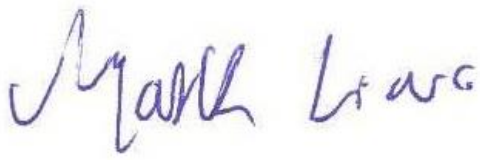
FCC RADIO TEST REPORT

Applicant	:	ELO TOUCH SOLUTIONS, INC.
Address	:	670 N. McCarthy Blvd., Suite 100 Milpitas, CA 95035 USA
Equipment	:	Touch All-in-One Computer
Model No.	:	ESY10I1E, ESY15I1E ,ESY22I1E
Trade Name	:	Elo or elo
FCC ID	:	RBWESYQC5

I HEREBY CERTIFY THAT :

The sample was received on Jul. 19, 2024 and the testing was completed on Nov. 15, 2024 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:



Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

ilac-MRA TAF Testing Laboratory 1439

CONTENTS

Appendix explains:

Appendix A. Test of AC Power Line Conducted Emission

Appendix B. Test Result and Data (30MHz ~ 1GHz)

Appendix C. Test Result and Data (1GHz ~ 40GHz)

Appendix D. In-Band Emission

Appendix E. On Time, Duty Cycle

Appendix F. 26dB Bandwidth & 99% Occupied Bandwidth

Appendix G. Maximum Equivalent Isotopically Radiated Power(E.I.R.P.)

Appendix H. Peak Power Spectral Density (E.I.R.P.)

Appendix I. Contention Based Protocol

Appendix J. Test Photographs

History of this test report

Report No.	Issued Date	Description
24070407-TRFCC06	Nov. 18, 2024	Original

1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart E §15.407

KDB 789033 D02 v02r01

KDB 987594 D01 v02r02

KDB 987594 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF.

FCC KDB 662911 D01 v02r01

FCC KDB 412172 D01 v01r01

FCC Rule	Description of Test	Result	Remark
15.203	Antenna Requirement	PASS	-
15.207(a)	AC Power Line Conducted Emission	PASS	-
15.407(b) 15.209	Undesirable Emission	PASS	-
15.407(a)	26 dB & Occupied Bandwidth	PASS	-
15.407(a)	Maximum Equivalent Isotopically Radiated Power (E.I.R.P.)	PASS	-
15.407(a)	Peak Power Spectral Density (E.I.R.P.)	PASS	-
15.407(d)	Contention-Based Protocol	PASS	-
2.1091	Radio Frequency Exposure	PASS	-

*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement,measurement uncertainty evaluation is not considered.

2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Operation Frequency Range	BT / BLE: 2400-2483.5MHz WLAN:802.11b/g/n/ax: 2400-2483.5MHz 5GHz:802.11a/n/ac/ax:5150-5250MHz, 5250-5350MHz, 5470-5725MHz, 5725-5875MHz 6GHz: 802.11a/ax: 5925MHz~6425MHz, 6425MHz~6525MHz 6525MHz~6875MHz, 6875MHz~7125MHz
Center Frequency Range	BT / BLE: 2402MHz-2480MHz WLAN:802.11b/g/n/ax: 2412MHz-2462MHz 5GHz:802.11a/n/ac/ax:5180-5240MHz, 5260-5320MHz, 5500-5720MHz, 5745-5825MHz 6GHz: 802.11a/ax: 5955MHz~6415MHz, 6435MHz~6515MHz 6535MHz~6855MHz, 6875MHz~7115MHz
Modulation Type	BT: GFSK, π/4-DQPSK, 8DPSK BLE: GFSK WLAN: 2.4GHz: 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 5GHz: 802.11a/n: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 6GHz 802.11a: BPSK, QPSK, 16QAM, 64QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Modulation Technology	DSSS, OFDM, FHSS, DTS, OFDMA
Data Rate	BT: GFSK: 1Mbps, π/4-DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps, 2Mbps WLAN: 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ax: MCS0 – MCS11, HE20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80/160 802.11ax: MCS0 – MCS11, HE20/40/80/160 6GHz 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11ax: MCS0 – MCS11, HE20/40/80/160
Antenna Type	PIFA Antenna

Antenna Gain (ESY10I1E)	For BT / BLE: 2400-2500MHz: ANT A: 2.01dBi For WLAN: 2400-2500MHz: ANT A: 2.01dBi, ANT B: 2.91dBi 5150-5250MHz: ANT A: 2.46dBi, ANT B: 2.22dBi 5250-5350MHz: ANT A: 2.19dBi, ANT B: 2.44dBi 5470-5725MHz: ANT A: 2.70dBi, ANT B: 2.38dBi 5725-5850MHz: ANT A: 2.70dBi, ANT B: 2.56dBi 5925~6425MHz:ANT A: 2.86dBi, ANT B: 2.54dBi 6425~6525MHz:ANT A: 2.72dBi, ANT B: 2.84dBi 6525~6875MHz:ANT A: 2.72dBi, ANT B: 2.84dBi 6875~7125MHz:ANT A: 2.46dBi, ANT B: 2.28dBi
Antenna Gain (ESY15I1E)	For BT / BLE: 2400-2500MHz: ANT A: 2.72dBi For WLAN: 2400-2500MHz: ANT A: 2.72dBi, ANT B: 2.42dBi 5150-5250MHz: ANT A: 2.44dBi, ANT B: 2.65dBi 5250-5350MHz: ANT A: 1.86dBi, ANT B: 2.69dBi 5470-5725MHz: ANT A: 2.83dBi, ANT B: 2.79dBi 5725-5850MHz: ANT A: 2.63dBi, ANT B: 2.79dBi 5925~6425MHz:ANT A: 2.53dBi, ANT B: 2.48dBi 6425~6525MHz:ANT A: 2.42dBi, ANT B: 2.44dBi 6525~6875MHz:ANT A: 2.42dBi, ANT B: 2.44dBi 6875~7125MHz:ANT A: 2.59dBi, ANT B: 2.44dBi
Antenna Gain (ESY22I1E)	For BT / BLE: 2400-2500MHz: ANT A: 2.32dBi For WLAN: 2400-2500MHz: ANT A: 2.32dBi, ANT B: 2.25dBi 5150-5250MHz: ANT A: 1.75dBi, ANT B: 2.17dBi 5250-5350MHz: ANT A: 2.34dBi, ANT B: 2.17dBi 5470-5725MHz: ANT A: 2.25dBi, ANT B: 2.35dBi 5725-5850MHz: ANT A: 2.65dBi, ANT B: 2.42dBi 5925~6425MHz:ANT A: 2.36dBi, ANT B: 2.58dBi 6425~6525MHz:ANT A: 2.38dBi, ANT B: 2.05dBi 6525~6875MHz:ANT A: 2.38dBi, ANT B: 2.47dBi 6875~7125MHz:ANT A: 2.28dBi, ANT B: 2.25dBi

