

FCC Test Report (NFC)

Report No.: RFBERD-WTW-P22060603-11

FCC ID: HD5-CN85L1N

Test Model: CN85L1N

Received Date: Sep. 04, 2018

Test Date: Oct. 08 to 12, 2018

Issued Date: July 05, 2022

Applicant: Honeywell International Inc.

Address: 9680 Old Bailes Road, Fort Mill, SC 29707 USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBERD-WTW-P22060603-11	Original release.	July 05, 2022

1 Certificate of Conformity

Product: Mobile computer

Brand: Honeywell

Test Model: CN85L1N

Sample Status: ENGINEERING SAMPLE

Applicant: Honeywell International Inc.

Test Date: Oct. 08 to 12, 2018

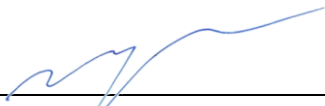
Standards: 47 CFR FCC Part 15, Subpart C (Section 15.225)

47 CFR FCC Part 15, Subpart C (Section 15.215)

ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Vivian Huang , **Date:** July 05, 2022
Vivian Huang / Specialist

Approved by :  , **Date:** July 05, 2022
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.225, 15.215)			
FCC Clause	Test Item	Result	Remarks
---	Occupied Bandwidth Measurement	-	Reference only.
15.207	Conducted emission test	NA	Without AC power port of the EUT.
15.225 (a)	The field strength of any emissions within the band 13.553-13.567 MHz	PASS	Meet the requirement of limit.
15.225 (b)	The field strength of any emissions within the bands 13.410-13.553 MHz and 13.567-13.710 MHz	PASS	Meet the requirement of limit.
15.225 (c)	The field strength of any emissions within the bands 13.110-13.410 MHz and 13.710-14.010 MHz	PASS	Meet the requirement of limit.
15.225 (d)	The field strength of any emissions appearing outside of the 13.110-14.010 MHz band	PASS	Meet the requirement of limit. Minimum passing margin is -11.8dB at 64.81MHz.
15.225 (e)	The frequency tolerance	PASS	Meet the requirement of limit.
15.215 (c)	20dB Bandwidth	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (NFC)

Product	Mobile computer
Brand	Honeywell
Test Model	CN85L1N
Status of EUT	ENGINEERING SAMPLE
HW Version	V1.0
HW P/N	V2.0 (DVT)
SW Version	OS.02.001-HON01.102
SW P/N	86.00.35-(0206)
Power Supply Rating	3.85Vdc from battery
Modulation Type	ASK
Operating Frequency	13.56MHz
Number of Channel	1
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Battery x 1, Touch pen x 1, Handstrap x 1
Data Cable Supplied	NA

Note:

1. This report is issued as a supplementary report to BV CPS report no. RF180904C09-11. The difference compared with original report is for adding the extra SKU (refer to note 8) which disable radio 2 (Zigbee+BT 2) by software, after the evaluation, it does not affect the original data, so the original test data is quoted.
2. According to above conditions, there is no addition test has to be performed. All test data were copied from the original test report (Report No.: RF180904C09-11). And all data were verified to meet the requirements.
3. The test data are copied which have obtained authorization from applicant and brand company both of the original test report (Report No.: RF180904C09-11).

4. EUT Configuration list:

Item
Scanner: N6703ER
with Keypad

5. There are WLAN, Bluetooth, NFC and WWAN technology used for the EUT. The EUT has three radios as following table:

Radio 1	Radio 3	Radio 4
WLAN+BT 1	NFC	WWAN

Note: For Bluetooth technology the Radio 1 support BT 5.0 dual mode.

6. Simultaneously transmission condition.

Condition	Technology		
1	WLAN 2.4GHz	NFC	WWAN
2	WLAN 5GHz	NFC	WWAN
3	Bluetooth (Radio 1)	NFC	WWAN

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

7. The EUT needs to be supplied from battery, the information is as below table:

Brand	Model No.	Spec.
Inventus Power, Inc. / Honeywell	CW-BAT	3.85Vdc, 5800mAh, 22.3Wh

8. The host devices are list as below table for difference of SKU.

Brand	Model	Product Name	USI FG P/N	Description
Honeywell	CN85L1N	Mobile computer	5487-273335-01	CN85G4/UPS/6703SR/CAM/WAN/GMS /FCC
Honeywell	CN85L1N	Mobile computer	5487-275335-01	CN85G4/UPS/6703SR/CAM/WAN/GMS /FCC/No 2nd BT/No Zigbee

9. The antennas provided to the EUT, please refer to the following table:

07. The antennas provided to the ECU, please refer to the following table.

Radio 1					
WLAN Antenna Spec. / Bluetooth Antenna No. 1 Spec.					
Chain No.	Antenna Gain include trace loss (dBi)	Frequency range (GHz)	Antenna type	Connector type	Trace loss (dB)
Chain 0	0.4	2.4~2.4835	PIFA	POGO pin	1.4
	1.62	5.15~5.25			2
	1.62	5.25~5.35			2
	1.15	5.47~5.725			2.4
	1.15	5.725~5.85			2.4
Chain 1	1.7	2.4~2.4835	PIFA	POGO pin	0.3
	1.3	5.15~5.25			0.9
	1.3	5.25~5.35			0.9
	2	5.47~5.725			0.9
	2	5.725~5.85			0.9
Radio 3					
NFC Antenna Spec.					
Frequency range (MHz)		Antenna type		Connector type	
13~14		Loop		NA	

10. The EUT has four types according to NFC technology as following table:

Mode	Type	Modulation	Data rate
Active	A	100%, ASK	106 kbit/s
	B	10%, ASK	106 kbit/s
	F	8-30%, ASK	212 kbit/s, 424 kbit/s
	V(ISO15693)	100%, ASK	26.48 kbit/s

11. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

12. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

One channel was provided to this EUT:

Channel	FREQ. (MHz)
1	13.56

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE	PLC	FS	EB	
-	√	-	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz **PLC**: Power Line Conducted Emission
FS: Frequency Stability **EB**: 20dB Bandwidth measurement

Note: 1. No need to concern of Conducted Emission due to the EUT is powered by battery.
2. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

Radiated Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type
1	1	ASK

Frequency Stability:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type
1	1	ASK

20dB Bandwidth:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type
1	1	ASK

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	24deg. C, 68%RH	DC 3.85V	Frank Chuang
FS	25deg. C, 60%RH	DC 3.85V	Anderson Chen
EB	25deg. C, 60%RH	DC 3.85V	Anderson Chen

3.3 Description of Support Units

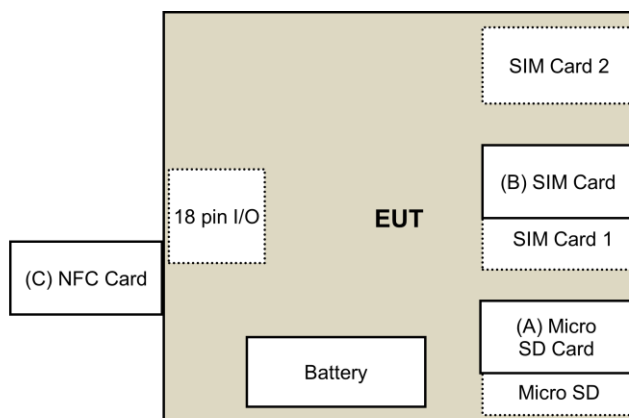
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	MicroSD Card	Transcend	NA	NA	NA	Provided by Lab
B.	SIM Card	R&S	CRT-Z3	NA	NA	Provided by Lab
C.	NFC Card	UGSI	NA	NA	NA	Supplied by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.225)

FCC Part 15, Subpart C (15.215)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission Measurement

4.1.1 Limits of Radiated Emission Measurement

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209 as below table:

Frequencies (MHz)	Field Strength (microvolts/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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-00 1	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-00 2	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Software	ADT_Radiated _V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-S P-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Oct. 08 to 12, 2018

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Note:

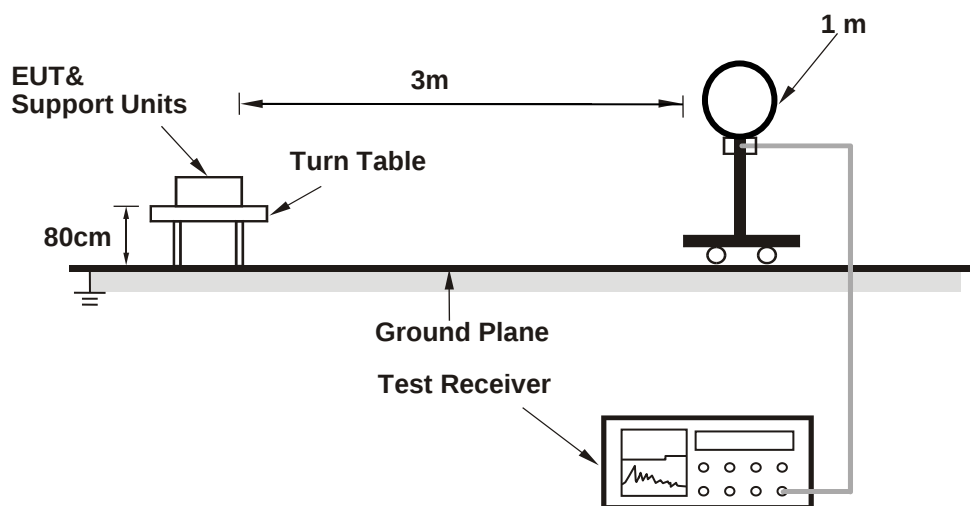
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

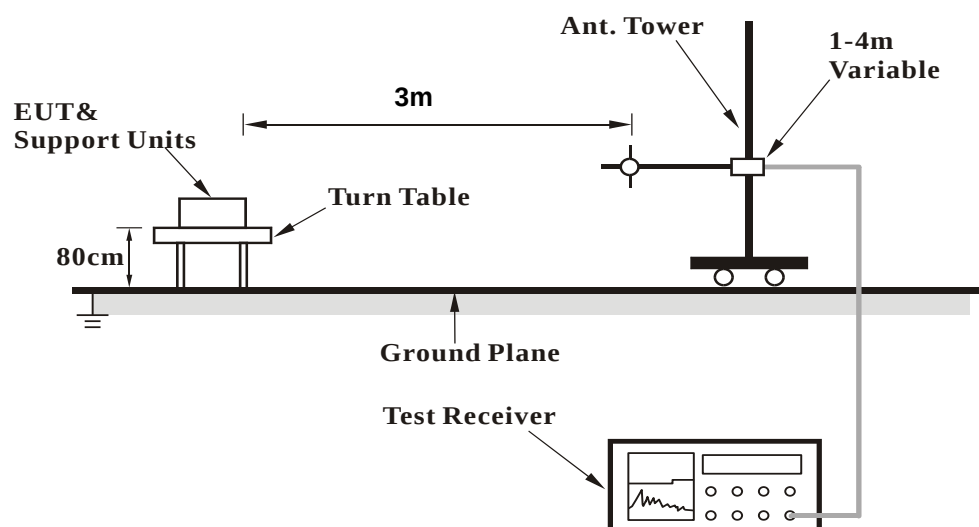
No deviation.

