




Test Report No.: RF2302WDG0253-1



# TEST REPORT

Applicant	Bosch Security Systems Inc
Address	130 Perinton Parkway, Fairport, New York, 14450 United States



Manufacturer or Supplier	Bosch Security Systems Inc
Address	130 Perinton Parkway, Fairport, New York, 14450 United States
Product	EVERSE Powered Speaker
Brand Name	
Model	EVERSE 8
Additional Model & Model Difference	EVERSE 12, see item 3.1
Date of tests	Aug. 31, 2021 ~ Nov. 05, 2021 Mar. 25, 2023 ~ Apr. 06, 2023

the tests have been carried out according to the requirements of the following standards:

**FCC Part 15, Subpart C, Section 15.247**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Loren Luo Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
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	  Date: May 08, 2023
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2108WDG0406-1	Original release	Dec. 09, 2021
RF2302WDG0253-1	Based on the original report RF2108WDG0406-1 to updated: 1.Increase the appearance size of the product, 2.Rechange the loudspeakers model, 3.Rechange the BT antenna model and antenna gain, 4.Add additional model,  After evaluated.it needed to be retest below items: <ul style="list-style-type: none"><li>• Transmitter Spurious Emissions</li></ul>	May 08, 2023

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.247(d)& 15.209	Transmitter Radiated Emission	PASS	Meet the requirement of limit.

## 2 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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	3.05dB
Radiated emissions	9KHz ~ 30MHz	2.72dB
	30MHz ~ 1GMHz	4.24dB
	1GHz ~ 18GHz	4.78dB
	18GHz ~ 40GHz	4.50dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	EVERSE Powered Speaker
<b>MODEL NO.</b>	EVERSE 8
<b>ADDITIONAL MODEL</b>	EVERSE 12
<b>FCC ID</b>	ESVEVERSE
<b>POWER SUPPLY</b>	Input: AC 100-240V~50-60Hz 1.2~0.6A Battery: 14.4V 6000mAh
<b>MODULATION TECHNOLOGY</b>	FHSS
<b>MODULATION TYPE</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>OPERATING FREQUENCY</b>	2402MHz~2480MHz
<b>NUMBER OF CHANNEL</b>	79
<b>PEAK OUTPUT POWER</b>	3.148mW (Max. Measured)
<b>ANTENNA TYPE</b>	PCB Antenna, 4.02dBi Gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	Refer to user's manual

#### NOTES:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 2302WDG0253) for detailed product photo.
4. The product has two colors, black and white, it's the same material and inside circuit.
5. Additional model EVERSE 12 is identical with the test model EVERSE 8 except the appearance size of the product, loudspeakers, BT antenna model and model of the product for trading purpose.



### 3.2 DESCRIPTION OF TEST MODES

79 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

### 3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photograph of the test configuration for reference.

### 3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, power supply voltage range and antenna ports. The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	-	-	AC 120V/60Hz with BT function

Where **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission

**RE≥1G**: Radiated Emission above 1GHz  
**APCM**: Antenna Port Conducted Measurement

#### **RADIATED EMISSION TEST (BELOW 1 GHz):**

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	39	FHSS	GFSK	DH5

For the test results, only the worst case was shown in test report.

#### **RADIATED EMISSION TEST (ABOVE 1 GHz):**

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
A	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	25deg. C, 55%RH	AC 120V 60Hz	Ryker
RE≥1G	25deg. C, 55%RH	AC 120V 60Hz	Ryker





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### 3.3 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. Section 15.247**

**KDB 558074 D01 15.247 Meas Guidance v05r02**

**ANSI C63.10-2013**

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

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit without any other necessary accessory or support units.

## 4 TEST TYPES AND RESULTS

### 4.1. RADIATED EMISSION AND BANDEDGE MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). Other emissions shall be at least 20dB below the highest level of the desired power.

