

TEST REPORT



CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu,
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Report No.:
CTK-2018-02315
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1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea
- Date of Receipt : 2018-05-24

2. Manufacturer

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

3. Use of Report : For FCC Report

4. Test Sample / Model: WLAN Access Point / WEA554i and WEA554d.

5. Date of Test : 2018-07-23 to 2018-09-11

6. FCC ID : A3LWEA554

7. Certification Number IC : 649E-WEA554

8. Test Standard(method) used : FCC Part 15 Subpart B ICES-003, Issue 6

9. FCC Classification: JBP (Part 15 B - Class B Computing Device Peripheral)

10. Testing Environment: refer to 12 pages to 45 pages

11. Test Results : refer to 13 pages to 45 pages

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

| | | |
|-------------|---|---|
| Affirmation | Tested by | Approved by |
| | Yoon Yeongdeuck: (Signature) EMC Test Engineer | Yoo Yoosang: (Signature) Technical Manager |

2018-09-11

Republic of KOREA **CTK Co., Ltd.**



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REPORT REVISION HISTORY

| Date | Revision | Page No |
|------------|-------------------------|---------|
| 2018-09-11 | Issued (CTK-2018-02315) | All |
| | | |
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1.0 General Product Description

| No. | ITEM | | APPLICATION | |
|-----|--------------------------|-----|--|---|
| 1 | Test Sample | | WLAN Access Point | |
| 2 | Model | | WEA554i | |
| 3 | Variant Model | | WEA554d | |
| 4 | Test Model | | WEA554i, WEA554d | |
| 5 | Mobility | | <input type="checkbox"/> Table-top <input type="checkbox"/> Floor-standing <input checked="" type="checkbox"/> Built-in <input type="checkbox"/> Portable | |
| 6 | Maximum Clock Frequency | | Above 108 MHz (Client not provided) | |
| 7 | Electrical Ratings | POE | Input: | AC 100 V – AC 240 V, 50 Hz ~ 60 Hz, 8.0 A |
| | | | Output: | DC 48 V |
| | | EUT | Input: | DC 48 V, 0.54 A |
| | | | Output: | - |
| 8 | Test Voltage / Frequency | | Voltage: | DC 48 V (POE) |
| | | | Frequency: | - |

1.1 Model Differences

| Model name | WEA554i | WEA554d |
|------------|---------|---------|
| Difference | Antenna | |

1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

Peripheral Devices

| Device | Model No. | Serial No. | Manufacturer |
|--|---------------|------------|--|
| HP 5130-24G-PoE+-4SFP+(370W) EI Switch | BJNGA-AD0031 | - | Hewlett Packard Enterprise Company |
| Notebook Computer | HSTNN-I66C-5U | 5CG7234N2C | HP |
| AC POWER ADAPTER | PPPO09A | - | Acbel Electronic (Wuhan) Co., Ltd./China |

Cable Description

[POE, Optical Mode]

| No. | From | | To | | Type of Cable | | |
|-----|--|----------|--|----------|---------------|------------------------|--------------------|
| | Device | I/O Port | Device | I/O Port | Length (m) | Shielded or Unshielded | Ferrite Core [Y/N] |
| 1 | EUT | ETH(POE) | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | LAN | 20.0 | S | N |
| 2 | | ETH(WAN) | Cable | - | 20.0 | S | N |
| 3 | | SFP | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | Optical | 20.0 | U | N |
| 4 | | GND | GND | GND | 2.0 | U | N |
| 5 | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | LAN | Notebook Computer | LAN | 3.0 | S | N |
| 6 | | AC POWER | AC Mains | - | 1.5 | U | N |
| 7 | Notebook Computer | DC IN | AC POWER ADAPTER | DC OUT | 1.8 | S | N |
| 8 | AC POWER ADAPTER | AC POWER | AC Mains | - | 1.5 | U | N |

[WAN Mode]

| No. | From | | To | | Type of Cable | | |
|-----|--|----------|--|----------|---------------|------------------------|--------------------|
| | Device | I/O Port | Device | I/O Port | Length (m) | Shielded or Unshielded | Ferrite Core [Y/N] |
| 1 | EUT | ETH(POE) | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | LAN | 20.0 | S | N |
| 2 | | ETH(WAN) | Notebook Computer | LAN | 20.0 | S | N |
| 3 | | SFP | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | Optical | 20.0 | U | N |
| 4 | | GND | GND | GND | 2.0 | U | N |
| 5 | Notebook Computer | DC IN | AC POWER ADAPTER | DC OUT | 1.8 | S | N |
| 6 | AC POWER ADAPTER | AC POWER | AC Mains | - | 1.5 | U | N |
| 7 | HP 5130-24G-PoE+-4SFP+(370W) EI Switch | AC POWER | AC Mains | - | 1.5 | U | N |

* Shielded or Unshielded : Unshielded=U, Shielded=S

1.4 Test Software

- EMC Test V 1.0
- Display Test Patterns – V1.5
- Ping.exe
- Not applicable

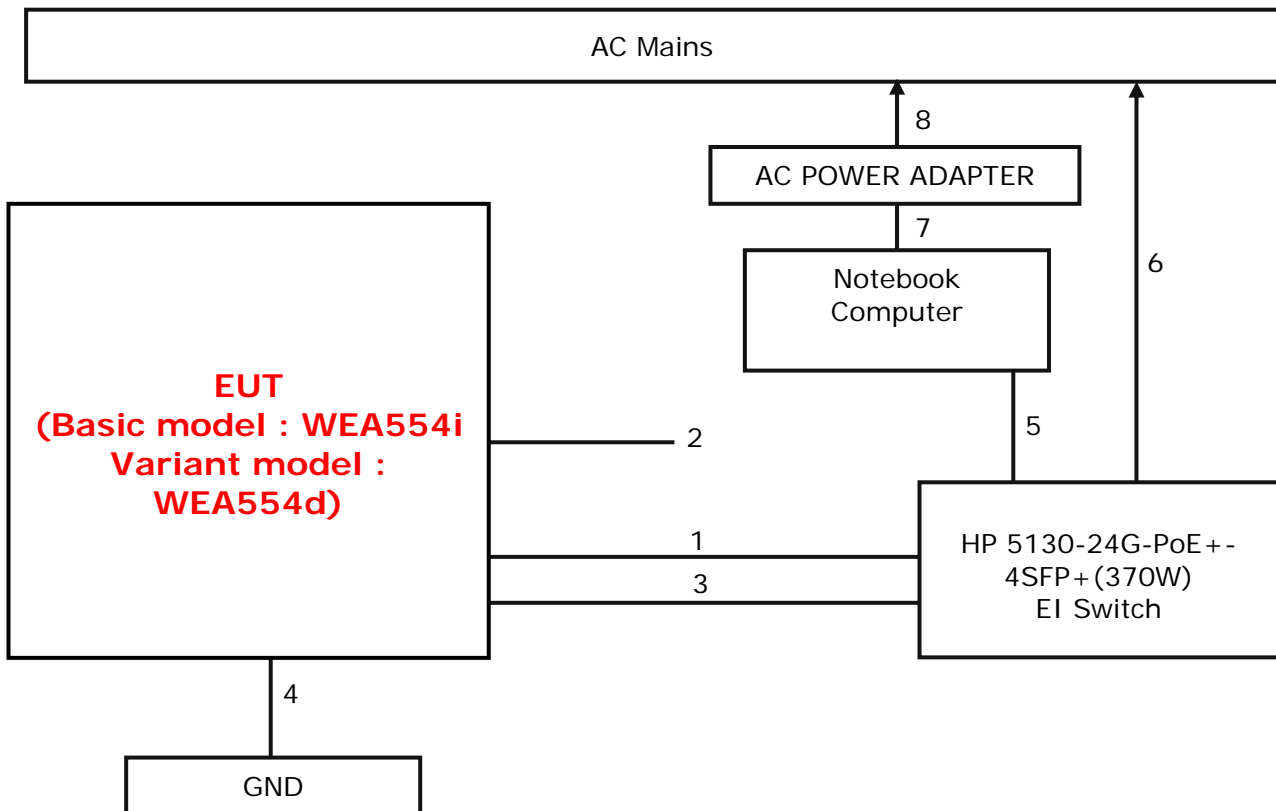
1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

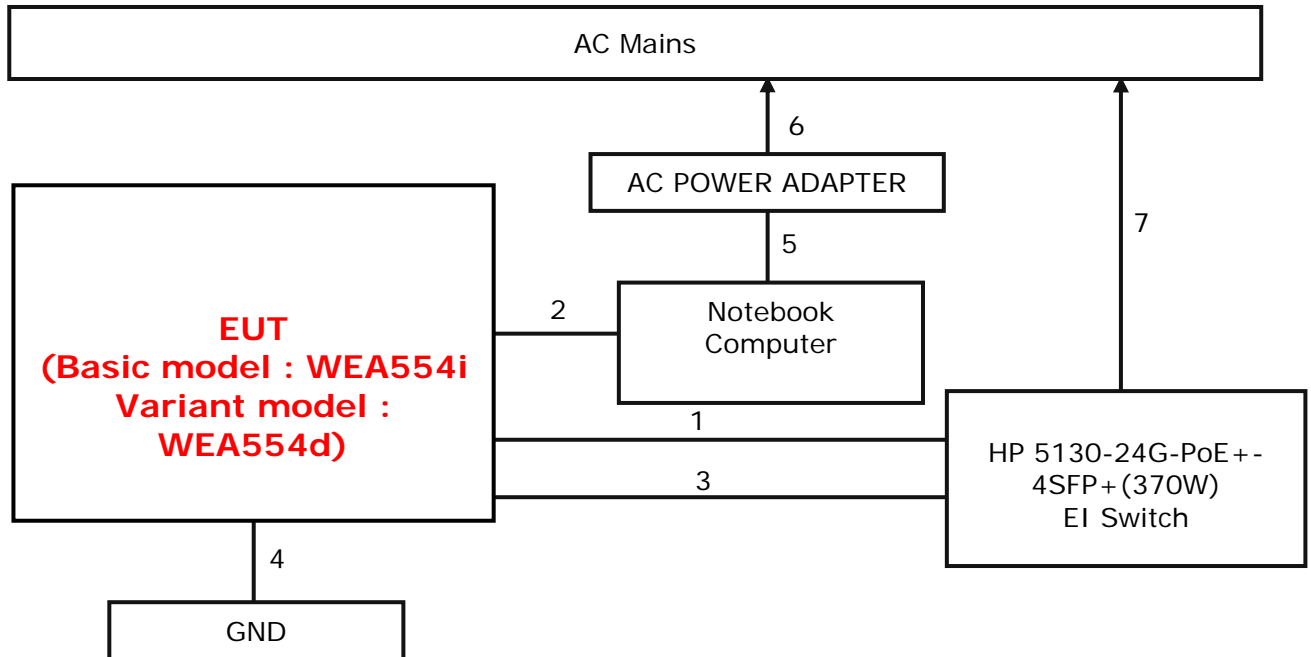
- ① POE Mode
- ② WAN Mode
- ③ Optical Mode

1.6 Configuration

[POE, Optical Mode]



[WAN Mode]





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1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.8 Test Facility

The measurement facility is located at
(Ho-dong) 113, Yejik-ro, Cheoin-gu, Yong-in-si, Gyeonggi-do, Korea.
(Unhak-dong) 142, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 Measurement Procedure


Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed Semi-Anechoic Chamber or anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.






Final radiated emissions test was performed Semi-Anechoic Chamber.
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2014 7.3.3, 7.3.4, 8.3.1.1, 8.3.1.2, 8.3.2.1, 8.3.2.2

Note #1: These results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations.

| | | | |
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|---|--|---|--|

1.10 Laboratory Accreditations and Listings

| Country | Agency | Scope of Accreditation | Registration Number | Logo |
|---------------|--------|--|--|---|
| USA | FCC | FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission) | 805871 |  |
| JAPAN | VCCI | VCCI V-3 EMI (Electromagnetic Interference / Emission) | C-10986 T-1843 R-3627 G-10387 |  |
| KOREA | MSIP | EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity) | KR0025 |  |
| International | KOLAS | EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity) | TESTING NO.KT119 |  |
| CANADA | ISED | ICES-003, Issue 6 EMI (Electromagnetic Interference / Emission) | 8737A-2 |  |



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1.11 Measurement Uncertainty

Compliance of the product is based on the measured value.

However, the measurement uncertainty is included for information purposes.

The measurement uncertainties given below are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

[Ho-dong Lab]

| Measurement Type | Frequency Range | Expanded Uncertainty |
|-----------------------------------|---------------------|--------------------------------------|
| Conducted Emission of Mains Ports | 150 kHz to 30 MHz | 2.26 dB (C.L.: Approx. 95 %, $k=2$) |
| Radiated Emission | 30 MHz to 1 000 MHz | 4.62 dB (C.L.: Approx. 95 %, $k=2$) |
| Radiated Emission | 1 GHz Above | 5.10 dB (C.L.: Approx. 95 %, $k=2$) |

[Unhak-dong Lab]

| Measurement Type | Frequency Range | Expanded Uncertainty |
|-----------------------------------|---------------------|--------------------------------------|
| Conducted Emission of Mains Ports | 150 kHz to 30 MHz | 2.18 dB (C.L.: Approx. 95 %, $k=2$) |
| Radiated Emission | 30 MHz to 1 000 MHz | 4.36 dB (C.L.: Approx. 95 %, $k=2$) |
| Radiated Emission | 1 GHz Above | 4.68 dB (C.L.: Approx. 95 %, $k=2$) |

2.0 EMC Test Regulations/Standards

The tests were performed according to following regulations:

| Applied standard | Title | Applied | Test Result |
|---|-----------------------------------|-------------------------------------|--|
| FCC Part 15 Subpart B <input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B | Conducted Voltage Emissions | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> MET <input type="checkbox"/> NOT MET |
| | Radiated Electric Field Emissions | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> MET <input type="checkbox"/> NOT MET |



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3.0 Results of Individual Test

3.1 Conducted Voltage Emissions of Mains ports

Test Date

2018-09-11

Test Location

Unhak-dong Lab Shielded Room

Test Equipment

| Name of Equipment | Model No. | Manufacturer | Serial No. | Due Date | Applied |
|---------------------|-----------|-----------------|-------------|------------|-------------------------------------|
| EMI Receiver | ESR | Rohde & Schwarz | 102323 | 2018-09-28 | <input checked="" type="checkbox"/> |
| LISN | ENV216 | Rohde & Schwarz | 101151 | 2018-10-25 | <input checked="" type="checkbox"/> |
| LISN | LS16C/10 | AFJ Instruments | 16011726410 | 2018-09-29 | <input checked="" type="checkbox"/> |
| ISN | ISN ST08 | TESEQ GMBH | 47110 | 2018-09-27 | <input type="checkbox"/> |
| 8-Wire ISN | ENY81 | Rohde & Schwarz | 100303 | 2018-10-10 | <input type="checkbox"/> |
| 8-Wire ISN For CAT6 | ENY81-CA6 | Rohde & Schwarz | 101791 | 2018-10-10 | <input type="checkbox"/> |
| CDN | CDN S501A | TESEQ GMBH | 46163 | 2018-09-27 | <input type="checkbox"/> |
| CDN | CDN S751A | TESEQ GMBH | 46645 | 2018-09-27 | <input type="checkbox"/> |

Test Software

ESR : EMC32 V10.20.01

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Setting

IF Band Width: 9 kHz

Climate Condition

Temperature: (24 ± 1) °C

Relative Humidity: (55 ± 1) %

Atmospheric Pressure: 99 kPa



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Test Result

The requirements are: MET NOT MET

| Test Mode | Frequency (MHz) | Measured Data (dB μ V) | Margin (dB) | Remark |
|-----------------|-----------------|----------------------------|-------------|----------|
| WEA554i_POE | 0.393 000 | 41.15 | 6.85 | CAverage |
| WEA554i_WAN | 0.388 500 | 41.40 | 6.70 | CAverage |
| WEA554i_Optical | 0.388 500 | 41.27 | 6.83 | CAverage |
| WEA554d_POE | 0.393 000 | 41.09 | 6.91 | CAverage |
| WEA554d_WAN | 0.388 500 | 41.50 | 6.60 | CAverage |
| WEA554d_Optical | 0.388 500 | 41.36 | 6.74 | CAverage |

The Result is calculated by using the following formula;

- * Result = Limit – Margin (Result included the correction factor)
- * Correction factor = Cable Loss + Insertion loss of LISN



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Test Data

[WEA554i_POE] [Line: L1]

Test

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Test Report

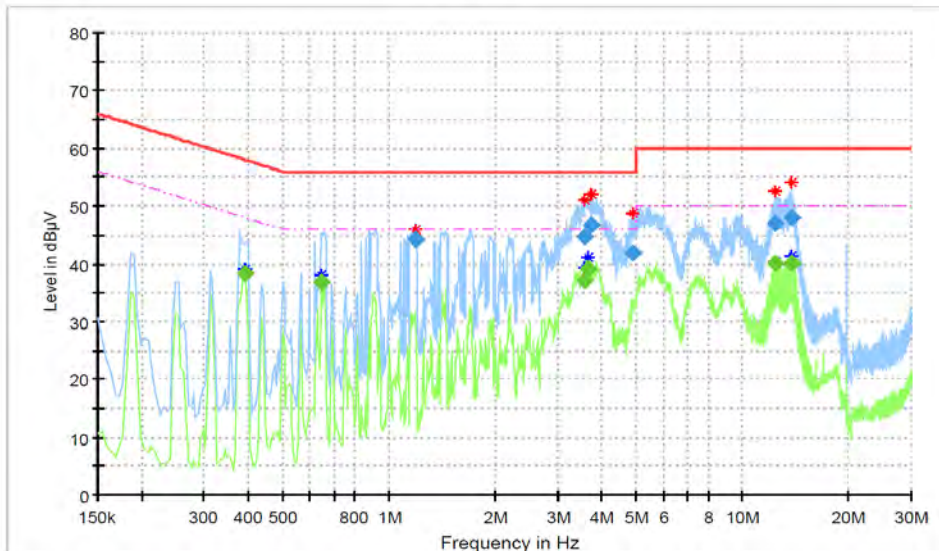
Common Information

Test Model Name: WEA554i
Test Mode: PoE mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN 1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

