Prüfbericht-Nr.: *Test report No.:*	**50058519 001**	**Auftrags-Nr.:** *Order No.:*	164073358	Seite 1 von 32 *Page 1 of 32*
Kunden-Referenz-Nr.: *Client reference No.:*	632551	**Auftragsdatum:** *Order date.:*	06.09.2016	
Auftraggeber: *Client:*	**THUMBS UP(UK) LTD** Unit L, Braintree Industrial Estate, Braintree Road HA4 0EJ, Ruislip London, United Kingdom			
Prüfgegenstand: *Test item:*	Wireless Sports Earphones			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	BTSPTEPPRM, BTSPPTEPCORPRM, BTSPTEPGYPRM, 68938 01, 68938 02, 88237 02 (Primark)			
Auftrags-Inhalt: *Order content:*	FCC approval			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 CFR47 FCC Part 2: Section 2.1093			

Wareneingangsdatum: *Date of receipt:*	14.09.2016	Please refer to photo documents
Prüfmuster-Nr.: *Test sample No.:*	A000419848-001 A000419848-003	
Prüfzeitraum: *Testing period:*	14.09.2016 - 10.10.2016	
Ort der Prüfung: *Place of testing:*	Accurate Technology Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von / *tested by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
05.12.2016	Ryan Yang / Senior Project Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
05.12.2016	Winnie Hou / Technical Certifier	

Sonstiges / *Other:*

FCC ID: 2AHHEBTSPTEPGYPRM

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged:*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)		F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY
RESULT: Pass

5.1.4 6DB BANDWIDTH
RESULT: Pass

5.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.6 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.7 20DB BANDWIDTH
RESULT: Pass

5.1.8 CARRIER FREQUENCY SEPARATION
RESULT: Pass

5.1.9 NUMBER OF HOPPING FREQUENCY
RESULT: Pass

5.1.10 TIME OF OCCUPANCY
RESULT: Pass

5.1.11 CONDUCTED EMISSION ON AC MAINS
RESULT: Pass

5.1.12 RADIATED EMISSION
RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS
RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Bluetooth 4.0 (Dual mode) of Conducted Testing

Appendix B: Test Results of Bluetooth 4.0 (Dual mode) of Conducted and Radiated Emission Testing

2 Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.
F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China

FCC Registration No.: 752051

Test site Industry Canada No.: 5077A-2

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Accurate Technology Co., Ltd.

Radio Spectrum Test				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Spectrum Analyzer	R&S	ESPI3	100396/003	09.01.2017
Spurious Emission				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Spectrum Analyzer	R&S	FSV40	101495	01.01.2017
Test Receiver	R&S	ESCS30	100307	01.01.2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	01.01.2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	01.01.2017
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	01.01.2017
Pre-Amplifier	R&S	CBLU11835 40-01	3791	01.01.2017
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	01.01.2017
RF Coaxial Cable	SUHNER	N-3m	No.8	01.01.2017
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	01.01.2017
RF Coaxial Cable	SUHNER	N-6m	No.10	01.01.2017
RF Coaxial Cable	RESENBERGER	N-12m	No.11	01.01.2017
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	09.01.2017
Conducted Emission on AC Mains				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Test Receiver	R&S	ESCI	26115-010-0027	17.05.2017
L.I.S.N.	R&S	ENV216	101161	17.05.2017
50Ω Coaxial Switch	Anritsu	MP59B	6100175589	17.05.2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Item		**Extended Uncertainty**
Conducted Emission		± 2.0 dB
Radiated Emission (9kHz-30MHz)	Field strength (dBμV/m)	U=3.08dB, k=2, σ=95%
Radiated Emission (30-1000MHz)	Field strength (dBμV/m)	U=4.42dB, k=2, σ=95%
Radiated Emission (above 1000MHz)	Field strength (dBμV/m)	U=4.06dB, k=2, σ=95%
Radio Spectrum		± 0.60 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Accurate Technology Co., Ltd. Test facility located at F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a 'Wireless Sports Earphones' device. It supports Bluetooth 4.0 (Dual mode) wireless technology.