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. As shown in 15.35(b), 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

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Spectrum Analyzer	Rohde&Schwarz	FSV3044	101326	July 20, 23
EMI Test Receiver	Rohde&Schwarz	ESU8	100372	Jun. 14, 23
Bilog Antenna	SCHWARZBECK	VULB 9168	01281	Jun. 19, 23
Pre-Amplifier	Agilent	8447D	2944A10488	Aug. 03, 23
3m Semi-anechoic Chamber	ETS-Lindgren	9m*6m*6m	D3040003DG-1	July 30, 24
Coaxial RF Cable	Joinfront	JFAA6-NMNM-8000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAR-NMBNCM-2000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAR-BNCMSMM-500	2100033742	July. 11, 23
Test software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Horn Antenna	ETS-Lindgren	3117	00240041	Jun. 19, 23
Horn Antenna	SCHWARZBECK	BBHA 9170	01024	Oct. 16, 23
Pre-Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV 9718C	00142	Jun. 14, 23
Pre-Amplifier (18GHz-40GHz)	Rohde&Schwarz	SCU40	100437	Oct. 27, 23
Coaxial RF Cable	Joinfront	JFAA6-NMNM-8000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAA6-NMSMM-2000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAA6-NMSMM-800	2100033742	July. 11, 23

**NOTES:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762..
5. Test site: No. 122, Houjie Avenue West Houjie Town, Dongguan City Guangdong Province, 523960, People's Republic of China.

#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. 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. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1.3m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be performed using fresh batteries. The turntable was rotated to maximize the emission level.

#### **NOTE:**

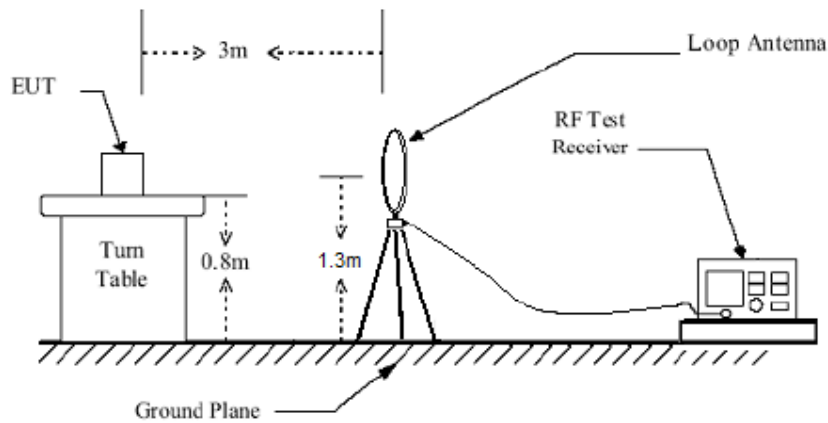
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

#### 4.1.4 DEVIATION FROM TEST STANDARD

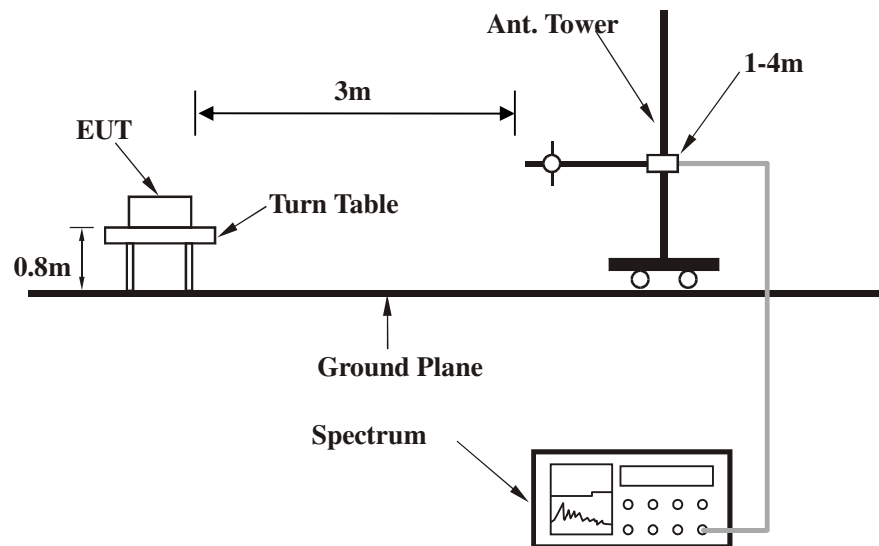
No deviation.

