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 Mar. 07, 2025 and the testing was completed on Apr. 26, 2025 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

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History of this test report

Report No.	Issued Date	Description
24070407-TRFCC01	Nov. 18, 2024	Original
24110305-TRFCC01	Jan. 17, 2025	Add Base (Brand: ELO, Model: KIT, Z20-POS-STAND).
25030004-TRFCC01	May. 13, 2025	1.Add 10" / 15" / 22" iron shell available. 2.15” inch added 2 panel reports (for this iron shell version configuration, it must include the original plastic panel, a total of four models). -Brand: BOE, Model: PV156FHM-N30 -Brand: AUO,Model: A156HAN01.1 3.The original design was external PoE, but this time the application was changed to built-in PoE or without PoE (for this iron shell version configuration). 4.The antenna gain value becomes smaller and the antenna position moves (for this iron shell version configuration). 5.The iron shell version does not come with a base, so there is no adapter(Billion/BS180-240625MBX(150W)&DELTA/ADP-150EH B (150W)) that comes with the base. 6.This application does not come with an SD Card slot (for this iron shell version configuration).

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.10:2013
FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	PASS
15.207	. AC Power Line Conducted Emission	PASS
15.209 15.205	. Radiated Spurious Emission	PASS
15.247(b)	. Output Power	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.
*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report(25030004-TEFV01).
*The difference is list below:
1.Add 10" / 15" / 22" iron shell available.
2.15” inch added 2 panel reports (for this iron shell version configuration, it must include the original plastic panel, a total of four models).
-Brand: BOE, Model: PV156FHM-N30
-Brand: AUO,Model: A156HAN01.1
3.The original design was external PoE, but this time the application was changed to built-in PoE or without PoE (for this iron shell version configuration).
4.The antenna gain value becomes smaller and the antenna position moves (for this iron shell version configuration).
5.The iron shell version does not come with a base, so there is no adapter(Billion/BS180-240625MBX(150W)&DELTA/ADP-150EH B (150W)) that comes with the base.
6.This application does not come with an SD Card slot (for this iron shell version configuration).
After engineering evaluation, the following item need to retest:
1.AC Power Line Conducted Emission
2.Radiated Spurious Emission
Refer to original report for other test categories. Test report number: 24070407-TRFCC01& 24110305-TRFCC01

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

For 24110305

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

For 25030004(New addition)

Antenna Gain (ESY10I1E)	For BT / BLE: 2400-2500MHz: ANT A: 0.79dBi For WLAN: 2400-2500MHz: ANT A: 0.79dBi, ANT B: 0.41dBi 5150-5250MHz: ANT A: 0.87dBi, ANT B: 0.92dBi 5250-5350MHz: ANT A: 0.74dBi, ANT B: 1.01dBi 5470-5725MHz: ANT A: 1.16dBi, ANT B: 1.18dBi 5725-5850MHz: ANT A: 1.09dBi, ANT B: 1.30dBi 5925~6425MHz: ANT A: 1.54dBi, ANT B: 1.49dBi 6425~6525MHz: ANT A: 1.53dBi, ANT B: 1.49dBi, 6525~6875MHz: ANT A: 1.43dBi, ANT B: 1.35dBi, 6875~7125MHz: ANT A: 1.44dBi, ANT B: 1.57dBi,
Antenna Gain (ESY15I1E)	For BT / BLE: 2400-2500MHz: ANT A: 1.45dBi For WLAN: 2400-2500MHz: ANT A: 1.45dBi, ANT B: 1.37dBi 5150-5250MHz: ANT A: 1.65dBi, ANT B: 2.03dBi 5250-5350MHz: ANT A: 1.17dBi, ANT B: 2.20dBi 5470-5725MHz: ANT A: 2.08dBi, ANT B: 2.05dBi 5725-5850MHz: ANT A: 2.01dBi, ANT B: 2.07dBi 5925~6425MHz: ANT A: 1.69dBi, ANT B: 2.52dBi, 6425~6525MHz: ANT A: 1.48dBi, ANT B: 2.04dBi, 6525~6875MHz: ANT A: 1.54dBi, ANT B: 2.04dBi, 6875~7125MHz: ANT A: 1.45dBi, ANT B: 1.88dBi,
Antenna Gain (ESY22I1E)	For BT / BLE: 2400-2500MHz: ANT A: 0.75dBi For WLAN: 2400-2500MHz: ANT A: 0.75dBi, ANT B: 0.97dBi 5150-5250MHz: ANT A: 1.49dBi, ANT B: 1.12dBi 5250-5350MHz: ANT A: 1.18dBi, ANT B: 1.12dBi 5470-5725MHz: ANT A: 1.02dBi, ANT B: 1.08dBi 5725-5850MHz: ANT A: 1.24dBi, ANT B: 1.66dBi 5925~6425MHz: ANT A: 1.25dBi, ANT B: 1.39dBi, 6425~6525MHz: ANT A: 1.41dBi, ANT B: 0.97dBi, 6525~6875MHz: ANT A: 1.41dBi, ANT B: 1.29dBi, 6875~7125MHz: ANT A: 1.75dBi, ANT B: 1.77dBi,

EUT powered by

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

For (E554932 KIT, Z20-POS-STAND-GEN2-10 & E767356 KIT, Z20-POS-STAND-GEN2-15):
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	☒	☐	☐

For (KIT, Z20-POS-STAND):
Flip Stand Without Panel powered by

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

For 24110305

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 (For ESY10I1E)	Brand: ELO Model: E554932 KIT, Z20-POS-STAND-GEN2-10
	Brand: ELO Model: KIT, Z20-POS-STAND
Flip Stand Without Panel (For ESY15I1E)	Brand: ELO Model: E767356 KIT, Z20-POS-STAND-GEN2-15
	Brand: ELO Model: KIT, Z20-POS-STAND
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

For 25030004(New addition)

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
Type-C Cable	Brand: Hotron Model: E113033 CAB, USB-C TO USB-C, Z20 Gen2 15,330mm,HT
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 **Brand: BOE** **Model: PV156FHM-N30(New addition)** **Brand: AUO** **Model: A156HAN01.1(New addition)**
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:
For 24110305

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

For 25030004(New addition)

Model No.	Remark
ESY10I1E	Only different sizes, other circuits, layout, product specifications are all the same. For details, please see chapter 1.1.
ESY15I1E	
ESY22I1E	

Note: ESY22I1E(built-in PoE) was the worst case, so it was used for the test result.

2.2 Carrier Frequency of Channes

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
***00**	**2402**	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	***78**	**2480**
19	2421	***39**	**2441**	59	2461	---	---

Note: Channels remarked * are selected to perform test.

2.3 Test Mode & Test Software

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

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	GFSK (1Mbps), From Adapter
2	π/4-DQPSK (2Mbps), From Adapter
3	8DPSK (3Mbps), From Adapter
caused “Test Mode 1” generated the worst case, it was reported as the final data.	
Radiation Emissions (Below 1GHz)	
Test Mode	Operating Description
1	GFSK (1Mbps), From Adapter
2	π/4-DQPSK (2Mbps), From Adapter
3	8DPSK (3Mbps), From Adapte
caused “Test Mode 1” generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	GFSK (1Mbps), From Adapter
2	π/4-DQPSK (2Mbps), From Adapter
3	8DPSK (3Mbps) From Adapter
caused “Test Mode1&3” generated the worst case, they were reported as the final data.	