9:19:55 AM



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Test

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 38.33 | 48.00 | 9.67 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.645000 | --- | 36.79 | 46.00 | 9.21 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.189500 | 44.26 | --- | 56.00 | 11.74 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 3.574500 | --- | 37.15 | 46.00 | 8.85 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.588000 | 44.61 | --- | 56.00 | 11.39 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.660000 | --- | 39.13 | 46.00 | 6.87 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.723000 | 46.75 | --- | 56.00 | 9.25 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 4.870500 | 41.81 | --- | 56.00 | 14.19 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 12.358500 | --- | 40.17 | 50.00 | 9.83 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 12.417000 | 47.09 | --- | 60.00 | 12.91 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.803000 | --- | 40.16 | 50.00 | 9.84 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.803000 | 47.91 | --- | 60.00 | 12.09 | 1000.0 | 9.000 | L1 | ON | 10.2 |

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[WEA554i_POE] [Line : Neutral]

Test

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Test Report

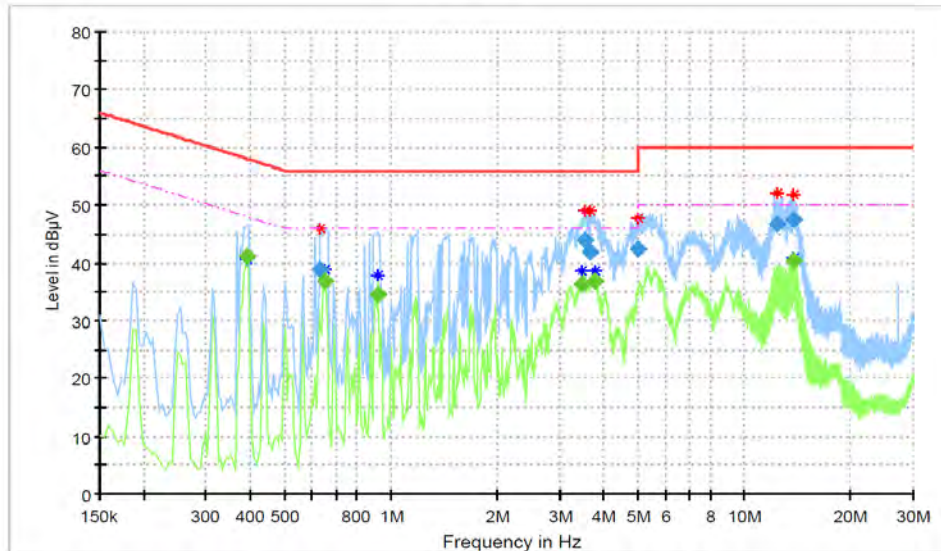
Common Information

Test Model Name: WEA554i
Test Mode: PoE mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 41.15 | 48.00 | 6.85 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.631500 | 38.87 | --- | 56.00 | 17.13 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.654000 | --- | 36.81 | 46.00 | 9.19 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.919500 | --- | 34.49 | 46.00 | 11.51 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.453000 | --- | 36.21 | 46.00 | 9.79 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.529500 | 43.96 | --- | 56.00 | 12.04 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.678000 | 41.82 | --- | 56.00 | 14.18 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.772500 | --- | 36.75 | 46.00 | 9.25 | 1000.0 | 9.000 | N | ON | 9.9 |
| 4.996500 | 42.48 | --- | 56.00 | 13.52 | 1000.0 | 9.000 | N | ON | 10.0 |
| 12.354000 | 46.74 | --- | 60.00 | 13.26 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.731000 | 47.60 | --- | 60.00 | 12.40 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.735500 | --- | 40.46 | 50.00 | 9.54 | 1000.0 | 9.000 | N | ON | 10.2 |

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[WEA554i_WAN] [Line: L1]

Test

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Test Report

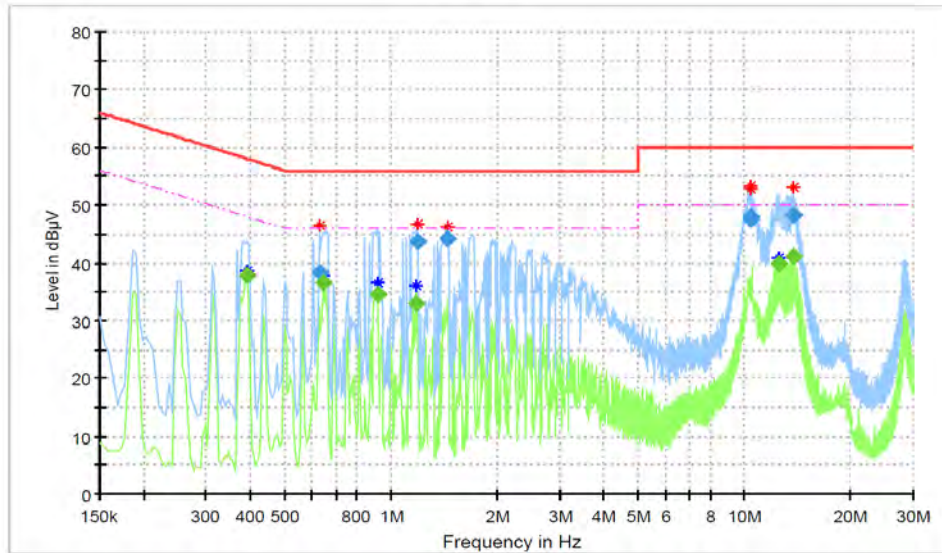
Common Information

Test Model Name: WEA554i
Test Mode: WAN mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 37.95 | 48.00 | 10.05 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.627000 | 38.23 | --- | 56.00 | 17.77 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.645000 | --- | 36.65 | 46.00 | 9.35 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.915000 | --- | 34.63 | 46.00 | 11.37 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 1.180500 | --- | 33.11 | 46.00 | 12.89 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.189500 | 43.74 | --- | 56.00 | 12.26 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.441500 | 44.08 | --- | 56.00 | 11.92 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 10.396500 | 47.45 | --- | 60.00 | 12.55 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 10.423500 | 47.89 | --- | 60.00 | 12.11 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 12.543000 | --- | 39.81 | 50.00 | 10.19 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.794000 | --- | 41.04 | 50.00 | 8.96 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.794000 | 48.19 | --- | 60.00 | 11.81 | 1000.0 | 9.000 | L1 | ON | 10.2 |

9/11/2018

9:46:45 AM



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Report No.:
CTK-2018-02315
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[WEA554i_WAN] [Line : Neutral]

Test

1 / 2

Test Report

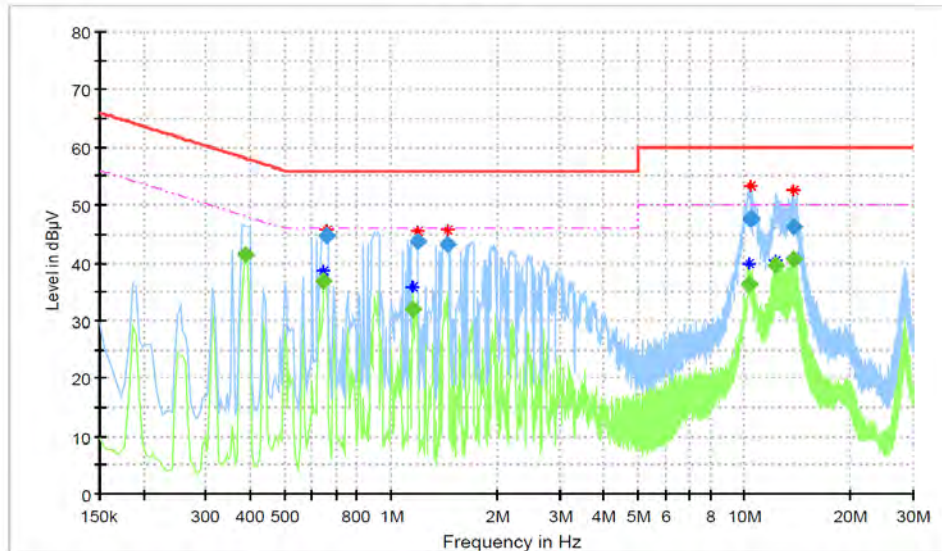
Common Information

Test Model Name: WEA554i
Test Mode: WAN mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

9:51:55 AM



CTK Co., Ltd.
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Report No.:
 CTK-2018-02315
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Test

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 41.40 | 48.10 | 6.70 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.645000 | --- | 36.90 | 46.00 | 9.10 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.658500 | 44.66 | --- | 56.00 | 11.34 | 1000.0 | 9.000 | N | ON | 10.0 |
| 1.153500 | --- | 31.97 | 46.00 | 14.03 | 1000.0 | 9.000 | N | ON | 10.0 |
| 1.185000 | 43.62 | --- | 56.00 | 12.38 | 1000.0 | 9.000 | N | ON | 10.0 |
| 1.441500 | 43.19 | --- | 56.00 | 12.81 | 1000.0 | 9.000 | N | ON | 9.9 |
| 10.261500 | --- | 36.34 | 50.00 | 13.66 | 1000.0 | 9.000 | N | ON | 10.1 |
| 10.365000 | 47.49 | --- | 60.00 | 12.51 | 1000.0 | 9.000 | N | ON | 10.1 |
| 10.419000 | 47.83 | --- | 60.00 | 12.17 | 1000.0 | 9.000 | N | ON | 10.1 |
| 12.291000 | --- | 39.67 | 50.00 | 10.33 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.735500 | 46.29 | --- | 60.00 | 13.71 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.794000 | --- | 40.72 | 50.00 | 9.28 | 1000.0 | 9.000 | N | ON | 10.2 |

9/11/2018

9:51:55 AM



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Report No.:
CTK-2018-02315
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[WEA554i_Optical] [Line: L1]

Test

1 / 2

Test Report

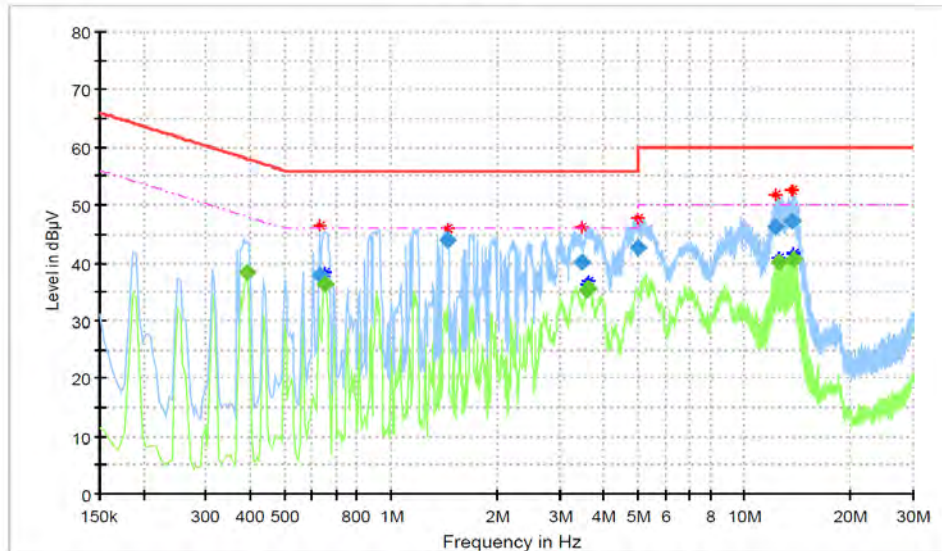
Common Information

Test Model Name: WEA554i
Test Mode: Optical mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

9:38:17 AM



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Report No.:
CTK-2018-02315
Page (23) / (57) Pages

Test

2 / 2

Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 38.23 | 48.00 | 9.77 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.627000 | 37.91 | --- | 56.00 | 18.09 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.649500 | --- | 36.42 | 46.00 | 9.58 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.441500 | 43.86 | --- | 56.00 | 12.14 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.480000 | 40.02 | --- | 56.00 | 15.98 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.597000 | --- | 35.25 | 46.00 | 10.75 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 3.624000 | --- | 35.63 | 46.00 | 10.37 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 4.992000 | 42.66 | --- | 56.00 | 13.34 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 12.295500 | 46.20 | --- | 60.00 | 13.80 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 12.543000 | --- | 40.19 | 50.00 | 9.81 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.672500 | 47.14 | --- | 60.00 | 12.86 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.735500 | --- | 40.67 | 50.00 | 9.33 | 1000.0 | 9.000 | L1 | ON | 10.2 |

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9:38:17 AM



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Report No.:
CTK-2018-02315
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[WEA554i_Optical] [Line : Neutral]

Test

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Test Report

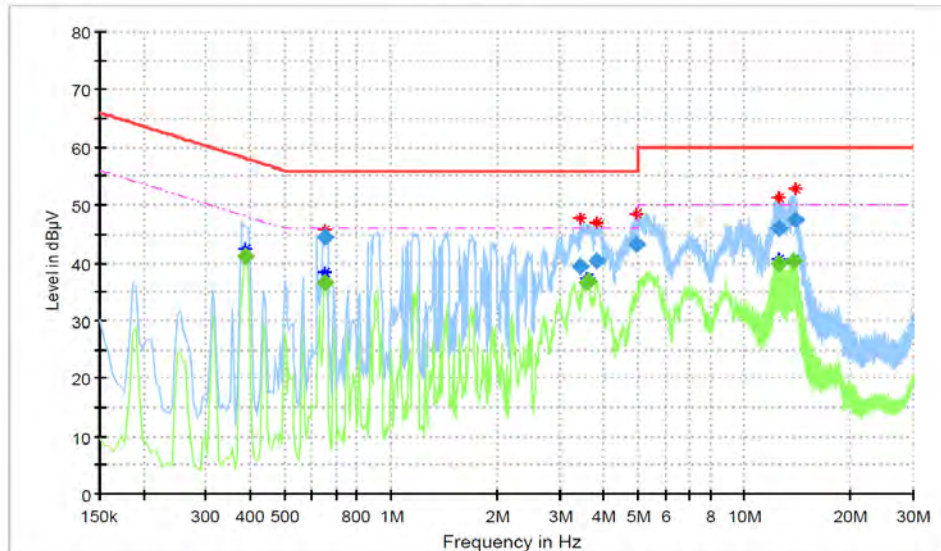
Common Information

Test Model Name: WEA554i
Test Mode: Optical mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCPIP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

9:33:05 AM



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Report No.:
CTK-2018-02315
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Test

2 / 2

Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 41.27 | 48.10 | 6.83 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.649500 | --- | 36.60 | 46.00 | 9.40 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.649500 | 44.42 | --- | 56.00 | 11.58 | 1000.0 | 9.000 | N | ON | 10.0 |
| 3.444000 | 39.45 | --- | 56.00 | 16.55 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.579000 | --- | 36.56 | 46.00 | 9.44 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.619500 | --- | 36.85 | 46.00 | 9.15 | 1000.0 | 9.000 | N | ON | 9.9 |
| 3.804000 | 40.42 | --- | 56.00 | 15.58 | 1000.0 | 9.000 | N | ON | 9.9 |
| 4.924500 | 43.05 | --- | 56.00 | 12.95 | 1000.0 | 9.000 | N | ON | 10.0 |
| 12.475500 | 46.09 | --- | 60.00 | 13.91 | 1000.0 | 9.000 | N | ON | 10.2 |
| 12.480000 | --- | 39.80 | 50.00 | 10.20 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.731000 | --- | 40.40 | 50.00 | 9.60 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.924500 | 47.51 | --- | 60.00 | 12.49 | 1000.0 | 9.000 | N | ON | 10.2 |

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9:33:05 AM



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Report No.:
CTK-2018-02315
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[WEA554d_POE] [Line: L1]

Test

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Test Report

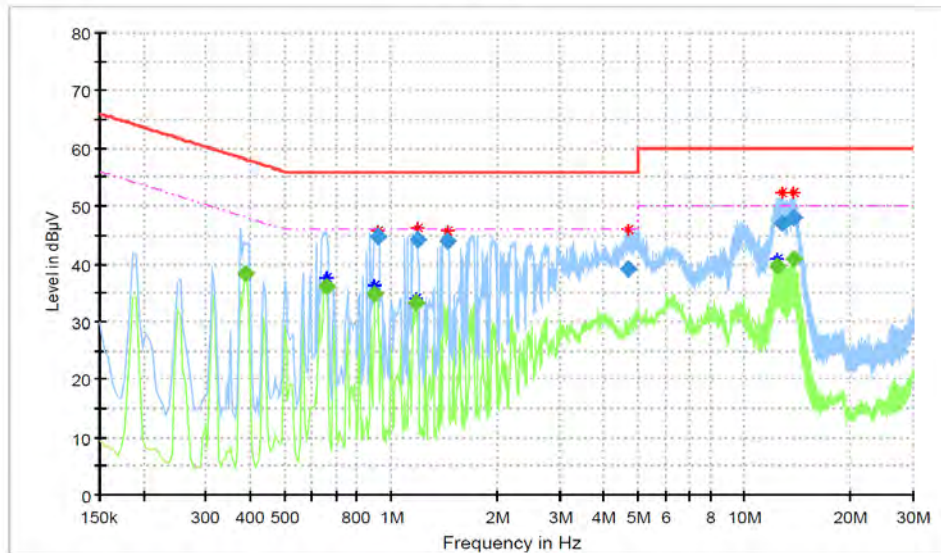
Common Information

Test Model Name: WEA554d
Test Mode: PoE mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:27:32 AM



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Report No.:
CTK-2018-02315
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Test