#### 4.1.5 TEST SETUP

##### Below 30MHz test setup

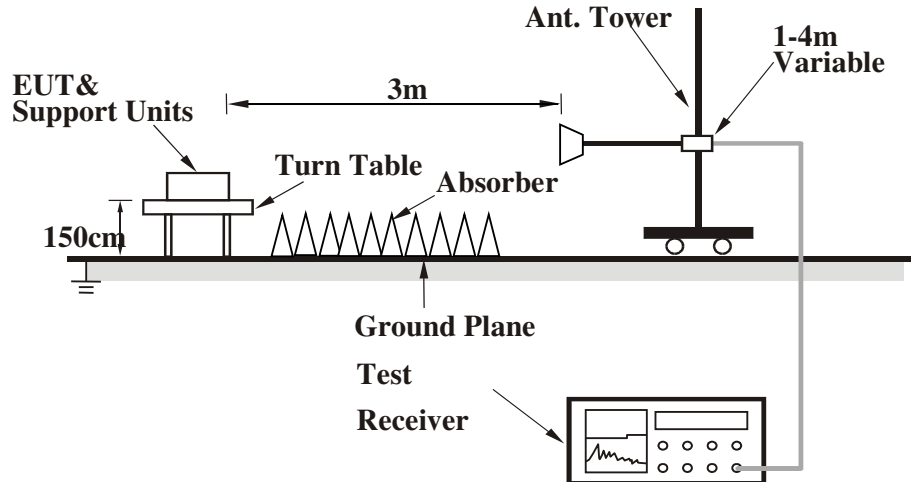


##### Below 1GHz test setup



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

## Above 1GHz test setup



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

### 4.1.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

### 4.1.7 TEST RESULTS

#### BELOW 1GHz WORST-CASE DATA:

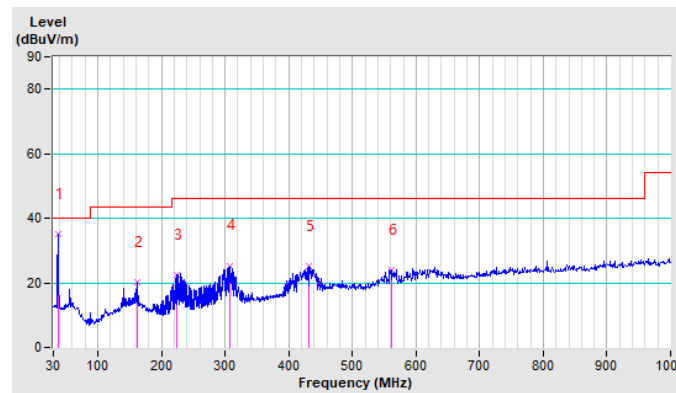
#### GFSK DH5

<b>CHANNEL</b>	Channel 39	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

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)	CORRECTIO N FACTOR (dB/m)
1	36.79	35.03 QP	40.00	-4.97	1.00 H	26	49.92	-14.89
2	160.95	20.31 QP	43.50	-23.19	1.00 H	51	33.40	-13.09
3	224.00	22.43 QP	46.00	-23.57	1.00 H	122	37.39	-14.96
4	307.42	25.33 QP	46.00	-20.67	1.00 H	10	37.31	-11.98
5	431.58	25.31 QP	46.00	-20.69	1.00 H	203	34.82	-9.51
6	562.53	24.12 QP	46.00	-21.88	1.00 H	114	31.44	-7.32

#### 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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value

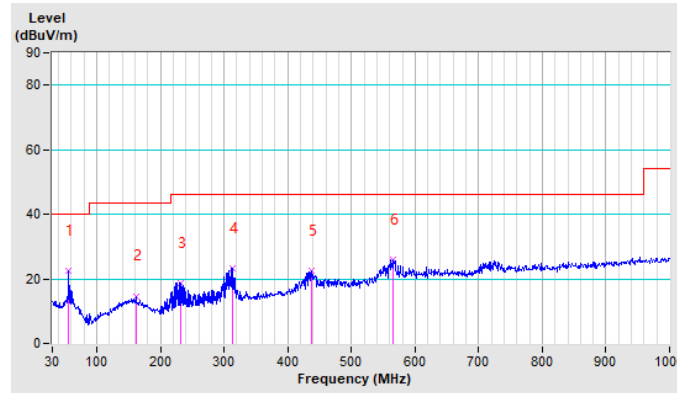


<b>CHANNEL</b>	Channel 39	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

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)	CORRECTIO N FACTOR (dB/m)
1	55.22	22.56 QP	40.00	-17.44	1.00 V	124	36.44	-13.88
2	160.95	14.65 QP	43.50	-28.85	1.00 V	176	27.74	-13.09
3	231.76	18.70 QP	46.00	-27.30	1.00 V	36	33.31	-14.61
4	313.24	23.09 QP	46.00	-22.91	1.00 V	116	34.98	-11.89
5	436.43	22.36 QP	46.00	-23.64	1.00 V	27	31.72	-9.36
6	565.44	25.86 QP	46.00	-20.14	1.00 V	84	33.10	-7.24