EUT powered by

Adapter	ESY10I1E	ESY15I1E	ESY22I1E
Brand: Billion Model: BA090-190474MBX	☒	☒	☒
Brand: Billion Model: BA070-190342MBX	☒	☒	☒
Brand: Delta Model: ADP-65JH HB	☒	☒	☒

Flip Stand Without Panel powered by

Adapter	ESY10I1E	ESY15I1E	ESY22I1E
Brand: Billion Model: BS180-240625MBX	☒	☒	☐
Brand: Delta Model: ADP-150EH B	☒	☒	☐
Brand: Billion Model: BA090-240375MBX	☒	☐	☐

Power Cable(EU)*2	Brand: I-SHENG Model: CAB-PWR-EU-3 LOBE-1.8M-BLK-R
Power Cable(US)*2	Brand: I-SHENG Model: CAB-PWR-US-3 LOBE-1.8M-BLK-R
Flip Stand Without Panel	Brand: ELO Model: E767356 KIT, Z20-POS-STAND-GEN2-15
Type-C Cable	Brand: Hotron Model: E113033 CAB, USB-C TO USB-C, Z20 Gen2 15,330mm,HT
Poe Module	Brand: ELO Model: E669163, ELO-KIT-POE-ADAPTER-5.0
Panel (ESY10I1E)	Brand: BOE Model: TV101WUM-NH3 Brand: AUO Model: G101UAN4.0
Panel (ESY15I1E)	Brand: BOE Model: BOE PV156FHM-N20 Brand: LG Model: LP156WFC-SPDZ
Panel (ESY22I1E)	Brand: LG Model: M215WF3-SLS2 Brand: AUO Model: M215HAN01.2

Note:
1. EUT support TPC Function.
2. EUT supports DFS Client Mode, without radar detection.
3. WLAN and BT can simultaneously transmission.
4. The device not support Channel Puncturing or Bandwidth Reduction mechanisms supported
5. 802.11ax EUT Only Support Full RU
6. EUT Operating mode : Indoor Client.
7. For more details, please refer to the User's manual of the EUT.

Difference description:

Model No.	Remark
ESY10I1E	Only different sizes, other circuits, layout, product specifications are all the same.
ESY15I1E	
ESY22I1E	

Note: After engineering evaluation ,Model: ESY22I1E is worst case.

2.2. Carrier Frequency of Channels

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5925 ~ 7125	802.11a, 802.11ax(HE20)	5955 ~ 7115	1~233
5925 ~ 7125	802.11ax(HE40)	5965 ~ 7085	3~227
5925 ~ 7125	802.11ax(HE80)	5985 ~ 7025	7~215
5925 ~ 7125	802.11ax(HE160)	6025 ~ 6985	15~207

The EUT incorporates a MIMO function

Modulation Type	TX CONFIGURATION
802.11a	1TX(Diversity)
802.11ax HE20	2TX
802.11ax HE40	2TX
802.11ax HE80	2TX
802.11ax HE160	2TX

2.3. Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
b. The complete test system included remote workstation and EUT for RF test. The remote workstation included Notebook.
c. An executive program, ” QRCT ver. 4.0-00189” under Windows OS system was executed to transmit and receive data via WLAN.
d. The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	802.11a (6Mbps) , Power From Adapter
2	802.11ax HE20 (7.3Mbps) , Power From Adapter
3	802.11ax HE40 (14.6Mbps) , Power From Adapter
4	802.11ax HE80 (30.6Mbps) , Power From Adapter
5	802.11ax HE160 (61.3Mbps) , Power From Adapter
caused “Test Mode 5” generated the worst case, it was reported as the final data.	
Radiation Emissions BELOW 1GHz)	
Test Mode	Operating Description
1	802.11a (6Mbps) , Power From Adapter
2	802.11ax HE20 (7.3Mbps) , Power From Adapter
3	802.11ax HE40 (14.6Mbps) , Power From Adapter
4	802.11ax HE80 (30.6Mbps) , Power From Adapter
5	802.11ax HE160 (61.3Mbps) , Power From Adapter
caused “Test Mode 5” generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 40GHz)	
Test Mode	Operating Description
1	11a (6Mbps) , Power From Adapter
2	802.11ax HE20 (7.3Mbps) , Power From Adapter
3	802.11ax HE40 (14.6Mbps) , Power From Adapter
4	802.11ax HE80 (30.6Mbps) , Power From Adapter
5	802.11ax HE160 (61.3Mbps) , Power From Adapter
caused “Test Mode 1~5” generated the worst case, they were reported as the final data.	

Note:1.There are two kinds of test voltage: AC 120V / 60Hz and AC 240V / 60Hz.

For ESY10I1E

worst case (V)

Test Item /test voltage	AC 120V / 60Hz	AC 240V / 60Hz.
AC Power Line Conducted Emission	V	
Radiation Emissions (Below 1GHz)	V	

For ESY15I1E

worst case (V)

Test Item /test voltage	AC 120V / 60Hz	AC 240V / 60Hz.
AC Power Line Conducted Emission	V	
Radiation Emissions (Below 1GHz)		V

For ESY22I1E

worst case (V)

Test Item /test voltage	AC 120V / 60Hz	AC 240V / 60Hz.
AC Power Line Conducted Emission	V	
Radiation Emissions (Below 1GHz)	V	

1.For ESY10I1E
There are six types of Adapters + one PoE power supply mode .After engineering evaluation:
For Radiated Spurious Emission(Below 1G),BS180-240625MBX 10 inch without Docking is worst case.
For Radiated Spurious Emission(Above 1G),BA070-190342MBX 22 inch without Docking is worst case.
For AC Power Line Conducted Emission, BS180-240625MBX 10 inch with Docking is worst case.

Adapter	Brand: Billion Model: BS180-240625MBX
Adapter	Brand: Billion Model: BA090-190474MBX
Adapter	Brand: Billion Model: BA070-190342MBX
Adapter	Brand: Delta Model: ADP-65JH HB
Adapter	Brand: Delta Model: ADP-150EH B
Adapter	Brand: Billion Model: BA090-240375MBX
POE	Brand: Bluewave Model: JS-100GT

For ESY15I1E
There are six types of Adapters + one PoE power supply mode .After engineering evaluation:
For Radiated Spurious Emission(Below 1G), ADP-65JH HB 15 inch with Docking is worst case.
For Radiated Spurious Emission(Above 1G), BA070-190342MBX 22 inch without Docking is worst case.
For AC Power Line Conducted Emission, BS180-240625MBX 15 inch with Docking is worst case.