2 / 2

Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 38.47 | 48.10 | 9.62 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.658500 | --- | 36.16 | 46.00 | 9.84 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.901500 | --- | 34.75 | 46.00 | 11.25 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 0.924000 | 44.59 | --- | 56.00 | 11.41 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 1.180500 | --- | 33.26 | 46.00 | 12.74 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.189500 | 44.32 | --- | 56.00 | 11.68 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.446000 | 43.81 | --- | 56.00 | 12.19 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 4.708500 | 39.07 | --- | 56.00 | 16.93 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 12.417000 | --- | 39.60 | 50.00 | 10.40 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 12.727500 | 46.99 | --- | 60.00 | 13.01 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.731000 | 47.99 | --- | 60.00 | 12.01 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.794000 | --- | 40.94 | 50.00 | 9.06 | 1000.0 | 9.000 | L1 | ON | 10.2 |

9/11/2018

10:27:32 AM



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Report No.:
CTK-2018-02315
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[WEA554d_POE] [Line : Neutral]

Test

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Test Report

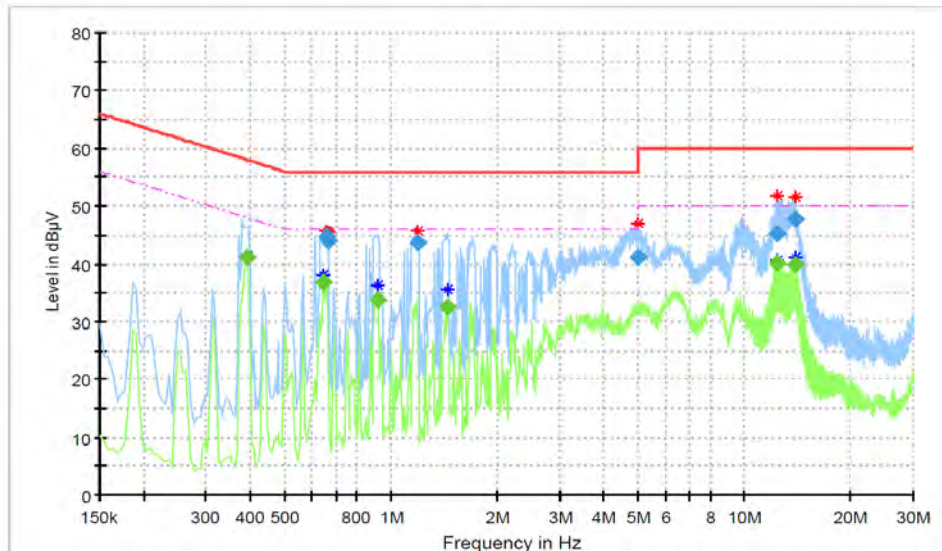
Common Information

Test Model Name: WEA554d
Test Mode: PoE mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN 1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:22:23 AM



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Report No.:
CTK-2018-02315
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Test

2 / 2

Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 41.09 | 48.00 | 6.91 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.645000 | --- | 36.94 | 46.00 | 9.06 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.658500 | 44.70 | --- | 56.00 | 11.30 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.663000 | 43.93 | --- | 56.00 | 12.07 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.915000 | --- | 33.71 | 46.00 | 12.29 | 1000.0 | 9.000 | N | ON | 9.9 |
| 1.189500 | 43.62 | --- | 56.00 | 12.38 | 1000.0 | 9.000 | N | ON | 10.0 |
| 1.446000 | --- | 32.62 | 46.00 | 13.38 | 1000.0 | 9.000 | N | ON | 9.9 |
| 4.983000 | 41.22 | --- | 56.00 | 14.78 | 1000.0 | 9.000 | N | ON | 10.0 |
| 12.417000 | --- | 40.01 | 50.00 | 9.99 | 1000.0 | 9.000 | N | ON | 10.2 |
| 12.421500 | 45.20 | --- | 60.00 | 14.80 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.920000 | --- | 39.98 | 50.00 | 10.02 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.920000 | 47.64 | --- | 60.00 | 12.36 | 1000.0 | 9.000 | N | ON | 10.2 |

9/11/2018

10:22:23 AM



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Report No.:
CTK-2018-02315
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[WEA554d_WAN] [Line: L1]

Test

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Test Report

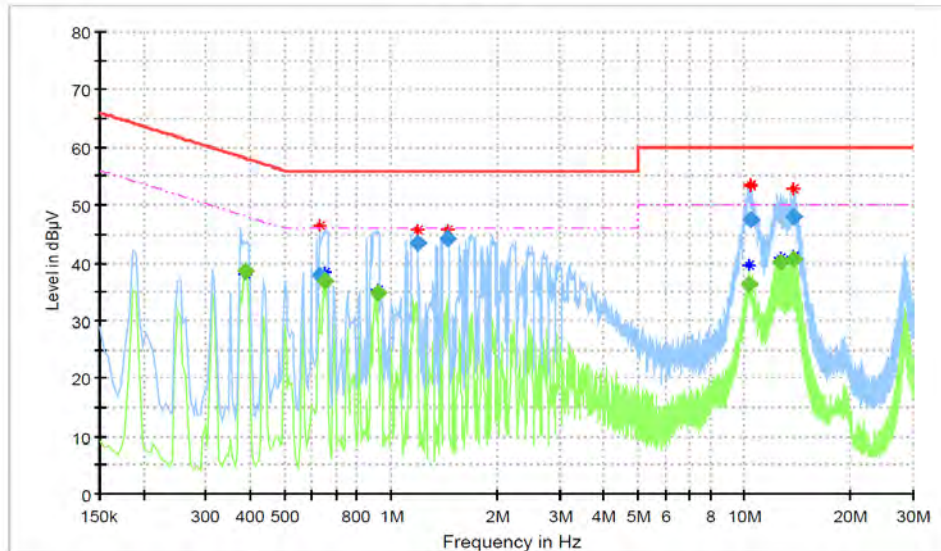
Common Information

Test Model Name: WEA554d
Test Mode: WAN mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:05:54 AM



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Report No.:
 CTK-2018-02315
 Page (31) / (57) Pages

Test

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 38.62 | 48.10 | 9.48 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.627000 | 37.93 | --- | 56.00 | 18.07 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.654000 | --- | 36.92 | 46.00 | 9.08 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.915000 | --- | 34.69 | 46.00 | 11.31 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 1.189500 | 43.51 | --- | 56.00 | 12.49 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.441500 | 44.07 | --- | 56.00 | 11.93 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 10.261500 | --- | 36.31 | 50.00 | 13.69 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 10.396500 | 47.38 | --- | 60.00 | 12.62 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 10.414500 | 47.60 | --- | 60.00 | 12.40 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 12.606000 | --- | 40.20 | 50.00 | 9.80 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.794000 | --- | 40.67 | 50.00 | 9.33 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.794000 | 47.89 | --- | 60.00 | 12.11 | 1000.0 | 9.000 | L1 | ON | 10.2 |

9/11/2018

10:05:54 AM



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Report No.:
CTK-2018-02315
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[WEA554d_WAN] [Line : Neutral]

Test

1 / 2

Test Report

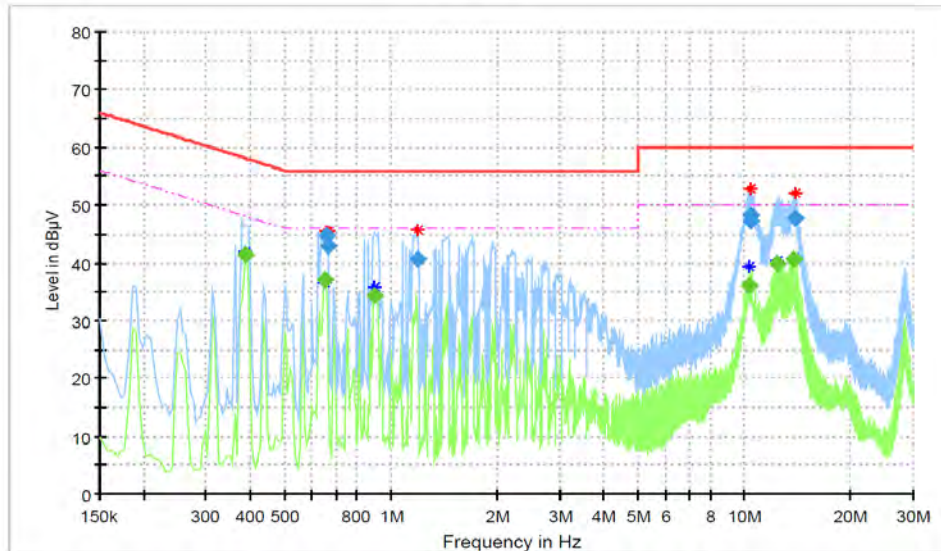
Common Information

Test Model Name: WEA554d
Test Mode: WAN mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:00:38 AM



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Report No.:
 CTK-2018-02315
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Test

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 41.50 | 48.10 | 6.60 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.654000 | --- | 37.00 | 46.00 | 9.00 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.658500 | 44.68 | --- | 56.00 | 11.32 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.663000 | 42.81 | --- | 56.00 | 13.19 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.901500 | --- | 34.33 | 46.00 | 11.67 | 1000.0 | 9.000 | N | ON | 9.9 |
| 1.194000 | 40.62 | --- | 56.00 | 15.38 | 1000.0 | 9.000 | N | ON | 10.0 |
| 10.270500 | --- | 36.18 | 50.00 | 13.82 | 1000.0 | 9.000 | N | ON | 10.1 |
| 10.383000 | 47.20 | --- | 60.00 | 12.80 | 1000.0 | 9.000 | N | ON | 10.1 |
| 10.455000 | 48.35 | --- | 60.00 | 11.65 | 1000.0 | 9.000 | N | ON | 10.1 |
| 12.412500 | --- | 39.95 | 50.00 | 10.05 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.794000 | --- | 40.75 | 50.00 | 9.25 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.920000 | 47.83 | --- | 60.00 | 12.17 | 1000.0 | 9.000 | N | ON | 10.2 |

9/11/2018

10:00:38 AM



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Report No.:
CTK-2018-02315
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[WEA554d_Optical] [Line: L1]

Test

1 / 2

Test Report

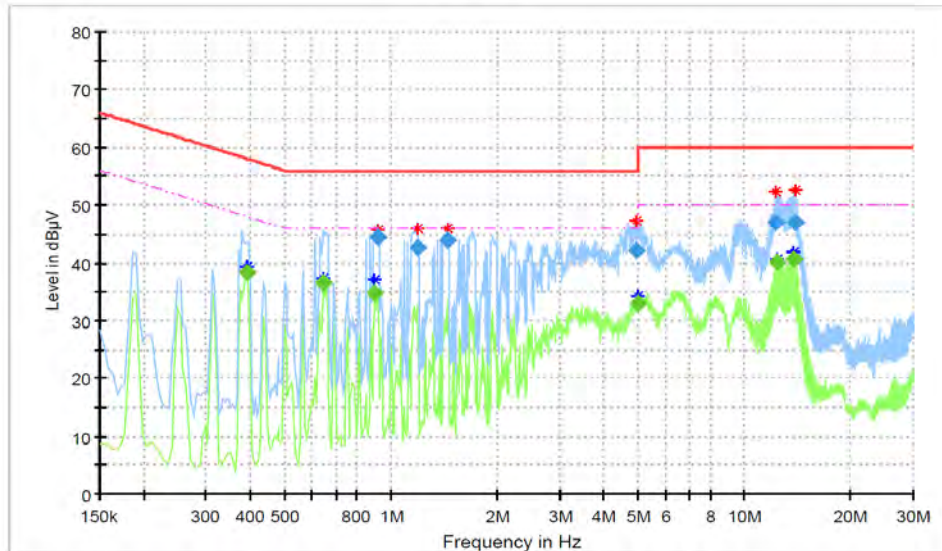
Common Information

Test Model Name: WEA554d
Test Mode: Optical mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:12:15 AM



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Test

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Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.393000 | --- | 38.25 | 48.00 | 9.75 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.645000 | --- | 36.67 | 46.00 | 9.33 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 0.901500 | --- | 34.84 | 46.00 | 11.16 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 0.924000 | 44.51 | --- | 56.00 | 11.49 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 1.194000 | 42.57 | --- | 56.00 | 13.43 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 1.441500 | 44.00 | --- | 56.00 | 12.00 | 1000.0 | 9.000 | L1 | ON | 9.9 |
| 4.942500 | 42.13 | --- | 56.00 | 13.87 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 4.978500 | --- | 32.92 | 46.00 | 13.08 | 1000.0 | 9.000 | L1 | ON | 10.0 |
| 12.291000 | 46.98 | --- | 60.00 | 13.02 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 12.412500 | --- | 40.18 | 50.00 | 9.82 | 1000.0 | 9.000 | L1 | ON | 10.1 |
| 13.857000 | --- | 40.75 | 50.00 | 9.25 | 1000.0 | 9.000 | L1 | ON | 10.2 |
| 13.924500 | 47.05 | --- | 60.00 | 12.95 | 1000.0 | 9.000 | L1 | ON | 10.2 |

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[WEA554d_Optical] [Line : Neutral]

Test

1 / 2

Test Report

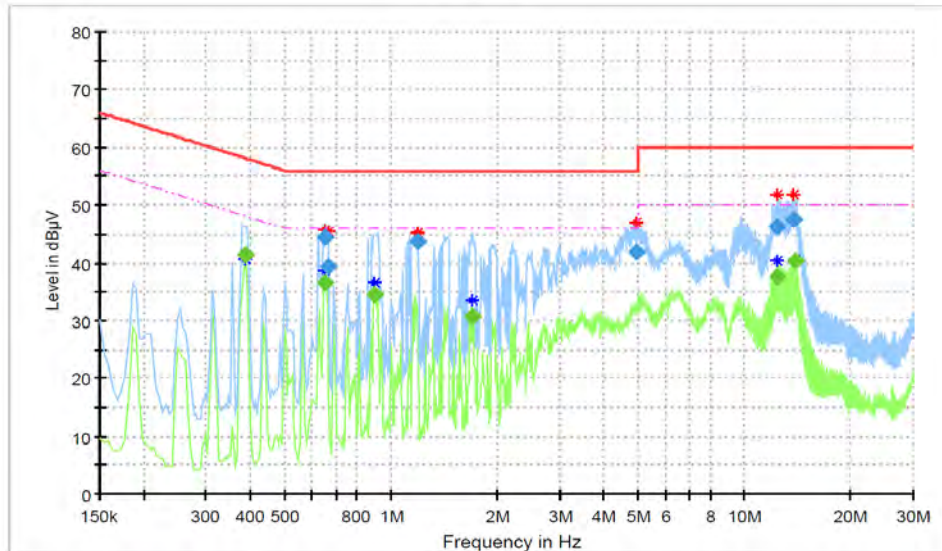
Common Information

Test Model Name: WEA554d
Test Mode: Optical mode
Manufacturer: Samsung Electronics Co., Ltd.
Tester: Yoon Yeong Deuck

Hardware Setup: EMI conducted\Voltage with ENV216_FO(101151) - [EMI conducted]

Subrange 1
Frequency Range: 150 kHz - 30 MHz
Receiver: ESR 3 [ESR 3]
@ VISA (ADR TCP/IP::192.168.48.20::INST0::INSTR), SN
1316.3003K03/102323, FW 3.36 SP1
Signal Path: ESR 3-ENV216 FO (101151)
FW 1.0
Correction Table: CE #1 Cable Loss
LISN: ENV216 FO (101151)
SN 101151
Correction Table (Line 0): ENV216_FO_N(101151)
Correction Table (Line 1): ENV216_FO_L1(101151)

Full Spectrum



9/11/2018

10:17:23 AM



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 CTK-2018-02315
 Page (37) / (57) Pages

Test

2 / 2

Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | CAverage (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.388500 | --- | 41.36 | 48.10 | 6.74 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.649500 | --- | 36.51 | 46.00 | 9.49 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.649500 | 44.38 | --- | 56.00 | 11.62 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.667500 | 39.43 | --- | 56.00 | 16.57 | 1000.0 | 9.000 | N | ON | 10.0 |
| 0.901500 | --- | 34.51 | 46.00 | 11.49 | 1000.0 | 9.000 | N | ON | 9.9 |
| 1.189500 | 43.62 | --- | 56.00 | 12.38 | 1000.0 | 9.000 | N | ON | 10.0 |
| 1.693500 | --- | 30.83 | 46.00 | 15.17 | 1000.0 | 9.000 | N | ON | 9.9 |
| 4.938000 | 41.84 | --- | 56.00 | 14.16 | 1000.0 | 9.000 | N | ON | 10.0 |
| 12.412500 | 46.25 | --- | 60.00 | 13.75 | 1000.0 | 9.000 | N | ON | 10.2 |
| 12.412500 | --- | 37.59 | 50.00 | 12.41 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.731000 | 47.61 | --- | 60.00 | 12.39 | 1000.0 | 9.000 | N | ON | 10.2 |
| 13.920000 | --- | 40.34 | 50.00 | 9.66 | 1000.0 | 9.000 | N | ON | 10.2 |

9/11/2018

10:17:23 AM



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Report No.:
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3.2 Radiated Electric Field Emissions (Below 1 GHz)

Test Date

2018-07-23

Test Location

Unhak-dong Lab 10 m SAC (test distance : 10 m, 3 m)

Test Equipment

| Name of Equipment | Model No. | Manufacturer | Serial No. | Due Date | Applied |
|-------------------|-----------|-----------------|---------------|------------|-------------------------------------|
| EMI Receiver | ESU40 | Rohde & Schwarz | 100036 | 2019-04-30 | <input checked="" type="checkbox"/> |
| Bilog Antenna | CBL6111C | Schaffner | 2520 | 2018-10-20 | <input checked="" type="checkbox"/> |
| 6dB Attenuator | DNF | Rohde & Schwarz | 272.4110.50-1 | 2019-03-09 | <input checked="" type="checkbox"/> |
| Amplifier | 310N | SONOMA | 186254 | 2018-10-31 | <input checked="" type="checkbox"/> |