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value







BUREAU VERITAS

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ABOVE 1GHz DATA

BT\_GFSK

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2390.00	44.16 PK	74.00	-29.84	1.20 H	150	42.60	1.56
2	2390.00	34.90 AV	54.00	-19.10	1.20 H	150	33.34	1.56
3	*2402.00	102.31 PK			1.20 H	150	100.75	1.56
4	*2402.00	100.00 AV			1.20 H	150	98.44	1.56
5	4804.00	51.51 PK	74.00	-22.49	1.56 H	248	44.27	7.24
6	4804.00	40.52 AV	54.00	-13.48	1.56 H	248	33.28	7.24
7	7206.00	55.76 PK	74.00	-18.24	1.46 H	50	44.31	11.45
8	7206.00	41.33 AV	54.00	-12.67	1.46 H	50	29.88	11.45

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	2390.00	45.80 PK	74.00	-28.20	1.45 V	136	44.24	1.56
2	2390.00	33.56 AV	54.00	-20.44	1.45 V	136	32.00	1.56
3	*2402.00	102.21 PK			1.45 V	136	100.65	1.56
4	*2402.00	101.67 AV			1.45 V	136	100.11	1.56
5	4804.00	50.28 PK	74.00	-23.72	1.20 V	140	43.04	7.24
6	4804.00	39.56 AV	54.00	-14.44	1.20 V	140	32.32	7.24
7	7206.00	54.26 PK	74.00	-19.74	1.50 V	36	42.81	11.45
8	7206.00	42.68 AV	54.00	-11.32	1.50 V	36	31.23	11.45

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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

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<b>CHANNEL</b>	TX Channel 39	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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	*2441.00	102.36 PK			1.40 H	160	100.78	1.58
2	*2441.00	100.54 AV			1.40 H	160	98.96	1.58
3	4882.00	52.32 PK	74.00	-21.68	1.80 H	164	44.66	7.66
4	4882.00	41.36 AV	54.00	-12.64	1.80 H	164	33.70	7.66
5	7323.00	50.48 PK	74.00	-23.52	1.45 H	360	38.89	11.59
6	7323.00	39.48 AV	54.00	-14.52	1.45 H	360	27.89	11.59
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	*2441.00	101.88 PK			1.20 V	130	100.30	1.58
2	*2441.00	100.36 AV			1.20 V	130	98.78	1.58
3	4882.00	49.26 PK	74.00	-24.74	1.40 V	150	41.60	7.66
4	4882.00	40.22 AV	54.00	-13.78	1.40 V	150	32.56	7.66
5	7323.00	50.27 PK	74.00	-23.73	1.47 V	258	38.68	11.59
6	7323.00	41.84 AV	54.00	-12.16	1.47 V	258	30.25	11.59

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

<b>CHANNEL</b>	TX Channel 78	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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	*2480.00	103.14 PK			1.20 H	130	101.55	1.59
2	*2480.00	100.56 AV			1.20 H	130	98.97	1.59
3	2483.50	45.23 PK	74.00	-28.77	1.20 H	130	43.64	1.59
4	2483.50	35.26 AV	54.00	-18.74	1.20 H	130	33.67	1.59
5	4960.00	53.14 PK	74.00	-20.86	1.20 H	147	45.07	8.07
6	4960.00	40.26 AV	54.00	-13.74	1.20 H	147	32.19	8.07
7	7440.00	51.26 PK	74.00	-22.74	1.23 H	48	39.52	11.74
8	7440.00	40.27 AV	54.00	-13.73	1.23 H	48	28.53	11.74
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	*2480.00	102.36 PK			1.20 V	140	100.77	1.59
2	*2480.00	100.47 AV			1.20 V	140	98.88	1.59
3	2483.50	45.28 PK	74.00	-28.72	1.20 V	140	43.69	1.59
4	2483.50	36.27 AV	54.00	-17.73	1.20 V	140	34.68	1.59
5	4960.00	53.88 PK	74.00	-20.12	1.59 V	350	45.81	8.07
6	4960.00	41.51 AV	54.00	-12.49	1.59 V	350	33.44	8.07
7	7440.00	50.36 PK	74.00	-23.64	1.40 V	258	38.62	11.74
8	7440.00	39.87 AV	54.00	-14.13	1.40 V	258	28.13	11.74

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.