Adapter	Brand: Billion Model: BS180-240625MBX
Adapter	Brand: Billion Model: BA090-190474MBX
Adapter	Brand: Billion Model: BA070-190342MBX
Adapter	Brand: Delta Model: ADP-65JH HB
Adapter	Brand: Delta Model: ADP-150EH B
Adapter	Brand: Billion Model: BA090-240375MBX
POE	Brand: Bluewave Model: JS-100GT

For ESY22I1E
There are three types of Adapters + one PoE power supply mode .After engineering evaluation:
For Radiated Spurious Emission(Below 1G), ADP-65JH HB 22 inch without Docking is worst case.
For Radiated Spurious Emission(Above 1G),BA070-190342MBX 22 inch without Docking is worst case.
For AC Power Line Conducted Emission, BA070-190342MBX 22 inch without Docking is worst case.

Adapter	Brand: Delta Model: ADP-65JH HB
Adapter	Brand: Billion Model: BA090-190474MBX
Adapter	Brand: Billion Model: BA070-190342MBX
POE	Brand: Bluewave Model: JS-100GT

For ESY10I1E

There are two types of Panels: AUO&BOE. After engineering evaluation, BOE is worst case, hence, is used at test report.

Panel	Brand: BOE Model: TV101WUM-NH3 Brand: AUO Model: G101UAN4.0

For ESY15I1E

There are two types of Panels: LG&BOE. After engineering evaluation, LG is worst case, hence, is used at test report.

Panel	Brand: BOE Model: BOE PV156FHM-N20 Brand: LG Model: LP156WFC-SPDZ

For ESY22I1E

There are two types of Panels: LG&AUO. After engineering evaluation, LG is worst case, hence, is used at test report.

Panel (ESY22I1E)	Brand: LG Model: M215WF3-SLS2 Brand: AUO Model: M215HAN01.2

2.4. Description of Test System

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	lenovo	S1GL2W	N/A	N/A
USB Cable (A to A)	BENEVO	E210567AWM	1m / NS	N/A
Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude E5450	N/A	Adapter / 1.8m / NS
USB Cable (A to A)	BENEVO	E210567AWM	1m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
HDD	TOSHIBA	TS1TSJ25M3S	N/A	N/A
Type-C Cable	DXDC	C8A1M3A02G1M0	0.4m/NA	N/A
POE	Bluewave	JS-100GT	N/A	N/A
AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude E5450	N/A	Adapter / 1.8m / NS
USB Cable (A to A)	BENEVO	E210567AWM	1m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
HDD	TOSHIBA	TS1TSJ25M3S	N/A	N/A
Type-C Cable	DXDC	C8A1M3A02G1M0	0.4m/NA	N/A
POE	Bluewave	JS-100GT	N/A	N/A

CBP					
Equipment	Brand	Model	Length/Type	Power cord/Length/Type	FCC ID
Notebook	Lenovo	S2292L	N/A	Adapter / 1.8m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A	N/A
AP	NETGEAR	RAXE500	N/A	Adapter / 1.5m / NS	PY320300508

2.5. General Information of Test

☒ Test Site	Cerpass Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel: +886-3-3226-888 Fax: +886-3-3226-881	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz	
Test Distance	The test distance of radiated emission from antenna to EUT is 3 M.	

For ESY10I1E & ESY15I1E -SISO

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/10/28	24.6°C / 45%	Leon Huang
RF Conducted	RFCON01-NK	2024/11/15	24.9°C / 56%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/10/24	25.1℃ / 55%	Park Chen

For ESY22I1E-SISO-ANT A

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/08/31	28℃ / 47%	Leon Huang
RF Conducted	RFCON01-NK	2024/09/17	28°C / 42%	Leon Huang
RF Conducted	RFCON01-NK	2024/10/28	24.6°C / 45%	Leon Huang
RF Conducted	RFCON01-NK	2024/11/15	24.9°C / 56%	Leon Huang
Radiated Emissions	3M02-NK	2024/09/13	23.7°C / 47%	Leon Huang
Radiated Emissions	3M02-NK	2024/10/08	22.1°C / 53%	Leon Huang

For ESY22I1E-SISO-ANT B

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/09/18	28.1°C / 43%	Leon Huang
RF Conducted	RFCON01-NK	2024/10/28	24.6°C / 45%	Leon Huang

For ESY10I1E-MIMO

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/10/28	24.6°C / 45%	Leon Huang
Radiated Emissions	3M02-NK	2024/10/09	21.6°C / 49%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/10/25	24.4°C / 48%	Park Chen

For ESY15I1E-MIMO

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/10/28	24.6°C / 45%	Leon Huang
Radiated Emissions	3M02-NK	2024/10/09	21.6°C / 49%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/10/24	25.1°C / 55%	Park Chen

For ESY22I1E-MIMO

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2024/08/29	26.8°C / 45%	Leon Huang
RF Conducted	RFCON01-NK	2024/08/30	26.9°C / 43%	Leon Huang
RF Conducted	RFCON01-NK	2024/08/31	28°C / 47%	Leon Huang
RF Conducted	RFCON01-NK	2024/09/13	27.8°C / 44%	Leon Huang
Radiated Emissions	3M02-NK	2024/09/11	19.6°C / 50%	Leon Huang
Radiated Emissions	3M02-NK	2024/09/12	22.6°C / 44%	Leon Huang
Radiated Emissions	3M02-NK	2024/10/08	22.1°C / 53%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/10/25	24.4°C / 48%	Park Chen
CBP	RFDFS01-NK	2024/08/20	27.5°C / 41%	Eason Hsu

2.6. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with t he emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.12dB
Radiated Spurious Emission(9KHz~30MHz)	±3.4dB
Radiated Spurious Emission(30MHz~1GHz)	±5.7dB
Radiated Spurious Emission(1GHz~40GHz)	±6.8dB
6dB Bandwidth	±4.4%
26dB Bandwidth	±4.4%
Occupied Bandwidth	±4.4%
Peak Output Power(Conducted Power Meter)	±1.1dB
Power Spectral Density	±1.8dB
Duty Cycle	±1.2%
Frequency Stability	±0.21KHz

3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	**Manufacturer**	**Model No**	**Serial No**	**Calibration Date**	**Valid Date**
Bilog Antenna	Schwarzbeck	VULB9168	369	2024/02/19	2025/02/18
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2024/01/16	2025/01/15
Horn Antenna	EMCO	3115	31589	2024/02/26	2025/02/25
Horn Antenna	EMCO	3116	31974	2023/10/16	2024/10/15
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2024/05/13	2025/05/12
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	101329	2024/07/16	2025/07/15
Preamplifier	Agilent	8449B	3008A01954	2024/03/01	2025/02/28
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2023/10/13	2024/10/12
Preamplifier	EM Electronics corp.	EM330	60659	2024/02/17	2025/02/16
Cable-6m(9k~300M)	N/A	EMC5D-BM-BM-6	130606	2024/03/13	2025/03/12
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2024/02/23	2025/02/22
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2024/03/05	2025/03/04
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2024/03/05	2025/03/04
Cable-8m(1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2024/03/05	2025/03/04
Cable-1m(1G-40G)	HUBER SUHNER	HUBER SUHNER / SF102	804398/2	2023/10/12	2024/10/11
Cable-3m(1G-40G)	HUBER SUHNER	HUBER SUHNER / SF102	804619/2	2023/10/12	2024/10/11
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
Highpass Filter	Warison	WFIL-H3000-18000F-03	WRJ5CFWC2J1	2024/07/03	2025/07/02
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2024/03/11	2025/03/10
Hipass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2024/03/11	2025/03/10