Test Software

TOYO EMI software Ver. 5.1.0

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Setting

IF Band Width: 120 kHz

Climate Condition

Temperature: (21 ± 1) °C

Relative Humidity: (59 ± 1) %

Atmospheric Pressure: 100 kPa

Test Result

The requirements are: MET NOT MET

| Test Mode | Frequency (MHz) | Measured Data (dBµV/m) | Margin (dB) | Remark |
|-----------------|-----------------|------------------------|-------------|------------|
| WEA554i_POE | 937.531 | 37.6 | 8.4 | Quasi-peak |
| WEA554i_WAN | 30.437 | 34.8 | 5.2 | Quasi-peak |
| WEA554i_Optical | 937.518 | 38.5 | 7.5 | Quasi-peak |
| WEA554d_POE | 937.145 | 34.7 | 11.3 | Quasi-peak |
| WEA554d_WAN | 937.457 | 34.4 | 11.6 | Quasi-peak |
| WEA554d_Optical | 33.156 | 28.2 | 11.8 | Quasi-peak |

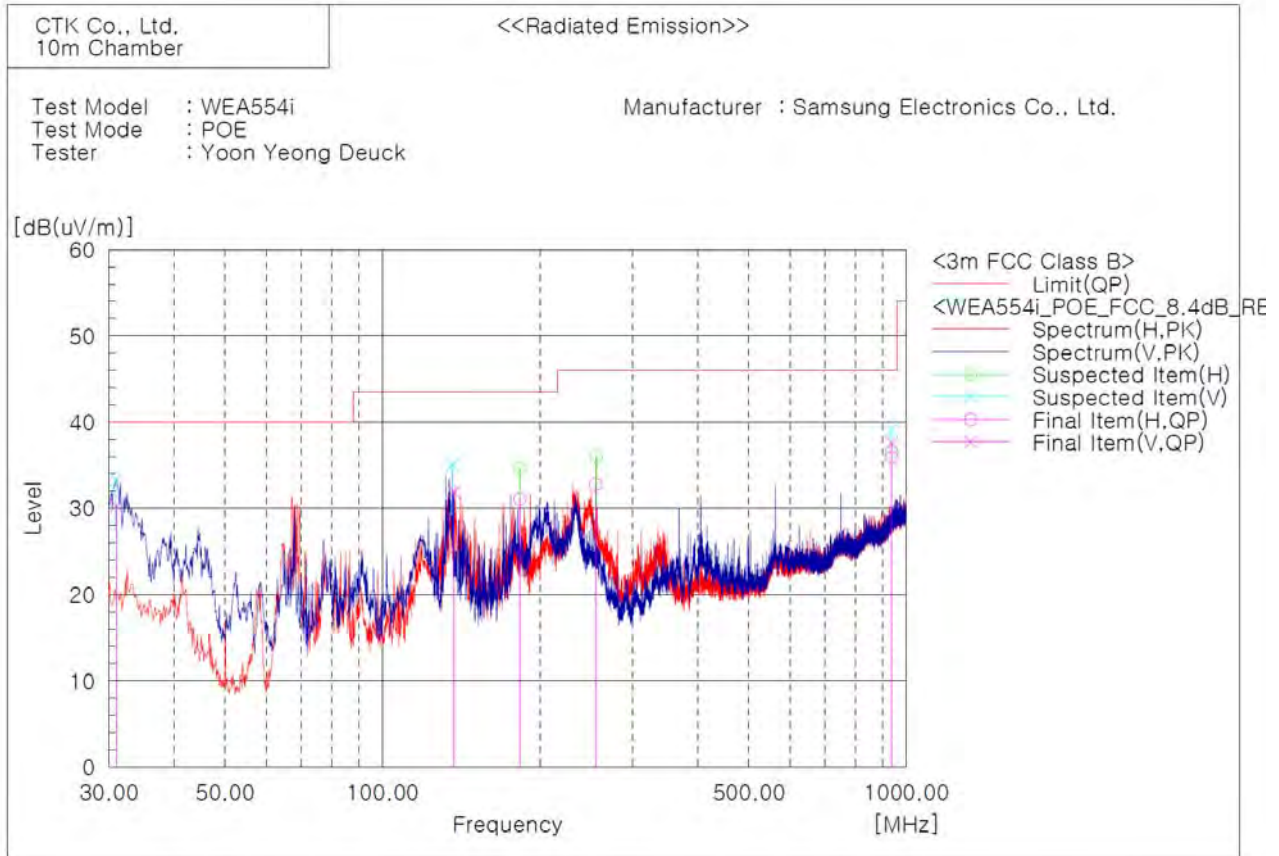
The Result is calculated by using the following formula;

* Result = Reading + Correction factor

* Correction factor = Antenna Factor + Cable Loss + 6 dB attenuator – Amp Gain

Test Data

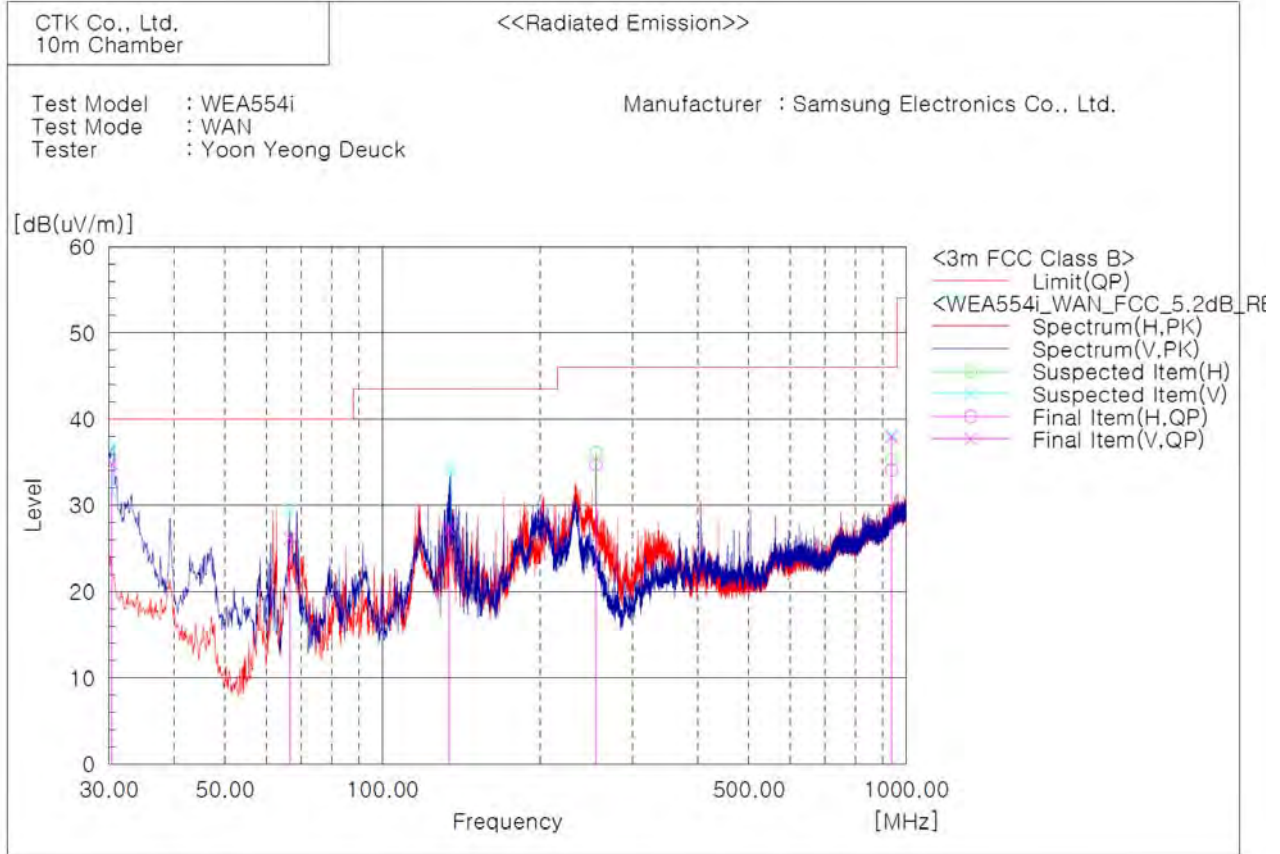
[WEA554i_POE]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 31.022 | V | 37.2 | -6.9 | 30.3 | 40.0 | 9.7 | 100.0 | 189.0 |
| 2 | 136.940 | V | 44.0 | -12.1 | 31.9 | 43.5 | 11.6 | 100.0 | 6.0 |
| 3 | 182.967 | H | 46.1 | -15.0 | 31.1 | 43.5 | 12.4 | 100.0 | 199.0 |
| 4 | 255.166 | H | 42.4 | -9.6 | 32.8 | 46.0 | 13.2 | 100.0 | 321.0 |
| 5 | 937.514 | H | 30.3 | 5.6 | 35.9 | 46.0 | 10.1 | 100.0 | 350.0 |
| 6 | 937.531 | V | 32.0 | 5.6 | 37.6 | 46.0 | 8.4 | 100.0 | 10.0 |

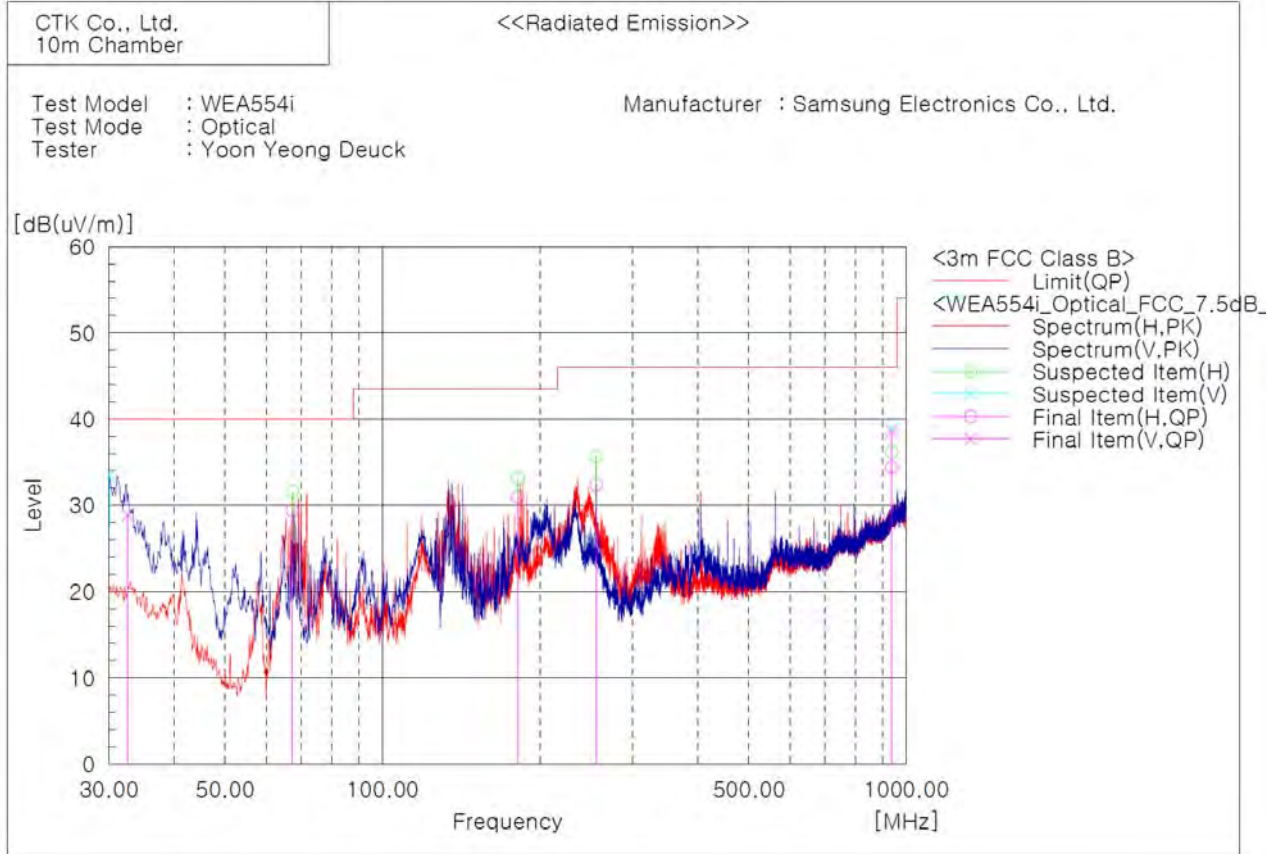
[WEA554i_WAN]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 30.437 | V | 41.6 | -6.8 | 34.8 | 40.0 | 5.2 | 100.0 | 86.0 |
| 2 | 66.519 | V | 45.7 | -19.5 | 26.2 | 40.0 | 13.8 | 100.0 | 23.0 |
| 3 | 134.082 | V | 39.4 | -12.1 | 27.3 | 43.5 | 16.2 | 100.0 | 254.0 |
| 4 | 255.614 | H | 44.3 | -9.6 | 34.7 | 46.0 | 11.3 | 100.0 | 269.0 |
| 5 | 937.478 | V | 32.3 | 5.6 | 37.9 | 46.0 | 8.1 | 100.0 | 110.0 |
| 6 | 937.488 | H | 28.5 | 5.6 | 34.1 | 46.0 | 11.9 | 100.0 | 30.0 |

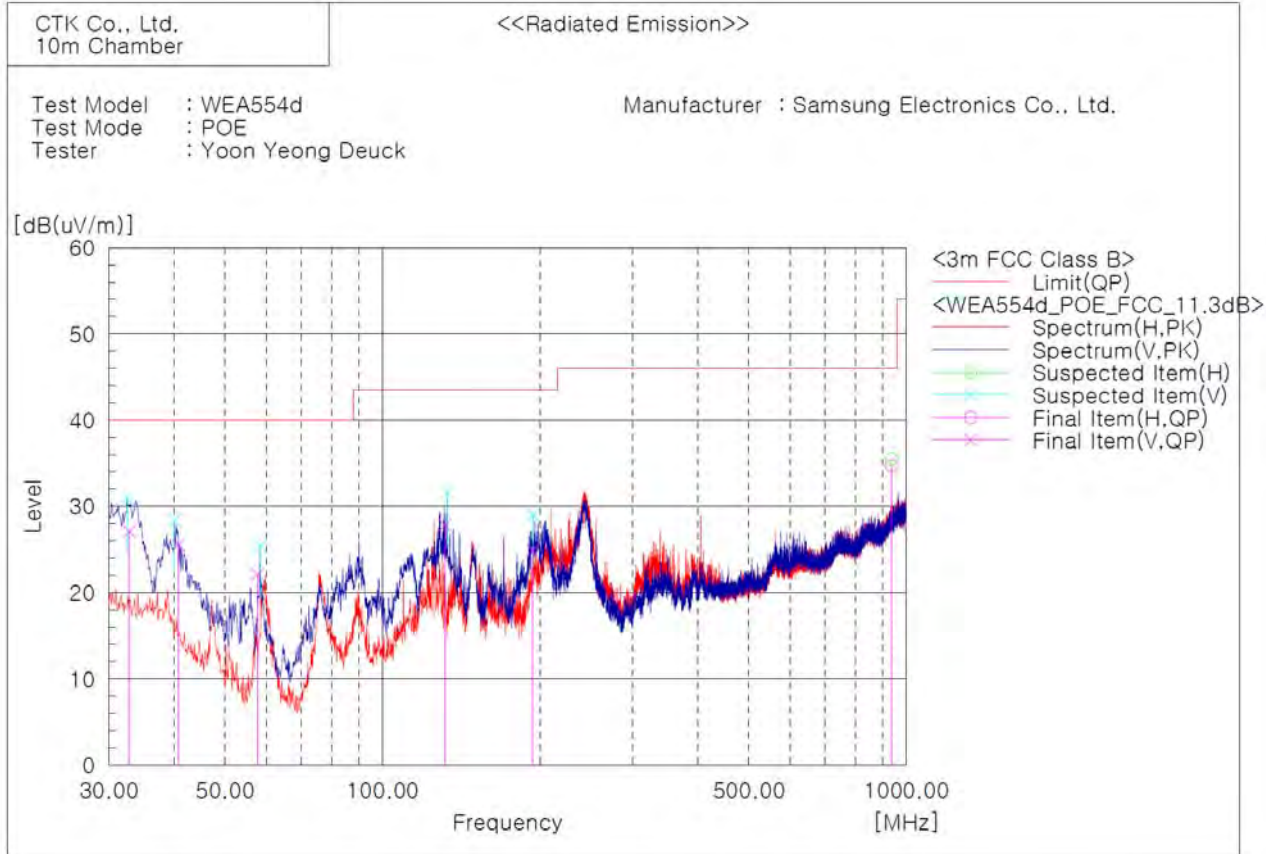
[WEA554i_Optical]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 32.640 | V | 36.2 | -7.3 | 28.9 | 40.0 | 11.1 | 100.0 | 98.0 |
| 2 | 67.288 | H | 48.8 | -19.4 | 29.4 | 40.0 | 10.6 | 200.0 | 106.0 |
| 3 | 181.188 | H | 46.0 | -15.0 | 31.0 | 43.5 | 12.5 | 200.0 | 39.0 |
| 4 | 255.699 | H | 41.9 | -9.5 | 32.4 | 46.0 | 13.6 | 100.0 | 269.0 |
| 5 | 937.518 | V | 32.9 | 5.6 | 38.5 | 46.0 | 7.5 | 100.0 | 352.0 |
| 6 | 937.522 | H | 28.8 | 5.6 | 34.4 | 46.0 | 11.6 | 100.0 | 106.0 |