Note:There are two kinds of test voltage: AC 120V / 60Hz and AC 240V / 60Hz.
For AC Power Line Conducted Emission, AC 240V / 60Hz is worst case.
For Radiated Spurious Emission, AC 240V / 60Hz is worst case.

There are three types of Adapters+one PoE power supply mode.
After engineering evaluation:
For AC Power Line Conducted Emission, JS-100GT is worst case.
For Radiated Spurious Emission, ADP-65JH HB 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

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

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

Modulation Type	TX CONFIGURATION
GFSK	1TX
π /4-DQPSK	1TX
8DPSK	1TX

2.4 Description of Test System

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	P73G	N/A	Adapter / 1.8m / NS
USB Cable (A to A)	BENEVO	E210567AWM	1m / NS	N/A
POE	Bluewave	GP-V480-032G	N/A	N/A
RJ45 Cable	N/A	N/A	1.2m / NS	N/A
AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	AUAS	P2430U	N/A	Adapter / 1.8m / NS
USB Cable (A to A)	BENEVO	E210567AWM	1m / NS	N/A
POE	Bluewave	JS-100GT	N/A	N/A
RJ45 Cable	N/A	N/A	1.2m / NS	N/A

2.5 General Information of Test

Organization	Cerpass Technology Corp.	
☒ 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 25,000MHz	
Test Distance	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Test period	Environmental Conditions	Tested By
Radiated Emissions	3M02-NK	2025/04/25	19.1℃ / 61%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2025/04/26	22.3℃ / 59%	Leon Huang

2.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the 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)	±3.2dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
Conducted Spurious Emission	±2.1dB
6dB Bandwidth	±5.4%
20dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Dwell Time / Deactivation Time	±7.6%
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%

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	Sunol	JB1	A020514-1	2024/05/17	2025/05/16
Active Loop Antenna	EMCO	6507	00040855	2024/05/02	2025/05/01
Horn Anrenna	EMCO	3116	31974	2025/02/20	2026/02/19
Horn Antenna	EMCO	3115	31589	2024/06/27	2025/06/26
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2024/08/22	2025/08/21
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2024/05/13	2025/05/12
Preamplifier	EMC INSTRUMENTS	EMC118A45V1SEE	980993	2024/10/24	2025/10/23
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2024/10/15	2025/10/14
Preamplifier	EM Electronics corp.	EM330	60820	2024/06/14	2025/06/13
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2024/08/08	2025/08/07
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2025/02/21	2026/02/20
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2025/02/26	2026/02/25
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2025/02/26	2026/02/25
Cable-8m(1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2025/02/26	2026/02/25
Cable-3m(10M-40G)	HUBER SUHNER	SF102	804619/2	2024/10/14	2025/10/13
Cable-1m(10M-40G)	HUBER SUHNER	SF102	804398/2	2024/10/14	2025/10/13
Highpass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2025/02/21	2026/02/20
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2025/02/11	2026/02/10
Highpass Filter	WOKEN	WFIL-H3000-18000F-03	WR377WC2B1	2024/10/15	2025/10/14
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

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
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2024/08/08	2025/08/07
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127740	2024/08/27	2025/08/26
Two-Line V-Network	ROHDE & SCHWARZ	ENV216	102185	2024/08/27	2025/08/26
E3	AUDIX	v8.2014-8-6	RK-000531	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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Antenna Construction and Directional Gain

Antenna Type	PIFA Antenna
Antenna Gain (ESY10I1E)	2400-2500MHz: ANT A: 0.79dBi
Antenna Gain (ESY15I1E)	2400-2500MHz: ANT A: 1.45dBi
Antenna Gain (ESY22I1E)	2400-2500MHz: ANT A: 0.75dBi

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.

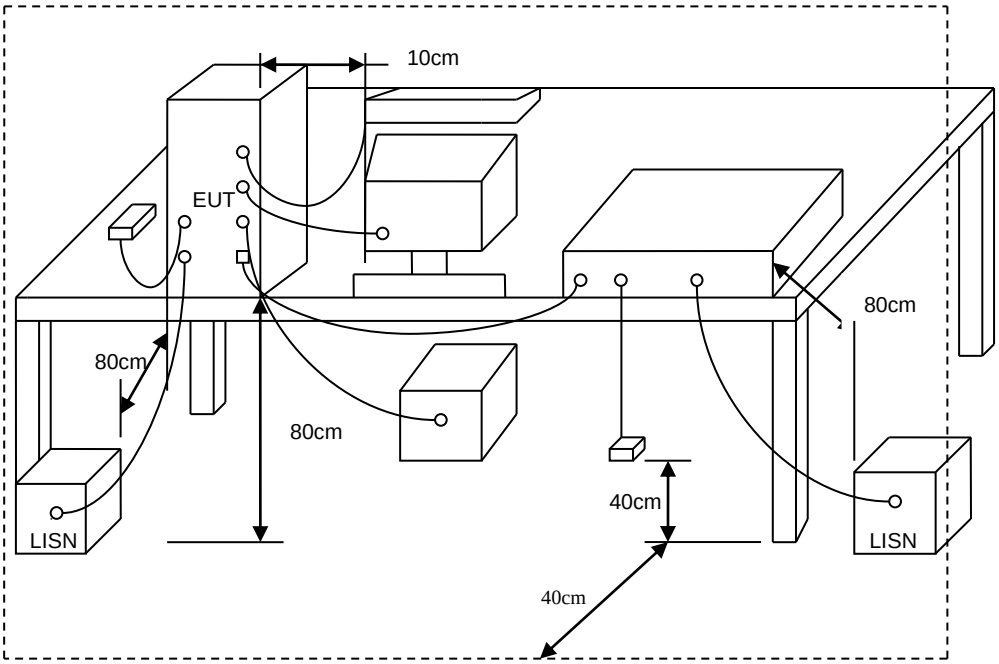
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2 Test Procedures

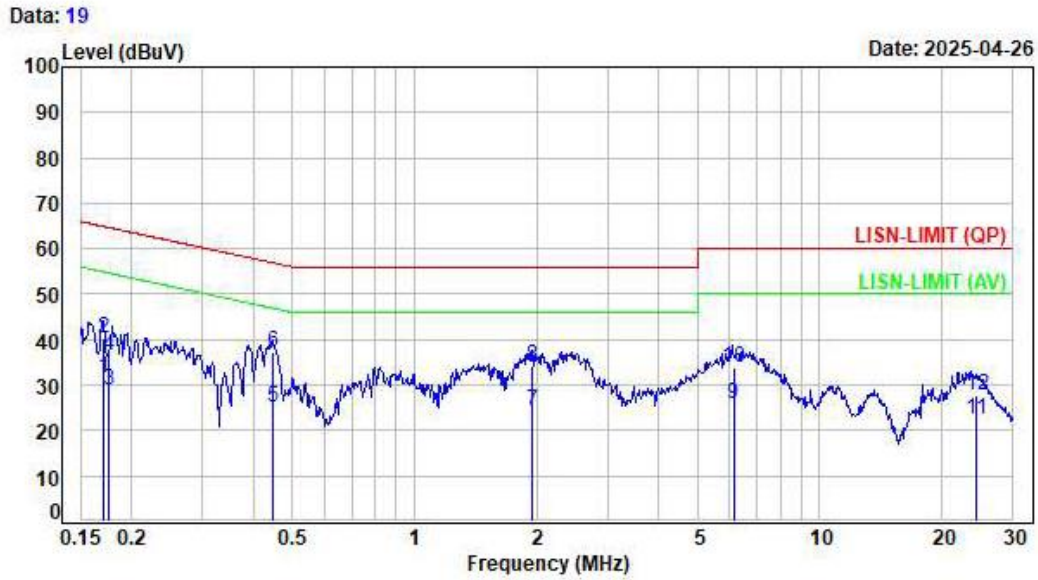
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
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