Test Item	RF Conducted				
Test Site	RFCON01-NK(2024/10/28)				
Instrument	**Manufacturer**	**Model No**	**Serial No**	**Calibration Date**	**Valid Date**
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2023/11/06	2024/11/05
Power Meter	Anritsu	ML2495A	1224005	2024/02/17	2025/02/16
Power Sensor	Anritsu	MA2411B	1207295	2024/02/17	2025/02/16
Attenuator	KEYSIGHT	8491B	MY39250703	2024/02/20	2025/02/19

Test Item	RF Conducted				
Test Site	RFCON01-NK(2024/11/15)				
Instrument	**Manufacturer**	**Model No**	**Serial No**	**Calibration Date**	**Valid Date**
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100291	2024/10/15	2025/10/14
Power Meter	Anritsu	ML2495A	1224005	2024/02/17	2025/02/16
Power Sensor	Anritsu	MA2411B	1207295	2024/02/17	2025/02/16
Attenuator	KEYSIGHT	8491B	MY39250703	2024/02/20	2025/02/19

Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	**Manufacturer**	**Model No**	**Serial No**	**Calibration Date**	**Valid Date**
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2024/05/13	2025/05/12
Two-Line V-Network	ROHDE & SCHWARZ	ENV216	102185	2024/08/27	2025/08/26
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127740	2024/08/27	2025/08/26
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2024/08/08	2025/08/07
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA

Test Item	CBP				
Test Site	RFDFS01-NK				
Instrument	**Manufacturer**	**Model No**	**Serial No**	**Calibration Date**	**Valid Date**
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100291	2023/10/11	2024/10/10
MXG-B RF Vector Signal Generator + Frequency Extender	KEYSIGHT	N5182B+N5182BX07	MY53051383+ MY59362519	2024/02/16	2025/02/15
Control BOX	World-pallas	AD222	L4490A	NA	NA
IOT0047A	KEYSIGHT	V23.9.1.10	NA	NA	NA

4. Antenna Requirements

4.1. Standard Applicable

For intentional device, according to FCC 47 CFR 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.

4.2. Antenna Construction and Directional Gain

Antenna Type	PIFA Antenna
Antenna Gain (ESY10I1E)	5925~6425MHz:ANT A: 2.86dBi, ANT B: 2.54dBi 6425~6525MHz:ANT A: 2.72dBi, ANT B: 2.84dBi 6525~6875MHz:ANT A: 2.72dBi, ANT B: 2.84dBi 6875~7125MHz:ANT A: 2.46dBi, ANT B: 2.28dBi
Antenna Gain (ESY15I1E)	5925~6425MHz:ANT A: 2.53dBi, ANT B: 2.48dBi 6425~6525MHz:ANT A: 2.42dBi, ANT B: 2.44dBi 6525~6875MHz:ANT A: 2.42dBi, ANT B: 2.44dBi 6875~7125MHz:ANT A: 2.59dBi, ANT B: 2.44dBi
Antenna Gain (ESY22I1E)	5925~6425MHz:ANT A: 2.36dBi, ANT B: 2.58dBi 6425~6525MHz:ANT A: 2.38dBi, ANT B: 2.05dBi 6525~6875MHz:ANT A: 2.38dBi, ANT B: 2.47dBi 6875~7125MHz:ANT A: 2.28dBi, ANT B: 2.25dBi

SISO-ANT A (ESY10I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.86(dBi) For PSD directional gain = G_{ant}=2.86(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.72 (dBi) For PSD directional gain = G_{ant}= 2.72 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.72(dBi) For PSD directional gain = G_{ant}=2.72(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.46 (dBi) For PSD directional gain = G_{ant}=2.46(dBi)

SISO-ANT B

5925~6425MHz
For Power directional gain= G_{ant}= 2.54(dBi) For PSD directional gain = G_{ant}=2.54(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.84 (dBi) For PSD directional gain = G_{ant}=2.84 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.84(dBi) For PSD directional gain = G_{ant}=2.84(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.28 (dBi) For PSD directional gain = G_{ant}=2.28(dBi)

MIMO (ESY10I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.86 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.71(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.84(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] =5.79(dBi)
6525~6875MHz:
For Power directional gain= G_{ant}= 2.84(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.79(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.46 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.38(dBi)

*MIMO type: Cyclic Delay Diversity (CDD) mode.

SISO-ANT A (ESY15I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.53(dBi) For PSD directional gain = G_{ant}=2.53(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.42 (dBi) For PSD directional gain = G_{ant}= 2.42 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.42(dBi) For PSD directional gain = G_{ant}=2.42(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.59 (dBi) For PSD directional gain = G_{ant}=2.59(dBi)

SISO-ANT B

5925~6425MHz
For Power directional gain= G_{ant}= 2.48(dBi) For PSD directional gain = G_{ant}=2.48(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.44 (dBi) For PSD directional gain = G_{ant}=2.44 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.44 (dBi) For PSD directional gain = G_{ant}=2.44 (dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.44 (dBi) For PSD directional gain = G_{ant}=2.44 (dBi)

MIMO (ESY15I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.53 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.52(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.44(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] =5.44(dBi)
6525~6875MHz:
For Power directional gain= G_{ant}= 2.44(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.44(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.59 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.53(dBi)

*MIMO type: Cyclic Delay Diversity (CDD) mode.

SISO-ANT A (ESY22I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.36(dBi) For PSD directional gain = G_{ant}=2.36(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.38 (dBi) For PSD directional gain = G_{ant}= 2.38 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.38(dBi) For PSD directional gain = G_{ant}=2.38(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.28 (dBi) For PSD directional gain = G_{ant}=2.28(dBi)

SISO-ANT B

5925~6425MHz
For Power directional gain= G_{ant}= 2.58(dBi) For PSD directional gain = G_{ant}=2.58(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.05 (dBi) For PSD directional gain = G_{ant}=2.05 (dBi)
6525~6875MHz
For Power directional gain= G_{ant}= 2.47 (dBi) For PSD directional gain = G_{ant}=2.47 (dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.25 (dBi) For PSD directional gain = G_{ant}=2.25 (dBi)

MIMO (ESY22I1E)

5925~6425MHz
For Power directional gain= G_{ant}= 2.58 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.48(dBi)
6425~6525MHz
For Power directional gain= G_{ant}= 2.38(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] =5.23(dBi)
6525~6875MHz:
For Power directional gain= G_{ant}= 2.47(dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.44(dBi)
6875~7125MHz
For Power directional gain= G_{ant}= 2.28 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] = 5.28(dBi)

*MIMO type: Cyclic Delay Diversity (CDD) mode.