4.1.5 Test Setup

For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Type A

Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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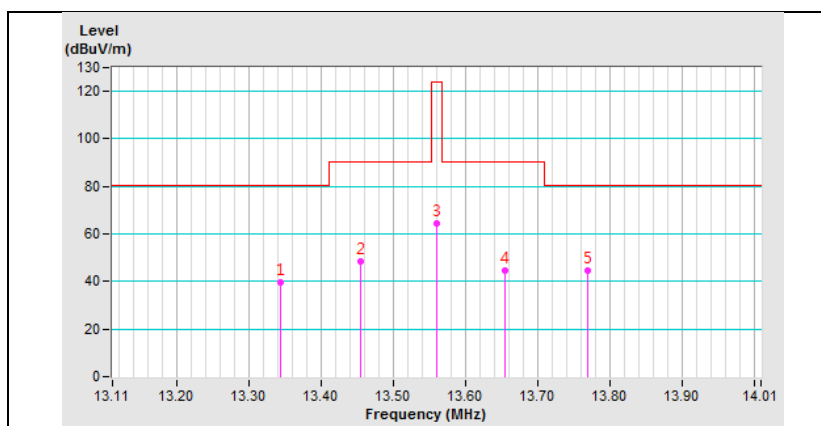
Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.343	39.89 QP	80.50	-40.61	1.00	170	43.34	-3.45
2	13.454	48.44 QP	90.47	-42.03	1.00	170	51.91	-3.47
3	*13.560	61.42 QP	124	-62.58	1.00	170	64.9	-3.48
4	13.655	44.38 QP	90.47	-46.09	1.00	170	47.88	-3.50
5	13.770	44.47 QP	80.50	-36.03	1.00	170	47.99	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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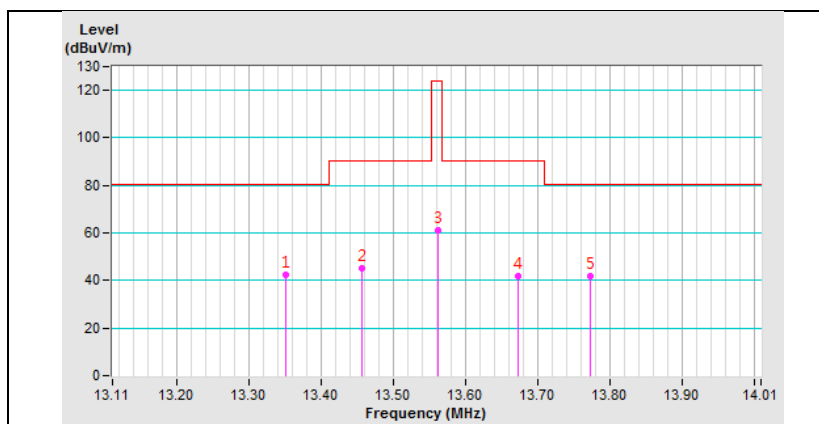
Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.351	42.31 QP	80.50	-38.19	1.00	82	45.76	-3.45
2	13.457	45.14 QP	90.47	-45.33	1.00	82	48.61	-3.47
3	*13.561	57.72 QP	124	-66.28	1.00	82	61.2	-3.48
4	13.673	42.04 QP	90.47	-48.43	1.00	82	45.54	-3.50
5	13.773	41.91 QP	80.50	-38.59	1.00	82	45.43	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
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 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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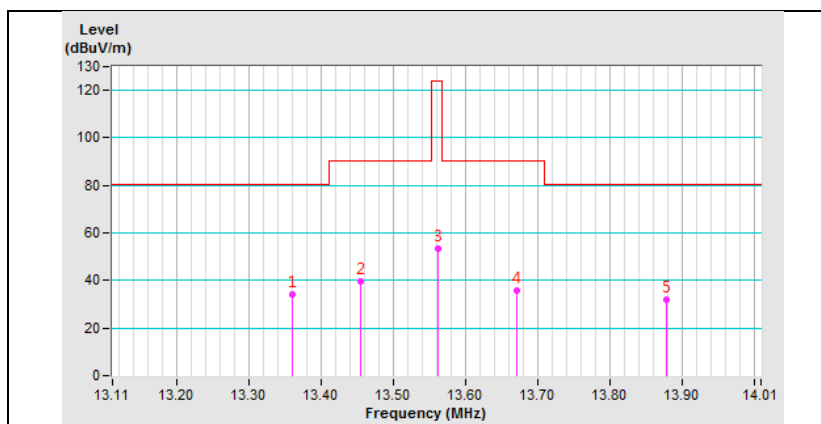
Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.359	34.02 QP	80.50	-46.48	1.00	165	37.47	-3.45
2	13.454	39.47 QP	90.47	-51.00	1.00	165	42.94	-3.47
3	*13.561	50.28 QP	124	-73.72	1.00	165	53.76	-3.48
4	13.672	35.97 QP	90.47	-54.50	1.00	165	39.47	-3.50
5	13.878	31.81 QP	80.50	-48.69	1.00	165	35.34	-3.53

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\mu\text{V/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$

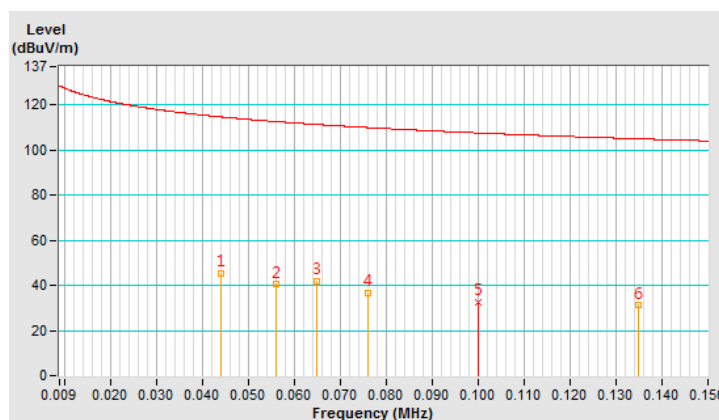


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
-----------------	----------------	-------------------	------------

Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.044	45.29 AV	114.73	-69.44	1.00	113	20.41	24.88
2	0.056	40.54 AV	112.63	-72.09	1.00	263	17.94	22.60
3	0.065	41.88 AV	111.34	-69.46	1.00	323	20.38	21.50
4	0.076	36.85 AV	109.98	-73.13	1.00	224	16.68	20.17
5	0.100	32.63 QP	107.60	-74.97	1.00	360	15.37	17.26
6	0.135	31.12 AV	104.99	-73.87	1.00	74	15.43	15.69

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

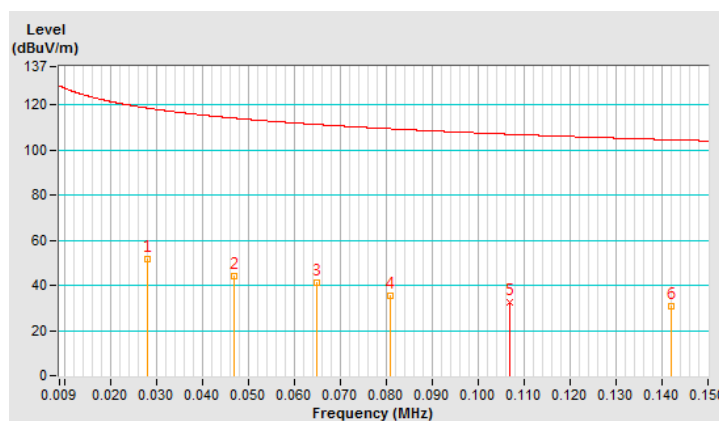


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendiclylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.028	51.92 AV	118.65	-66.73	1.00	173	22.49	29.43
2	0.047	44.13 AV	114.15	-70.02	1.00	253	20.03	24.10
3	0.065	41.41 AV	111.34	-69.93	1.00	152	19.91	21.50
4	0.081	35.55 AV	109.43	-73.88	1.00	28	15.98	19.57
5	0.107	32.50 QP	107.01	-74.51	1.00	57	15.55	16.95
6	0.142	31.02 AV	104.56	-73.54	1.00	277	15.64	15.38

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

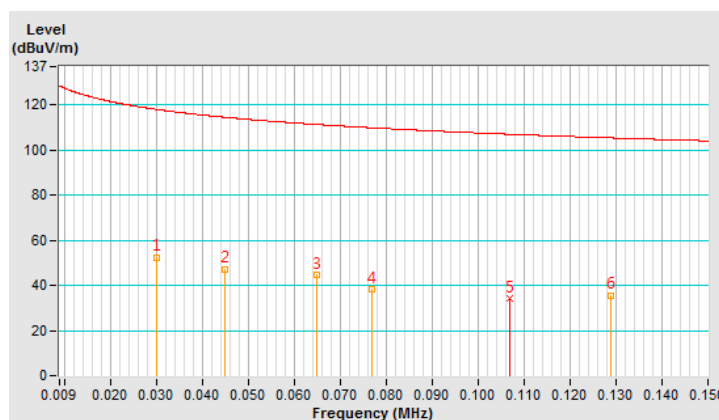


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.030	52.21 AV	118.05	-65.84	1.00	274	23.71	28.50
2	0.045	47.22 AV	114.53	-67.31	1.00	25	22.60	24.62
3	0.065	44.49 AV	111.34	-66.85	1.00	258	22.99	21.50
4	0.077	38.20 AV	109.87	-71.67	1.00	115	18.16	20.04
5	0.107	33.99 QP	107.01	-73.02	1.00	159	17.04	16.95
6	0.129	35.56 AV	105.39	-69.83	1.00	202	19.59	15.97

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

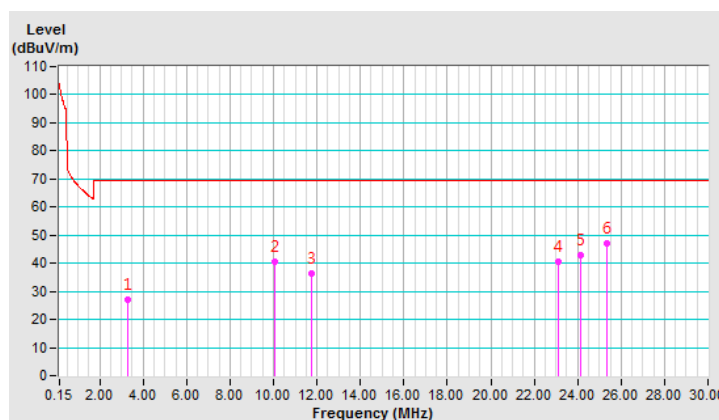


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3.305	27.13 QP	69.50	-42.37	1.00	135	30.17	-3.04
2	10.048	40.70 QP	69.50	-28.80	1.00	353	43.66	-2.96
3	11.750	36.34 QP	69.50	-33.16	1.00	168	39.56	-3.22
4	23.129	40.68 QP	69.50	-28.82	1.00	241	44.43	-3.75
5	24.139	42.94 QP	69.50	-26.56	1.00	84	46.48	-3.54
6	25.326	47.23 QP	69.50	-22.27	1.00	214	50.51	-3.28

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

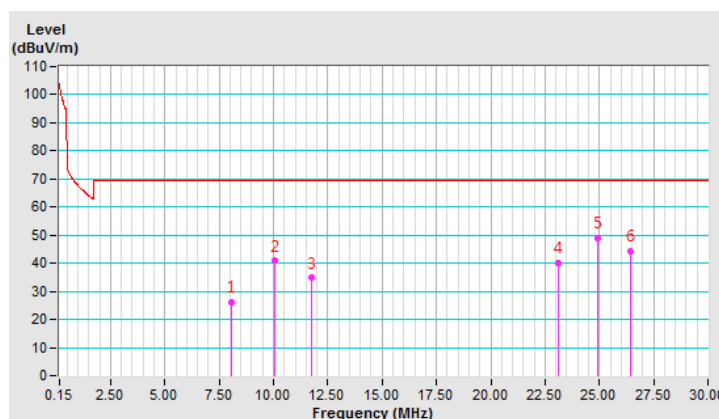


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	8.045	26.24 QP	69.50	-43.26	1.00	158	29.25	-3.01
2	10.048	40.81 QP	69.50	-28.69	1.00	245	43.77	-2.96
3	11.754	34.73 QP	69.50	-34.77	1.00	241	37.94	-3.21
4	23.127	40.16 QP	69.50	-29.34	1.00	8	43.91	-3.75
5	24.952	49.04 QP	69.50	-20.46	1.00	45	52.40	-3.36
6	26.413	44.36 QP	69.50	-25.14	1.00	114	47.40	-3.04