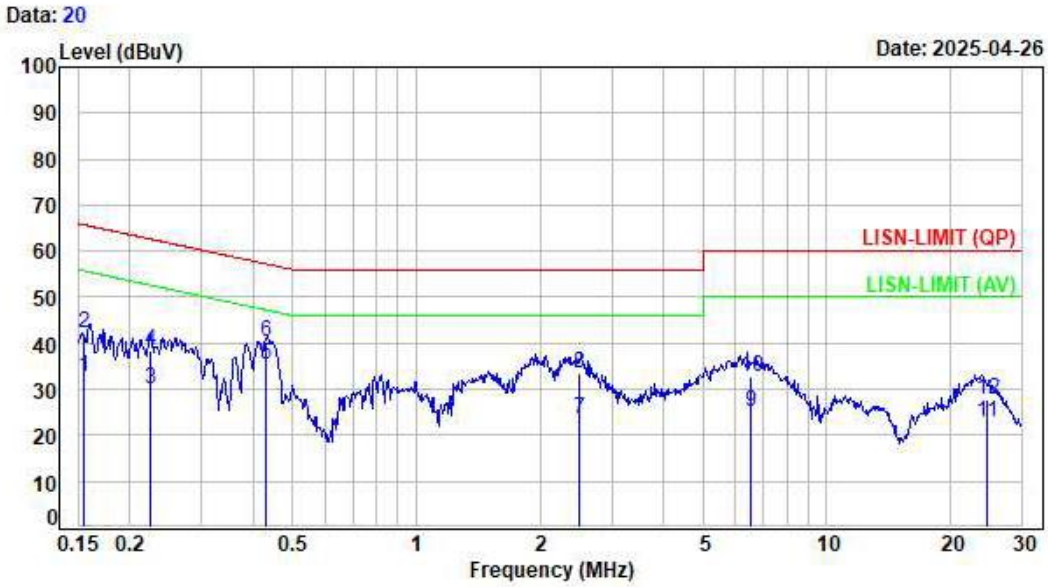
Test Mode : BT 1TX CH00 1Mbps
Voltage : From POE(AC 240V/60Hz)
Phase : Line



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1704	9.63	21.87	31.50	54.94	-23.44	Average	P
2	0.1704	9.63	30.84	40.47	64.94	-24.47	QP	P
3	0.1760	9.63	19.16	28.79	54.67	-25.88	Average	P
4	0.1760	9.63	26.71	36.34	64.67	-28.33	QP	P
5	0.4467	9.65	15.33	24.98	46.94	-21.96	Average	P
6	0.4467	9.65	27.57	37.22	56.94	-19.72	QP	P
7	1.9589	9.68	14.54	24.22	46.00	-21.78	Average	P
8	1.9589	9.68	24.42	34.10	56.00	-21.90	QP	P
9	6.1294	9.78	16.12	25.90	50.00	-24.10	Average	P
10	6.1294	9.78	23.87	33.65	60.00	-26.35	QP	P
11	24.3388	9.94	12.57	22.51	50.00	-27.49	Average	P
12	24.3388	9.94	17.91	27.85	60.00	-32.15	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

Test Mode : BT 1TX CH00 1Mbps
Voltage : From POE(AC 240V/60Hz)
Phase : Neutral



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1555	9.61	22.99	32.60	55.70	-23.10	Average	P
2	0.1555	9.61	32.53	42.14	65.70	-23.56	QP	P
3	0.2242	9.61	20.25	29.86	52.66	-22.80	Average	P
4	0.2242	9.61	28.94	38.55	62.66	-24.11	QP	P
5	0.4302	9.62	25.69	35.31	47.25	-11.94	Average	P
6	0.4302	9.62	30.84	40.46	57.25	-16.79	QP	P
7	2.4979	9.68	13.71	23.39	46.00	-22.61	Average	P
8	2.4979	9.68	23.70	33.38	56.00	-22.62	QP	P
9	6.5260	9.77	15.30	25.07	50.00	-24.93	Average	P
10	6.5260	9.77	22.75	32.52	60.00	-27.48	QP	P
11	24.5450	10.05	12.90	22.95	50.00	-27.05	Average	P
12	24.5450	10.05	17.79	27.84	60.00	-32.16	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

6. Test of Radiated Spurious Emission

6.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

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.

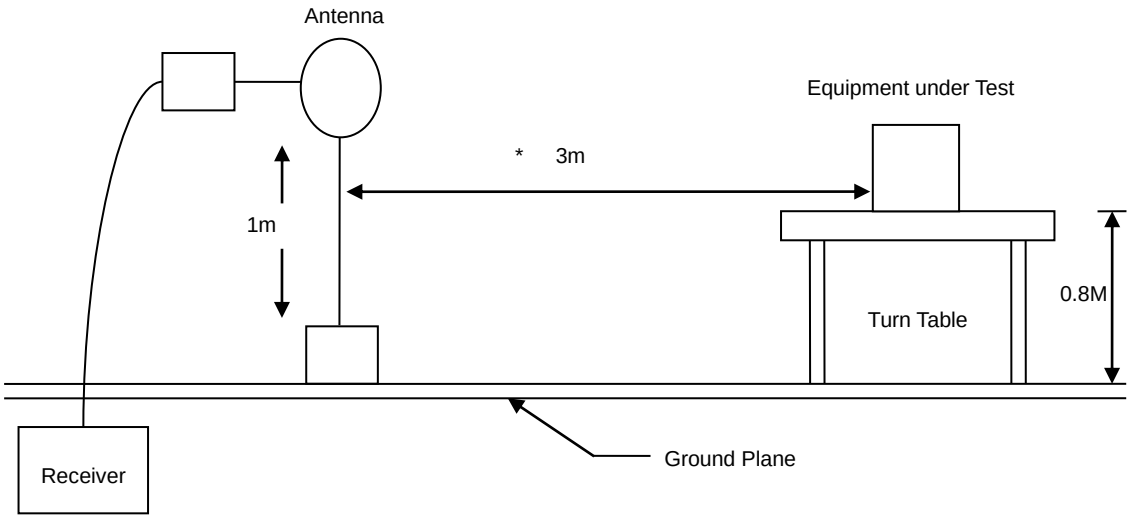
Note:

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.
(Y-AXIS is the worst.)