5. Test of AC Power Line Conducted Emission

5.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.10-2013. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

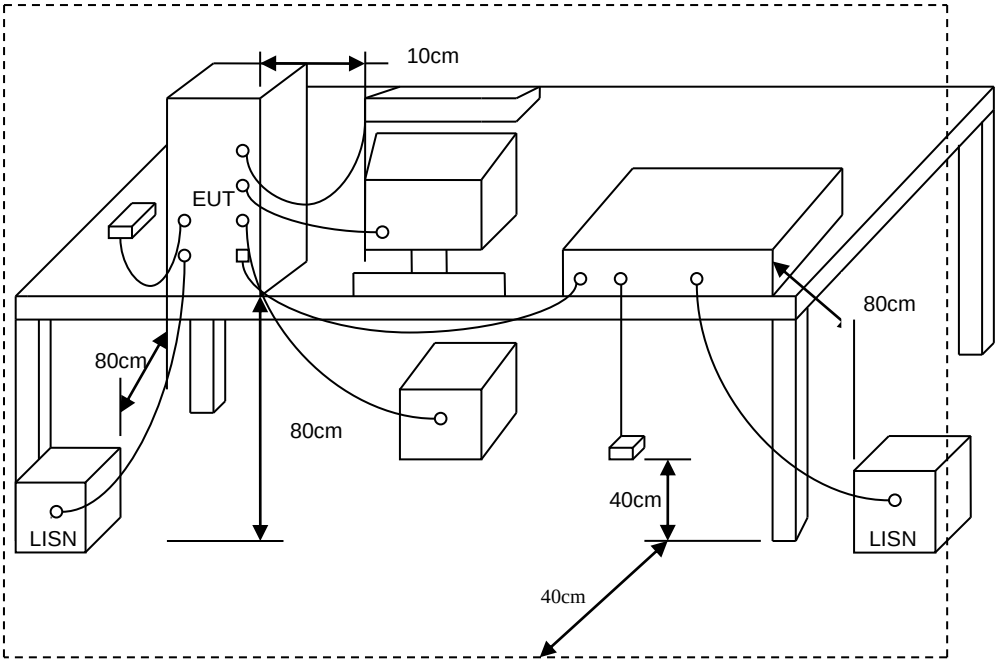
Frequency (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2. Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.3. Typical Test Setup



5.4. Test Result and Data

Refer to Appendix A

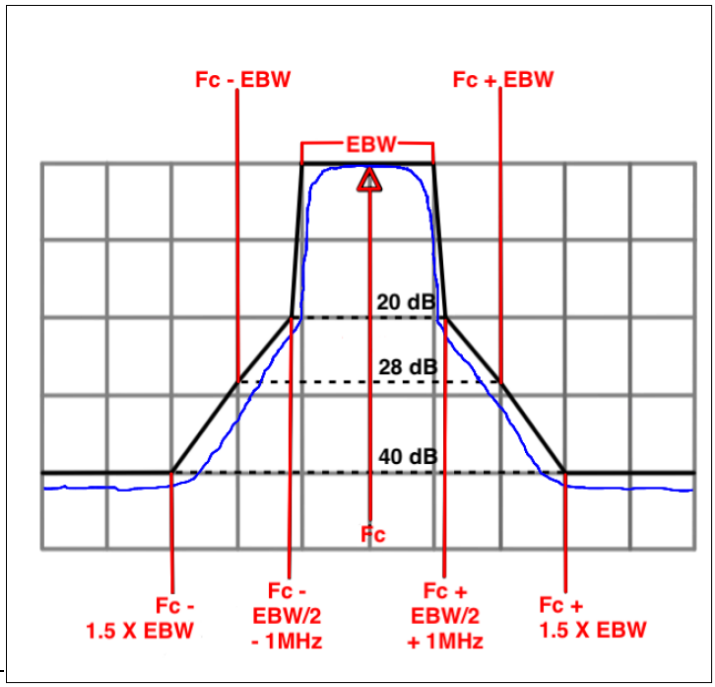
5.5. Test Photographs

Refer to Appendix J

6. Test of Undesirable Emission (Radiated)

6.1. Test Limit

Un-restricted band emissions above 1GHz Limit

Frequency	Limit
Any outside the 5.945 – 7.125 GHz emission	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
	Note : -27 dBm EIRP OOBE is measured RMS which is a deviation from the current 15E rules for 5 GHz bands. In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit.
5.945 – 7.125 GHz	Emission MASK Limit
	Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than oneand one-half times the channel bandwidth must be suppressed by at least 40 dB.
	

6.2. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

Note: 1.The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions such that emissions from the EUT are maximized.

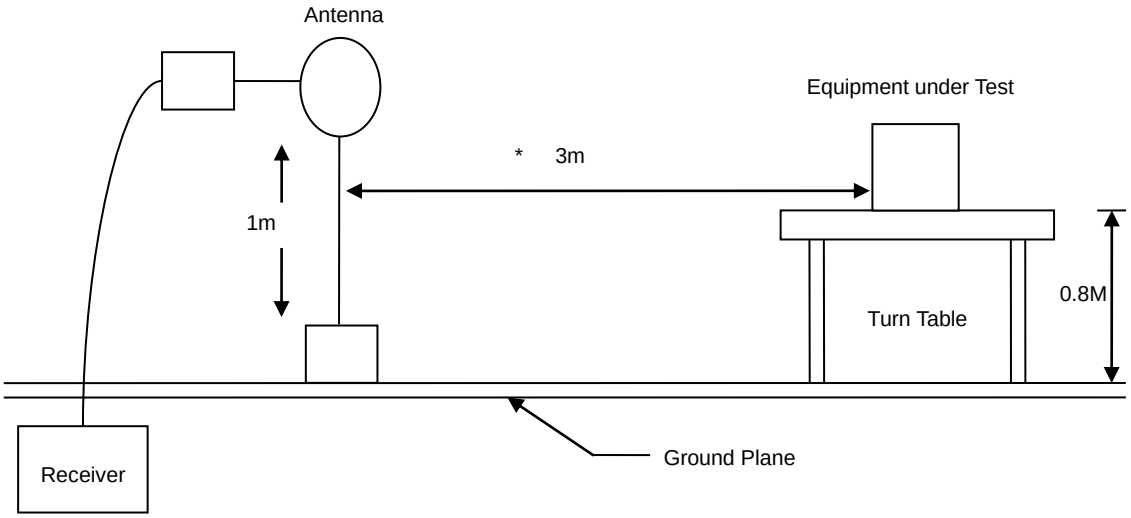
Below 1G-
For ESY10I1E -with Docking
For ESY15I1E & For ESY22I1 (Z-AXIS is the worst.)