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

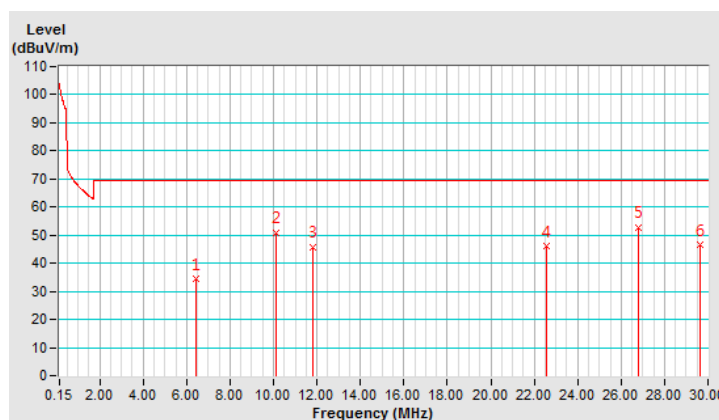


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.425	34.35 QP	69.50	-35.15	1.00	133	37.40	-3.05
2	10.097	50.78 QP	69.50	-18.72	1.00	360	53.74	-2.96
3	11.802	45.59 QP	69.50	-23.91	1.00	346	48.81	-3.22
4	22.579	45.99 QP	69.50	-23.51	1.00	56	49.86	-3.87
5	26.811	52.71 QP	69.50	-16.79	1.00	205	55.66	-2.95
6	29.660	46.46 QP	69.50	-23.04	1.00	28	48.78	-2.32

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

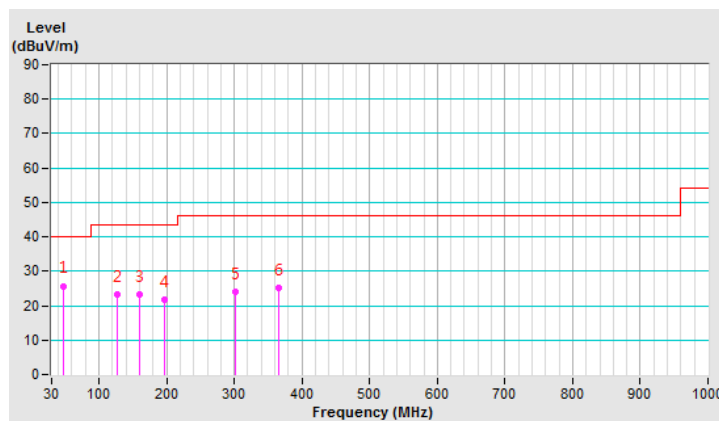


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.38	25.7 QP	40.0	-14.3	2.00 H	231	33.7	-8.0
2	126.59	23.1 QP	43.5	-20.4	1.00 H	302	32.4	-9.3
3	159.62	23.4 QP	43.5	-20.1	1.50 H	29	31.2	-7.8
4	196.16	21.7 QP	43.5	-21.8	1.00 H	360	32.5	-10.8
5	301.79	23.8 QP	46.0	-22.2	1.00 H	161	30.7	-6.9
6	365.89	25.2 QP	46.0	-20.8	1.50 H	360	30.4	-5.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

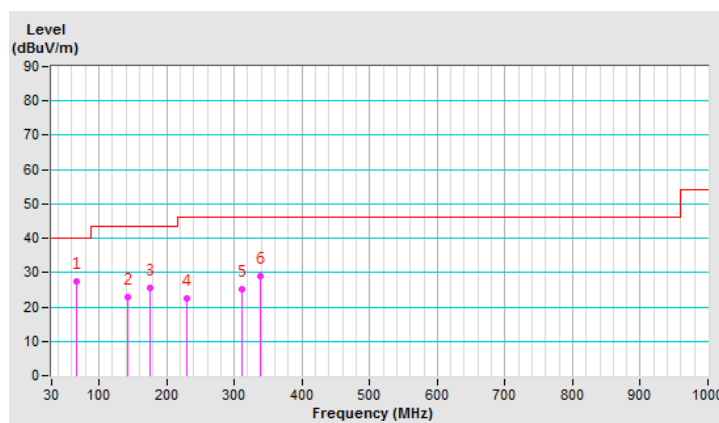


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	67.81	27.3 QP	40.0	-12.7	1.50 V	255	36.9	-9.6
2	143.08	22.9 QP	43.5	-20.6	1.00 V	247	30.8	-7.9
3	176.30	25.4 QP	43.5	-18.1	1.00 V	77	34.3	-8.9
4	229.12	22.6 QP	46.0	-23.4	1.50 V	358	33.1	-10.5
5	311.88	25.2 QP	46.0	-20.8	2.00 V	360	31.6	-6.4
6	339.02	29.0 QP	46.0	-17.0	1.50 V	59	34.8	-5.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



Type B

Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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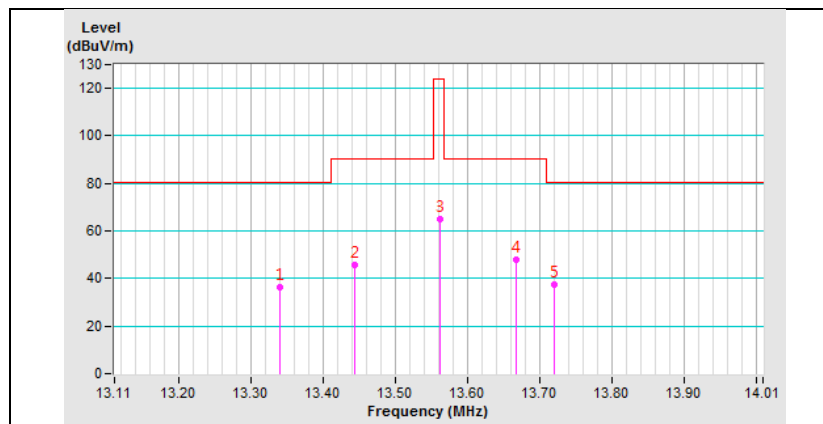
Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.339	36.52 QP	80.50	-43.98	1.00	172	39.97	-3.45
2	13.443	45.81 QP	90.47	-44.66	1.00	172	49.28	-3.47
3	*13.561	61.67 QP	124	-62.33	1.00	172	65.15	-3.48
4	13.668	47.88 QP	90.47	-42.59	1.00	172	51.38	-3.50
5	13.720	37.26 QP	80.50	-43.24	1.00	172	40.77	-3.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\mu\text{V/m} & 30\text{m} \\
 &= 84\text{dBuV/m} & 30\text{m} \\
 &= 84+20\log(30/3)^2 & 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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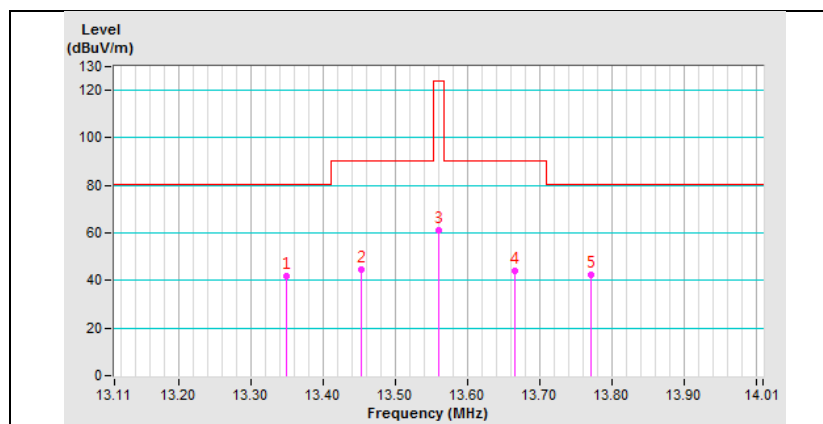
Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.348	42.09 QP	80.50	-38.41	1.00	81	45.54	-3.45
2	13.452	44.39 QP	90.47	-46.08	1.00	81	47.86	-3.47
3	*13.560	57.44 QP	124	-66.56	1.00	81	60.92	-3.48
4	13.666	44.16 QP	90.47	-46.31	1.00	81	47.66	-3.50
5	13.771	42.26 QP	80.50	-38.24	1.00	81	45.78	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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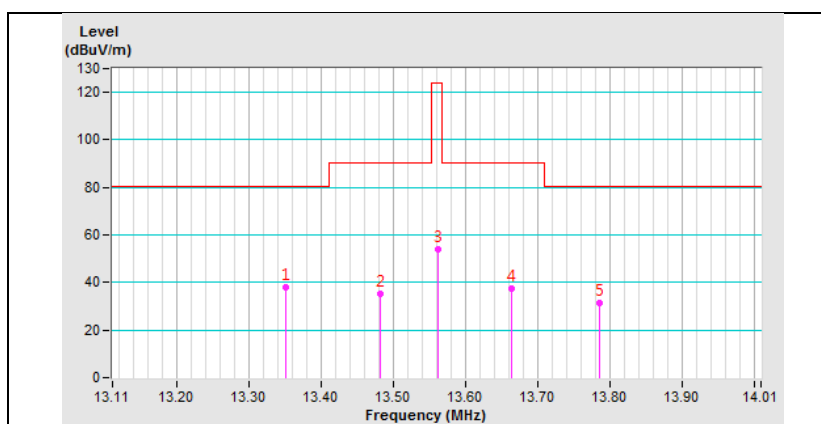
Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.350	37.96 QP	80.50	-42.54	1.00	166	41.41	-3.45
2	13.481	35.19 QP	90.47	-55.28	1.00	166	38.66	-3.47
3	*13.561	50.52 QP	124	-73.48	1.00	166	54	-3.48
4	13.664	37.52 QP	90.47	-52.95	1.00	166	41.02	-3.50
5	13.785	31.38 QP	80.50	-49.12	1.00	166	34.90	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$

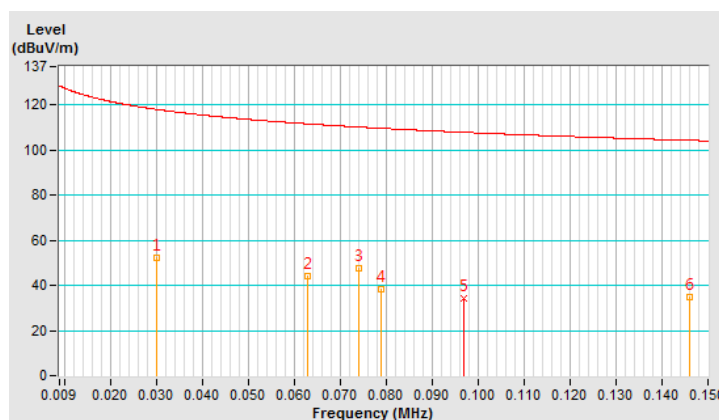


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.030	52.43 AV	118.05	-65.62	1.00	77	23.93	28.50
2	0.063	44.39 AV	111.61	-67.22	1.00	198	22.64	21.75
3	0.074	47.60 AV	110.21	-62.61	1.00	57	27.20	20.40
4	0.079	38.50 AV	109.65	-71.15	1.00	317	18.69	19.81
5	0.097	34.49 QP	107.86	-73.37	1.00	129	16.87	17.62
6	0.146	35.11 AV	104.31	-69.20	1.00	92	19.92	15.19

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

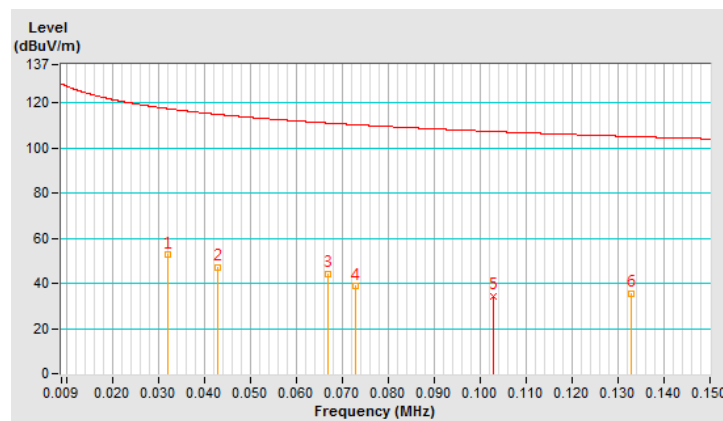


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendiclylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.032	52.61 AV	117.49	-64.88	1.00	244	24.62	27.99
2	0.043	47.02 AV	114.92	-67.90	1.00	85	21.88	25.14
3	0.067	44.26 AV	111.08	-66.82	1.00	360	23.01	21.25
4	0.073	38.80 AV	110.33	-71.53	1.00	111	18.27	20.53
5	0.103	34.19 QP	107.34	-73.15	1.00	69	17.07	17.12
6	0.133	35.53 AV	105.12	-69.59	1.00	193	19.75	15.78