According to the declaration of the applicant, the electrical circuit design, PCB layout and components used are identical for all models, only the model No. and appearance are different.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	Wireless Sports Earphones
Type Designation	BTSPTEPPRM, BTSPPTEPCORPRM, BTSPTEPGYPRM, 68938 01, 68938 02, 88237 02
Trade Mark	Primark
FCC ID	2AHHEBTSPTEPGYPRM
Operating Frequency	2402 - 2480 MHz
Operating Temperature Range	-10 °C ~ +50 °C
Operating Voltage	DC 3.2~4.2V via Internal rechargeable lithium battery
Testing Voltage	DC 3.3V via Internal rechargeable lithium battery DC 5.0V via USB port for charging
Type of Modulation	GFSK, π/4DQPSK, 8DPSK
Channel Number	BDR & EDR mode:79 channels; Low Energy mode:40 channels
Channel Separation	BDR & EDR mode:1MHz; Low Energy mode:2MHz
Wireless Technology	Bluetooth 4.0 (Dual mode)
Antenna Type	Chip Antenna
Antenna Gain	0.50 dBi

Table 3: RF Channel and Frequency of Bluetooth

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	**2402.00**	20	2422.00	40	2442.00	60	2462.00
01	2403.00	21	2423.00	41	2443.00	61	2463.00
02	2404.00	22	2424.00	42	2444.00	62	2464.00
03	2405.00	23	2425.00	43	2445.00	63	2465.00
04	2406.00	24	2426.00	44	2446.00	64	2466.00
05	2407.00	25	2427.00	45	2447.00	65	2467.00
06	2408.00	26	2428.00	46	2448.00	66	2468.00
07	2409.00	27	2429.00	47	2449.00	67	2469.00
08	2410.00	28	2430.00	48	2450.00	68	2470.00
09	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	**78**	**2480.00**
19	2421.00	**39**	**2441.00**	59	2461.00	--	--

Table 4: RF Channel and Frequency of Bluetooth Low Energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	**2402.00**	10	2422.00	20	2442.00	30	2462.00
01	2404.00	11	2424.00	21	2444.00	31	2464.00
02	2406.00	12	2426.00	22	2446.00	32	2466.00
03	2408.00	13	2428.00	23	2448.00	33	2468.00
04	2410.00	14	2430.00	24	2450.00	34	2470.00
05	2412.00	15	2432.00	25	2452.00	35	2472.00
06	2414.00	16	2434.00	26	2454.00	36	2474.00
07	2416.00	17	2436.00	27	2456.00	37	2476.00
08	2418.00	18	2438.00	28	2458.00	38	2478.00
09	2420.00	**19**	**2440.00**	29	2460.00	**39**	**2480.00**

Table 5: Frequency Hopping Information

Technical Specification	Description
Hopping Range	Hereby we declare that the frequency range of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V4.0 dual mode for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04-E).
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73, 07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56, 69,62,71,64, 7,25,27,66,57,70,74,61,78,63,10,41,05,43, 15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,
Receiver input bandwidth	The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings. Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

3.3 Independent Operation Modes

The basic operation modes are:

A. On
   1. Bluetooth transmitting mode (BDR & EDR mode)
      a) Low Channel
      b) Middle Channel
      c) High Channel
   2. Bluetooth transmitting mode (Low Energy mode)
      a) Low Channel
      b) Middle Channel
      c) High Channel

B. On, Transmitting on Hopping channel
C. On, Bluetooth connecting mode
D. Charging mode via USB port
E. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location Info
- Model Difference Letter
- Operation Description
- Photo Document
- Schematics
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014

According to clause 3.1, all tests were performed on model BTSPTEPPRM in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Notebook PC	Lenovo	4290-RT8	R9-FW93G	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