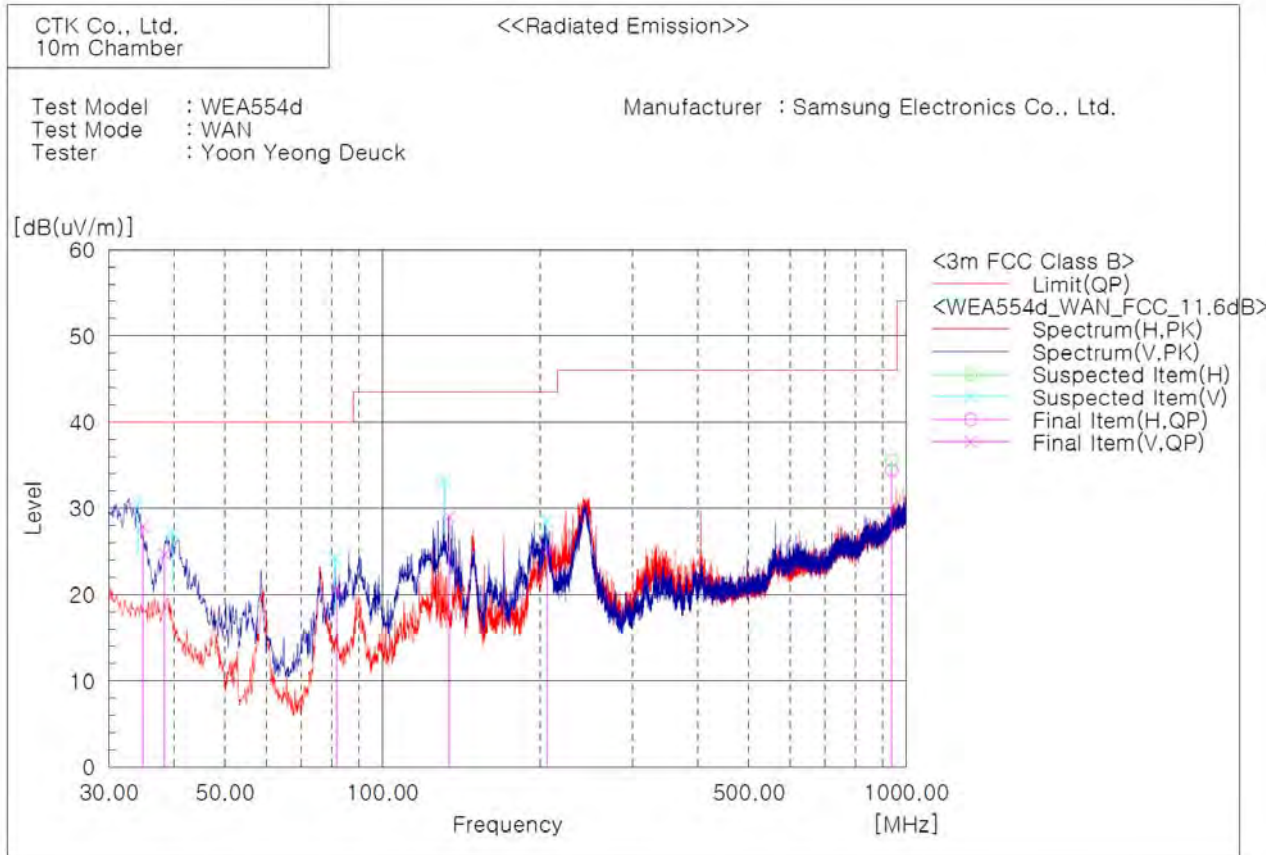
[WEA554d_POE]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 32.836 | V | 34.5 | -7.4 | 27.1 | 40.0 | 12.9 | 100.0 | 159.5 |
| 2 | 40.748 | V | 36.4 | -10.9 | 25.5 | 40.0 | 14.5 | 100.0 | 248.6 |
| 3 | 57.665 | V | 41.6 | -19.5 | 22.1 | 40.0 | 17.9 | 100.0 | 131.3 |
| 4 | 131.458 | V | 39.9 | -12.1 | 27.8 | 43.5 | 15.7 | 100.0 | 345.6 |
| 5 | 193.465 | V | 39.9 | -15.0 | 24.9 | 43.5 | 18.6 | 100.0 | 36.6 |
| 6 | 937.145 | H | 29.2 | 5.5 | 34.7 | 46.0 | 11.3 | 100.0 | 121.3 |

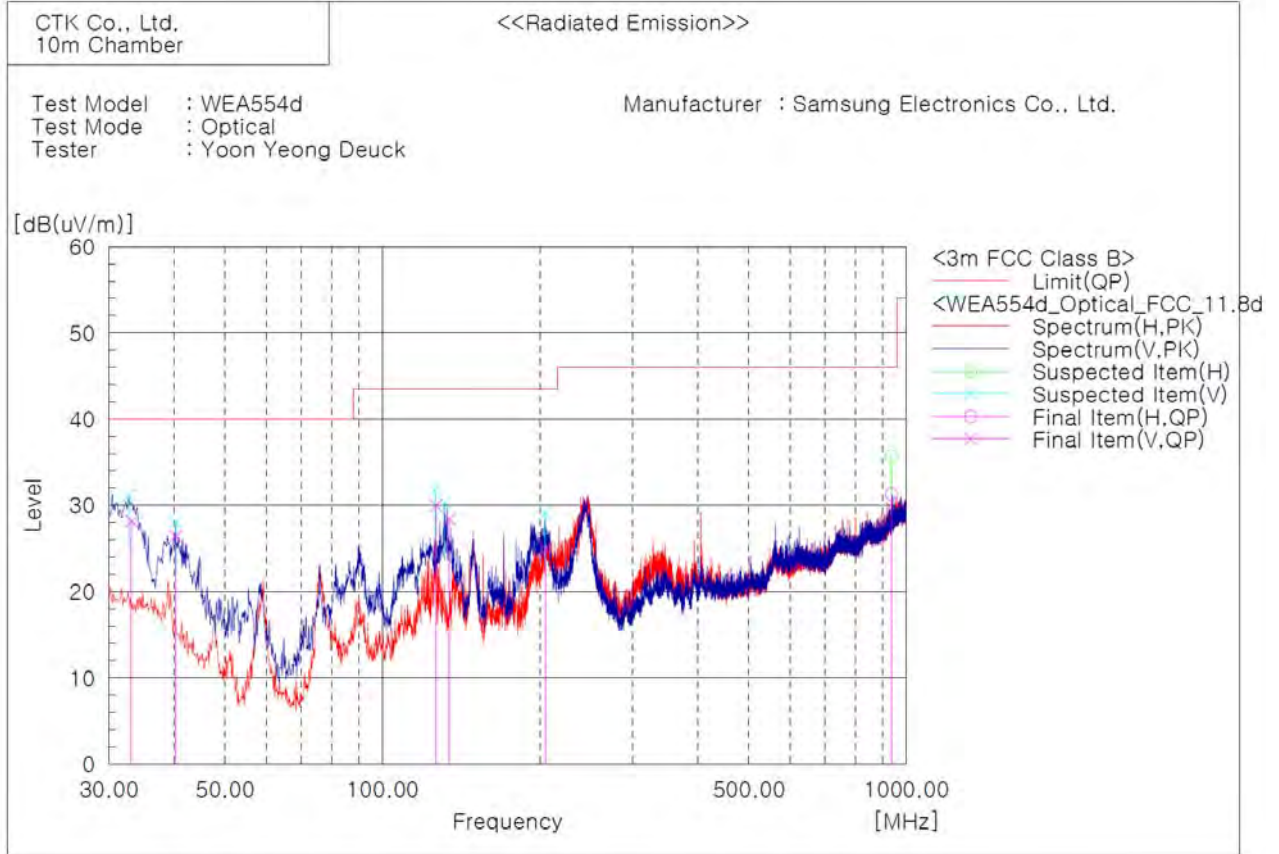
[WEA554d_WAN]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 34.894 | V | 35.9 | -8.0 | 27.9 | 40.0 | 12.1 | 100.0 | 156.9 |
| 2 | 38.345 | V | 34.2 | -9.5 | 24.7 | 40.0 | 15.3 | 100.0 | 183.1 |
| 3 | 81.785 | V | 38.0 | -17.4 | 20.6 | 40.0 | 19.4 | 100.0 | 245.6 |
| 4 | 133.845 | V | 41.1 | -12.1 | 29.0 | 43.5 | 14.5 | 100.0 | 245.3 |
| 5 | 205.984 | V | 39.7 | -14.4 | 25.3 | 43.5 | 18.2 | 100.0 | 37.6 |
| 6 | 937.457 | H | 28.8 | 5.6 | 34.4 | 46.0 | 11.6 | 100.0 | 198.3 |

[WEA554d_Optical]



Final Result

| No. | Frequency [MHz] | (P) | Reading QP [dB(uV)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|---------------|----------------------|---------------------|----------------|-------------|-------------|
| 1 | 33.156 | V | 35.7 | -7.5 | 28.2 | 40.0 | 11.8 | 100.0 | 148.3 |
| 2 | 40.256 | V | 37.0 | -10.6 | 26.4 | 40.0 | 13.6 | 100.0 | 146.5 |
| 3 | 126.452 | V | 42.3 | -12.3 | 30.0 | 43.5 | 13.5 | 199.9 | 312.6 |
| 4 | 134.183 | V | 40.5 | -12.1 | 28.4 | 43.5 | 15.1 | 100.0 | 236.1 |
| 5 | 204.894 | V | 39.4 | -14.4 | 25.0 | 43.5 | 18.5 | 100.0 | 23.6 |
| 6 | 937.148 | H | 25.8 | 5.5 | 31.3 | 46.0 | 14.7 | 100.0 | 175.1 |



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Report No.:
 CTK-2018-02315
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3.3 Radiated Electric Field Emissions (Above 1 GHz)

Test Date

2018-07-23

Test Location

Unhak-dong Lab 10 m SAC (test distance : 3 m)

Test Equipment

| Name of Equipment | Model No. | Manufacturer | Serial No. | Due Date | Applied |
|---------------------|------------|-----------------|------------|------------|-------------------------------------|
| EMI Receiver | ESU40 | Rohde & Schwarz | 100036 | 2019-04-30 | <input checked="" type="checkbox"/> |
| Horn Antenna | BBHA9120D | SCHWARZBECK | 01727 | 2019-10-20 | <input checked="" type="checkbox"/> |
| Horn Antenna | BBHA9170 | SCHWARZBECK | 788 | 2019-12-05 | <input checked="" type="checkbox"/> |
| Low Noise Amplifier | TK-PA18H | TESTEK | 160008-L | 2018-09-27 | <input checked="" type="checkbox"/> |
| Low Noise Amplifier | TK-PA1840H | TESTEK | 170018-L | 2018-09-27 | <input checked="" type="checkbox"/> |
| Band Reject Filter | BRM50702 | Micro Tronics | G306 | 2018-10-30 | <input checked="" type="checkbox"/> |
| Band Reject Filter | BRM50716 | Micro Tronics | G223 | 2018-10-30 | <input checked="" type="checkbox"/> |

Test Software

TOYO EMI software Ver. 5.1.0

Frequency Range of Measurement

1 GHz to 40 GHz

Instrument Setting

IF Band Width: 1 MHz

Climate Condition

Temperature: (21 ± 1) °C

Relative Humidity: (59 ± 1) %

Atmospheric Pressure: 100 kPa

Test Result

The requirements are: MET NOT MET

| Test Mode | Frequency (MHz) | Measured Data (dBµV/m) | Margin (dB) | Remark |
|-----------------|-----------------|------------------------|-------------|----------|
| WEA554i_POE | 17 978.620 | 46.9 | 7.1 | CAverage |
| WEA554i_WAN | 17 996.280 | 46.0 | 8.0 | CAverage |
| WEA554i_Optical | 14 685.100 | 44.8 | 9.2 | CAverage |
| WEA554d_POE | 39 696.990 | 48.3 | 5.7 | CAverage |
| WEA554d_WAN | 17 991.160 | 47.0 | 7.0 | CAverage |
| WEA554d_Optical | 39 658.700 | 48.2 | 5.8 | CAverage |

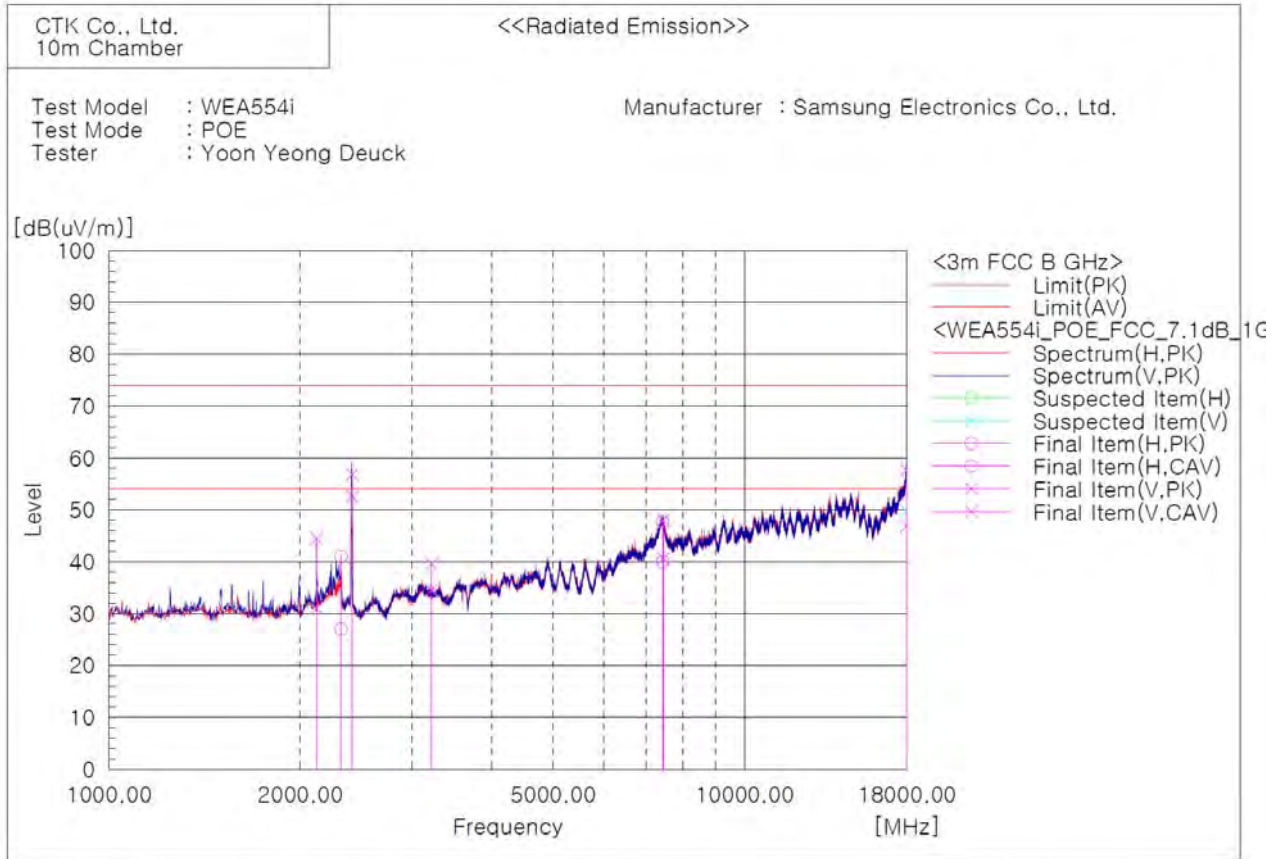
The Result is calculated by using the following formula;

* Result = Reading + Correction factor

* Correction factor = Antenna Factor + Cable Loss– Amp Gain

Test Data

[1 GHz to 18 GHz] [WEA554i_POE]