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

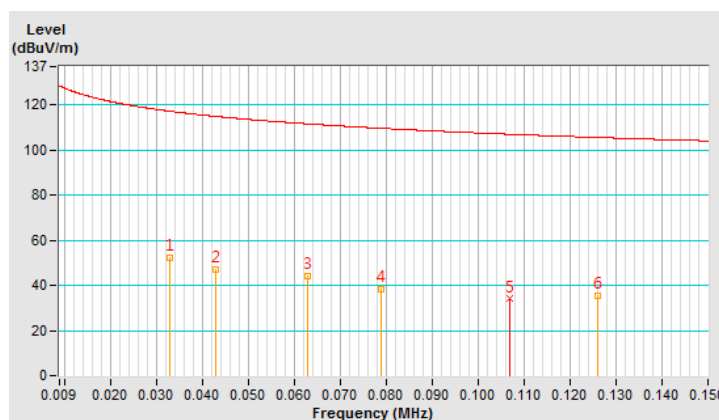


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.033	52.23 AV	117.22	-64.99	1.00	64	24.50	27.73
2	0.043	47.20 AV	114.92	-67.72	1.00	135	22.06	25.14
3	0.063	44.39 AV	111.61	-67.22	1.00	198	22.64	21.75
4	0.079	38.50 AV	109.65	-71.15	1.00	317	18.69	19.81
5	0.107	33.99 QP	107.01	-73.02	1.00	159	17.04	16.95
6	0.126	35.41 AV	105.59	-70.18	1.00	182	19.31	16.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

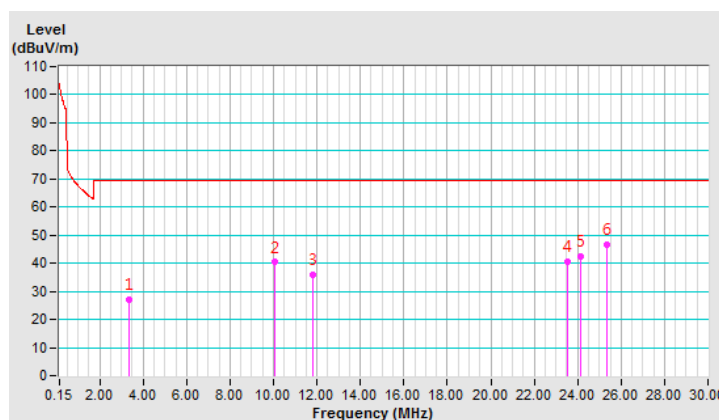


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3.329	27.21 QP	69.50	-42.29	1.00	95	30.25	-3.04
2	10.044	40.40 QP	69.50	-29.10	1.00	330	43.36	-2.96
3	11.783	36.04 QP	69.50	-33.46	1.00	48	39.26	-3.22
4	23.529	40.48 QP	69.50	-29.02	1.00	151	44.14	-3.66
5	24.149	42.44 QP	69.50	-27.06	1.00	24	45.98	-3.54
6	25.358	46.71 QP	69.50	-22.79	1.00	164	49.98	-3.27

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

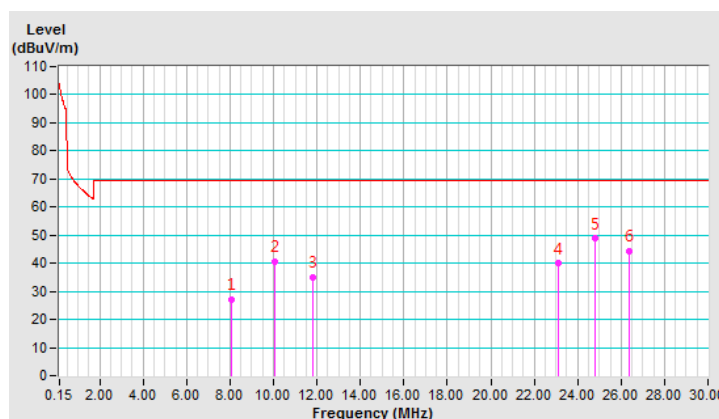


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	8.085	27.24 QP	69.50	-42.26	1.00	156	30.25	-3.01
2	10.041	40.61 QP	69.50	-28.89	1.00	195	43.57	-2.96
3	11.804	35.03 QP	69.50	-34.47	1.00	352	38.25	-3.22
4	23.087	39.86 QP	69.50	-29.64	1.00	350	43.62	-3.76
5	24.812	48.74 QP	69.50	-20.76	1.00	115	52.13	-3.39
6	26.379	44.26 QP	69.50	-25.24	1.00	84	47.31	-3.05

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

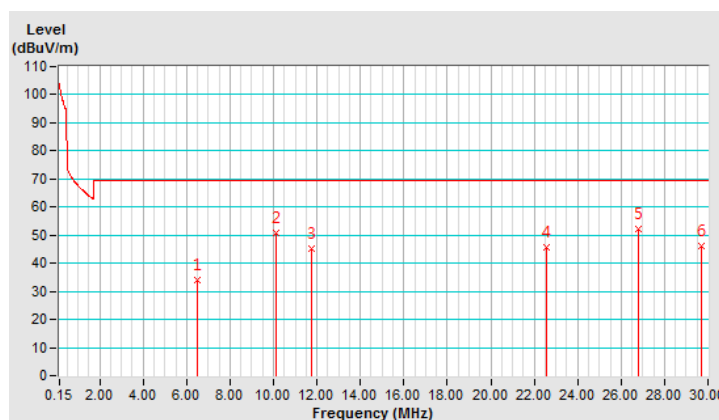


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.485	34.15 QP	69.50	-35.35	1.00	43	37.20	-3.05
2	10.106	50.81 QP	69.50	-18.69	1.00	330	53.78	-2.97
3	11.772	45.39 QP	69.50	-24.11	1.00	236	48.61	-3.22
4	22.584	45.69 QP	69.50	-23.81	1.00	176	49.56	-3.87
5	26.801	52.31 QP	69.50	-17.19	1.00	165	55.26	-2.95
6	29.700	46.16 QP	69.50	-23.34	1.00	20	48.47	-2.31

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

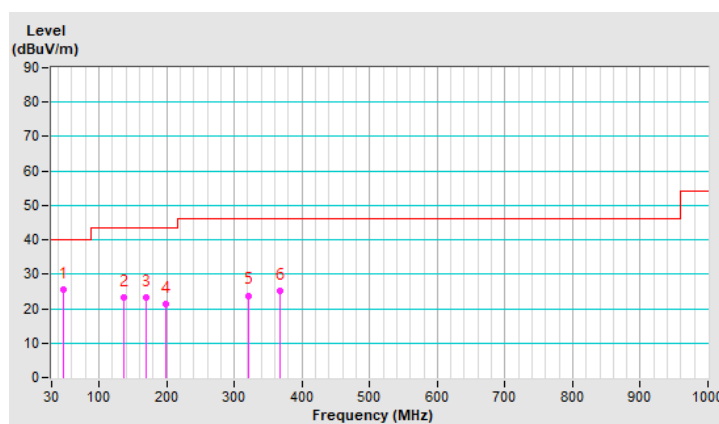


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.40	25.6 QP	40.0	-14.4	2.00 H	251	33.6	-8.0
2	136.59	23.3 QP	43.5	-20.2	1.30 H	332	31.7	-8.4
3	169.62	23.4 QP	43.5	-20.1	1.60 H	49	31.7	-8.3
4	198.16	21.5 QP	43.5	-22.0	1.20 H	356	32.4	-10.9
5	321.79	23.8 QP	46.0	-22.2	1.30 H	191	29.9	-6.1
6	367.39	25.2 QP	46.0	-20.8	1.70 H	290	30.4	-5.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

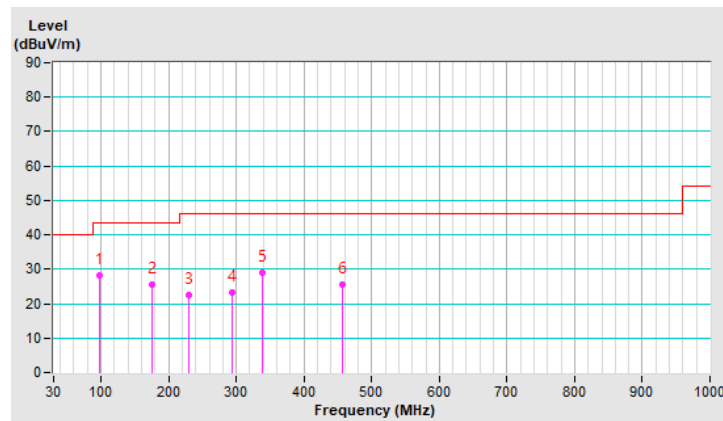


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	97.81	28.3 QP	43.5	-15.2	1.50 V	275	41.2	-12.9
2	176.30	25.4 QP	43.5	-18.1	1.00 V	77	34.3	-8.9
3	229.12	22.6 QP	46.0	-23.4	1.50 V	358	33.1	-10.5
4	293.08	23.3 QP	46.0	-22.7	2.40 V	297	30.4	-7.1
5	339.02	29.0 QP	46.0	-17.0	1.50 V	59	34.8	-5.8
6	456.88	25.4 QP	46.0	-20.6	3.50 V	340	28.2	-2.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



Type F

Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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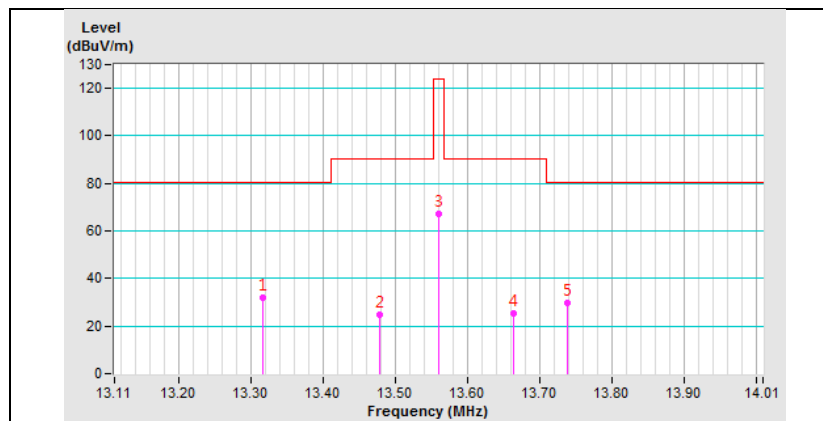
Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.315	31.70 QP	80.50	-48.80	1.00	175	35.15	-3.45
2	13.478	24.85 QP	90.47	-65.62	1.00	175	28.32	-3.47
3	*13.560	61.72 QP	124	-62.28	1.00	175	65.2	-3.48
4	13.664	25.31 QP	90.47	-65.16	1.00	175	28.81	-3.50
5	13.739	29.79 QP	80.50	-50.71	1.00	175	33.30	-3.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\mu\text{V/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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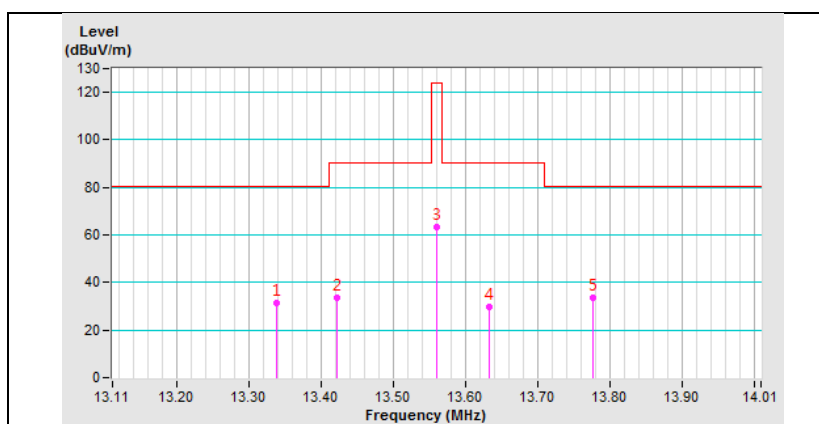
Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.337	31.28 QP	80.50	-49.22	1.00	86	34.73	-3.45
2	13.421	33.64 QP	90.47	-56.83	1.00	86	37.10	-3.46
3	*13.560	57.67 QP	124	-66.33	1.00	86	61.15	-3.48
4	13.632	29.74 QP	90.47	-60.73	1.00	86	33.23	-3.49
5	13.777	33.48 QP	80.50	-47.02	1.00	86	37.00	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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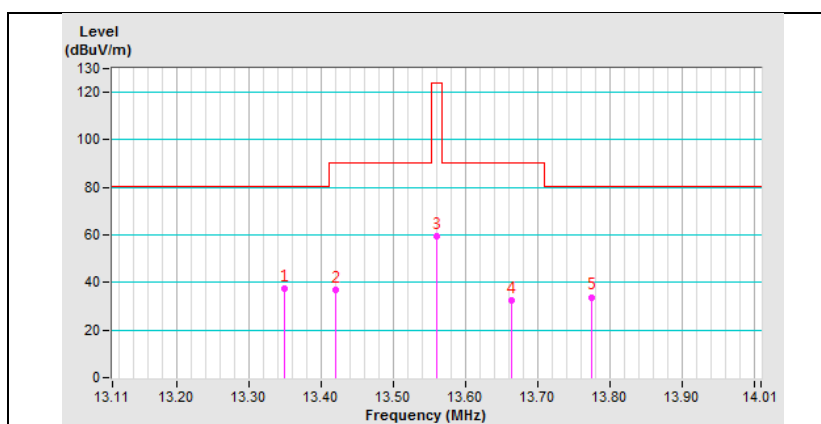
Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.348	37.35 QP	80.50	-43.15	1.00	340	40.80	-3.45
2	13.420	36.71 QP	90.47	-53.76	1.00	340	40.17	-3.46
3	*13.560	53.72 QP	124	-70.28	1.00	340	57.2	-3.48
4	13.664	32.23 QP	90.47	-58.24	1.00	340	35.73	-3.50
5	13.775	33.84 QP	80.50	-46.66	1.00	340	37.36	-3.52