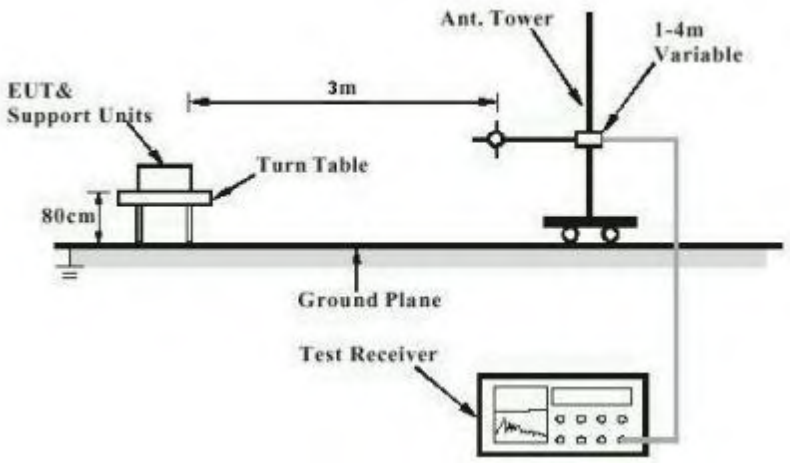


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

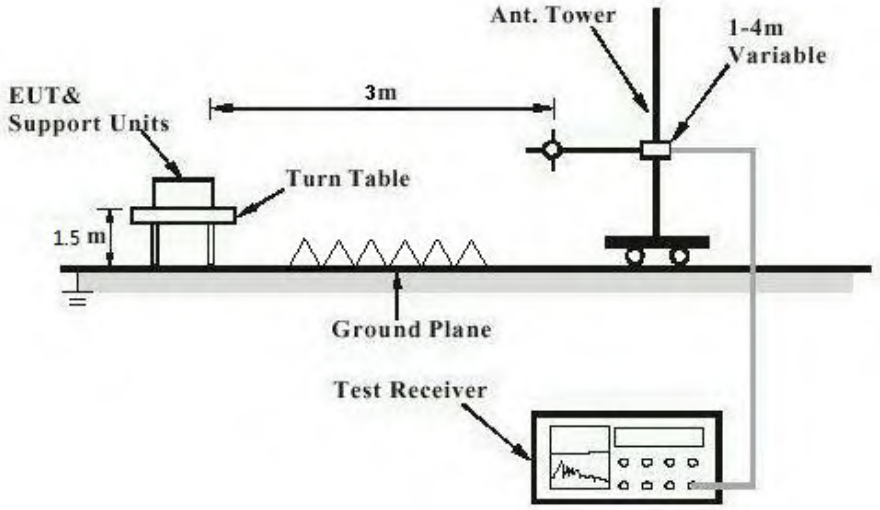


Diagram of Measurement Configuration for Mains Conduction Measurement

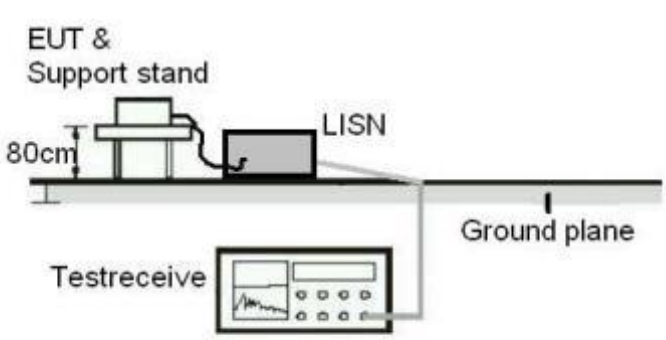
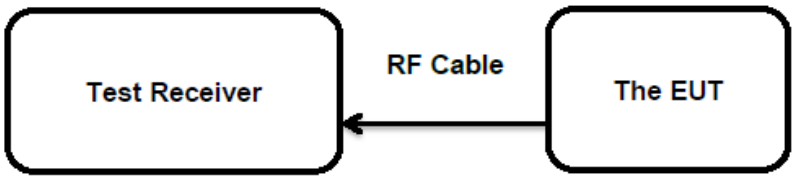


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0.50 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(1)&(3)
Basic standard	:	ANSI C63.10: 2013
Limits	:	FHSS < 0.125 Watts, DSSS < 1.0 Watts
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.1, A.2
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 7: Test Result of Maximum Peak Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BDR	2402	6.16	0.00413	< 0.125
	2441	8.04	0.00637	
	2480	8.08	0.00643	
EDR	2402	0.36	0.00109	< 0.125
	2441	2.33	0.00171	
	2480	2.03	0.00160	
Low Energy	2402	-2.20	0.00060	< 1.0
	2440	-1.10	0.00078	
	2480	-1.02	0.00079	
Maximum Measured Value		8.08	0.00643	/

Note: The cable loss 0.5 dB is taken into account in results.

This testing was carried out on all operation modes, but only the worst case was presented in this report.

For the measurement records, refer to the appendix A.

5.1.3 Conducted Power Spectral Density

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e)
Basic standard	:	ANSI C63.10: 2013
Limits	:	8 dBm/3kHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.2
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 8: Test Result of Power Spectral Density, Low Energy

Test Mode	Test Channel (MHz)	Power Spectrum Density(dBm/3kHz)	Limit (dBm/3kHz)
Low Energy	2402	-18.11	< 8.0
	2440	-16.94	
	2480	-16.78	
Maximum Measured Value		-16.78	

Note: The cable loss 0.5 dB is taken into account in results.