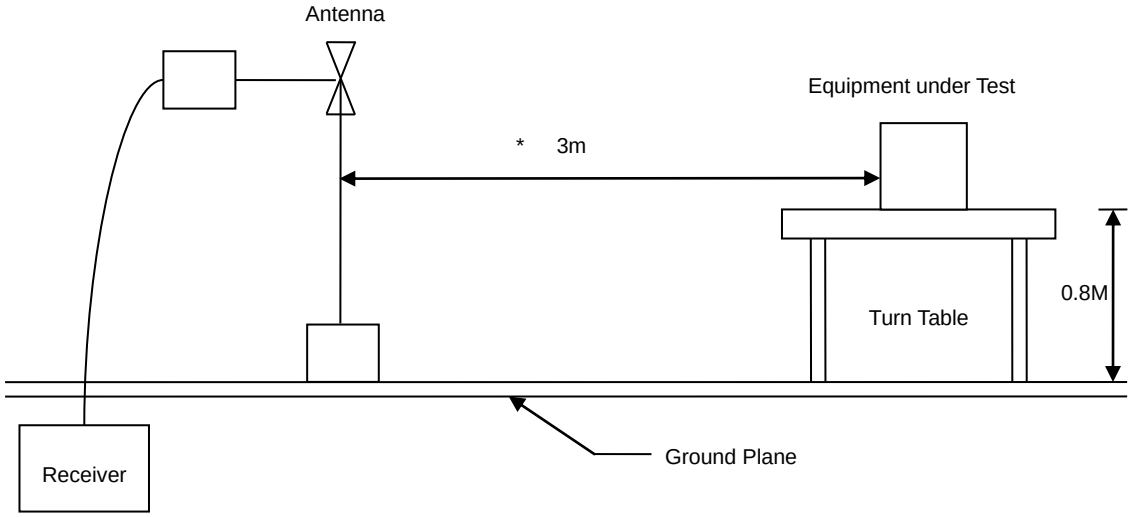
2.Due to the test software function limit the operation band setting(200dBuV/m).
There's no corresponding limitation in the actual test item.

6.3 Typical Test Setup

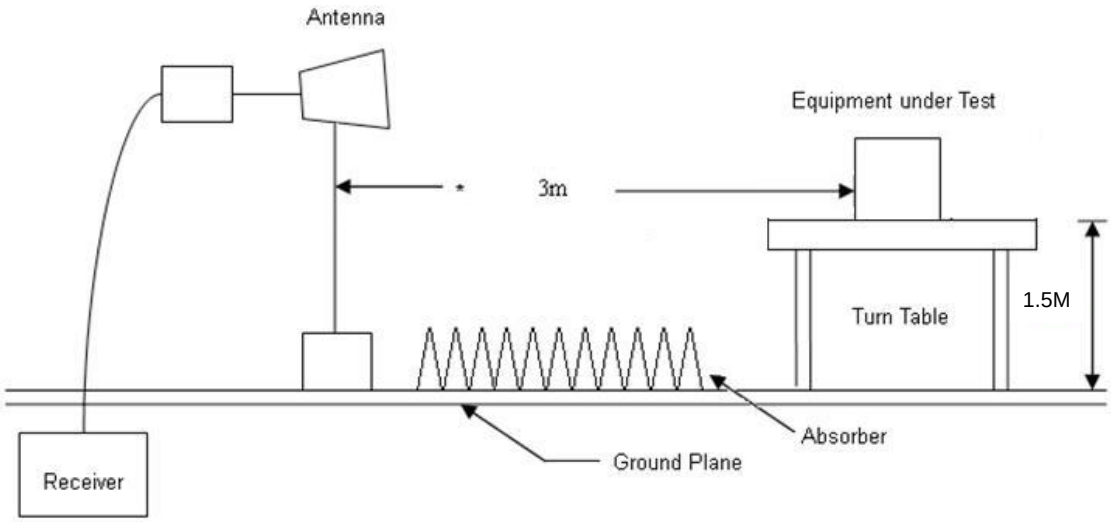
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

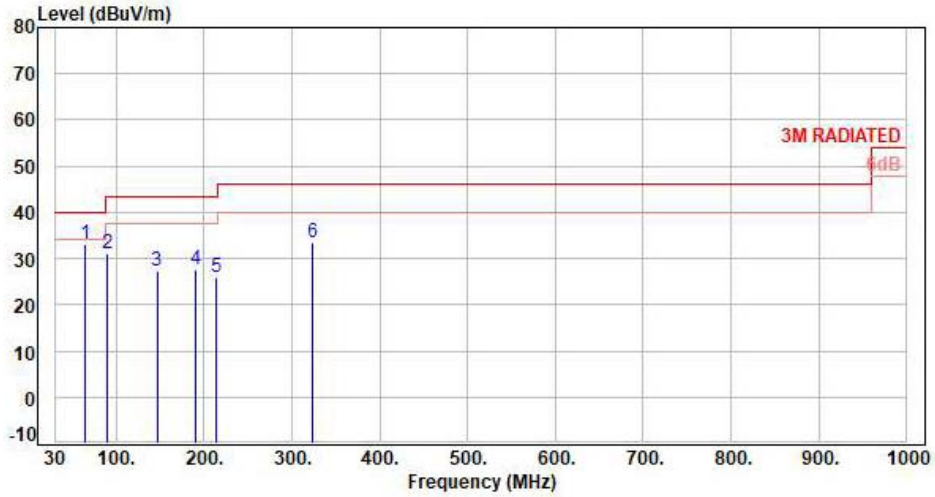


6.4 Test Result and Data (9kHz ~ 30MHz)

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

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

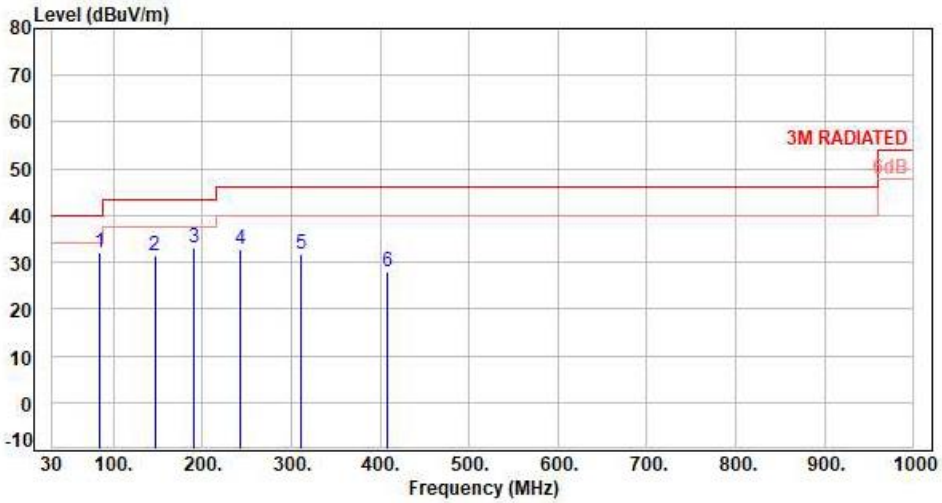
Test Mode : BT 1TX GFSK CH39 1Mbps
Voltage : From Adapter(AC240V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	64.92	-10.64	43.88	33.24	40.00	-6.76	Peak	400	360	P
2	89.17	-15.96	47.12	31.16	43.50	-12.34	Peak	400	360	P
3	146.40	-9.84	37.12	27.28	43.50	-16.22	Peak	400	360	P
4	191.02	-11.69	39.21	27.52	43.50	-15.98	Peak	400	360	P
5	214.30	-12.38	38.44	26.06	43.50	-17.44	Peak	400	360	P
6	322.94	-7.16	40.46	33.30	46.00	-12.70	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Test Mode : BT 1TX GFSK CH39 1Mbps
Voltage : From Adapter(AC240V/60Hz)
Pol : Horizontal