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$

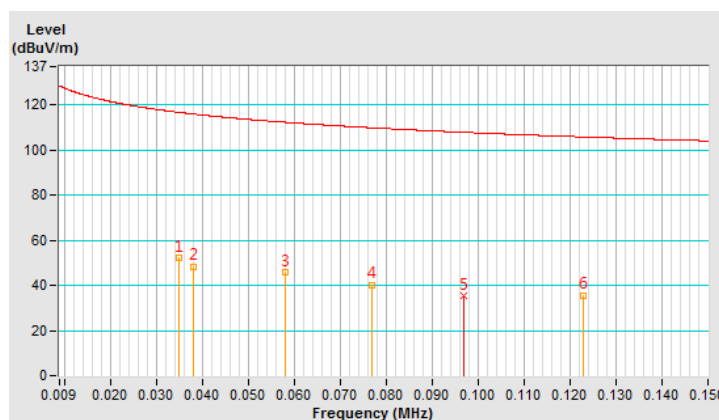


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.035	52.11 AV	116.71	-64.60	1.00	31	24.90	27.21
2	0.038	48.32 AV	116.00	-67.68	1.00	212	21.89	26.43
3	0.058	45.77 AV	112.33	-66.56	1.00	0	23.41	22.36
4	0.077	40.20 AV	109.87	-69.67	1.00	158	20.16	20.04
5	0.097	35.19 QP	107.86	-72.67	1.00	119	17.57	17.62
6	0.123	35.50 AV	105.80	-70.30	1.00	303	19.28	16.22

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

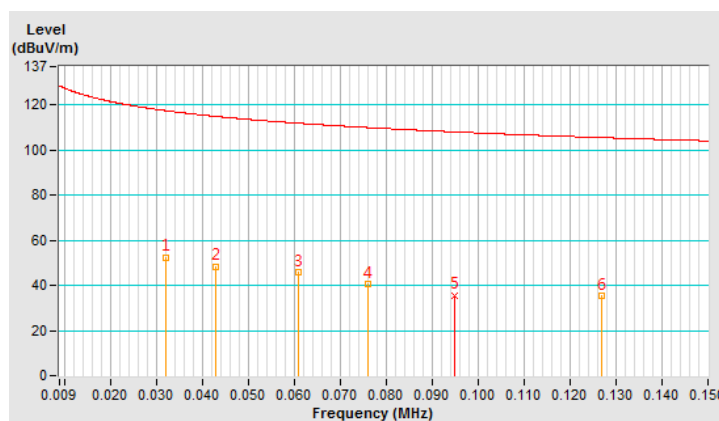


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendiclylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.032	52.51 AV	117.49	-64.98	1.00	61	24.52	27.99
2	0.043	48.32 AV	114.92	-66.60	1.00	2	23.18	25.14
3	0.061	45.57 AV	111.89	-66.32	1.00	25	23.58	21.99
4	0.076	40.50 AV	109.98	-69.48	1.00	58	20.33	20.17
5	0.095	35.49 QP	108.04	-72.55	1.00	359	17.62	17.87
6	0.127	35.30 AV	105.52	-70.22	1.00	153	19.24	16.06

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

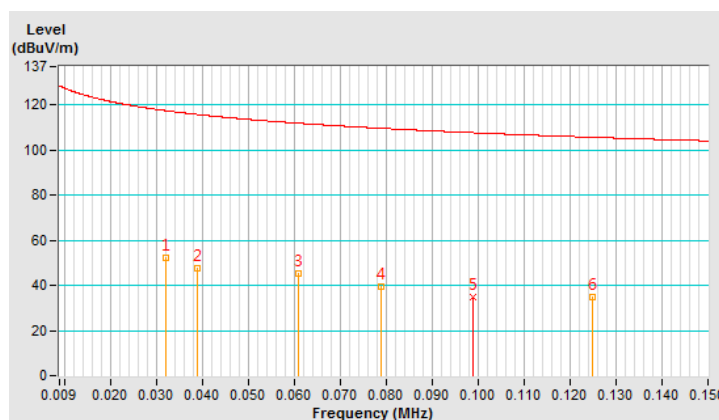


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.032	52.41 AV	117.49	-65.08	1.00	18	24.42	27.99
2	0.039	47.72 AV	115.77	-68.05	1.00	219	21.55	26.17
3	0.061	45.46 AV	111.89	-66.43	1.00	320	23.47	21.99
4	0.079	39.70 AV	109.65	-69.95	1.00	98	19.89	19.81
5	0.099	34.89 QP	107.69	-72.80	1.00	179	17.51	17.38
6	0.125	34.90 AV	105.66	-70.76	1.00	223	18.76	16.14

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

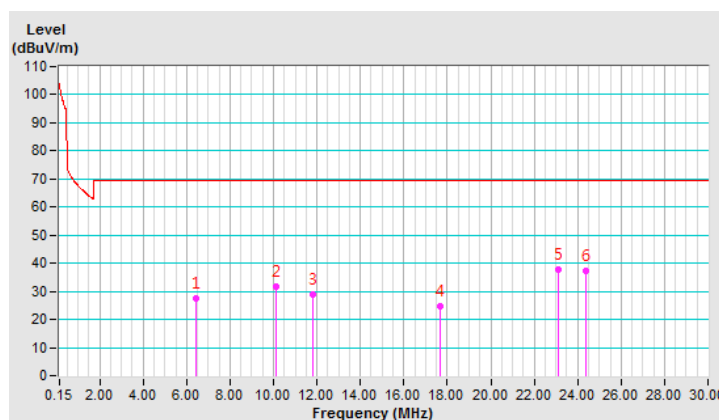


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.424	27.61 QP	69.50	-41.89	1.00	123	30.66	-3.05
2	10.093	31.85 QP	69.50	-37.65	1.00	51	34.81	-2.96
3	11.831	29.02 QP	69.50	-40.48	1.00	153	32.24	-3.22
4	17.694	24.79 QP	69.50	-44.71	1.00	325	28.88	-4.09
5	23.129	37.77 QP	69.50	-31.73	1.00	225	41.52	-3.75
6	24.351	37.21 QP	69.50	-32.29	1.00	246	40.71	-3.50

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

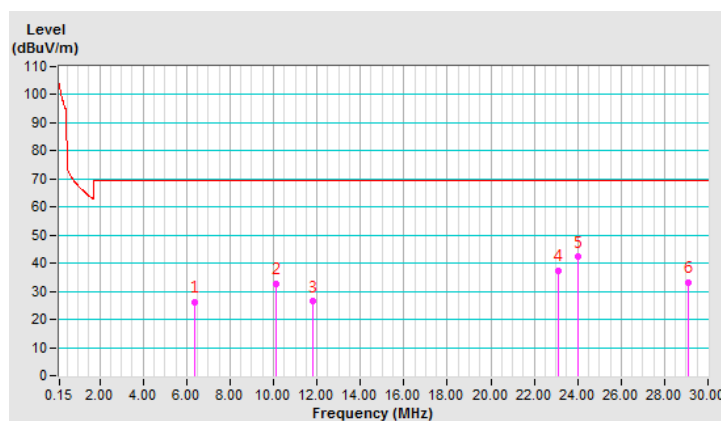


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.348	26.28 QP	69.50	-43.22	1.00	168	29.33	-3.05
2	10.096	32.72 QP	69.50	-36.78	1.00	22	35.68	-2.96
3	11.837	26.37 QP	69.50	-43.13	1.00	208	29.60	-3.23
4	23.130	37.22 QP	69.50	-32.28	1.00	145	40.97	-3.75
5	24.044	42.23 QP	69.50	-27.27	1.00	117	45.79	-3.56
6	29.114	33.17 QP	69.50	-36.33	1.00	351	35.62	-2.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

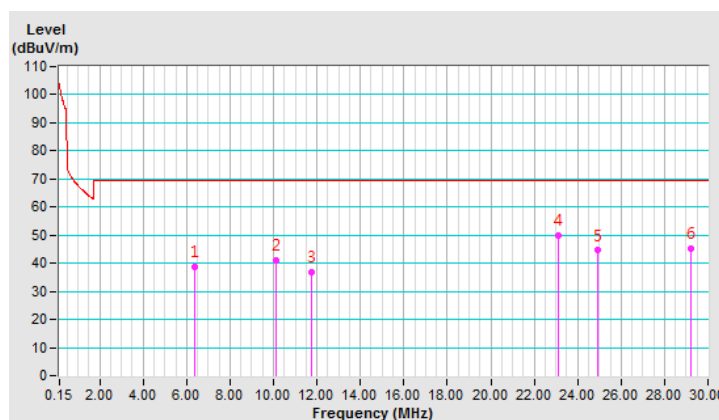


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.394	38.86 QP	69.50	-30.64	1.00	142	41.90	-3.04
2	10.098	41.21 QP	69.50	-28.29	1.00	213	44.17	-2.96
3	11.752	37.02 QP	69.50	-32.48	1.00	22	40.23	-3.21
4	23.130	50.06 QP	69.50	-19.44	1.00	352	53.81	-3.75
5	24.917	44.61 QP	69.50	-24.89	1.00	15	47.98	-3.37
6	29.235	45.24 QP	69.50	-24.26	1.00	158	47.66	-2.42