This testing was carried out on all operation modes, but only the worst case was presented in this report.

For the measurement records, refer to the appendix A.

5.1.4 6dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(2)
Basic standard	:	ANSI C63.10: 2013
Limits	:	More than 500 KHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.2
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 9: Test Result of 6dB Bandwidth, Low Energy

Test Mode	Test Channel (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)
Low Energy	2402	681.60	> 500
	2440	681.70	
	2480	673.00	
Minimum Measured Value		673.00	

For the measurement records, refer to the appendix A.

5.1.5 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d)
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.1, A.2
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test plot, and compliance is achieved as well.

For the measurement records, refer to the appendix A.

5.1.6 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	10.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.1, A.2
Test channel	:	Low / Middle / High
Ambient temperature	:	23 ℃
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

Remark:
The Radiated Spurious Emission was carried out within frequency range 9kHz – 30MHz and 18GHz - 26.5GHz, and the measurements with active antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

Pre-test the EUT in continuous transmitting mode at the low (2402 MHz), middle (2441 MHz) and high (2480 MHz) channel with different data packet. Compliance test in continuous transmitting mode with BDR mode (DH5) as the worst case was found.

For the measurement records, refer to the appendix B.

5.1.7 20dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(1)
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 10: Test Result of 20dB Bandwidth

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BDR	2402	924.80	616.533	/
	2441	933.50	622.333	
	2480	937.80	625.200	
EDR	2402	1206.90	804.600	/
	2441	1207.00	804.667	
	2480	1207.00	804.667	
Maximum Measured Value		1207.00	804.667	/

For the measurement records, refer to the appendix A.

5.1.8 Carrier Frequency Separation

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(1)
Basic standard	:	ANSI C63.10: 2013
Limits	:	≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 11: Test Result of Carrier Frequency Separation

Channel	Channel Frequency (MHz)	Measured Channel Separation (KHz)	Limit (kHz)	Result
Low Channel	2402	1002.9	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
Adjacency Channel	2403			
Middle Channel	2441	1000.0		Pass
Adjacency Channel	2442			
High Channel	2480	1000.0		Pass
Adjacency Channel	2479			

Note:
The limit is maximum 2/3 of the 20 dB bandwidth: 804.667 KHz.

For the measurement records, refer to the appendix A.

5.1.9 Number of Hopping Frequency

RESULT: **Pass**

Test Specification

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10: 2013
Limits	:	≥ 15 non-overlapping channels
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	B
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 12: Test Result of Number of Hopping Frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2402 to 2480 MHz	79	≥15	Pass

For the measurement records, refer to the appendix A.

5.1.10 Time of Occupancy

RESULT: **Pass**

Test Specification

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10: 2013
Limits	:	< 0.4s
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	09.10.2016
Input voltage	:	DC 3.3V via Internal rechargeable lithium battery
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 13: Test Result of Time of Occupancy

Test Mode	Test Channel	Data Packet	Pulse width (ms)	Measured Dwell time(s)	Limit (s)
BDR mode	2402	DH1	0.442	0.141	< 0.4s
		DH3	1.710	0.274	
		DH5	2.978	0.318	
	2441	DH1	0.442	0.141	
		DH3	1.710	0.274	
		DH5	2.978	0.318	
	2480	DH1	0.442	0.141	
		DH3	1.725	0.276	
		DH5	2.978	0.318	
EDR mode	2402	3DH1	0.449	0.144	
		3DH3	1.710	0.274	
		3DH5	2.978	0.318	
	2441	3DH1	0.449	0.144	
		3DH3	1.710	0.274	
		3DH5	2.978	0.318	
	2480	3DH1	0.449	0.144	
		3DH3	1.725	0.276	
		3DH5	2.978	0.318	
Maximum Measured Value			2.978	0.318	

Note:

Dwell time = Pulse width x (Hopping rate / Number of channels) x Period

Period = 0.4 x 79 (channel) = 31.6 seconds

This testing was carried out on all operation modes, but only the worst case was presented in this report.

For the measurement records, refer to the appendix A.

