

Dates of Tests: October 18 ~ November 11, 2021
Test Report S/N: LR500112111E
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID.

2A3I8DT-SMS01B

APPLICANT

DamoaTech Co.,Ltd.

Equipment Class	:	Digital Transmission System (DTS)
Manufacturing Description	:	Measure Soil parameters
Manufacturer	:	DamoaTech Co.,Ltd.
Model name	:	DT-SMS01B
Contain Module	:	2A3I8DT-SMS01B-1
Test Device Serial No.:	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C ; ANSI C-63.4-2014 ANSI C-63.10-2013
Frequency Range	:	2412 MHz ~ 2467 MHz
Max. Output Power	:	Max 0.0363 W
Data of issue	:	November 12, 2021

This test report is issued under the authority of:



Ja-Beom Koo, Manager

The test was supervised by:



Eun-Hwan Jung, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



History of this test report

Report No.	Version	Description	Issued Date
LR500112111E	1.0	Initial issue of report	November 12, 2021

TABLE OF CONTENTS

1. GENERAL INFORMATION	-----	4
2. INFORMATION ABOUT TEST ITEM	-----	5
3. TEST REPORT	-----	6
3.1 SUMMARY OF TESTS	-----	6
3.2 TECHNICAL CHARACTERISTICS TEST	-----	7
3.2.1 RADIATED SPURIOUS EMISSIONS	-----	7
 APPENDIX		
APPENDIX TEST EQUIPMENT USED FOR TESTS	-----	13

1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2022-09-28	ECT accredited Lab.
RRA	KOREA	KR0049	-	EMC accredited Lab.
FCC	U.S.A	649054	2023-01-25	FCC CAB
VCCI	JAPAN	C-4948,	2023-09-10	VCCI registration
VCCI	JAPAN	T-2416,	2023-09-10	VCCI registration
VCCI	JAPAN	R-4483(10 m),	2023-08-15	VCCI registration
VCCI	JAPAN	G-847	2021-12-13	VCCI registration
IC	CANADA	5799A-1	2022-10-18	IC filing

2. Information about test item

2-1 Client & Manufacturer

Company name : DamoaTech Co.,Ltd.
 Address : 604, 723, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, South KOREA
 Tel / Fax : TEL No : +82-70-4369-0904 / FAX No : +82-31-696-9974

2-2 Equipment Under Test (EUT)

Model name : DT-SMS01B
 Serial number : Identical prototype
 Date of receipt : October 18, 2021
 EUT condition : Pre-production, not damaged
 Antenna type : SMD PIFA Antenna - Max Gain 3 dBi
 Frequency Range : 2412 MHz ~ 2467 MHz
 RF output power : Max 0.0363 W
 Type of Modulation : CCK, DQPSK, DBPSK for DSSS,
 BPSK for OFDM
 Power Source : DC 7.2 V
 Firmware Version : V1.0.0

2-3 Tested frequency

802.11 b/g/n	LOW	MID	HIGH
Frequency (MHz)	2412	2442	2467

2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
-	-	-	-

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	N/A
15.247(b)	Transmitter Peak Output Power	< 1 Watt		N/A
15.247(d)	Transmitter Power Spectral Density	< 8 dBm @ 3 kHz		N/A
15.247(d)	Band Edge	> 20 dBc		N/A
15.209	Field Strength of Harmonics	Emission	Radiated	C
15.207	AC Conducted Emissions	Emissions	Conducted	NA
15.203	Antenna requirement	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

N/A: The product replaces this test with a certificate using an authenticated module.

→ Antenna Requirement

DamoaTech Co.,Ltd. FCC ID: 2A3I8DT-SMS01B unit complies with the requirement of §15.203.

The antenna type is Steel wire ,Chip Antenna.

The sample was tested according to the following specification:

*FCC Parts 15.247; ANSI C-63.4-2014

*FCC KDB Publication No. 558074 D01 v05r02

*FCC TCB Workshop 2012, April

3.2 Technical Characteristics Test

3.2.1 Radiated Spurious Emissions

Procedure:

The EUT was placed on a 0.8 m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9 kHz ~ 10th harmonic.