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

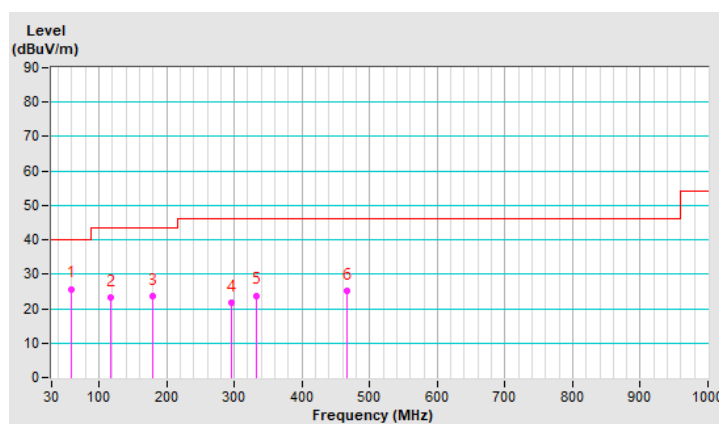


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	58.38	25.7 QP	40.0	-14.3	1.00 H	131	34.0	-8.3
2	116.59	23.1 QP	43.5	-20.4	3.00 H	332	33.0	-9.9
3	179.62	23.5 QP	43.5	-20.0	1.70 H	59	32.8	-9.3
4	296.16	21.7 QP	46.0	-24.3	1.20 H	330	28.8	-7.1
5	331.79	23.8 QP	46.0	-22.2	1.20 H	271	29.6	-5.8
6	465.89	25.2 QP	46.0	-20.8	1.40 H	260	27.9	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

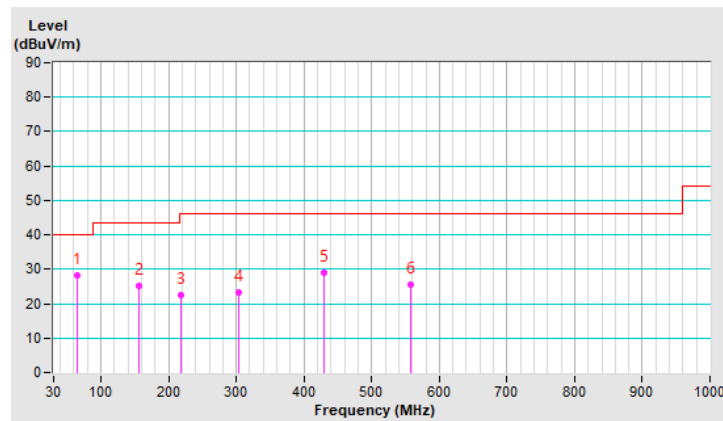


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	64.81	28.2 QP	40.0	-11.8	1.40 V	75	37.5	-9.3
2	156.30	25.3 QP	43.5	-18.2	1.00 V	97	32.8	-7.5
3	219.12	22.5 QP	46.0	-23.5	1.47 V	348	33.3	-10.8
4	303.08	23.3 QP	46.0	-22.7	2.60 V	197	30.1	-6.8
5	429.02	29.0 QP	46.0	-17.0	1.10 V	109	32.4	-3.4
6	556.88	25.4 QP	46.0	-20.6	2.50 V	330	26.4	-1.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



Type V(ISO15693)

Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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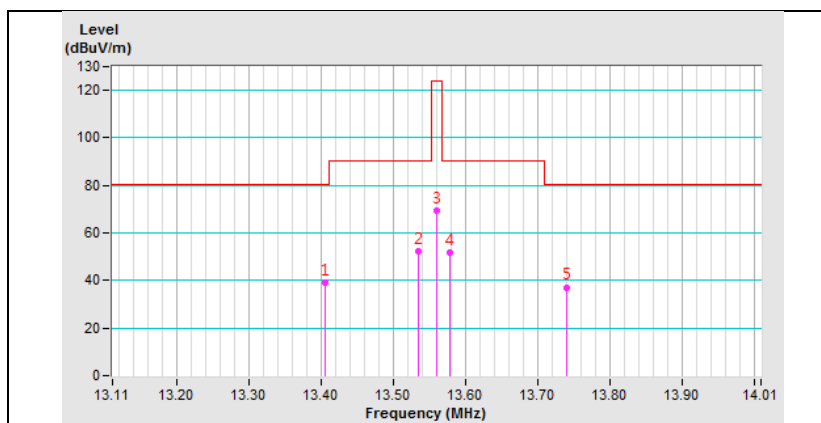
Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.405	39.13 QP	80.50	-41.37	1.00	175	42.59	-3.46
2	13.535	52.43 QP	90.47	-38.04	1.00	175	55.91	-3.48
3	*13.560	61.96 QP	124	-62.04	1.00	175	65.44	-3.48
4	13.579	51.52 QP	90.47	-38.95	1.00	175	55.01	-3.49
5	13.741	37.14 QP	80.50	-43.36	1.00	175	40.65	-3.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\mu\text{V/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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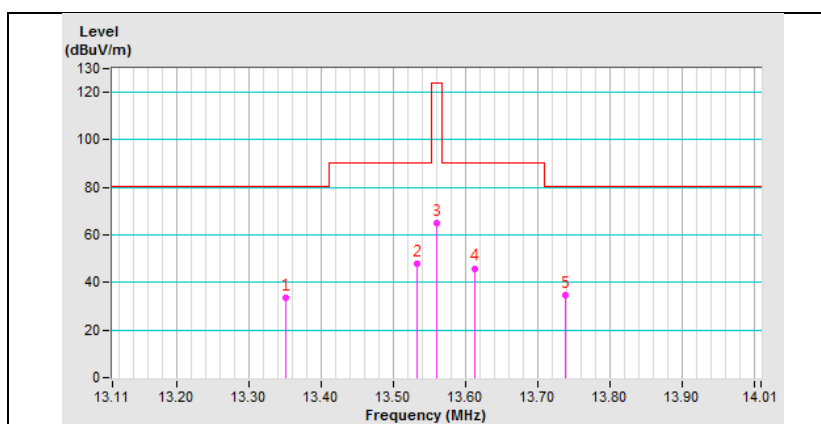
Antenna Polarity & Test Distance: Perpendicylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.350	33.64 QP	80.50	-46.86	1.00	87	37.09	-3.45
2	13.533	48.05 QP	90.47	-42.42	1.00	87	51.53	-3.48
3	*13.560	57.81 QP	124	-66.19	1.00	87	61.29	-3.48
4	13.612	45.98 QP	90.47	-44.49	1.00	87	49.47	-3.49
5	13.739	34.64 QP	80.50	-45.86	1.00	87	38.15	-3.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$



Frequency Range	13.110 ~ 14.010MHz	Detector Function	Quasi-Peak
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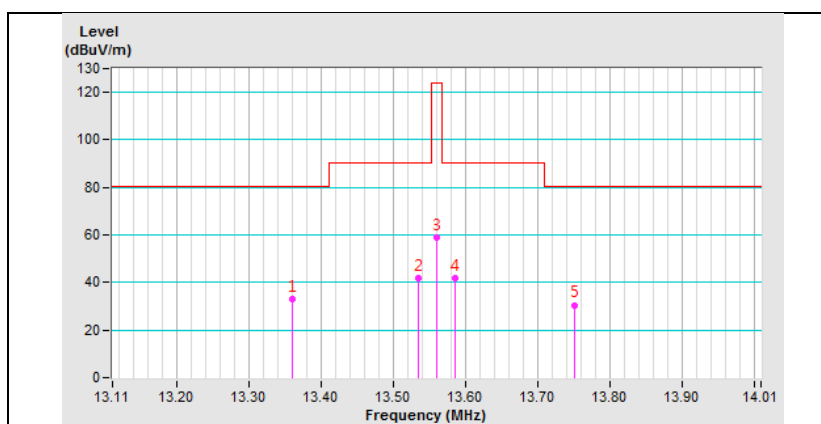
Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	13.359	33.06 QP	80.50	-47.44	1.00	350	36.51	-3.45
2	13.535	41.64 QP	90.47	-48.83	1.00	350	45.12	-3.48
3	*13.560	51.7 QP	124	-72.3	1.00	350	55.18	-3.48
4	13.585	41.71 QP	90.47	-48.76	1.00	350	45.20	-3.49
5	13.752	30.55 QP	80.50	-49.95	1.00	350	34.06	-3.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor(dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. Above limits have been translated by the formula
 6. " * ": Fundamental frequency.

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 13.56\text{MHz} &= 15848\text{uV/m} && 30\text{m} \\
 &= 84\text{dBuV/m} && 30\text{m} \\
 &= 84+20\log(30/3)^2 && 3\text{m} \\
 &= 124\text{dBuV/m}
 \end{aligned}$$

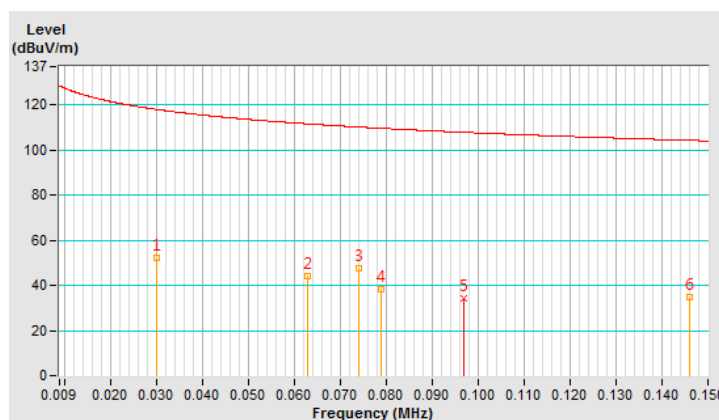


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.033	52.21 AV	117.22	-65.01	1.00	194	24.48	27.73
2	0.041	47.32 AV	115.34	-68.02	1.00	165	21.67	25.65
3	0.065	44.56 AV	111.34	-66.78	1.00	300	23.06	21.50
4	0.071	39.20 AV	110.57	-71.37	1.00	81	18.43	20.77
5	0.099	33.89 QP	107.69	-73.80	1.00	49	16.51	17.38
6	0.137	35.50 AV	104.87	-69.37	1.00	163	19.89	15.61

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

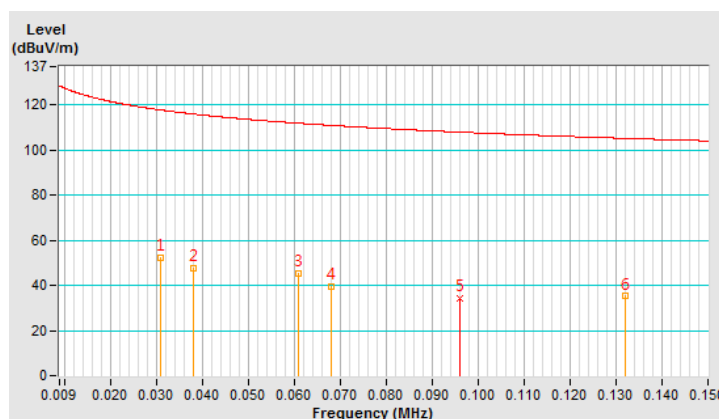


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendiclyar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.031	52.51 AV	117.77	-65.26	1.00	74	24.27	28.24
2	0.038	47.62 AV	116.00	-68.38	1.00	169	21.19	26.43
3	0.061	45.46 AV	111.89	-66.43	1.00	260	23.47	21.99
4	0.068	39.60 AV	110.95	-71.35	1.00	131	18.46	21.14
5	0.096	34.49 QP	107.95	-73.46	1.00	99	16.74	17.75
6	0.132	35.20 AV	105.19	-69.99	1.00	133	19.37	15.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

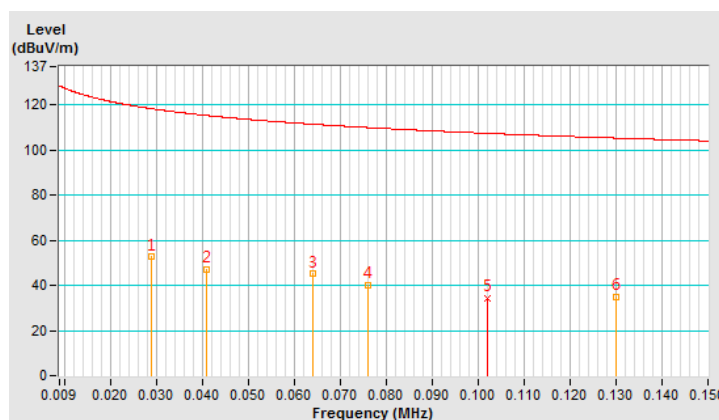


Frequency Range	9kHz ~ 0.15MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	0.029	52.71 AV	118.34	-65.63	1.00	68	23.74	28.97
2	0.041	47.22 AV	115.34	-68.12	1.00	129	21.57	25.65
3	0.064	45.16 AV	111.47	-66.31	1.00	180	23.54	21.62
4	0.076	40.10 AV	109.98	-69.88	1.00	101	19.93	20.17
5	0.102	34.49 QP	107.43	-72.94	1.00	49	17.32	17.17
6	0.130	35.00 AV	105.32	-70.32	1.00	103	19.08	15.92