5.1.11 Conducted Emission on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.207(a) & FCC Part 15.107(a)
Basic standard	:	ANSI C63.10: 2013 & ANSI C63.4: 2014
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a) & FCC Part 15.107(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	10.10.2016
Input voltage	:	DC 5.0V via USB port for charging
Operation mode	:	C, D
Earthing	:	Not connected
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

5.1.12 Radiated Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.109(a)
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	30 - 6000MHz
Classification	:	Class B
Limits	:	FCC Part 15.109(a)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	10.10.2016
Input voltage	:	DC 5.0V via USB port for charging
Operation mode	:	D
Earthing	:	Not connected
Ambient temperature	:	24 ℃
Relative humidity	:	48 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT: **Pass**

Test Specification

Test standard : CFR47 FCC Part 2.1093
FCC KDB Publication 447498 D01 v06

Measurement Record:

The minimum distance for the EUT is less than 5mm.

Since maximum peak output power of the transmitter is 8.08 dBm ≈ 6.43 mW < $\frac{3*d}{\sqrt{f}}$ = 9.52 mW.

Hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01 General RF Exposure Guidance v06.

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Appendix A

Test Results of Bluetooth 4.0 (Dual mode) of Conducted Testing

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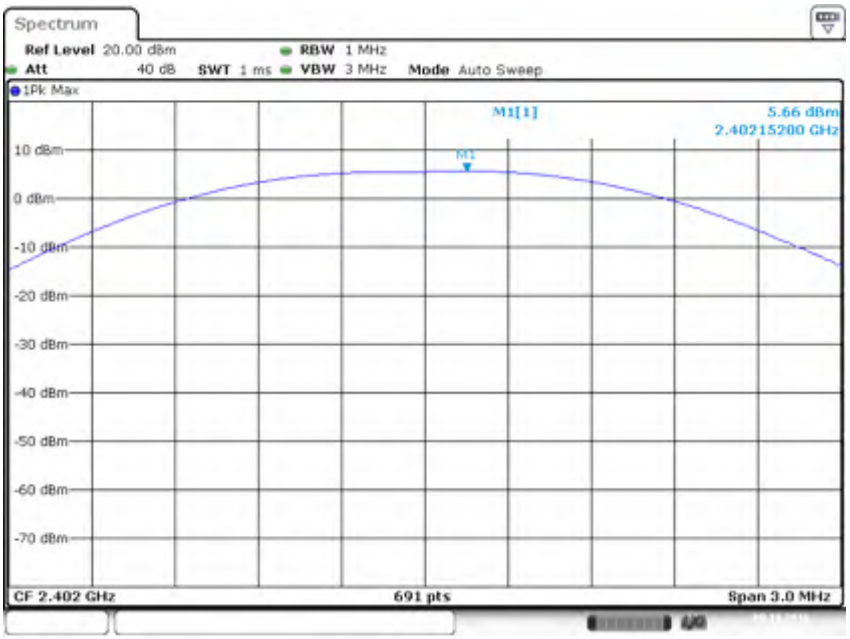
Appendix A.1: Test Plots of Maximum Peak Conducted Output Power

BDR Mode, DH1



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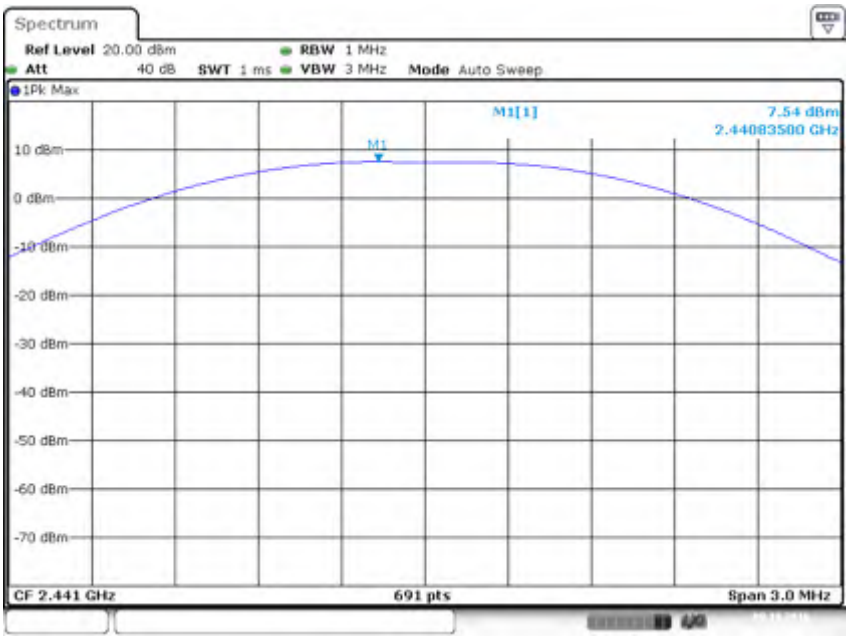