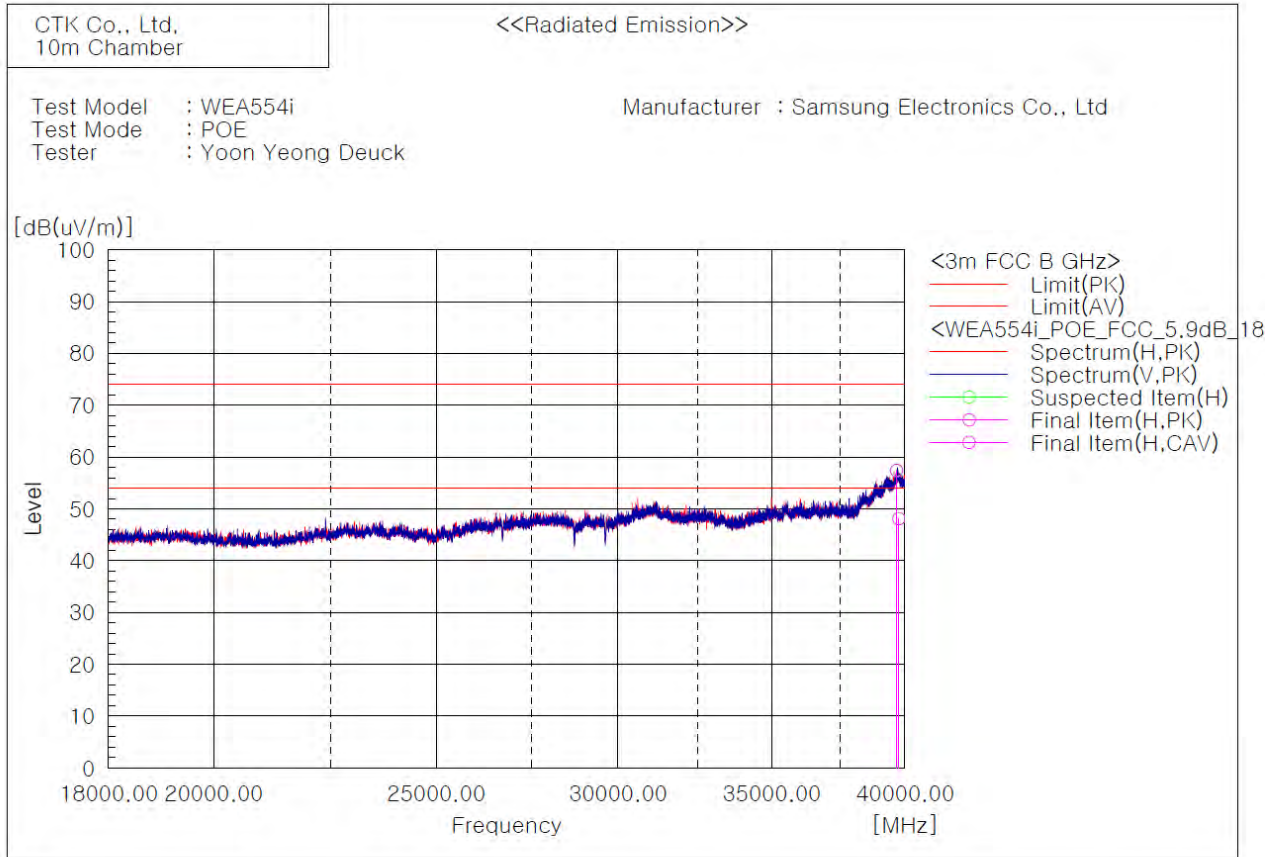
Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 2122.210 | V | 64.6 | 51.1 | -20.1 | 44.5 | 31.0 | 74.0 | 54.0 | 29.5 | 23.0 | 100.0 | 126.0 |
| 2 | 2122.212 | V | 64.6 | 51.1 | -20.1 | 44.5 | 31.0 | 74.0 | 54.0 | 29.5 | 23.0 | 100.0 | 263.0 |
| 3 | 2319.670 | H | 60.8 | 46.8 | -19.8 | 41.0 | 27.0 | 74.0 | 54.0 | 33.0 | 27.0 | 200.0 | 301.0 |
| 4 | 2319.740 | H | 60.8 | 46.8 | -19.8 | 41.0 | 27.0 | 74.0 | 54.0 | 33.0 | 27.0 | 300.0 | 218.0 |
| 5 | 2413.210 | V | 76.8 | 72.6 | -20.0 | 56.8 | 52.6 | 74.0 | 54.0 | 17.2 | 1.4 | 200.0 | 126.0 |
| 6 | 2413.230 | V | 76.8 | 72.6 | -20.0 | 56.8 | 52.6 | 74.0 | 54.0 | 17.2 | 1.4 | 200.0 | 119.0 |
| 7 | 3216.411 | V | 57.9 | 52.8 | -18.3 | 39.6 | 34.5 | 74.0 | 54.0 | 34.4 | 19.5 | 200.0 | 129.0 |
| 8 | 3216.470 | V | 57.9 | 52.8 | -18.3 | 39.6 | 34.5 | 74.0 | 54.0 | 34.4 | 19.5 | 300.0 | 126.0 |
| 9 | 7432.225 | H | 50.2 | 42.5 | -2.5 | 47.7 | 40.0 | 74.0 | 54.0 | 26.3 | 14.0 | 200.0 | 78.0 |
| 10 | 7432.490 | H | 50.2 | 42.5 | -2.5 | 47.7 | 40.0 | 74.0 | 54.0 | 26.3 | 14.0 | 100.0 | 69.0 |
| 11 | 7447.550 | V | 48.4 | 43.4 | -2.8 | 48.0 | 40.6 | 74.0 | 54.0 | 26.0 | 13.4 | 100.0 | 110.0 |
| 12 | 7447.587 | V | 48.4 | 43.4 | -2.8 | 48.0 | 40.6 | 74.0 | 54.0 | 26.0 | 13.4 | 100.0 | 77.0 |
| 13 | 17978.100 | V | 48.4 | 37.7 | 9.2 | 57.6 | 46.9 | 74.0 | 54.0 | 16.4 | 7.1 | 200.0 | 201.0 |
| 14 | 17978.620 | V | 48.4 | 37.7 | 9.2 | 57.6 | 46.9 | 74.0 | 54.0 | 16.4 | 7.1 | 200.0 | 166.0 |

=> Operating frequency (No. 5, 6) emissions are excluded from test result.



[18 GHz to 40 GHz] [WEA554i_POE]



Final Result

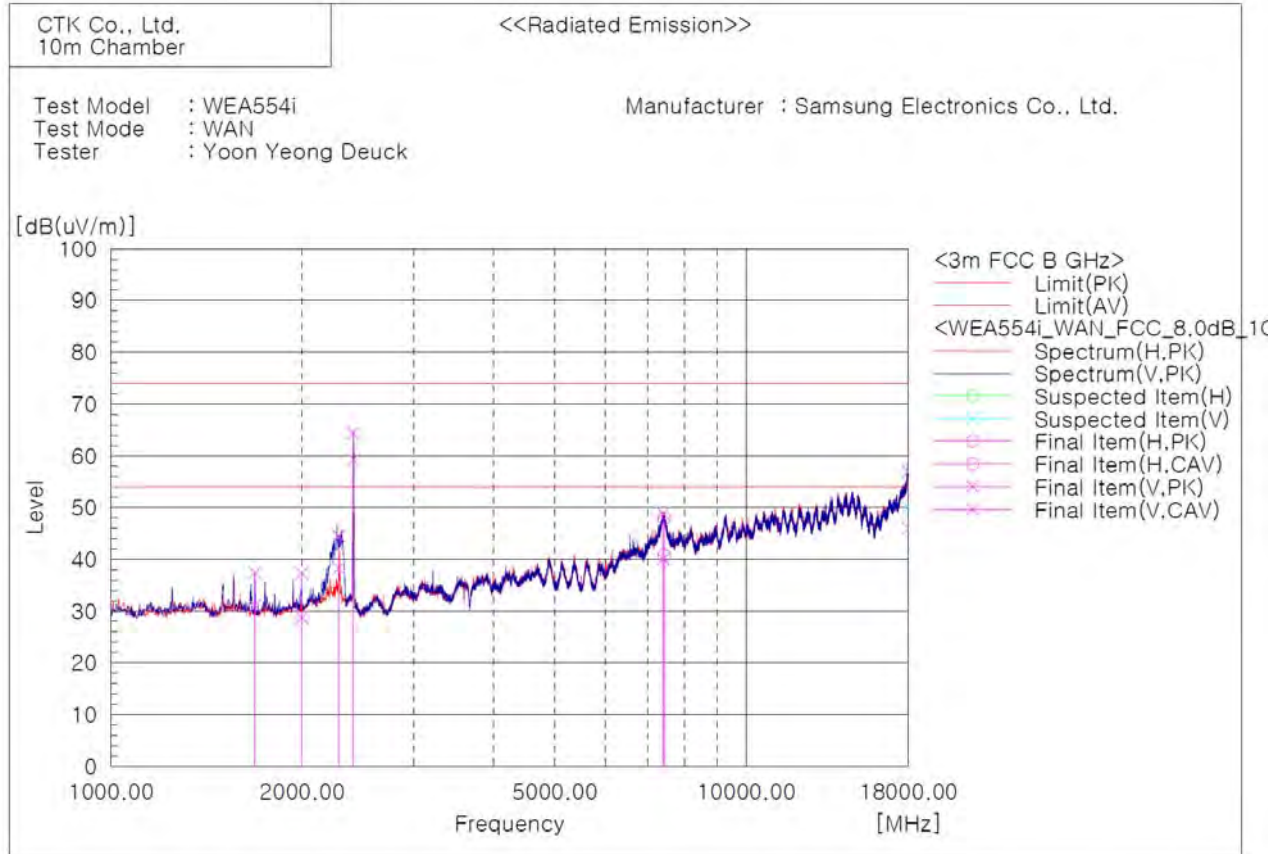
| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 39764.140 | H | 55.5 | 46.0 | 2.1 | 57.4 | 48.1 | 74.0 | 54.0 | 16.6 | 5.9 | 200.0 | 58.0 |
| 2 | 39671.220 | H | 55.5 | 46.0 | 1.9 | 57.4 | 48.1 | 74.0 | 54.0 | 16.6 | 5.9 | 300.0 | 48.0 |



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Page (48) / (57) Pages

[1 GHz to 18 GHz] [WEA554i_WAN]

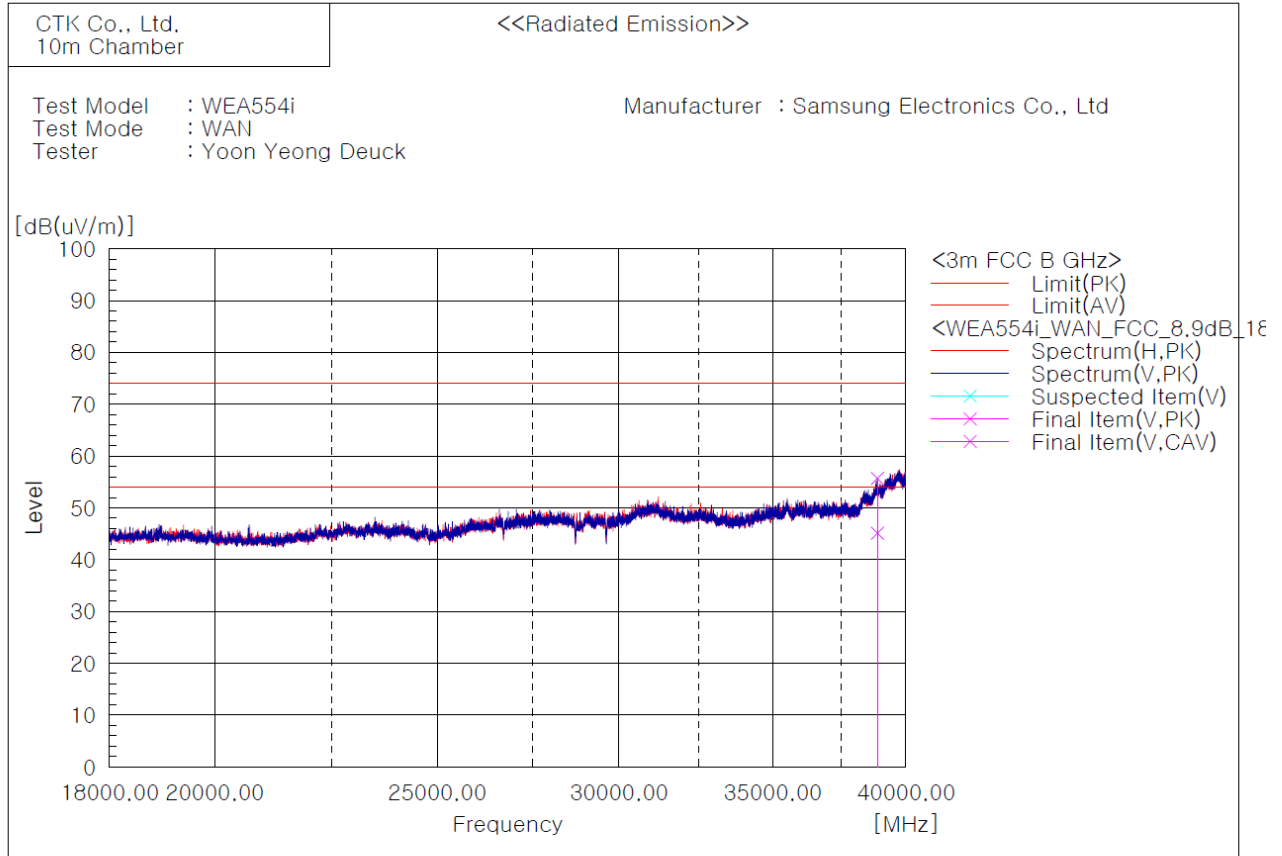


Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 1686.450 | V | 59.7 | 53.4 | -22.3 | 37.4 | 31.1 | 74.0 | 54.0 | 36.6 | 22.9 | 100.0 | 177.0 |
| 2 | 1686.470 | V | 59.7 | 53.4 | -22.3 | 37.4 | 31.1 | 74.0 | 54.0 | 36.6 | 22.9 | 100.0 | 105.0 |
| 3 | 1998.100 | V | 58.7 | 50.2 | -21.4 | 37.3 | 28.8 | 74.0 | 54.0 | 36.7 | 25.2 | 100.0 | 150.0 |
| 4 | 1998.103 | V | 58.7 | 50.2 | -21.4 | 37.3 | 28.8 | 74.0 | 54.0 | 36.7 | 25.2 | 300.0 | 169.0 |
| 5 | 2285.250 | V | 64.3 | 58.1 | -19.8 | 44.5 | 38.3 | 74.0 | 54.0 | 29.5 | 15.7 | 200.0 | 210.0 |
| 6 | 2285.508 | V | 64.3 | 58.1 | -19.8 | 44.5 | 38.3 | 74.0 | 54.0 | 29.5 | 15.7 | 300.0 | 155.0 |
| 7 | 2408.201 | V | 84.4 | 79.2 | -20.0 | 64.4 | 59.2 | 74.0 | 54.0 | 9.6 | -5.2 | 200.0 | 216.0 |
| 8 | 2408.901 | V | 84.4 | 79.2 | -20.0 | 64.4 | 59.2 | 74.0 | 54.0 | 9.6 | -5.2 | 200.0 | 219.0 |
| 9 | 7404.550 | V | 51.0 | 42.3 | -2.2 | 48.8 | 40.1 | 74.0 | 54.0 | 25.2 | 13.9 | 100.0 | 301.0 |
| 10 | 7404.750 | V | 51.0 | 42.3 | -2.2 | 48.8 | 40.1 | 74.0 | 54.0 | 25.2 | 13.9 | 300.0 | 115.0 |
| 11 | 7432.460 | H | 50.4 | 43.2 | -2.5 | 47.9 | 40.7 | 74.0 | 54.0 | 26.1 | 13.3 | 100.0 | 311.0 |
| 12 | 7432.660 | H | 50.4 | 43.2 | -2.5 | 47.9 | 40.7 | 74.0 | 54.0 | 26.1 | 13.3 | 100.0 | 305.0 |
| 13 | 17996.280 | V | 47.4 | 36.5 | 9.5 | 56.9 | 46.0 | 74.0 | 54.0 | 17.1 | 8.0 | 100.0 | 3.0 |
| 14 | 17997.880 | V | 47.4 | 36.5 | 9.5 | 56.9 | 46.0 | 74.0 | 54.0 | 17.1 | 8.0 | 100.0 | 290.0 |

=> Operating frequency (No. 7, 8) emissions are excluded from test result.

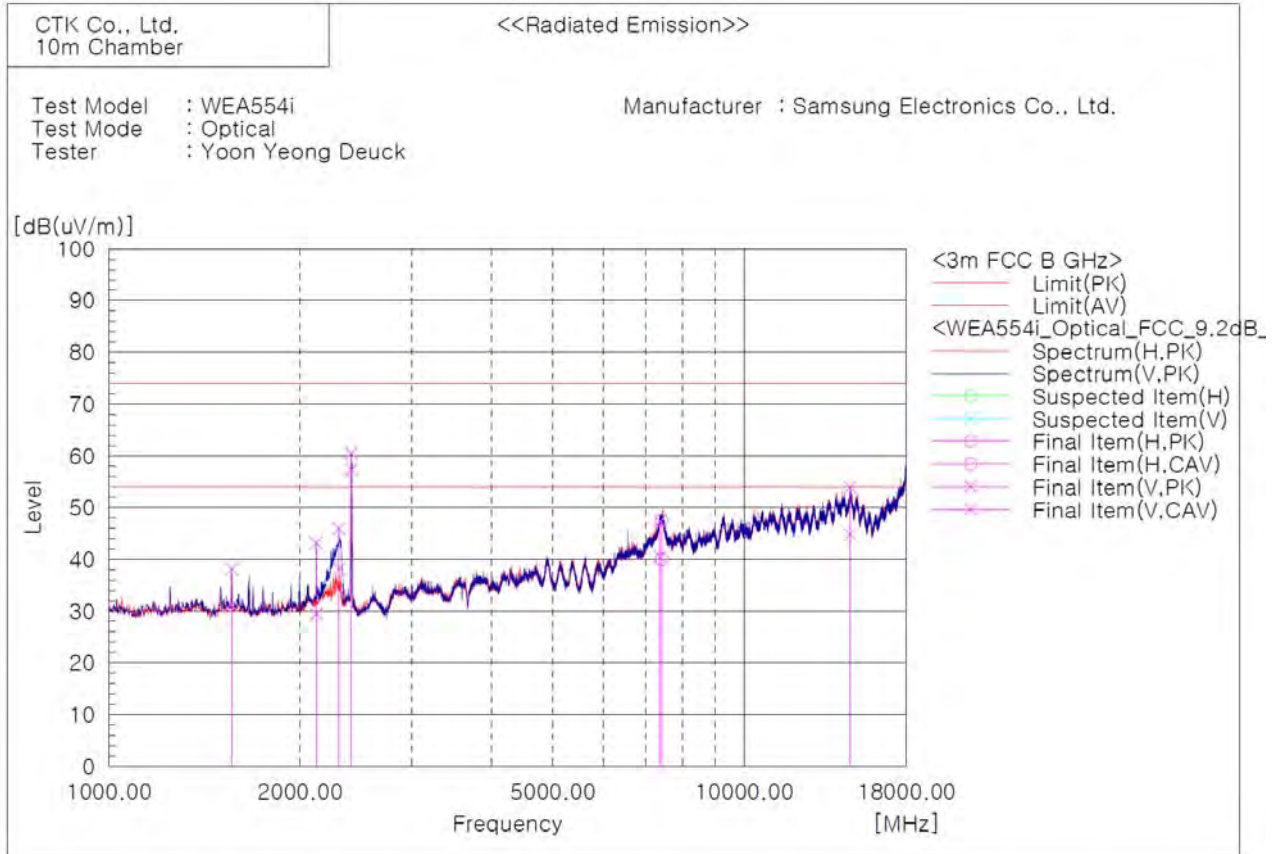
[18 GHz to 40 GHz] [WEA554i_WAN]