RBW = 100 kHz (30 MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

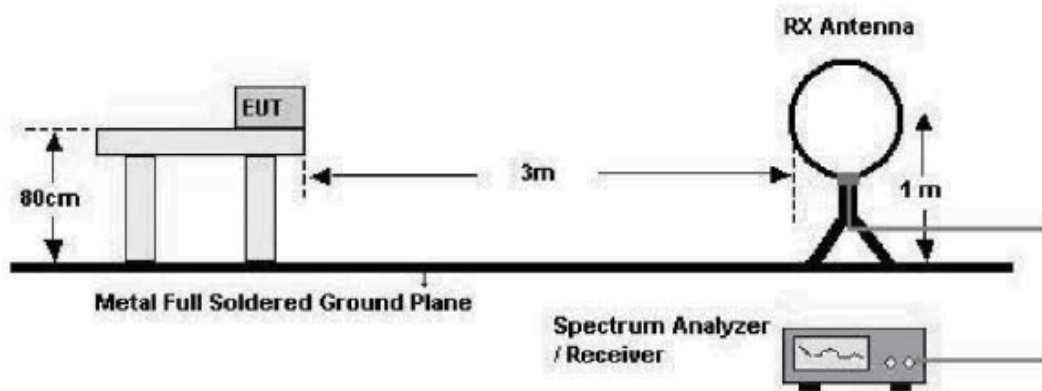
Trace = max hold

VBW $\geq$ RBW

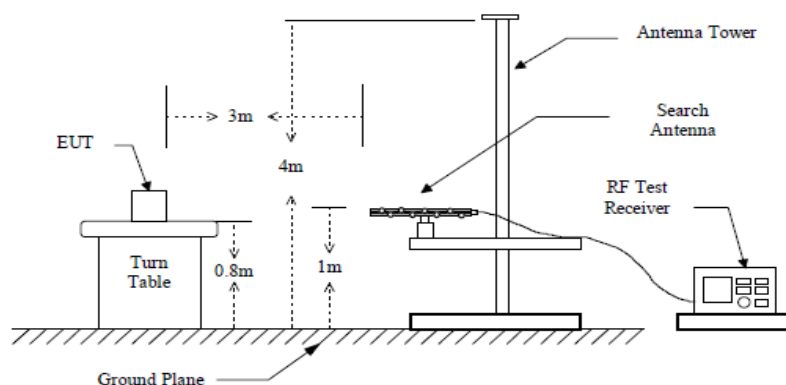
Detector function = peak

Sweep = auto

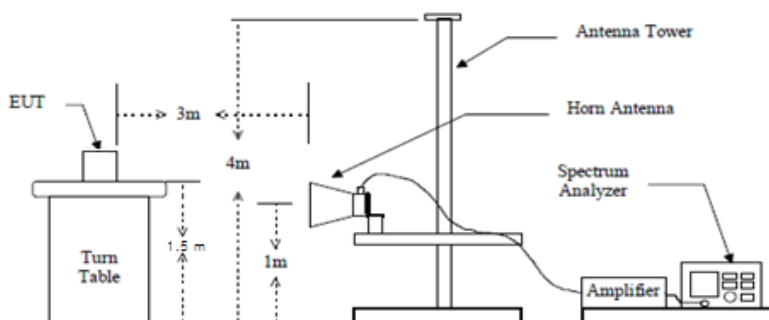
below 30 MHz



below 1 GHz (30 MHz to 1 GHz)



above 1 GHz



Measurement Data: Complies

- See next pages for actual measured data.
- No other emissions were detected at a level greater than 20 dB below limit include from 9 kHz to 30 MHz.
- Checked with a red circle is the fundamental frequency.

Note : Attach worst-case data in accordance with ANSI C63.10-2013 6.3.4.

Minimum Standard: FCC Part 15.209(a)