Above 1G-
For ESY22I1 (Z-AXIS is the worst.)

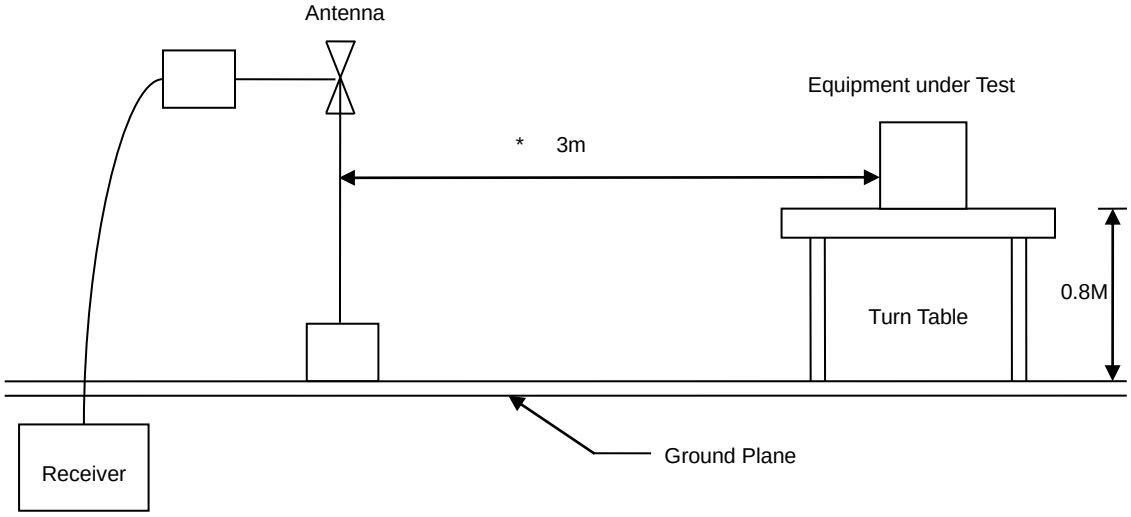
2.Field strength of emissions limit:
for Above 18GHz:
1 m Emission Limit = 3 m Emission Limit + 20log(3 m/1 m).
Distance extrapolation = 20 *log (3/1) = 9.54 dB
Limit is re-adjusted in terms of limit taken in 1m = 3 m Emission Limit + 9.54dB

6.3. Typical Test Setup

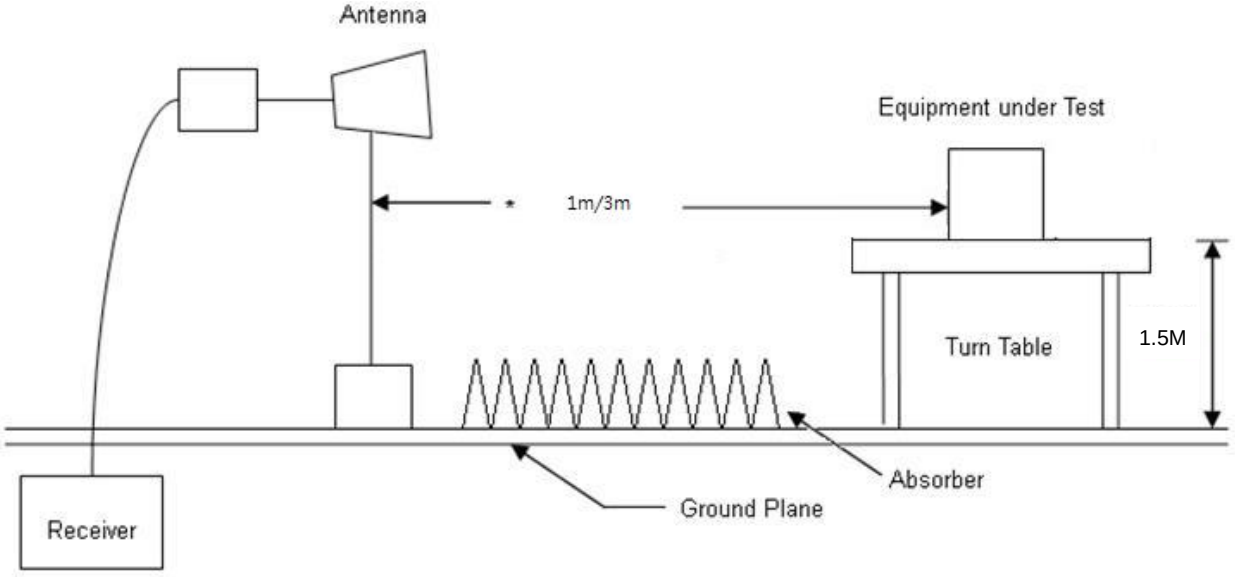
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



6.4. Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

6.5. Test Result and Data (30MHz ~ 1GHz)

Refer to Appendix B

6.6. Test Result and Data (1GHz ~ 40GHz)

Refer to Appendix C

6.7. In-Band Emission

Refer to Appendix D

6.8. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.150
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

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

6.9. Test Photographs (30MHz ~ 1GHz)

Refer to Appendix J

6.10. Test Photographs (1GHz ~ 40GHz)

Refer to Appendix J

7. On Time, Duty Cycle

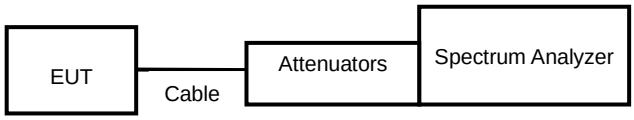
7.1. Test Limit

None; for reporting purposes only.

7.2. Test Procedure

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.3. Test Setup Layout



7.4. Test Result and Data

Refer to Appendix E

8. 26dB Bandwidth & 99% Occupied Bandwidth

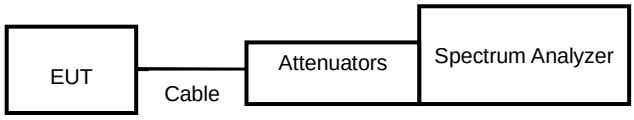
8.1. Test Limit

The 26dB Bandwidth shall not exceed 320 MHz.

8.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW = approximately 1% of the emission bandwidth, the VBW >= 3 x RBW, peak detector and max hold.