Final Result

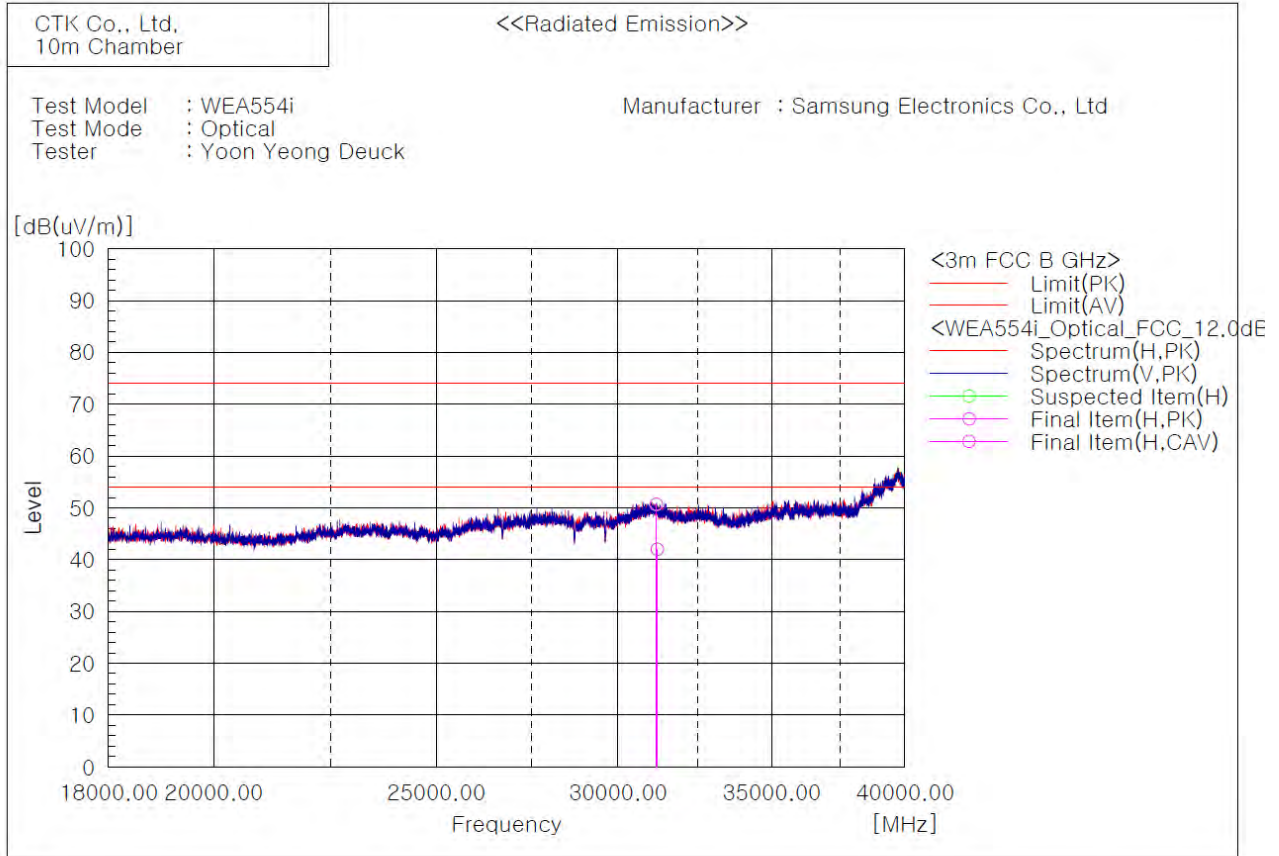
| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 38874.250 | V | 55.8 | ----- | -0.1 | 55.7 | ----- | 74.0 | 54.0 | 18.3 | ----- | 100.0 | 255.0 |
| 2 | 38873.700 | V | ----- | 45.2 | -0.1 | ----- | 45.1 | 74.0 | 54.0 | ----- | 8.9 | 300.0 | 199.0 |

[1 GHz to 18 GHz] [WEA554i_Optical]



=> Operating frequency (No. 7, 8) emissions are excluded from test result.

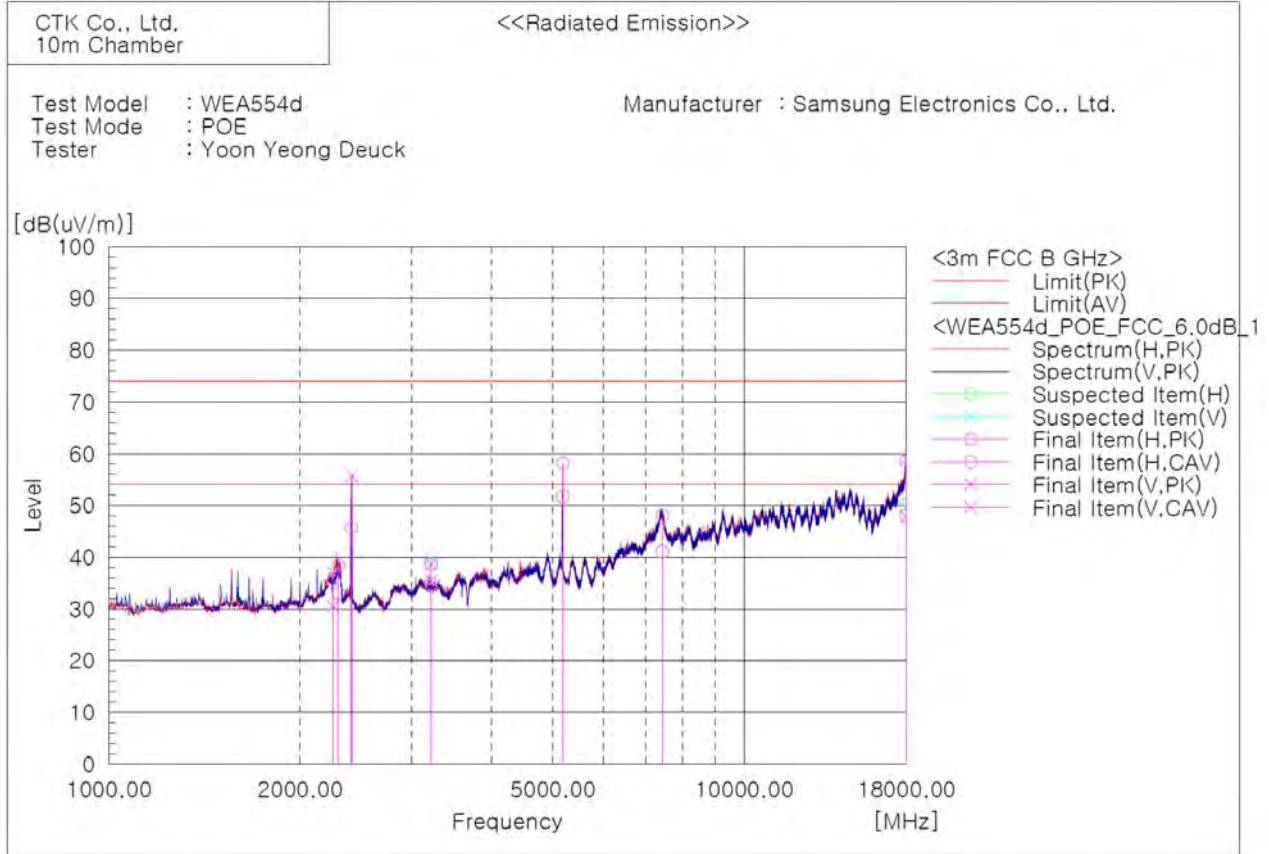
[18 GHz to 40 GHz] [WEA554i_Optical]



Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 31175.480 | H | 53.9 | | -3.2 | 50.7 | | 74.0 | 54.0 | 23.3 | | 200.0 | 211.0 |
| 2 | 31208.700 | H | | 45.2 | -3.2 | | 42.0 | 74.0 | 54.0 | | 12.0 | 200.0 | 166.0 |

[1 GHz to 18 GHz] [WEA554d_POE]

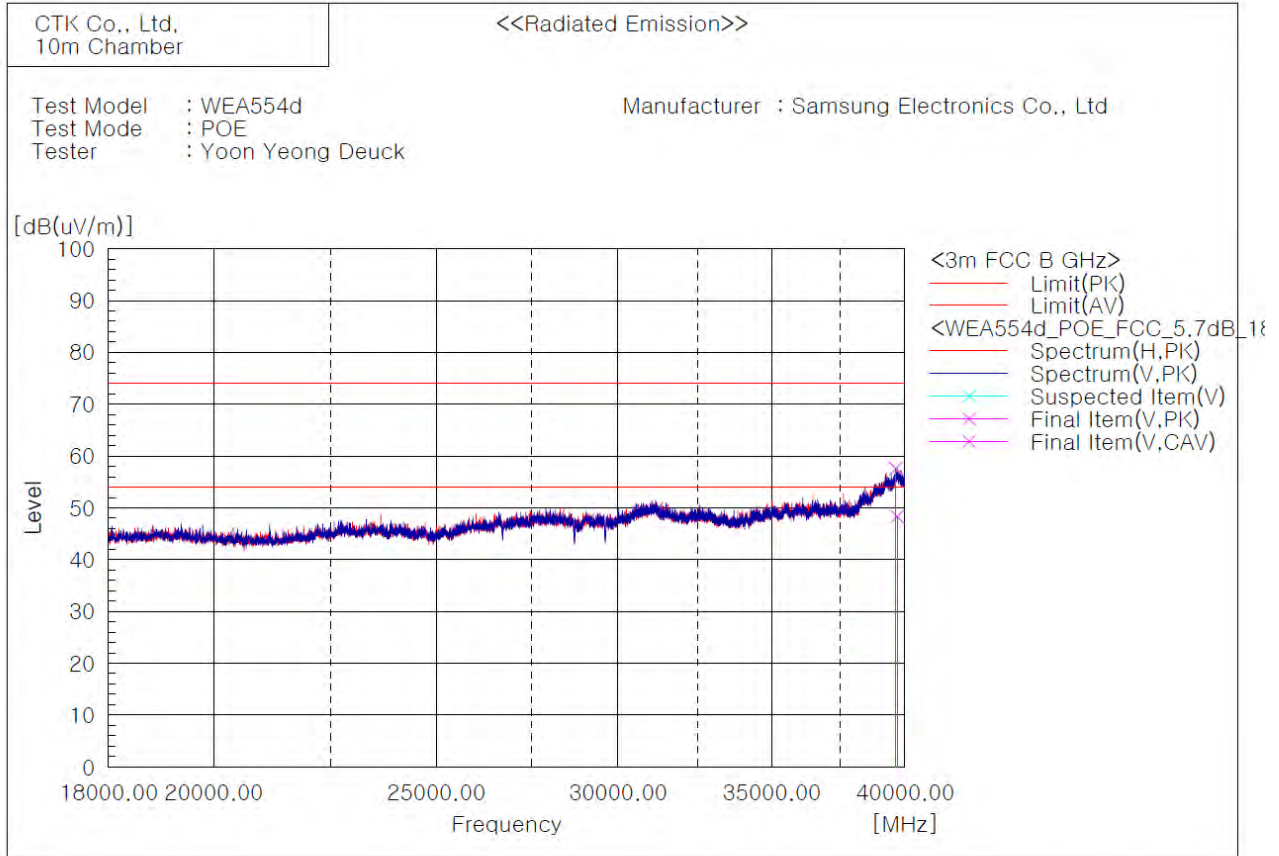


Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 2255.455 | V | 56.7 | | -19.7 | 37.0 | | 74.0 | 54.0 | 37.0 | | 200.0 | 99.0 |
| 2 | 2255.900 | V | | 50.2 | -19.7 | | 30.5 | 74.0 | 54.0 | | 23.5 | 200.0 | 45.0 |
| 3 | 2298.410 | H | | 52.8 | -19.8 | | 33.0 | 74.0 | 54.0 | | 21.0 | 400.0 | 321.0 |
| 4 | 2298.410 | H | 58.2 | | -19.8 | 38.4 | | 74.0 | 54.0 | 35.6 | | 400.0 | 299.0 |
| 5 | 2408.910 | H | | 65.7 | -20.0 | | 45.7 | 74.0 | 54.0 | | 8.3 | 200.0 | 266.0 |
| 6 | 2413.306 | V | 75.7 | | -20.0 | 55.7 | | 74.0 | 54.0 | 18.3 | | 200.0 | 199.0 |
| 7 | 3216.416 | V | | 53.6 | -18.3 | | 35.3 | 74.0 | 54.0 | | 18.7 | 300.0 | 309.0 |
| 8 | 3216.480 | V | 57.0 | | -18.3 | 38.7 | | 74.0 | 54.0 | 35.3 | | 300.0 | 257.0 |
| 9 | 3216.490 | H | 57.0 | | -18.3 | 38.7 | | 74.0 | 54.0 | 35.3 | | 200.0 | 187.0 |
| 10 | 3216.690 | H | | 53.1 | -18.3 | | 34.8 | 74.0 | 54.0 | | 19.2 | 200.0 | 309.0 |
| 11 | 5184.147 | H | | 64.6 | -12.9 | | 51.7 | 74.0 | 54.0 | | 2.3 | 200.0 | 290.0 |
| 12 | 5186.210 | H | 71.0 | | -12.8 | 58.2 | | 74.0 | 54.0 | 15.8 | | 200.0 | 263.0 |
| 13 | 7440.800 | H | 50.6 | | -2.6 | 48.0 | | 74.0 | 54.0 | 26.0 | | 400.0 | 236.0 |
| 14 | 7440.899 | H | | 43.7 | -2.6 | | 41.1 | 74.0 | 54.0 | | 12.9 | 400.0 | 41.0 |
| 15 | 17985.160 | V | | 38.5 | 9.3 | | 47.8 | 74.0 | 54.0 | | 6.2 | 200.0 | 104.0 |
| 16 | 17985.190 | H | | 38.7 | 9.3 | | 48.0 | 74.0 | 54.0 | | 6.0 | 300.0 | 322.0 |
| 17 | 17985.250 | H | 49.3 | | 9.3 | 58.6 | | 74.0 | 54.0 | 15.4 | | 200.0 | 199.0 |
| 18 | 17995.150 | V | 49.5 | | 9.5 | 59.0 | | 74.0 | 54.0 | 15.0 | | 400.0 | 321.0 |

=> Operating frequency (No. 5, 6, 11, 12) emissions are excluded from test result.

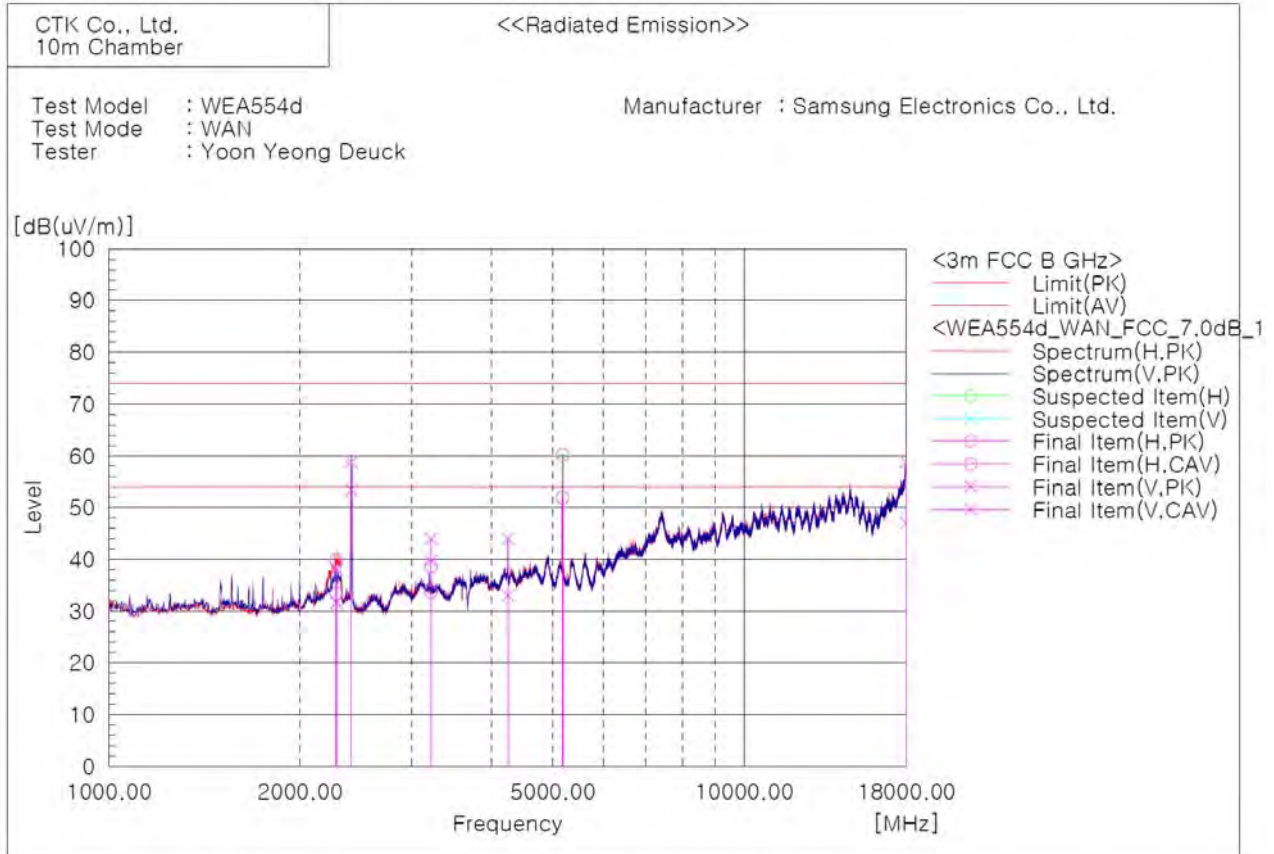
[18 GHz to 40 GHz] [WEA554d_POE]



Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 39637.250 | V | 55.8 | | 1.8 | 57.6 | | 74.0 | 54.0 | 16.4 | | 100.0 | 139.0 |
| 2 | 39696.990 | V | | 46.4 | 1.9 | | 48.3 | 74.0 | 54.0 | | 5.7 | 200.0 | 116.0 |

[1 GHz to 18 GHz] [WEA554d_WAN]