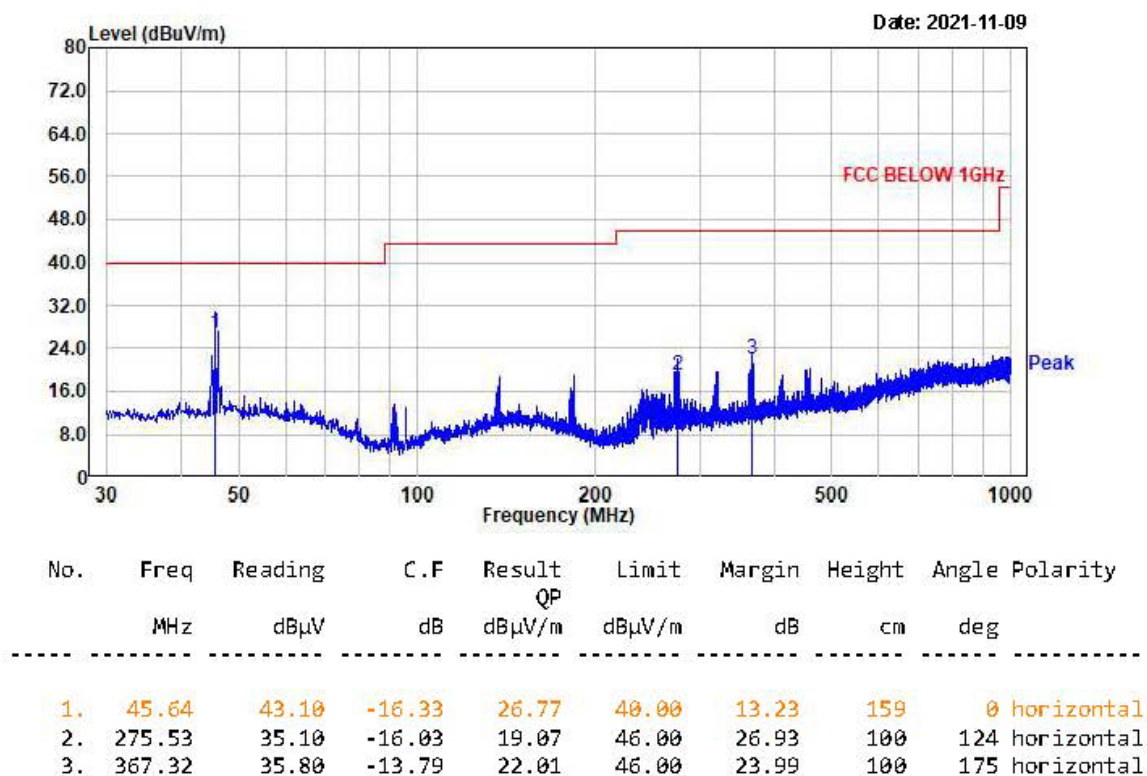
Frequency (MHz)	Limit (uV/m) @ 3 m
0.009 ~ 0.490	2400/F(kHz) (@ 300 m)
0.490 ~ 1.705	24000/F(kHz) (@ 30 m)
1.705 ~ 30	30(@ 30 m)
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

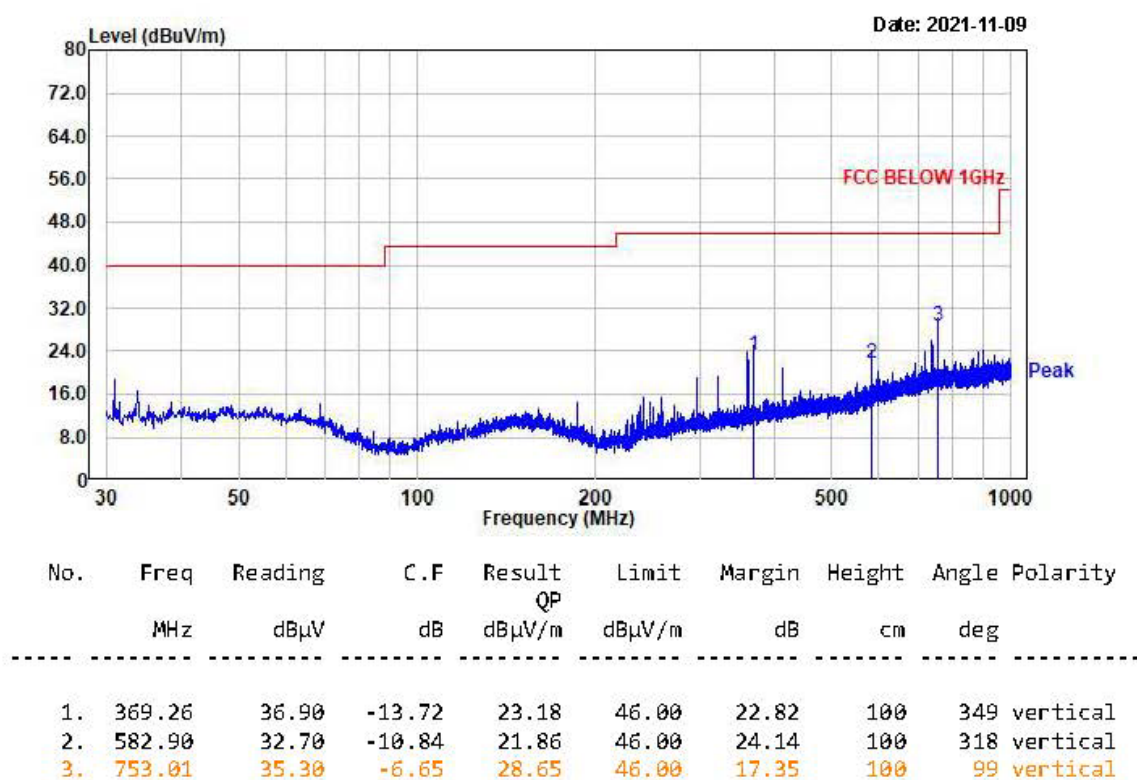
Measurement Data: (9 kHz – 30 MHz)

