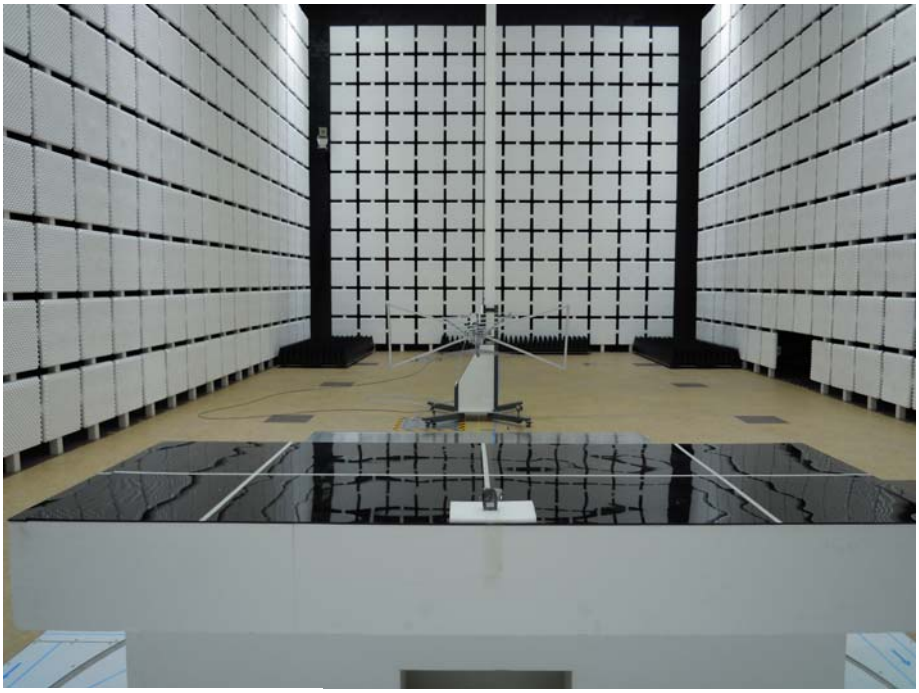
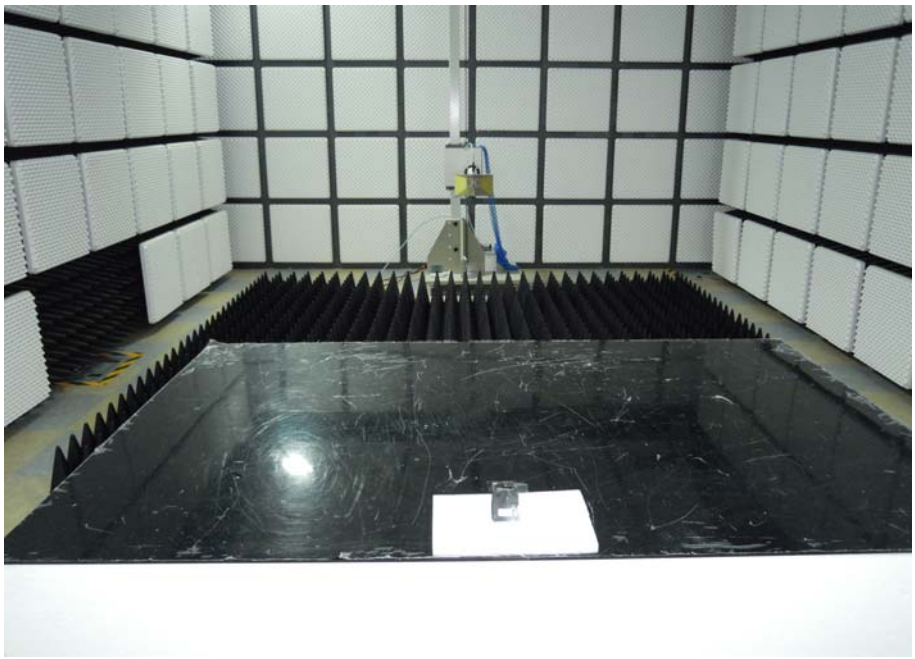
Appendix. Photographs of test setup

Field strength emission measurement



(Below 1 ㎓)



(Above 1 ㎓)