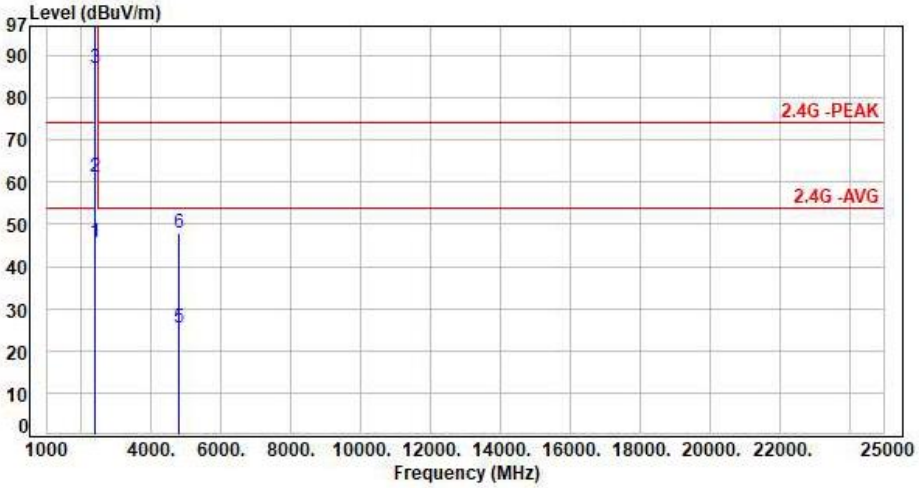


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	84.32	-15.37	47.48	32.11	40.00	-7.89	Peak	400	0	P
2	146.40	-9.84	41.25	31.41	43.50	-12.09	Peak	400	0	P
3	191.02	-11.69	44.65	32.96	43.50	-10.54	Peak	400	0	P
4	243.40	-10.71	43.59	32.88	46.00	-13.12	Peak	400	0	P
5	311.30	-7.48	39.06	31.58	46.00	-14.42	Peak	400	0	P
6	408.30	-4.92	32.99	28.07	46.00	-17.93	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.6 Test Result and Data (1GHz ~ 25GHz)

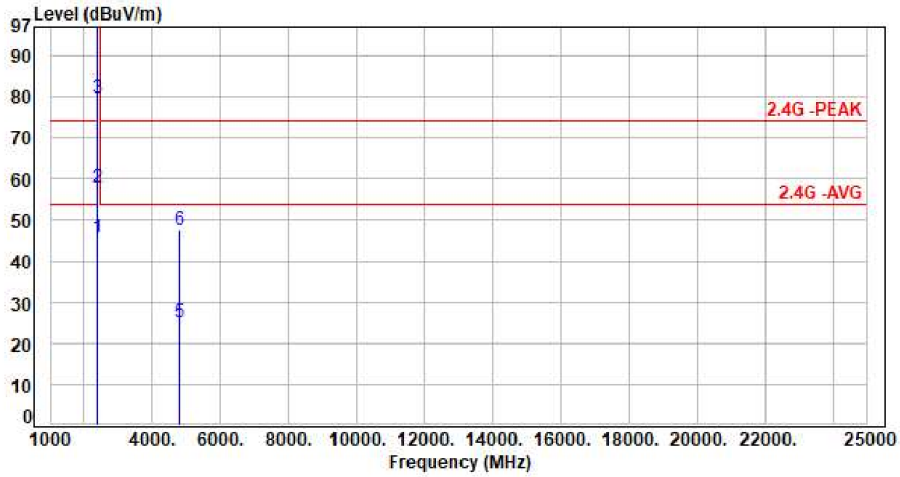
Test Mode : BT 1TX GFSK CH00 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	50.37	45.85	54.00	-8.15	Average	299	178	P
2	2390.00	-4.52	65.79	61.27	74.00	-12.73	Peak	299	178	P
3	2402.00	-4.65	91.81	87.16	200.00	-112.84	Average	299	178	P
4	2402.00	-4.65	114.31	109.66	200.00	-90.34	Peak	299	178	P
5	4804.00	6.59	18.95	25.54	54.00	-28.46	Average	100	10	P
6	4804.00	6.59	41.45	48.04	74.00	-25.96	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

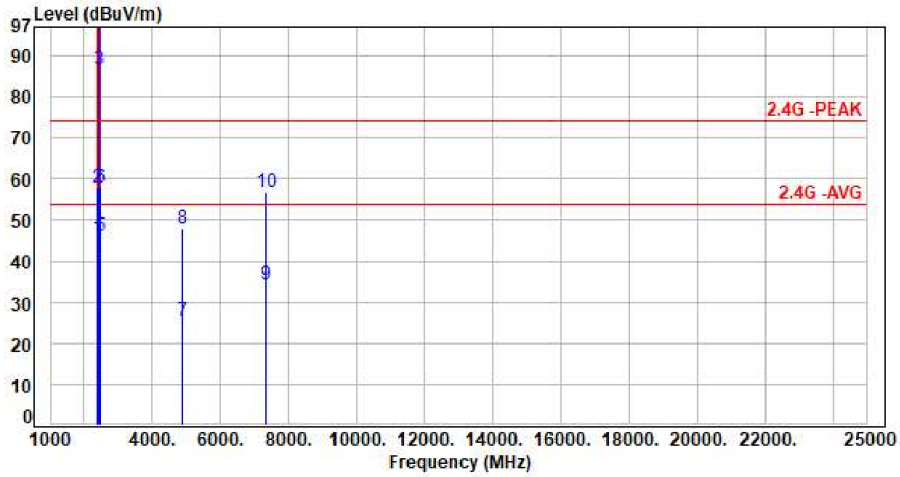
Test Mode : BT 1TX GFSK CH00 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	50.36	45.84	54.00	-8.16	Average	213	161	P
2	2390.00	-4.52	62.52	58.00	74.00	-16.00	Peak	213	161	P
3	2402.00	-4.65	84.19	79.54	200.00	-120.46	Average	213	161	P
4	2402.00	-4.65	106.69	102.04	200.00	-97.96	Peak	213	161	P
5	4804.00	6.59	18.64	25.23	54.00	-28.77	Average	100	350	P
6	4804.00	6.59	41.14	47.73	74.00	-26.27	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

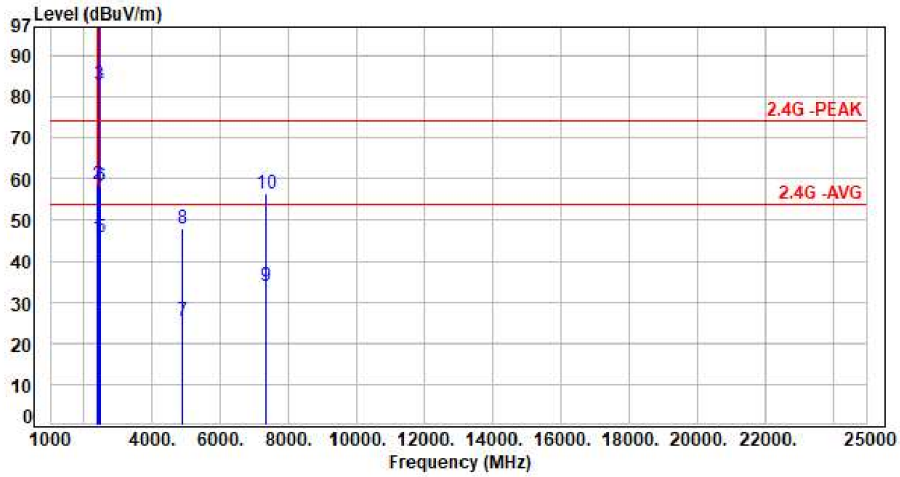
Test Mode : BT 1TX GFSK CH39 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	50.42	45.90	54.00	-8.10	Average	292	173	P
2	2390.00	-4.52	62.38	57.86	74.00	-16.14	Peak	292	173	P
3	2441.00	-4.75	91.43	86.68	200.00	-113.32	Average	292	173	P
4	2441.00	-4.75	113.93	109.18	200.00	-90.82	Peak	292	173	P
5	2483.50	-4.75	50.88	46.13	54.00	-7.87	Average	292	173	P
6	2483.50	-4.75	62.76	58.01	74.00	-15.99	Peak	292	173	P
7	4882.00	6.87	18.52	25.39	54.00	-28.61	Average	100	350	P
8	4882.00	6.87	41.02	47.89	74.00	-26.11	Peak	100	350	P
9	7323.00	13.03	21.28	34.31	54.00	-19.69	Average	100	350	P
10	7323.00	13.03	43.78	56.81	74.00	-17.19	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