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor		Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp.Gain+Cable	AV / Peak		AV / Peak		AV / Peak	
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
*No emissions were detected at a level greater than 20 dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20 dB below limit.

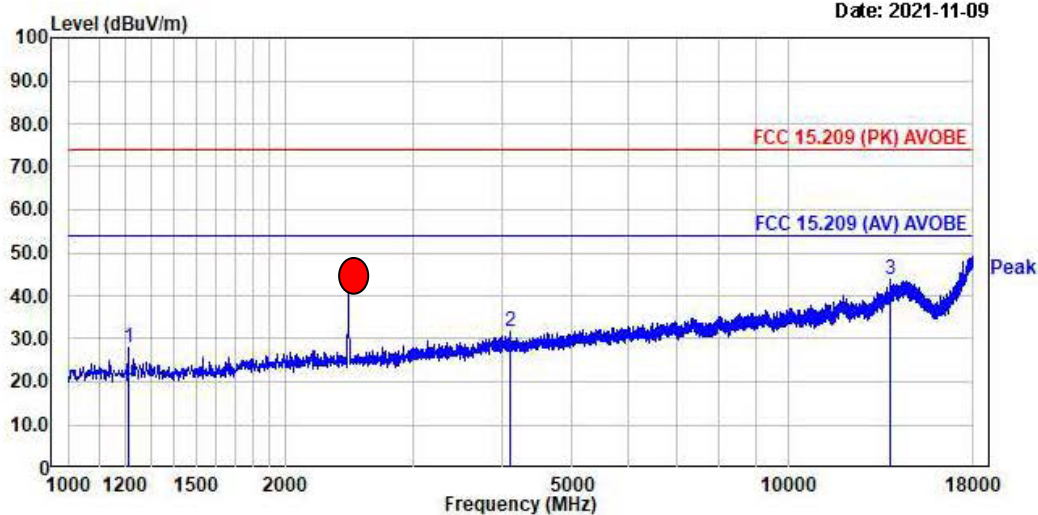
Radiated Emissions – 802.11 mode

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

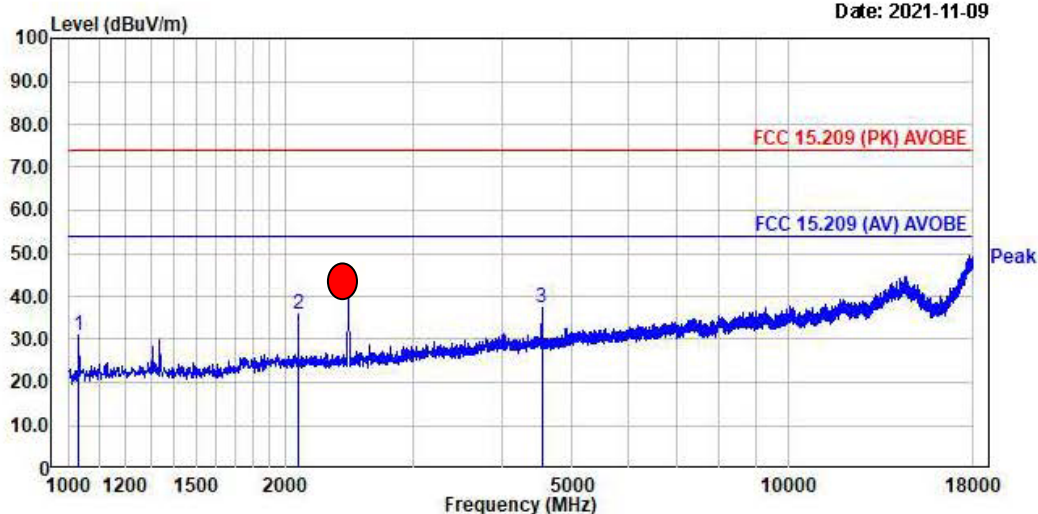
Date: 2021-11-09