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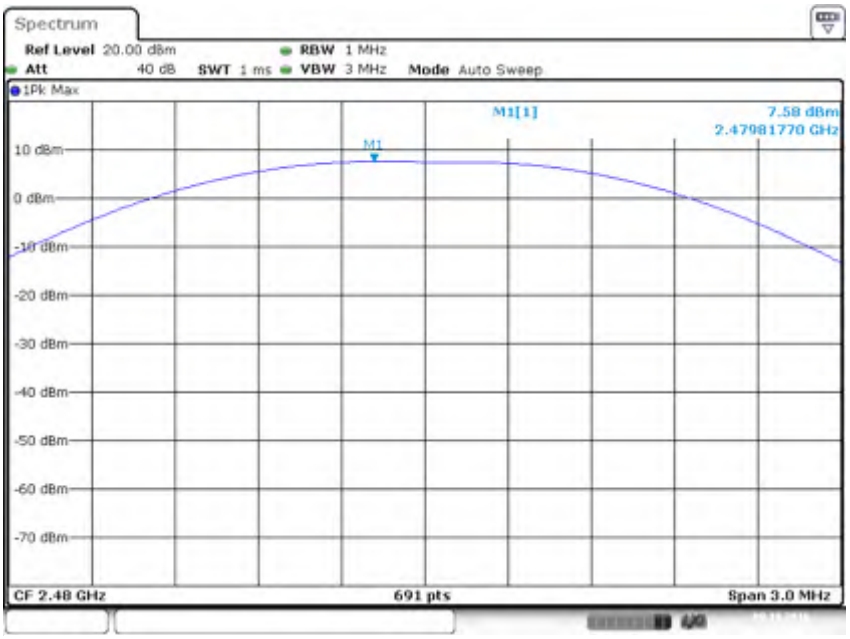
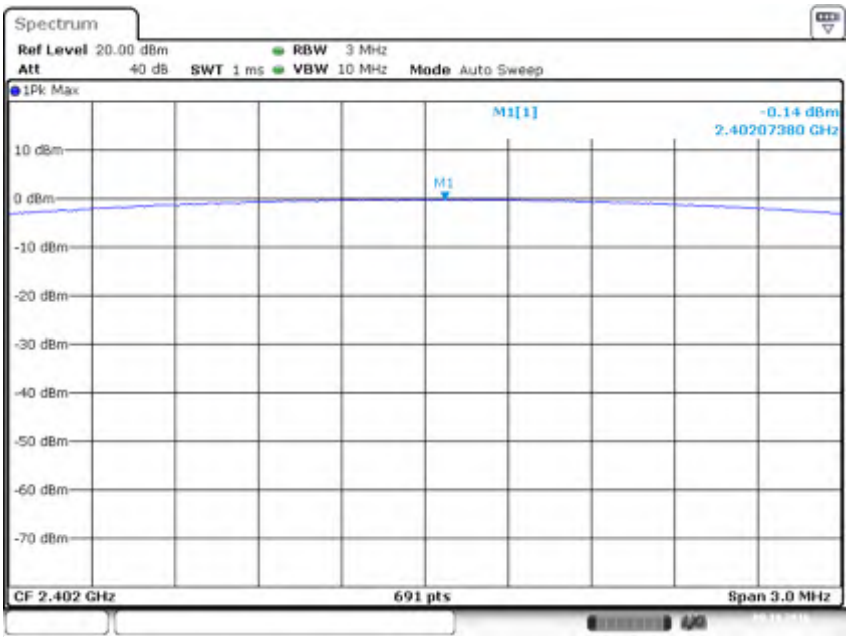