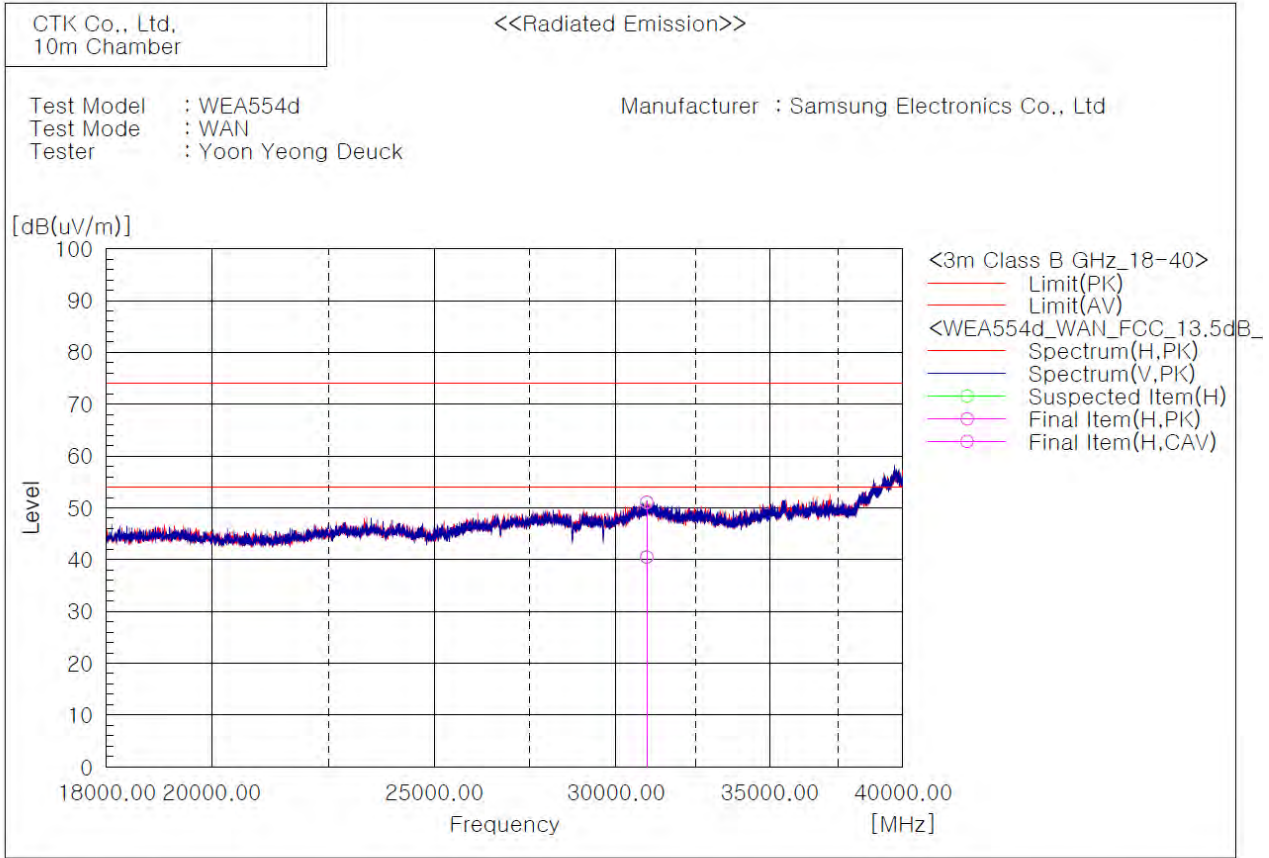


Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(μV)] | Reading CAV [dB(μV)] | c.f [dB(1/m)] | Result PK [dB(μV/m)] | Result CAV [dB(μV/m)] | Limit PK [dB(μV/m)] | Limit AV [dB(μV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 2281.450 | H | 59.7 | 53.2 | -19.8 | 39.9 | 33.4 | 74.0 | 54.0 | 34.1 | 20.6 | 300.0 | 155.0 |
| 2 | 2281.450 | H | 59.7 | 53.2 | -19.8 | 39.9 | 33.4 | 74.0 | 54.0 | 34.1 | 20.6 | 300.0 | 299.0 |
| 3 | 2283.410 | V | 57.9 | 51.5 | -19.8 | 38.1 | 31.7 | 74.0 | 54.0 | 35.9 | 22.3 | 300.0 | 269.0 |
| 4 | 2283.630 | V | 57.9 | 51.5 | -19.8 | 38.1 | 31.7 | 74.0 | 54.0 | 35.9 | 22.3 | 300.0 | 255.0 |
| 5 | 2408.470 | V | 78.8 | 73.4 | -20.0 | 58.8 | 53.4 | 74.0 | 54.0 | 15.2 | 0.6 | 300.0 | 46.0 |
| 6 | 2408.550 | V | 78.8 | 73.4 | -20.0 | 58.8 | 53.4 | 74.0 | 54.0 | 15.2 | 0.6 | 300.0 | 55.0 |
| 7 | 3216.158 | H | 62.2 | 52.0 | -18.3 | 43.9 | 33.7 | 74.0 | 54.0 | 30.1 | 20.3 | 200.0 | 321.0 |
| 8 | 3216.250 | V | 62.2 | 52.0 | -18.3 | 43.9 | 33.7 | 74.0 | 54.0 | 30.1 | 20.3 | 100.0 | 126.0 |
| 9 | 3216.410 | V | 62.2 | 52.0 | -18.3 | 43.9 | 33.7 | 74.0 | 54.0 | 30.1 | 20.3 | 100.0 | 169.0 |
| 10 | 3216.500 | H | 56.9 | 58.0 | -18.3 | 38.6 | 39.7 | 74.0 | 54.0 | 35.4 | 14.3 | 200.0 | 287.0 |
| 11 | 4249.254 | V | 59.8 | 48.9 | -15.9 | 43.9 | 33.0 | 74.0 | 54.0 | 30.1 | 21.0 | 100.0 | 352.0 |
| 12 | 4249.339 | V | 59.8 | 48.9 | -15.9 | 43.9 | 33.0 | 74.0 | 54.0 | 30.1 | 21.0 | 100.0 | 174.0 |
| 13 | 5182.109 | H | 73.1 | 64.8 | -12.9 | 60.2 | 51.9 | 74.0 | 54.0 | 13.8 | 2.1 | 100.0 | 216.0 |
| 14 | 5182.558 | H | 73.1 | 64.8 | -12.9 | 60.2 | 51.9 | 74.0 | 54.0 | 13.8 | 2.1 | 100.0 | 126.0 |
| 15 | 17990.150 | V | 49.4 | 37.6 | 9.4 | 58.8 | 47.0 | 74.0 | 54.0 | 15.2 | 7.0 | 300.0 | 265.0 |
| 16 | 17991.160 | V | 49.4 | 37.6 | 9.4 | 58.8 | 47.0 | 74.0 | 54.0 | 15.2 | 7.0 | 200.0 | 212.0 |

=> Operating frequency (No. 5, 6, 13, 14) emissions are excluded from test result.

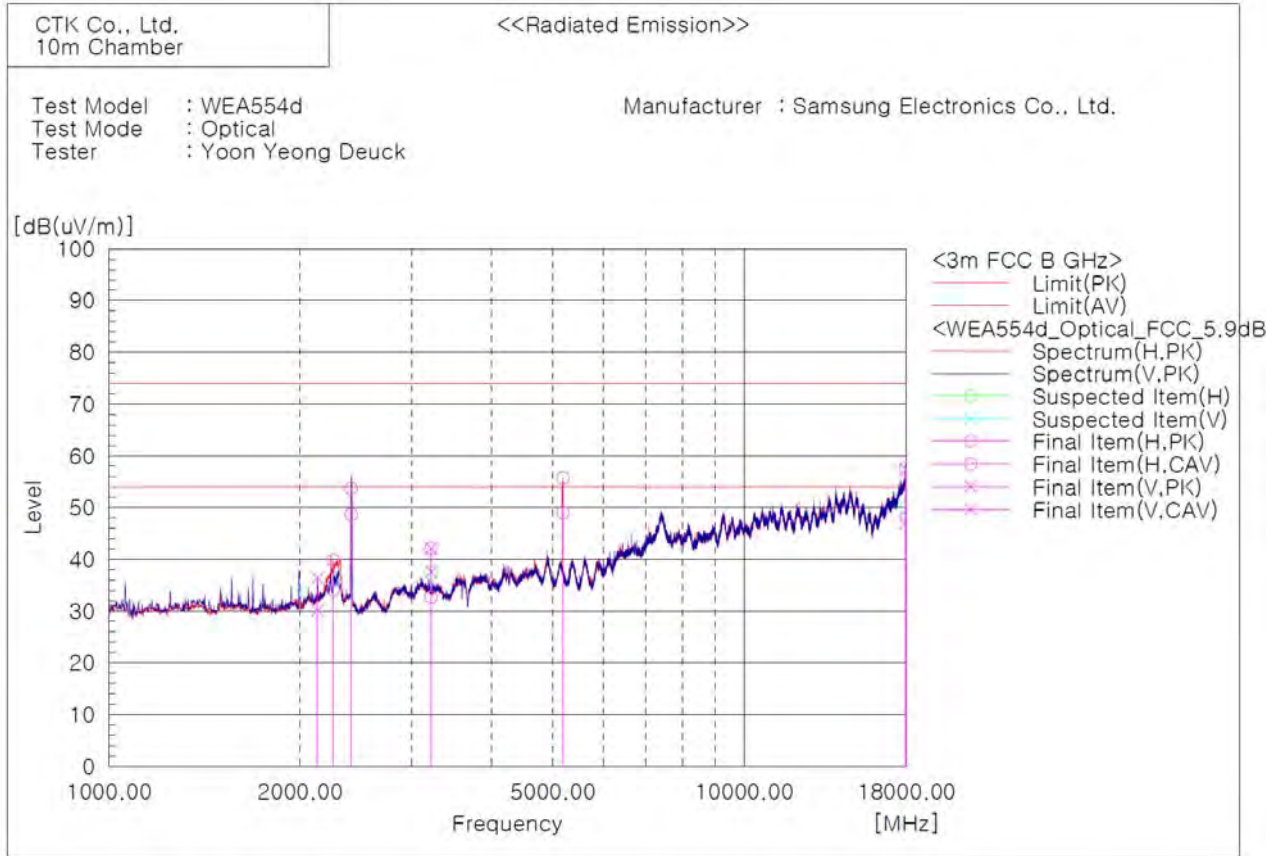
[18 GHz to 40 GHz] [WEA554d_WAN]



Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(µV)] | Reading CAV [dB(µV)] | c.f [dB(1/m)] | Result PK [dB(µV/m)] | Result CAV [dB(µV/m)] | Limit PK [dB(µV/m)] | Limit AV [dB(µV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 30941.300 | H | | 43.5 | -3.0 | | 40.5 | 74.0 | 54.0 | | 13.5 | 199.6 | 128.1 |
| 2 | 30941.490 | H | 54.1 | | -3.0 | 51.1 | | 74.0 | 54.0 | 22.9 | | 100.0 | 231.6 |

[1 GHz to 18 GHz] [WEA554d_Optical]

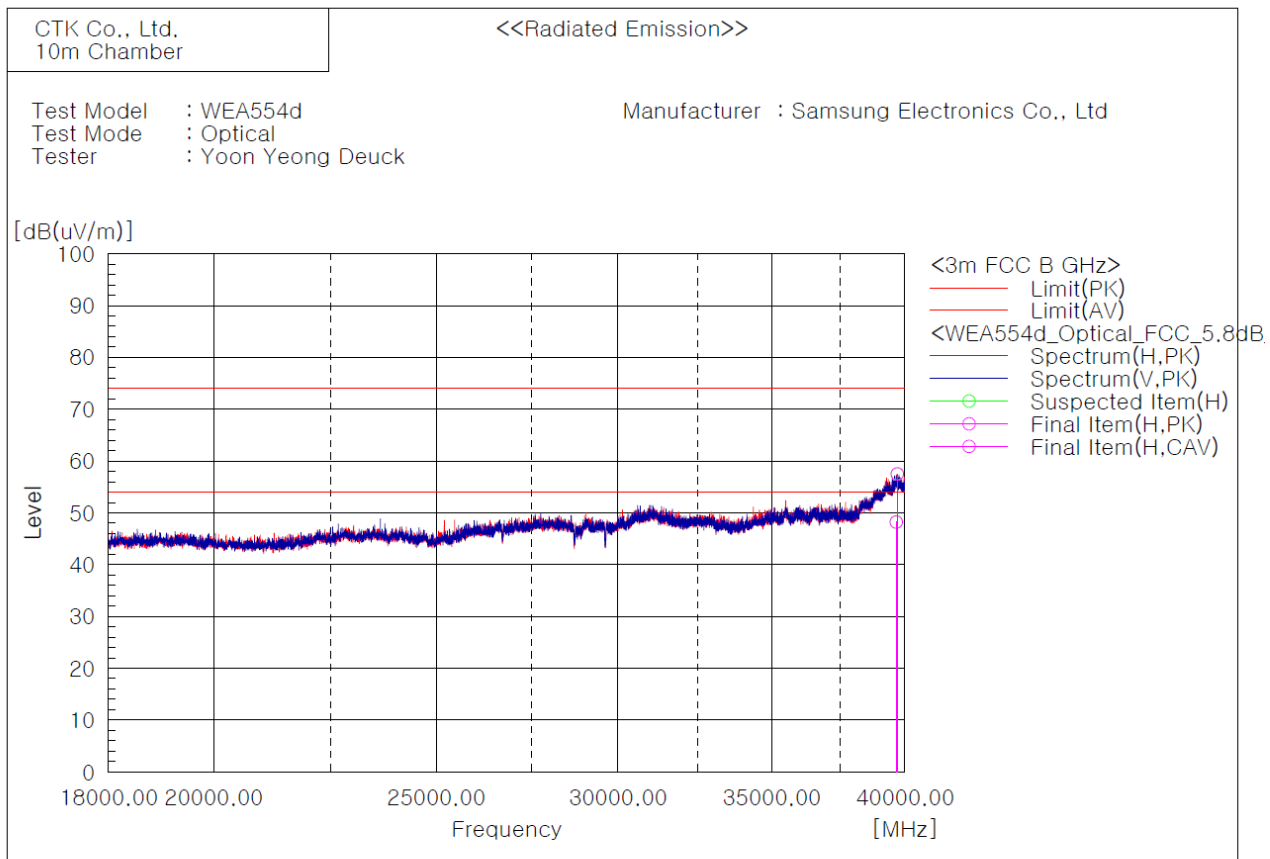


Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 2130.280 | V | 56.4 | 50.1 | -20.0 | 36.4 | 30.1 | 74.0 | 54.0 | 37.6 | 23.9 | 200.0 | 266.0 |
| 2 | 2130.490 | V | | 53.7 | -19.7 | | 34.0 | 74.0 | 54.0 | | 20.0 | 300.0 | 106.0 |
| 3 | 2255.366 | H | | | -19.7 | | | 74.0 | 54.0 | | | 400.0 | 315.0 |
| 4 | 2255.521 | H | 59.5 | | -19.7 | 39.8 | | 74.0 | 54.0 | 34.2 | | 300.0 | 211.0 |
| 5 | 2408.102 | H | | 68.7 | -20.0 | | 48.7 | 74.0 | 54.0 | | 5.3 | 200.0 | 211.0 |
| 6 | 2408.632 | H | 73.7 | | -20.0 | 53.7 | | 74.0 | 54.0 | 20.3 | | 200.0 | 120.0 |
| 7 | 3216.410 | H | | 51.0 | -18.3 | | 32.7 | 74.0 | 54.0 | | 21.3 | 200.0 | 33.0 |
| 8 | 3216.410 | H | 60.4 | | -18.3 | 42.1 | | 74.0 | 54.0 | 31.9 | | 200.0 | 299.0 |
| 9 | 3216.482 | V | | 55.9 | -18.3 | | 37.6 | 74.0 | 54.0 | | 16.4 | 200.0 | 322.0 |
| 10 | 3216.687 | V | 60.4 | | -18.3 | 42.1 | | 74.0 | 54.0 | 31.9 | | 200.0 | 309.0 |
| 11 | 5186.105 | H | 68.6 | | -12.9 | 55.7 | | 74.0 | 54.0 | 18.3 | | 100.0 | 269.0 |
| 12 | 5186.550 | H | | 61.8 | -12.8 | | 49.0 | 74.0 | 54.0 | | 5.0 | 100.0 | 199.0 |
| 13 | 17966.110 | V | | 38.1 | 8.9 | | 47.0 | 74.0 | 54.0 | | 7.0 | 400.0 | 325.0 |
| 14 | 17966.170 | V | 48.4 | | 8.9 | 57.3 | | 74.0 | 54.0 | 16.7 | | 200.0 | 32.0 |
| 15 | 17978.140 | H | 48.4 | | 9.2 | 57.6 | | 74.0 | 54.0 | 16.4 | | 200.0 | 311.0 |
| 16 | 17978.630 | H | | 38.9 | 9.2 | | 48.1 | 74.0 | 54.0 | | 5.9 | 300.0 | 150.0 |

=> Operating frequency (No. 5, 6, 11, 12) emissions are excluded from test result.

[18 GHz to 40 GHz] [WEA554d_Optical]



Final Result

| No. | Frequency [MHz] | (P) | Reading PK [dB(uV)] | Reading CAV [dB(uV)] | c.f [dB(1/m)] | Result PK [dB(uV/m)] | Result CAV [dB(uV/m)] | Limit PK [dB(uV/m)] | Limit AV [dB(uV/m)] | Margin PK [dB] | Margin CAV [dB] | Height [cm] | Angle [deg] |
|-----|-----------------|-----|---------------------|----------------------|---------------|----------------------|-----------------------|---------------------|---------------------|----------------|-----------------|-------------|-------------|
| 1 | 39658.700 | H | ----- | 46.4 | 1.8 | ----- | 48.2 | 74.0 | 54.0 | ----- | 5.8 | 100.0 | 311.0 |
| 2 | 39700.330 | H | 55.6 | ----- | 1.9 | 57.5 | ----- | 74.0 | 54.0 | 16.5 | ----- | 200.0 | 255.0 |