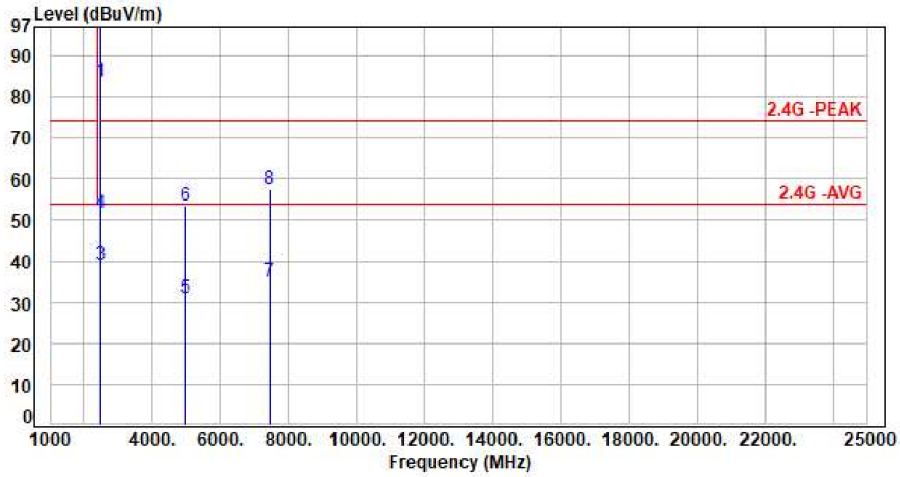
Test Mode : BT 1TX GFSK CH39 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	50.30	45.78	54.00	-8.22	Average	323	110	P
2	2390.00	-4.52	63.09	58.57	74.00	-15.43	Peak	323	110	P
3	2441.00	-4.75	87.61	82.86	200.00	-117.14	Average	323	110	P
4	2441.00	-4.75	110.11	105.36	200.00	-94.64	Peak	323	110	P
5	2483.50	-4.75	50.53	45.78	54.00	-8.22	Average	323	110	P
6	2483.50	-4.75	62.98	58.23	74.00	-15.77	Peak	323	110	P
7	4882.00	6.87	18.65	25.52	54.00	-28.48	Average	100	350	P
8	4882.00	6.87	41.15	48.02	74.00	-25.98	Peak	100	350	P
9	7323.00	13.03	20.87	33.90	54.00	-20.10	Average	100	10	P
10	7323.00	13.03	43.37	56.40	74.00	-17.60	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

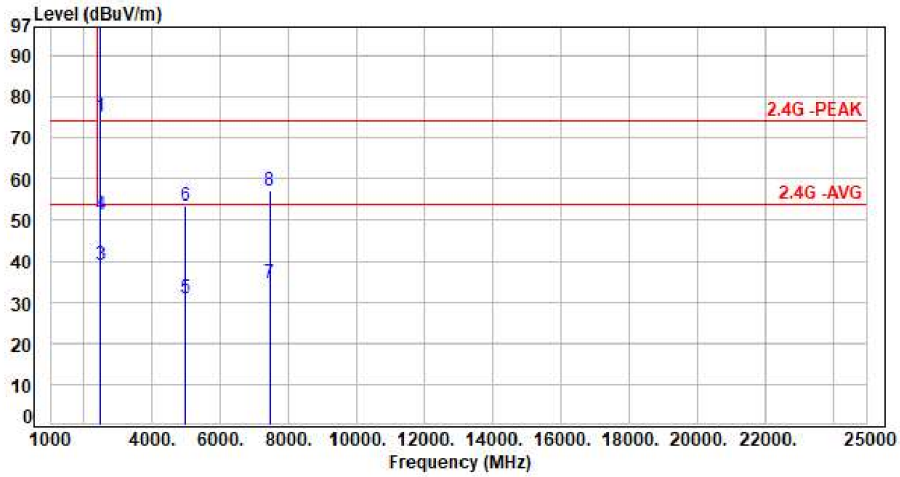
Test Mode : BT 1TX GFSK CH78 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-4.74	88.31	83.57	200.00	-116.43	Average	265	195	P
2	2480.00	-4.74	110.81	106.07	200.00	-93.93	Peak	265	195	P
3	2483.50	-4.75	43.99	39.24	54.00	-14.76	Average	265	195	P
4	2483.50	-4.75	56.42	51.67	74.00	-22.33	Peak	265	195	P
5	4960.00	7.21	23.90	31.11	54.00	-22.89	Average	100	212	P
6	4960.00	7.21	46.40	53.61	74.00	-20.39	Peak	100	212	P
7	7440.00	13.34	21.59	34.93	54.00	-19.07	Average	100	350	P
8	7440.00	13.34	44.09	57.43	74.00	-16.57	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

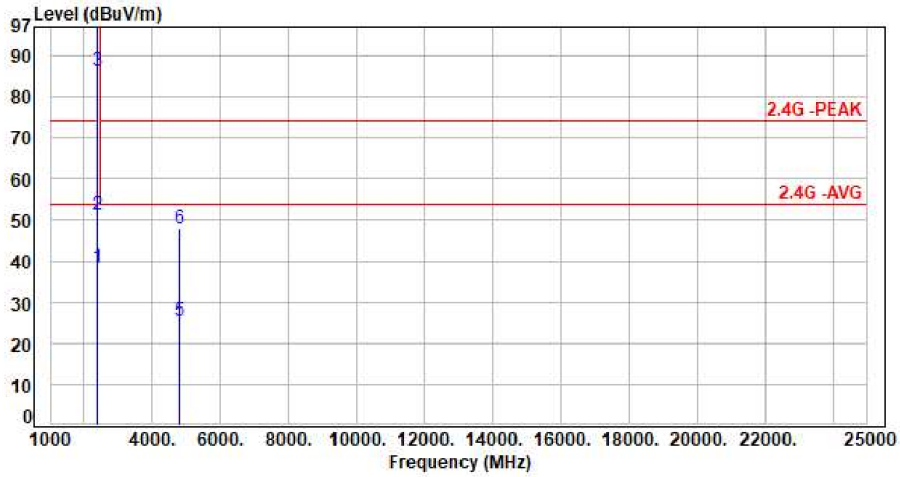
Test Mode : BT 1TX GFSK CH78 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-4.74	79.87	75.13	200.00	-124.87	Average	149	150	P
2	2480.00	-4.74	102.37	97.63	200.00	-102.37	Peak	149	150	P
3	2483.50	-4.75	43.67	38.92	54.00	-15.08	Average	149	150	P
4	2483.50	-4.75	56.03	51.28	74.00	-22.72	Peak	149	150	P
5	4960.00	7.21	23.66	30.87	54.00	-23.13	Average	370	241	P
6	4960.00	7.21	46.16	53.37	74.00	-20.63	Peak	370	241	P
7	7440.00	13.34	21.46	34.80	54.00	-19.20	Average	100	10	P
8	7440.00	13.34	43.96	57.30	74.00	-16.70	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