Date: 9.OCT.2016 14:22:54

EDR Mode, 3DH1



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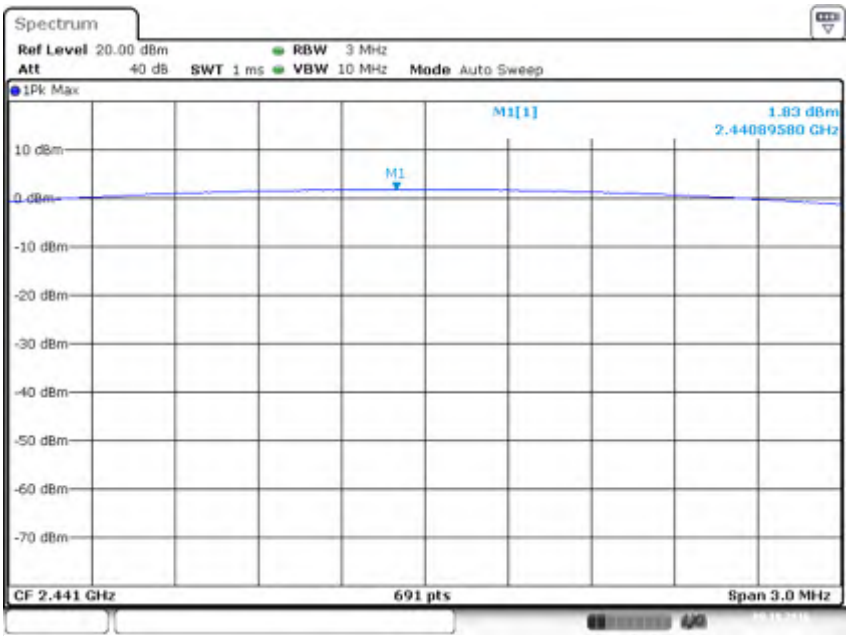

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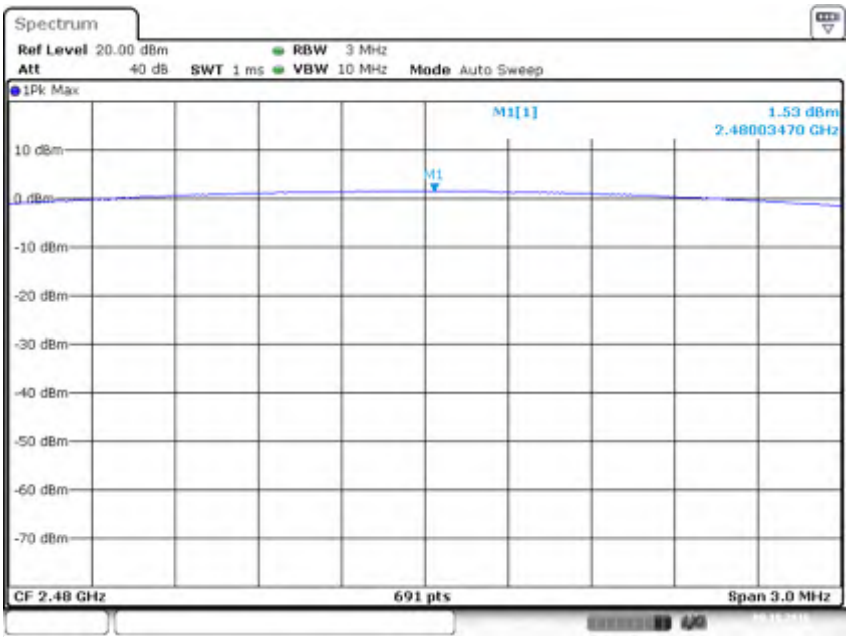

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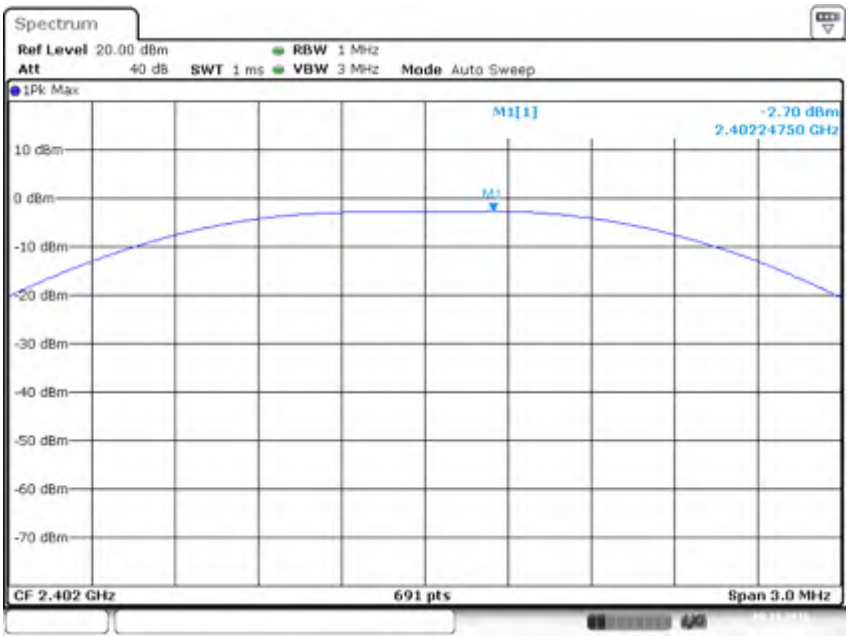
Low Energy Mode