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

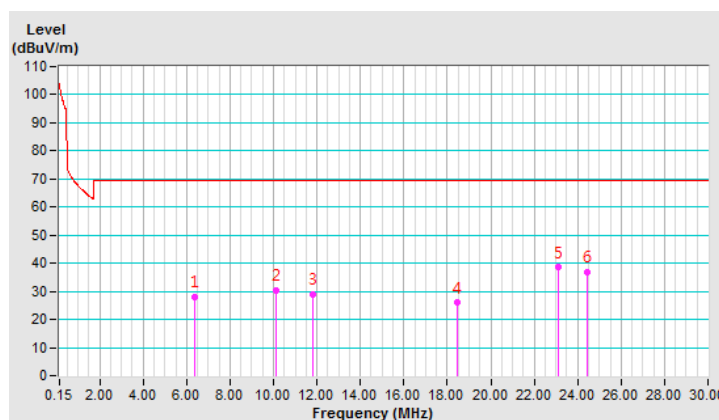


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.389	28.11 QP	69.50	-41.39	1.00	157	31.15	-3.04
2	10.096	30.37 QP	69.50	-39.13	1.00	223	33.33	-2.96
3	11.802	29.04 QP	69.50	-40.46	1.00	42	32.26	-3.22
4	18.488	25.89 QP	69.50	-43.61	1.00	147	30.09	-4.20
5	23.129	38.49 QP	69.50	-31.01	1.00	256	42.24	-3.75
6	24.471	36.97 QP	69.50	-32.53	1.00	323	40.44	-3.47

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

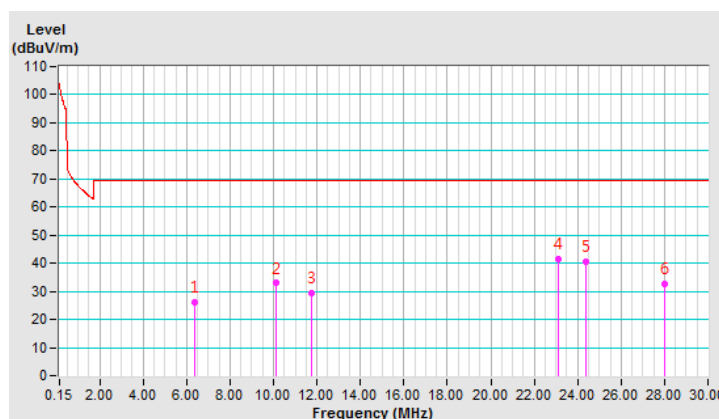


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Perpendiclylar at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.398	26.28 QP	69.50	-43.22	1.00	321	29.32	-3.04
2	10.096	32.97 QP	69.50	-36.53	1.00	58	35.93	-2.96
3	11.752	29.54 QP	69.50	-39.96	1.00	54	32.75	-3.21
4	23.129	41.66 QP	69.50	-27.84	1.00	115	45.41	-3.75
5	24.351	40.65 QP	69.50	-28.85	1.00	257	44.15	-3.50
6	28.016	32.82 QP	69.50	-36.68	1.00	360	35.51	-2.69

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

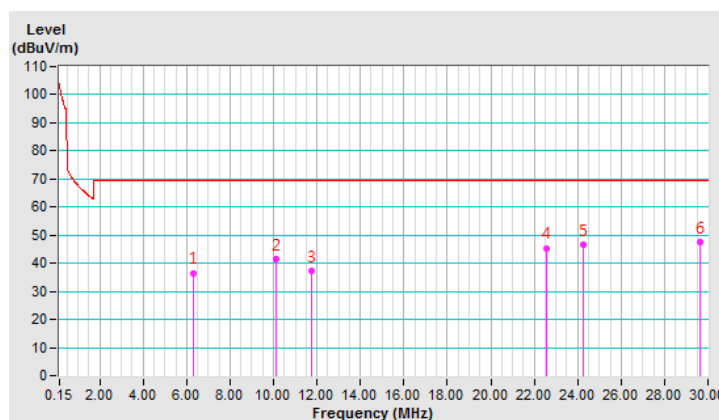


Frequency Range	0.15MHz ~ 30MHz	Detector Function	Quasi-Peak
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Antenna Polarity & Test Distance: Ground Parallel at 3m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6.328	36.29 QP	69.50	-33.21	1.00	215	39.34	-3.05
2	10.097	41.30 QP	69.50	-28.20	1.00	154	44.26	-2.96
3	11.752	37.07 QP	69.50	-32.43	1.00	321	40.28	-3.21
4	22.581	45.34 QP	69.50	-24.16	1.00	15	49.21	-3.87
5	24.288	46.38 QP	69.50	-23.12	1.00	225	49.89	-3.51
6	29.664	47.38 QP	69.50	-22.12	1.00	320	49.70	-2.32

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

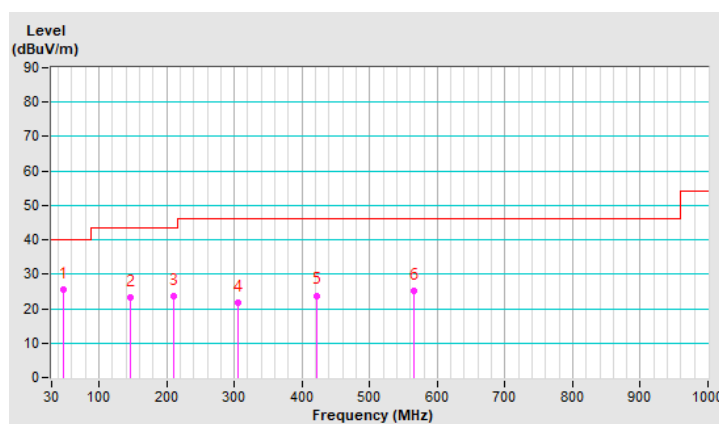


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.38	25.6 QP	40.0	-14.4	1.40 H	171	33.6	-8.0
2	146.59	23.2 QP	43.5	-20.3	2.95 H	232	30.9	-7.7
3	209.62	23.5 QP	43.5	-20.0	1.50 H	79	34.5	-11.0
4	306.16	21.6 QP	46.0	-24.4	1.40 H	130	28.3	-6.7
5	421.79	23.8 QP	46.0	-22.2	1.53 H	301	27.5	-3.7
6	565.89	25.2 QP	46.0	-20.8	1.60 H	160	26.0	-0.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

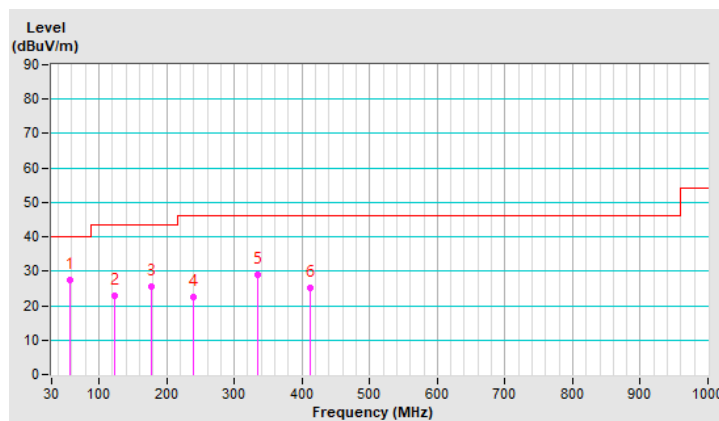


Frequency Range	30MHz ~ 1000MHz	Detector Function	Quasi-Peak
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ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.81	27.3 QP	40.0	-12.7	2.50 V	275	35.6	-8.3
2	123.08	22.9 QP	43.5	-20.6	1.40 V	357	32.3	-9.4
3	178.30	25.5 QP	43.5	-18.0	1.11 V	80	34.6	-9.1
4	239.12	22.6 QP	46.0	-23.4	1.70 V	360	31.8	-9.2
5	335.02	29.1 QP	46.0	-16.9	1.30 V	39	34.9	-5.8
6	411.88	25.2 QP	46.0	-20.8	1.70 V	330	29.3	-4.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

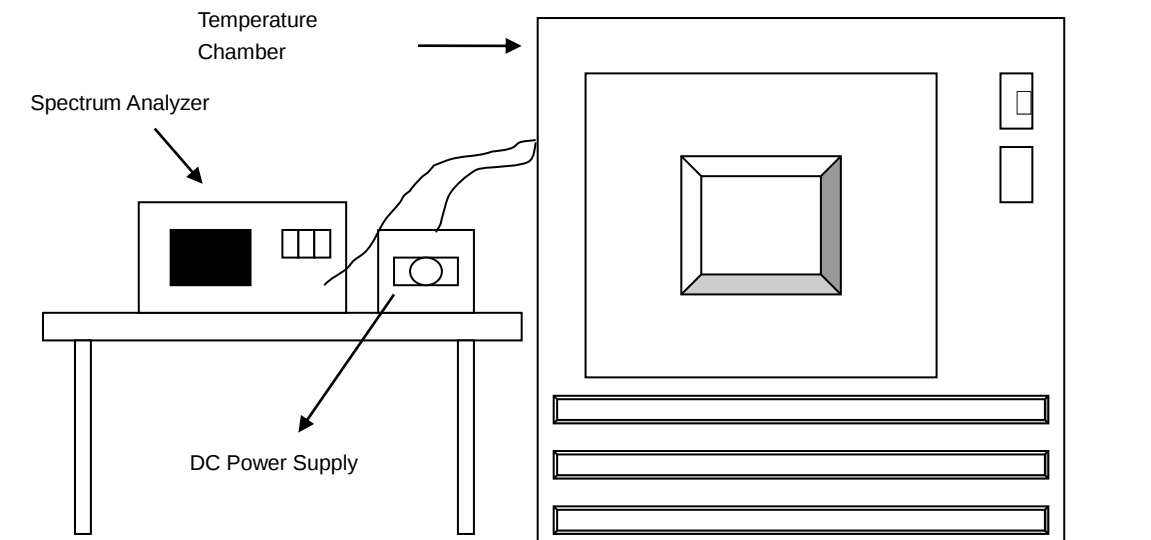


4.2 Frequency Stability

4.2.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turned the EUT on and coupled its output to a spectrum analyzer.
- Turned the EUT off and set the chamber to the highest temperature specified.
- Allowed sufficient time (approximately 30 min) for the temperature of the chamber to stabilize then turned the EUT on and measured the operating frequency after 2, 5, and 10 minutes.
- Repeated step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at $+20$ degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

Same as Item 4.1.6.

4.2.7 Test Result

Frequency Stability Versus Temp.									
TEMP. (°C)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	3.85	13.56002	0.00015	13.56001	0.00007	13.56001	0.00007	13.56002	0.00015
40	3.85	13.56007	0.00052	13.56005	0.00037	13.56006	0.00044	13.56006	0.00044
30	3.85	13.56007	0.00052	13.56006	0.00044	13.56005	0.00037	13.56007	0.00052
20	3.85	13.56	0.00000	13.56	0.00000	13.56	0.00000	13.55999	-0.00007
10	3.85	13.55997	-0.00022	13.55996	-0.00029	13.55998	-0.00015	13.55997	-0.00022
0	3.85	13.55995	-0.00037	13.55994	-0.00044	13.55994	-0.00044	13.55993	-0.00052
-10	3.85	13.55994	-0.00044	13.55994	-0.00044	13.55994	-0.00044	13.55993	-0.00052
-20	3.85	13.55997	-0.00022	13.55995	-0.00037	13.55996	-0.00029	13.55995	-0.00037

Frequency Stability Versus Voltage									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	4.43	13.56	0.00000	13.56	0.00000	13.56	0.00000	13.55999	-0.00007
	3.85	13.56	0.00000	13.56	0.00000	13.56	0.00000	13.55999	-0.00007
	3.27	13.56	0.00000	13.56	0.00000	13.56	0.00000	13.55999	-0.00007

4.3 20dB bandwidth

4.3.1 Limits of 20dB bandwidth Measurement

The 20dB bandwidth shall be specified in operating frequency band.