No.	Freq MHz	RD PK dBμV	RD AV dBμV	C.F dB	Result PK dBμV	Result AV dBμV	Limit PK dBμV	Limit AV dBμV	Margin PK dB	Margin AV dB	Height cm	Angle deg	Polarity
1.	1208.25	38.12	-----	-10.12	28.00	-----	74.00	-----	46.00	-----	350	353	horizontal
2.	4188.88	28.49	-----	3.22	31.71	-----	74.00	-----	42.29	-----	210	217	horizontal
3.	13839.25	25.66	-----	18.29	43.95	-----	74.00	-----	30.05	-----	360	360	horizontal

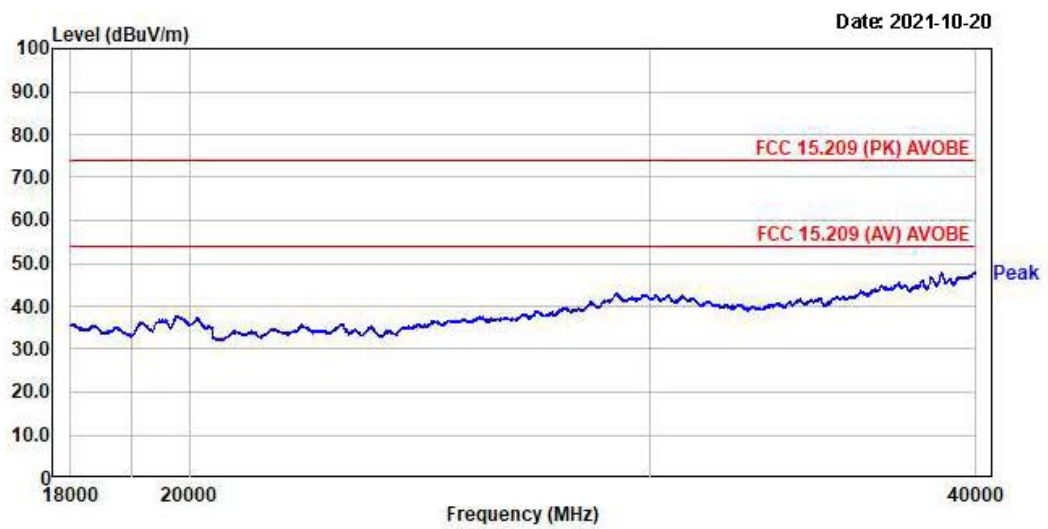
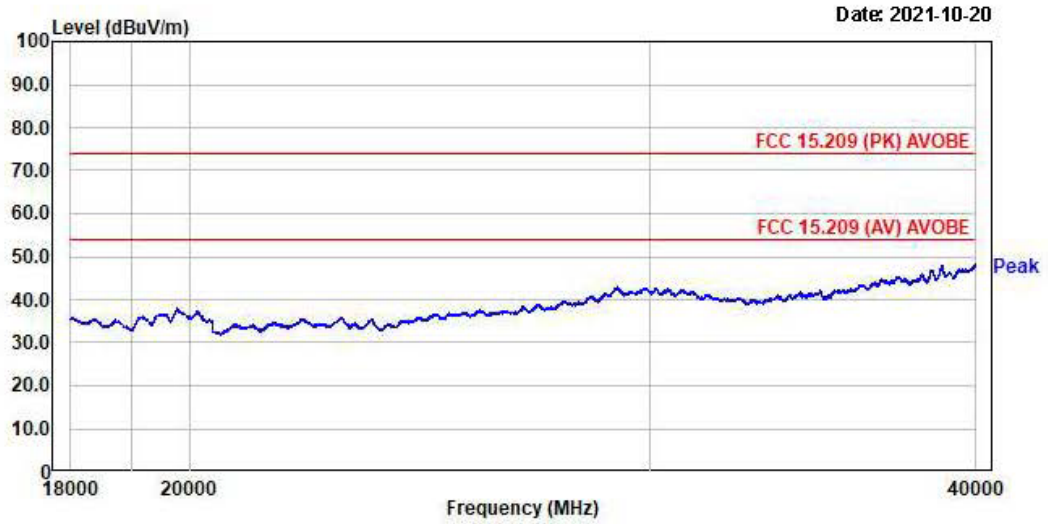
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Date: 2021-11-09