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<b>CHANNEL</b>	TX Channel 0	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

**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	2390.00	44.34 PK	74.00	-29.66	1.40 H	180	42.78	1.56
2	2390.00	31.98 AV	54.00	-22.02	1.40 H	180	30.42	1.56
3	*2402.00	93.77 PK			1.40 H	180	92.21	1.56
4	*2402.00	92.74 AV			1.40 H	180	91.18	1.56
5	4804.00	50.89 PK	74.00	-23.11	1.25 H	147	43.65	7.24
6	4804.00	38.20 AV	54.00	-15.80	1.25 H	147	30.96	7.24
7	7206.00	54.56 PK	74.00	-19.44	1.36 H	150	43.11	11.45
8	7206.00	43.22 AV	54.00	-10.78	1.36 H	150	31.77	11.45

**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	2390.00	45.62 PK	74.00	-28.38	1.20 V	150	44.06	1.56
2	2390.00	32.45 AV	54.00	-21.55	1.20 V	150	30.89	1.56
3	*2402.00	95.92 PK			1.20 V	150	94.36	1.56
4	*2402.00	94.27 AV			1.20 V	150	92.71	1.56
5	4804.00	58.37 PK	74.00	-15.63	1.07 V	148	51.13	7.24
6	4804.00	41.47 AV	54.00	-12.53	1.07 V	148	34.23	7.24
7	7206.00	54.83 PK	74.00	-19.17	1.54 V	193	43.38	11.45
8	7206.00	42.62 AV	54.00	-11.38	1.54 V	193	31.17	11.45

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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

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<b>CHANNEL</b>	TX Channel 39	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

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	*2441.00	90.36 PK			1.45 H	128	88.78	1.58
2	*2441.00	89.28 AV			1.45 H	128	87.70	1.58
3	4882.00	51.24 PK	74.00	-22.76	1.56 H	254	43.58	7.66
4	4882.00	37.61 AV	54.00	-16.39	1.56 H	254	29.95	7.66
5	7323.00	54.34 PK	74.00	-19.66	1.59 H	45	42.75	11.59
6	7323.00	40.61 AV	54.00	-13.39	1.59 H	45	29.02	11.59
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	*2441.00	91.71 PK			1.20 V	130	90.13	1.58
2	*2441.00	90.82 AV			1.20 V	130	89.24	1.58
3	4882.00	50.31 PK	74.00	-23.69	1.40 V	156	42.65	7.66
4	4882.00	38.29 AV	54.00	-15.71	1.40 V	156	30.63	7.66
5	7323.00	53.22 PK	74.00	-20.78	1.45 V	36	41.63	11.59
6	7323.00	39.68 AV	54.00	-14.32	1.45 V	36	28.09	11.59

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

<b>CHANNEL</b>	TX Channel 78	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>			Average (AV)

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	*2480.00	91.21 PK			1.20 H	130	89.62	1.59
2	*2480.00	90.85 AV			1.20 H	130	89.26	1.59
3	2483.50	43.16 PK	74.00	-30.84	1.20 H	130	41.57	1.59
4	2483.50	30.28 AV	54.00	-23.72	1.20 H	130	28.69	1.59
5	4960.00	50.36 PK	74.00	-23.64	1.45 H	254	42.29	8.07
6	4960.00	39.18 AV	54.00	-14.82	1.45 H	254	31.11	8.07
7	7440.00	53.11 PK	74.00	-20.89	1.20 H	39	41.37	11.74
8	7440.00	40.38 AV	54.00	-13.62	1.20 H	39	28.64	11.74
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	*2480.00	92.63 PK			1.40 V	150	91.04	1.59
2	*2480.00	90.15 AV			1.40 V	150	88.56	1.59
3	2483.50	44.81 PK	74.00	-29.19	1.40 V	150	43.22	1.59
4	2483.50	32.62 AV	54.00	-21.38	1.40 V	150	31.03	1.59
5	4960.00	51.28 PK	74.00	-22.72	1.56 V	34	43.21	8.07
6	4960.00	40.69 AV	54.00	-13.31	1.56 V	34	32.62	8.07
7	7440.00	52.19 PK	74.00	-21.81	1.46 V	269	40.45	11.74
8	7440.00	41.18 AV	54.00	-12.82	1.46 V	269	29.44	11.74

**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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 5 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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