4.3.2 Test Setup

Same as Item 4.1.5.

4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1kHz RBW and 3kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.3.5 Deviation from Test Standard

No deviation.

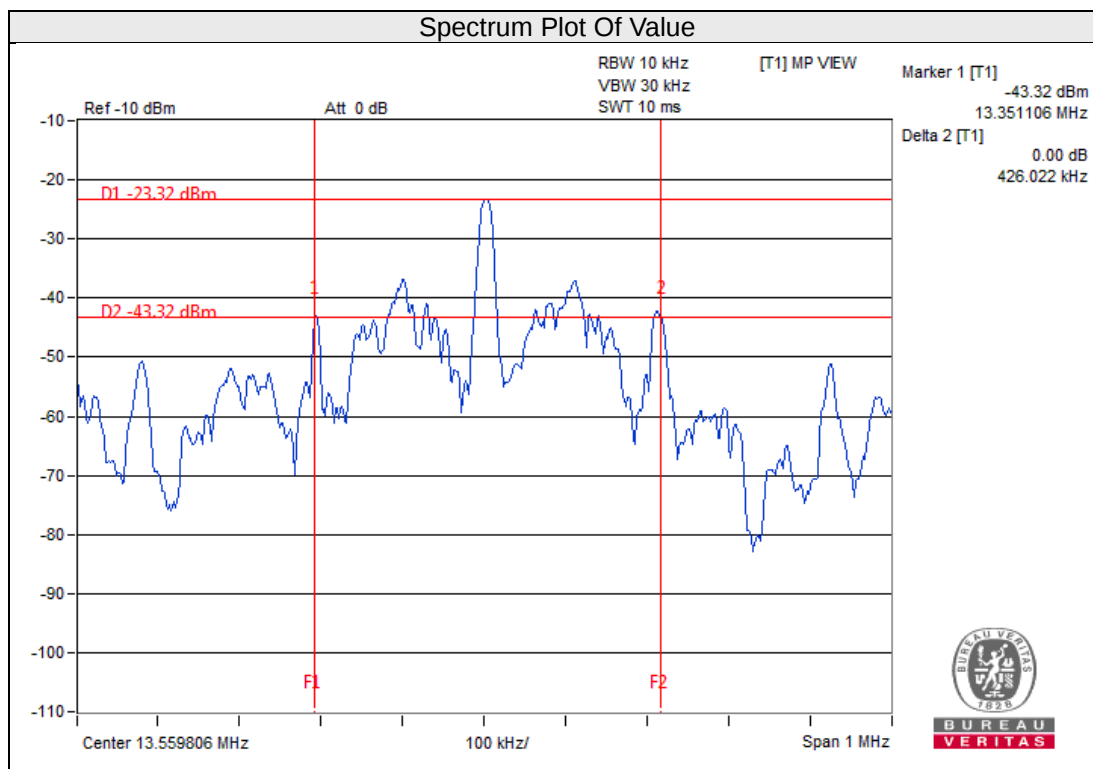
4.3.6 EUT Operating Conditions

Same as Item 4.1.6.

4.3.7 Test Results

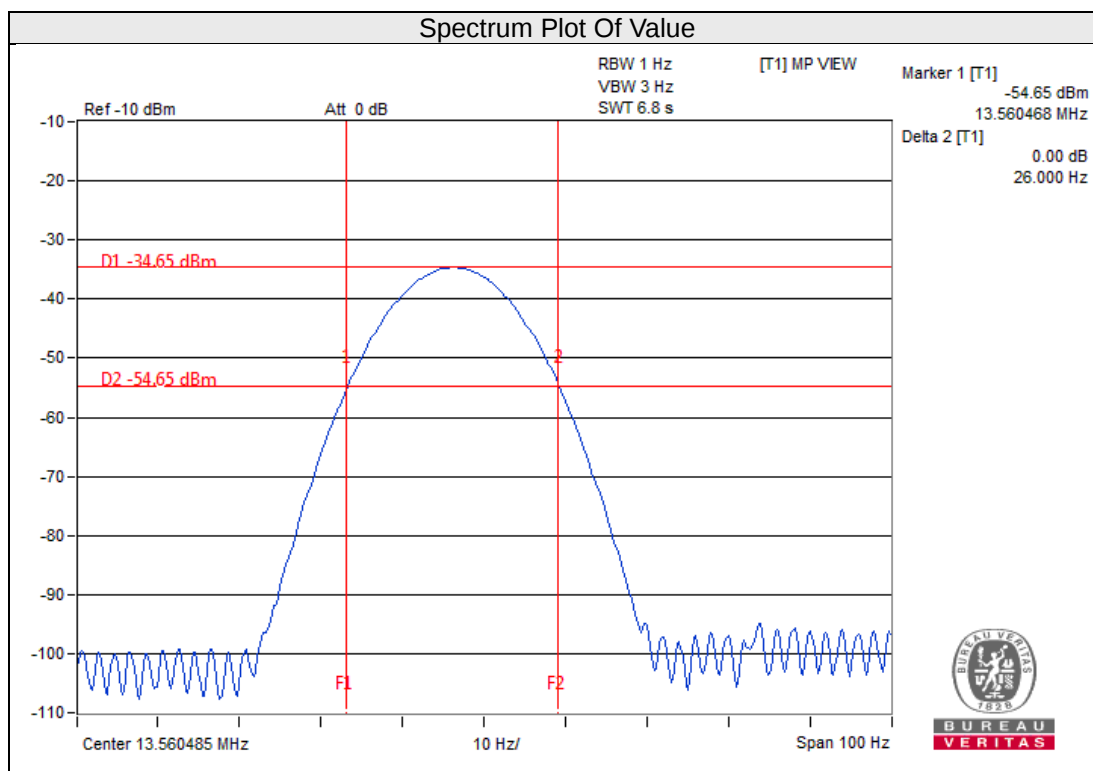
Type A

20dBc point (Low)	20dBc point (High)	Operating frequency band (MHz)	Pass/Fail
13.351106	13.777128	13.11 – 14.01	Pass



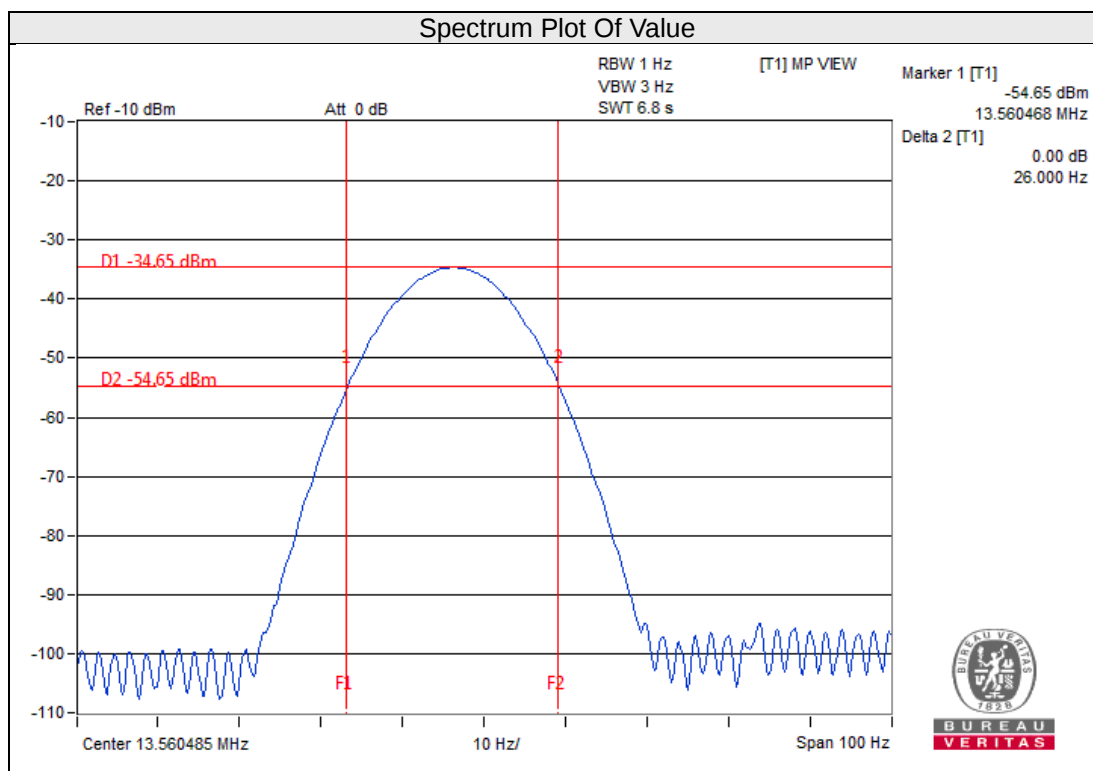
Type B

20dBc point (Low)	20dBc point (High)	Operating frequency band (MHz)	Pass/Fail
13.560468	13.560494	13.11 – 14.01	Pass



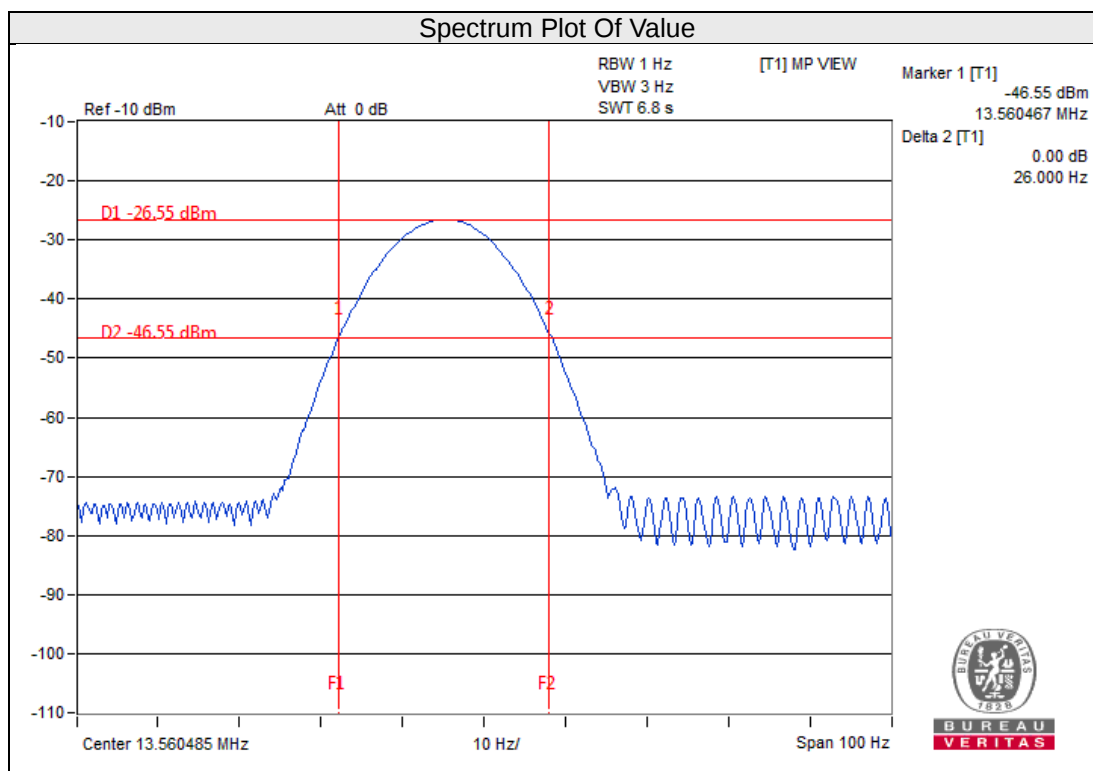
Type F

20dBc point (Low)	20dBc point (High)	Operating frequency band (MHz)	Pass/Fail
13.560468	13.560494	13.11 – 14.01	Pass



Type V(ISO15693)

20dBc point (Low)	20dBc point (High)	Operating frequency band (MHz)	Pass/Fail
13.560467	13.560693	13.11 – 14.01	Pass



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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