No.	Freq MHz	RD PK dBμV	RD AV dBμV	C.F dB	Result PK dBμV	Result AV dBμV	Limit PK dBμV	Limit AV dBμV	Margin PK dB	Margin AV dB	Height cm	Angle deg	Polarity
1.	1031.88	42.32	-----	-11.30	31.02	-----	74.00	-----	42.98	-----	15	10	vertical
2.	2085.88	41.16	-----	-5.30	35.86	-----	74.00	-----	38.14	-----	6	4	vertical
3.	4538.13	33.44	-----	4.00	37.44	-----	74.00	-----	36.56	-----	63	59	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



APPENDIX

TEST EQUIPMENT USED FOR TESTS

	Use	Description	Model No.	Serial No.	Manufacturer	Interval	Next Cal. Date
1		Signal Analyzer (9 kHz ~ 30 GHz)	FSV30	100757	R&S	1 year	2022-09-06
2		Signal Generator (~3.2 GHz)	8648C	3623A02597	HP	1 year	2022-03-16
3		SYNTHESIZED CW GENERATOR	83711B	US34490456	HP	1 year	2022-03-16
4		Attenuator (3 dB)	8491A	37822	HP	1 year	2022-09-06
5		Attenuator (10 dB)	8491A	63196	HP	1 year	2022-09-06
6	■	EMI Test Receiver (~7 GHz)	ESC17	100722	R&S	1 year	2022-09-06
7	■	RF Amplifier (~1.3 GHz)	8447D OPT 010	2944A07684	HP	1 year	2022-09-06
8	■	RF Amplifier (1~26.5 GHz)	8449B	3008A02126	HP	1 year	2022-03-16
9	■	Horn Antenna (1~18 GHz)	3115	00114105	ETS	2 year	2022-09-10
10	■	DRG Horn (Small)	3116B	81109	ETS-Lindgren	2 year	2022-03-18
11		DRG Horn (Small)	3116B	133350	ETS-Lindgren	2 year	2022-03-18
12	■	TRILOG Antenna	VULB 9160	9160-3237	SCHWARZBECK	2 year	2023-03-20
13		Temp.Humidity Data Logger	SK-L200TH II A	00801	SATO	1 year	2022-03-16
14		Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
15		DC Power Supply	6674A	3637A01657	Agilent	-	-
17	■	Power Meter	EPM-441A	GB32481702	HP	1 year	2022-03-16
18	■	Power Sensor	8481A	3318A94972	HP	1 year	2022-09-06
19		Audio Analyzer	8903B	3729A18901	HP	1 year	2022-09-06
20		Modulation Analyzer	8901B	3749A05878	HP	1 year	2022-09-06
21		TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2022-09-06
22		Stop Watch	HS-3	812Q08R	CASIO	2 year	2022-03-18
23		LISN	KNW-407	8-1430-1	Kyoritsu	1 year	2022-03-16
24		Two-Lime V-Network	ESH3-Z5	893045/017	R&S	1 year	2022-03-16
25		UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	1 year	2022-03-16
26		Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	1 year	2022-03-16
27		Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	1 year	2022-03-16
28		OSP120 BASE UNIT	OSP120	101230	R&S	1 year	2022-03-16
29		Signal Generator(100 kHz ~ 40 GHz)	SMB100A03	177621	R&S	1 year	2022-03-16
30	■	Signal Analyzer (10 Hz ~ 40 GHz)	FSV40	101367	R&S	1 year	2022-03-16
31	■	Active Loop Antenna	FMZB 1519	1519-031	SCHWARZBECK	2 year	2023-09-07