8.3. Test Setup Layout



8.4. Test Result and Data (26dB Bandwidth)

Refer to Appendix F

8.5. Test Result and Data (99% Occupied Bandwidth)

Refer to Appendix F

9. Maximum Equivalent Isotopically Radiated Power(E.I.R.P.)

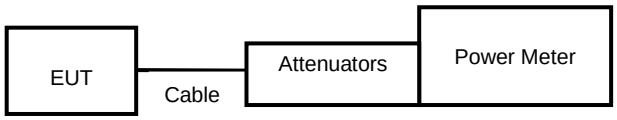
9.1. Test Limit

Frequency Band			Limit
☒	5.925~6.425GHz		
	Operating Mode		
	☐	For standard power access point and fixed client device :	e.i.r.p < 36 dBm , For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125 mW (21 dBm).
	☐	For indoor access point :	e.i.r.p < 30 dBm.
	☐	For subordinate device control of an indoor access point :	e.i.r.p < 30 dBm.
	☐	For client device control of a standard power access point:	e.i.r.p < 30 dBm.
	☒	For client device control of an indoor access point:	e.i.r.p < 24 dBm.
	☐	For very low power devices	e.i.r.p < 14 dBm.
☒	6.425-6.525 GHz		
	Operating Mode		
	☐	For indoor access point	e.i.r.p < 30 dBm.
	☒	For client device control of an indoor access point ::	e.i.r.p < 24 dBm.
☒	6.525~6.875 GHz		
	Operating Mode		
	☐	For standard power access point and fixed client device :	e.i.r.p < 36 dBm , For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees not exceed 125 mW (21 dBm).
	☐	For indoor access point :	e.i.r.p < 30 dBm.
	☐	For subordinate device control of an indoor access point :	e.i.r.p < 30 dBm.
	☐	For client device control of a standard power access point:	e.i.r.p < 30 dBm.
	☒	For client device control of an indoor access point:	e.i.r.p < 24 dBm.
	☐	For very low power devices	e.i.r.p < 14 dBm.
☒	6.875-7.125 GHz		
	Operating Mode		
	☐	For indoor access point	e.i.r.p < 30 dBm.
	☒	For client device control of an indoor access point ::	e.i.r.p < 24 dBm.

9.2. Test Procedure

According to the methods defined in ANSI C63.10-2013
The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

9.3. Test Setup Layout



9.4. Test Result and Data

Refer to Appendix G

10. Peak Power Spectral Density (E.I.R.P.)

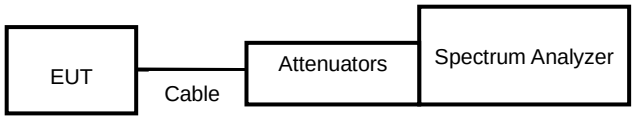
10.1.Test Limit

Frequency Band			Limit
☒	5.925~6.425GHz		
	Operating Mode		
	☐	For standard power access point and fixed client device :	e.i.r.p PSD < 23 dBm/MHz.
	☐	For indoor access point :	e.i.r.p PSD < 5 dBm/MHz.
	☐	For subordinate device control of an indoor access point :	e.i.r.p PSD < 5 dBm/MHz.
	☐	For client device control of a standard power access point:	e.i.r.p PSD < 17 dBm/MHz.
	☒	For client device control of an indoor access point:	e.i.r.p PSD < -1 dBm/MHz.
	☐	For very low power devices	e.i.r.p PSD < -5 dBm/MHz.
☒	6.425-6.525 GHz		
	Operating Mode		
	☐	For indoor access point	e.i.r.p PSD < 5 dBm/MHz.
	☒	For client device control of an indoor access point ::	e.i.r.p PSD < -1 dBm/MHz.
☒	6.525~6.875 GHz		
	Operating Mode		
	☐	For standard power access point and fixed client device :	e.i.r.p PSD < 23 dBm/MHz.
	☐	For indoor access point :	e.i.r.p PSD < 5 dBm/MHz.
	☐	For subordinate device control of an indoor access point :	e.i.r.p PSD < 5 dBm/MHz.
	☐	For client device control of a standard power access point:	e.i.r.p PSD < 17 dBm/MHz.
	☐	For client device control of an indoor access point:	e.i.r.p PSD < -1 dBm/MHz.
	☒	For very low power devices	e.i.r.p PSD < -5 dBm/MHz.
☒	6.875-7.125 GHz		
	Operating Mode		
	☐	For indoor access point	e.i.r.p PSD < 5 dBm/MHz.
	☒	For client device control of an indoor access point ::	e.i.r.p PSD < -1 dBm/MHz.

10.2. Test Procedure

Reference to KDB789033 D02 General UNII Test Procedures New Rules v02r01

10.3. Test Setup Layout



10.4. Test Result and Data

Refer to Appendix H

11. Contention Based Protocol

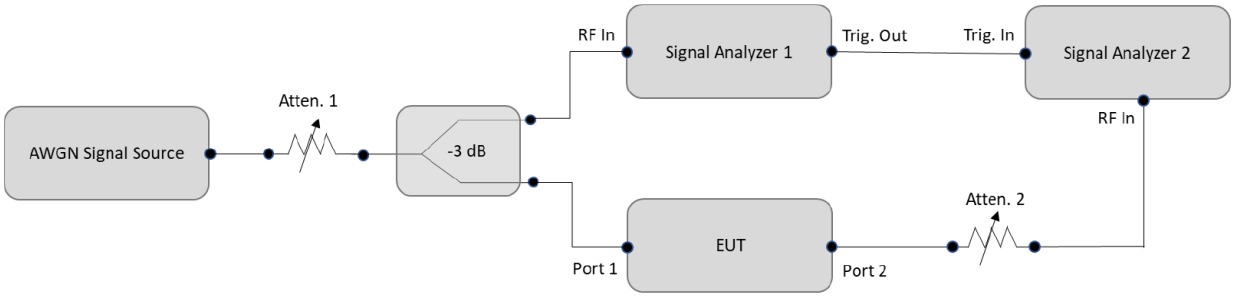
11.1.Test Limit

EUT can detect an AWGN signal with 90% (or better) level of certainty.

11.2.Test Procedure

Reference to KDB 987594 D02 U-NII 6 GHz EMC Measurement v01

11.3.Test Setup Layout



11.4.Test Result and Data

Refer to Appendix I

12. Radio Frequency Exposure

12.1.Applicable Standards

<table>
<tr><td>☐
§1.1307(b)(3)(i)(A)</td><td>The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.</td></tr>
<tr><td>☒
§1.1307(b)(3)(i)(c)</td><td>ERP is below a threshold calculated based on the distance , R between the person and t

antenna / radiating structure, where R > λ / 2 π .