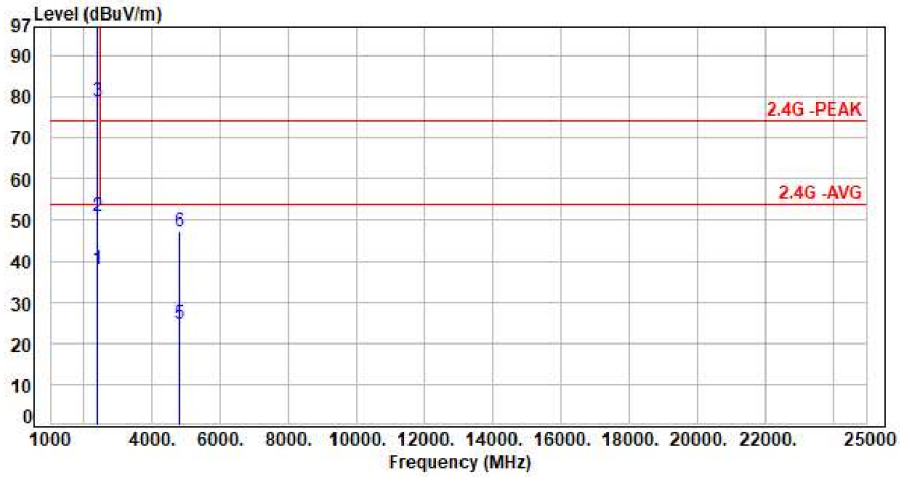
Test Mode : BT 1TX GFSK CH00 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	42.81	38.29	54.00	-15.71	Average	300	179	P
2	2390.00	-4.52	55.85	51.33	74.00	-22.67	Peak	300	179	P
3	2402.00	-4.65	90.98	86.33	200.00	-113.67	Average	300	179	P
4	2402.00	-4.65	113.48	108.83	200.00	-91.17	Peak	300	179	P
5	4804.00	6.59	18.71	25.30	54.00	-28.70	Average	100	350	P
6	4804.00	6.59	41.21	47.80	74.00	-26.20	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

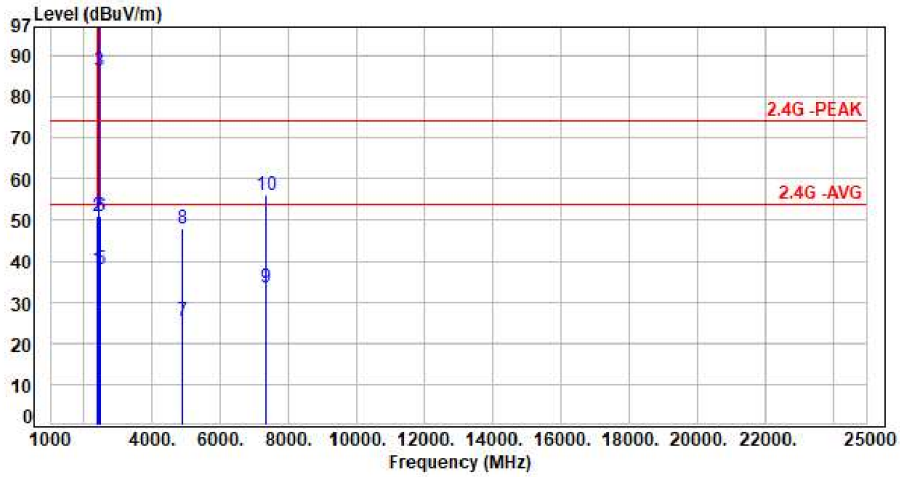
Test Mode : BT 1TX GFSK CH00 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	42.47	37.95	54.00	-16.05	Average	211	161	P
2	2390.00	-4.52	55.53	51.01	74.00	-22.99	Peak	211	161	P
3	2402.00	-4.65	83.56	78.91	200.00	-121.09	Average	211	161	P
4	2402.00	-4.65	106.06	101.41	200.00	-98.59	Peak	211	161	P
5	4804.00	6.59	18.14	24.73	54.00	-29.27	Average	100	10	P
6	4804.00	6.59	40.64	47.23	74.00	-26.77	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

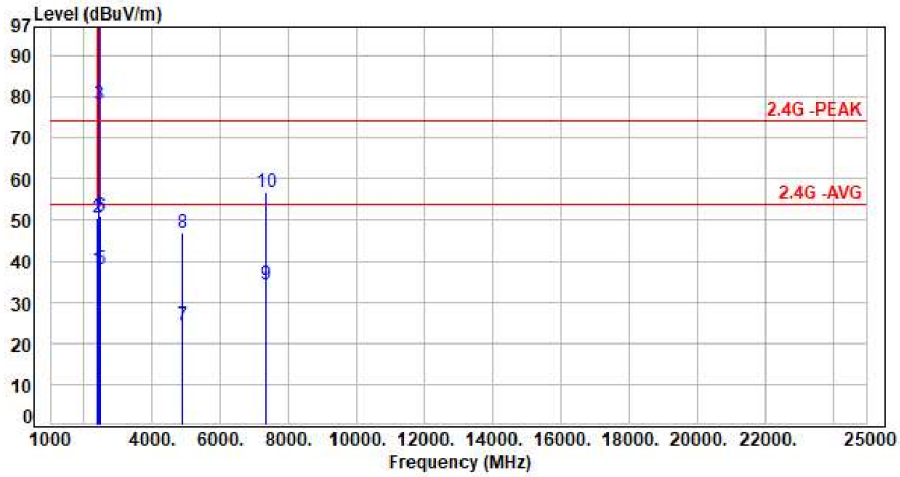
Test Mode : BT 1TX GFSK CH39 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	42.63	38.11	54.00	-15.89	Average	294	174	P
2	2390.00	-4.52	55.27	50.75	74.00	-23.25	Peak	294	174	P
3	2441.00	-4.75	90.88	86.13	200.00	-113.87	Average	294	174	P
4	2441.00	-4.75	113.38	108.63	200.00	-91.37	Peak	294	174	P
5	2483.50	-4.75	42.74	37.99	54.00	-16.01	Average	294	174	P
6	2483.50	-4.75	55.74	50.99	74.00	-23.01	Peak	294	174	P
7	4882.00	6.87	18.66	25.53	54.00	-28.47	Average	100	350	P
8	4882.00	6.87	41.16	48.03	74.00	-25.97	Peak	100	350	P
9	7323.00	13.03	20.71	33.74	54.00	-20.26	Average	100	10	P
10	7323.00	13.03	43.21	56.24	74.00	-17.76	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

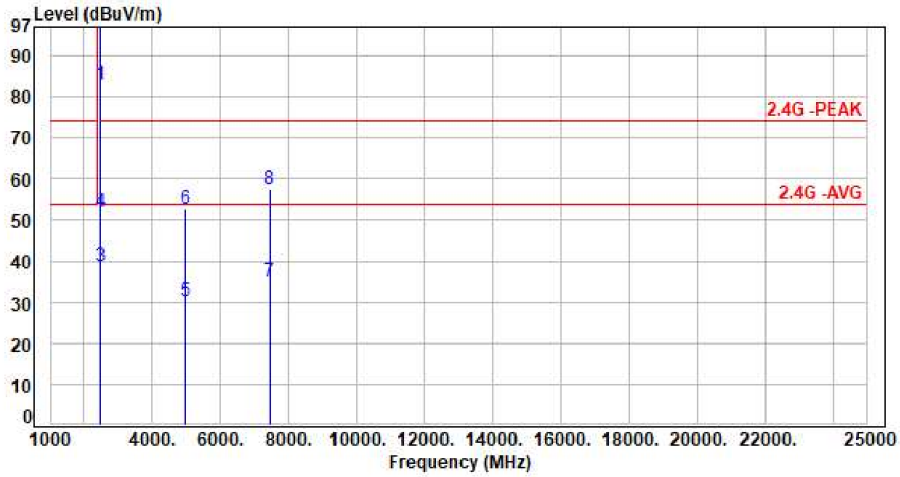
Test Mode : BT 1TX GFSK CH39 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-4.52	42.46	37.94	54.00	-16.06	Average	159	206	P
2	2390.00	-4.52	54.99	50.47	74.00	-23.53	Peak	159	206	P
3	2441.00	-4.75	82.83	78.08	200.00	-121.92	Average	159	206	P
4	2441.00	-4.75	105.33	100.58	200.00	-99.42	Peak	159	206	P
5	2483.50	-4.75	42.81	38.06	54.00	-15.94	Average	159	206	P
6	2483.50	-4.75	55.78	51.03	74.00	-22.97	Peak	159	206	P
7	4882.00	6.87	17.63	24.50	54.00	-29.50	Average	100	350	P
8	4882.00	6.87	40.13	47.00	74.00	-27.00	Peak	100	350	P
9	7323.00	13.03	21.31	34.34	54.00	-19.66	Average	100	10	P
10	7323.00	13.03	43.81	56.84	74.00	-17.16	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

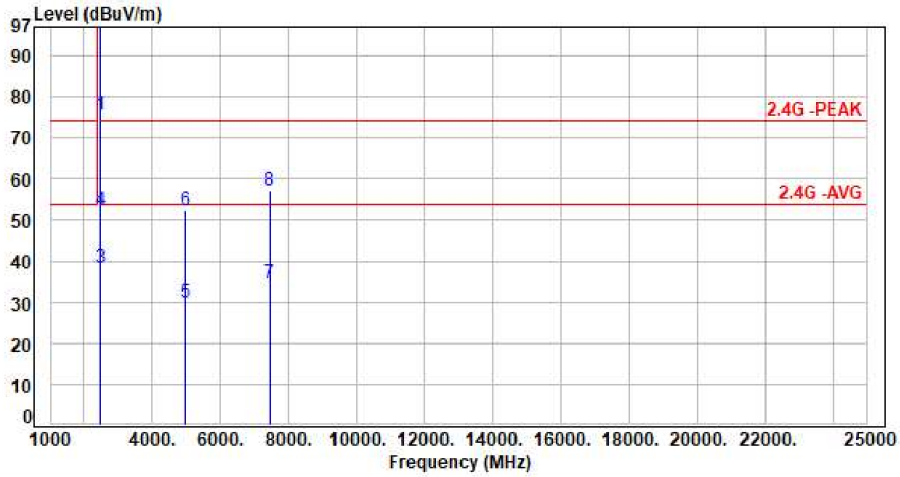
Test Mode : BT 1TX GFSK CH78 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-4.74	87.83	83.09	200.00	-116.91	Average	264	193	P
2	2480.00	-4.74	110.33	105.59	200.00	-94.41	Peak	264	193	P
3	2483.50	-4.75	43.32	38.57	54.00	-15.43	Average	264	193	P
4	2483.50	-4.75	56.68	51.93	74.00	-22.07	Peak	264	193	P
5	4960.00	7.21	23.17	30.38	54.00	-23.62	Average	100	212	P
6	4960.00	7.21	45.67	52.88	74.00	-21.12	Peak	100	212	P
7	7440.00	13.34	21.54	34.88	54.00	-19.12	Average	100	10	P
8	7440.00	13.34	44.04	57.38	74.00	-16.62	Peak	100	10	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Test Mode : BT 1TX GFSK CH78 3Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2480.00	-4.74	80.17	75.43	200.00	-124.57	Average	116	151	P
2	2480.00	-4.74	102.67	97.93	200.00	-102.07	Peak	116	151	P
3	2483.50	-4.75	43.17	38.42	54.00	-15.58	Average	116	151	P
4	2483.50	-4.75	57.00	52.25	74.00	-21.75	Peak	116	151	P
5	4960.00	7.21	22.55	29.76	54.00	-24.24	Average	372	242	P
6	4960.00	7.21	45.05	52.26	74.00	-21.74	Peak	372	242	P
7	7440.00	13.34	21.39	34.73	54.00	-19.27	Average	100	350	P
8	7440.00	13.34	43.89	57.23	74.00	-16.77	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.7 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 – 5.250
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

7. Maximum Average Output Power

7.1 Test Limit

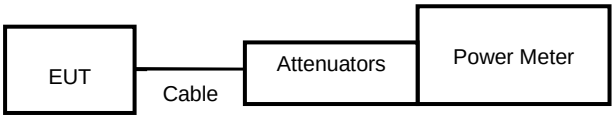
The Maximum Average Output Power Measurement is 30dBm.

7.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.5

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.

7.3 Test Setup Layout



7.4 Test Result and Data

ESY22I1E (24070407-TRFCC01)

Setting	Modulation Type	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
10	GFSK	0	2402	15.69	37.068
		39	2441	15.34	34.198
		78	2480	11.89	15.453
10	π/4-DQPSK	0	2402	11.98	15.776
		39	2441	11.59	14.421
		78	2480	7.97	6.266
10	8DPSK	0	2402	12.14	16.368
		39	2441	11.72	14.859
		78	2480	8.28	6.730

AFH Mode

Setting	Modulation Type	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
10	GFSK	0-19	2402-2421	15.63	36.559
10	π/4-DQPSK	0-19	2402-2421	11.94	15.631
10	8DPSK	0-19	2402-2421	12.09	16.181

ESY22I1E (verify data)

Setting	Modulation Type	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
10	GFSK	0	2402	15.21	33.189
10		39	2441	14.85	30.549
10		78	2480	11.29	13.459
10	π/4-DQPSK	0	2402	11.33	13.583
10		39	2441	11.05	12.735
10		78	2480	7.53	5.662
10	8DPSK	0	2402	11.63	14.555
10		39	2441	11.19	13.152
10		78	2480	7.77	5.984

AFH Mode

Setting	Modulation Type	Channel	Frequency (MHz)	AV Output Power (dBm)	AV Output Power (mW)
10	GFSK	0-19	2402-2421	15.13	32.584
10	π/4-DQPSK	0-19	2402-2421	11.30	13.490
10	8DPSK	0-19	2402-2421	11.59	14.421