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES
SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION
<table><tr><th colspan="3">RF Source Frequency</th><th colspan="3">Minimum Distance</th><th>Threshold ERP</th></tr><tr><td>f_L MHz</td><td></td><td>f_H MHz</td><td>$\lambda_L / 2\pi$</td><td></td><td>$\lambda_H / 2\pi$</td><td>W</td></tr><tr><td>0.3</td><td>–</td><td>1.34</td><td>159 m</td><td>–</td><td>35.6 m</td><td>1,920 R²</td></tr><tr><td>1.34</td><td>–</td><td>30</td><td>35.6 m</td><td>–</td><td>1.6 m</td><td>3,450 R²/f²</td></tr><tr><td>30</td><td>–</td><td>300</td><td>1.6 m</td><td>–</td><td>159 mm</td><td>3.83 R²</td></tr><tr><td>300</td><td>–</td><td>1,500</td><td>159 mm</td><td>–</td><td>31.8 mm</td><td>0.0128 R²f</td></tr><tr><td>1,500</td><td>–</td><td>100,000</td><td>31.8 mm</td><td>–</td><td>0.5 mm</td><td>19.2R²</td></tr><tr><td colspan="7">Subscripts L and H are low and high; λ is wavelength.
From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.</td></tr></table></td></tr>
<tr><td>☐
§ 1.1307(b)(3)(i)(B).</td><td>Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <= Pth

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$$ and f is in GHz;

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);</td></tr>
</table>

12.2.EUT Specification

Frequency band (Operating)	☐ WLAN: 2412MHz ~ 2462MHz ☐ WLAN: 5150MHz ~ 5250MHz ☐ WLAN: 5250MHz ~ 5350MHz ☐ WLAN: 5470MHz ~ 5725MHz ☐ WLAN: 5725MHz ~ 5850MHz ☒ WLAN: 5955MHz ~6415MHz ☒ WLAN: 6435MHz ~6515MHz ☒ WLAN: 6535MHz ~6855MHz ☒ WLAN: 6875MHz ~7115MHz ☐ Bluetooth: 2402MHz ~ 2480MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☒ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Evaluation applied	☐ Blanket 1 mW Blanket Exemption ☒ MPE-based Exemption ☐ SAR-based Exemption
Remark: The maximum conducted output power is 11.61dBm (12.11mW) at 6985MHz (with 2.28dBi antenna gain.)	

12.3.Result

For ESY10I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.33	6.83	2.86	9.69	7.54	20	0.8022	0.006	0.768
6435	5.29	5.79	2.72	8.51	6.36	20	0.74236	0.004	0.768
6715	6.04	6.54	2.72	9.26	7.11	20	0.7114	0.005	0.768
7015	7.09	7.59	2.46	10.05	7.90	20	0.68098	0.006	0.768

No non-compliance noted

For ESY10I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.56	6.06	2.54	8.60	6.45	20	0.8022	0.004	0.768
6515	5.25	5.75	2.84	8.59	6.44	20	0.73324	0.004	0.768
6715	6.11	6.61	2.84	9.45	7.30	20	0.7114	0.005	0.768
7015	7.01	7.51	2.28	9.79	7.64	20	0.68098	0.006	0.768

No non-compliance noted.

For ESY15I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.48	6.98	2.53	9.51	7.36	20	0.8022	0.005	0.768
6435	5.44	5.94	2.42	8.36	6.21	20	0.74236	0.004	0.768
6715	6.16	6.66	2.42	9.08	6.93	20	0.7114	0.005	0.768
7015	7.24	7.74	2.59	10.33	8.18	20	0.68098	0.007	0.768

No non-compliance noted

For ESY15I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.41	5.91	2.48	8.39	6.24	20	0.8022	0.004	0.768
6515	5.11	5.61	2.44	8.05	5.90	20	0.73324	0.004	0.768
6715	5.98	6.48	2.44	8.92	6.77	20	0.7114	0.005	0.768
7015	6.83	7.33	2.44	9.77	7.62	20	0.68098	0.006	0.768

No non-compliance noted

For ESY22I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.59	7.09	2.36	9.45	7.30	20	0.8022	0.005	0.768
6515	5.57	6.07	2.38	8.45	6.30	20	0.73324	0.004	0.768
6715	6.34	6.84	2.38	9.22	7.07	20	0.7114	0.005	0.768
7015	7.38	7.88	2.28	10.16	8.01	20	0.68098	0.006	0.768

No non-compliance noted

For ESY22I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.71	6.21	2.58	8.79	6.64	20	0.8022	0.005	0.768
6515	5.43	5.93	2.05	7.98	5.83	20	0.73324	0.004	0.768
6715	6.25	6.75	2.47	9.22	7.07	20	0.7114	0.005	0.768
7015	7.17	7.67	2.25	9.92	7.77	20	0.68098	0.006	0.768

No non-compliance noted.

For ESY10I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.16	11.66	2.86	14.52	12.37	20	0.7929	0.017	0.768
6445	4.98	5.48	2.84	8.32	6.17	20	0.74121	0.004	0.768
6705	8.40	8.90	2.84	11.74	9.59	20	0.71246	0.009	0.768
6985	11.35	11.85	2.46	14.31	12.16	20	0.6839	0.016	0.768

No non-compliance noted.

For ESY15I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.28	11.78	2.53	14.31	12.16	20	0.7929	0.016	0.768
6465	7.84	8.34	2.44	10.78	8.63	20	0.73891	0.007	0.768
6705	8.52	9.02	2.44	11.46	9.31	20	0.71246	0.009	0.768
6985	11.47	11.97	2.59	14.56	12.41	20	0.6839	0.017	0.768

No non-compliance noted.

For ESY22I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	λ/2π (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.40	11.90	2.58	14.48	12.33	20	0.79287	0.017	0.768
6465	7.97	8.47	2.38	10.85	8.70	20	0.73891	0.007	0.768
6665	8.66	9.16	2.47	11.63	9.48	20	0.71674	0.009	0.768
6985	11.61	12.11	2.28	14.39	12.24	20	0.68390	0.017	0.768

No non-compliance noted.

Maximum Permissible Exposure (Co-location)

For ESY10I1E (BT+6E)

Modulation Type	Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Max.Tune up e.r.p. Power(mW)	Limit (mW)	MPE Ratio	Pass
GFSK	2402-2480	15.37	15.87	2.01	20	37.41	3060.00	0.01	
11ax HE160	5945~6425	11.16	11.66	2.86	20	17.26	768.00	0.02	
Co-location Total							---	0.03	
ΣMPE ratios Limit							---	1.00	

For ESY15I1E (BT+6E)

Modulation Type	Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Max.Tune up e.r.p. Power(mW)	Limit (mW)	MPE Ratio	Pass
GFSK	2402-2480	15.51	16.01	2.72	20	45.50	3060.00	0.01	
11ax HE160	6985	11.47	11.97	2.59	20	17.42	768.00	0.02	
Co-location Total							---	0.03	
ΣMPE ratios Limit							---	1.00	

For ESY22I1E (BT+6E)

Modulation Type	Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Max.Tune up e.r.p. Power(mW)	Limit (mW)	MPE Ratio	Pass
GFSK	2402-2480	15.69	16.19	2.32	20	43.25	3060.00	0.01	
11ax HE160	5945~6425	11.40	11.90	2.58	20	17.10	768.00	0.02	
Co-location Total							---	0.03	
ΣMPE ratios Limit							---	1.00	

----------THE END OF REPORT----------