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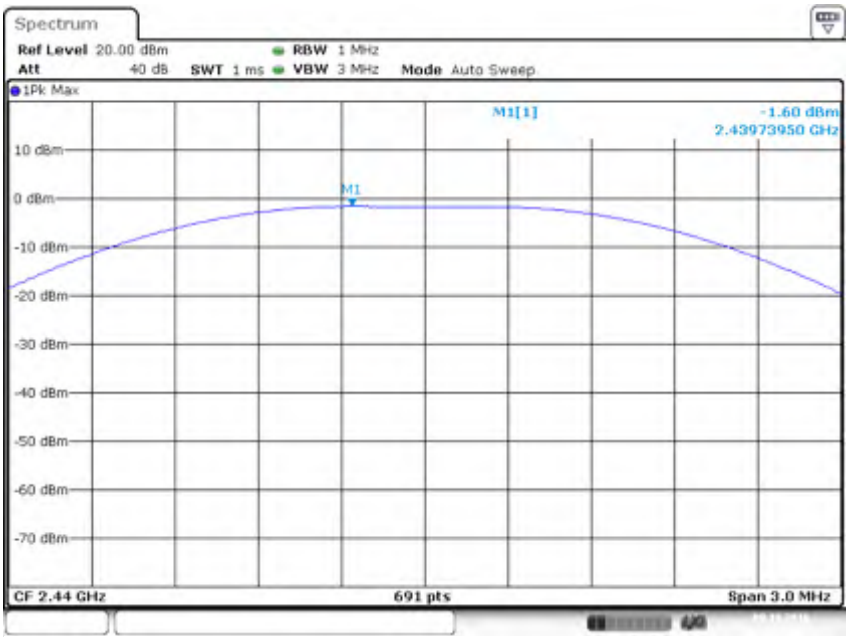

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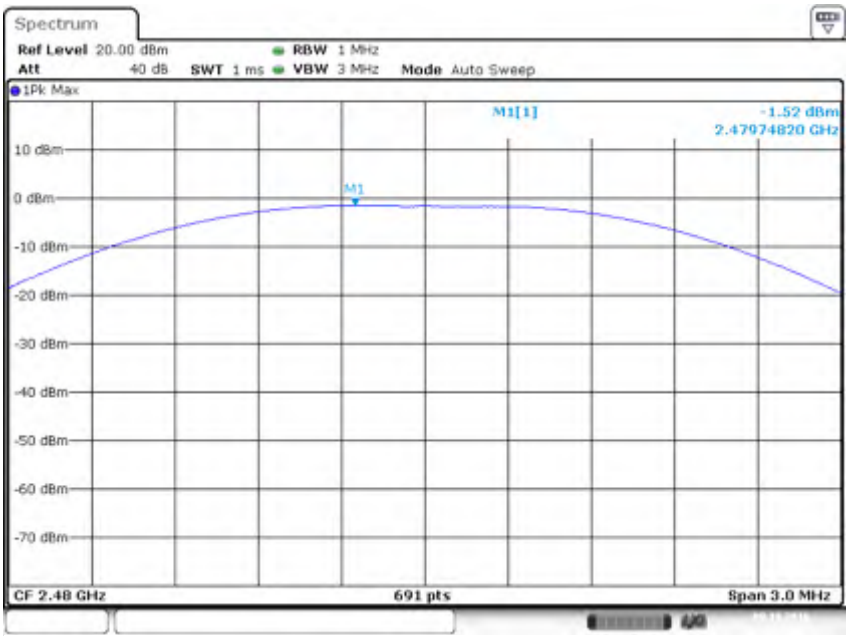

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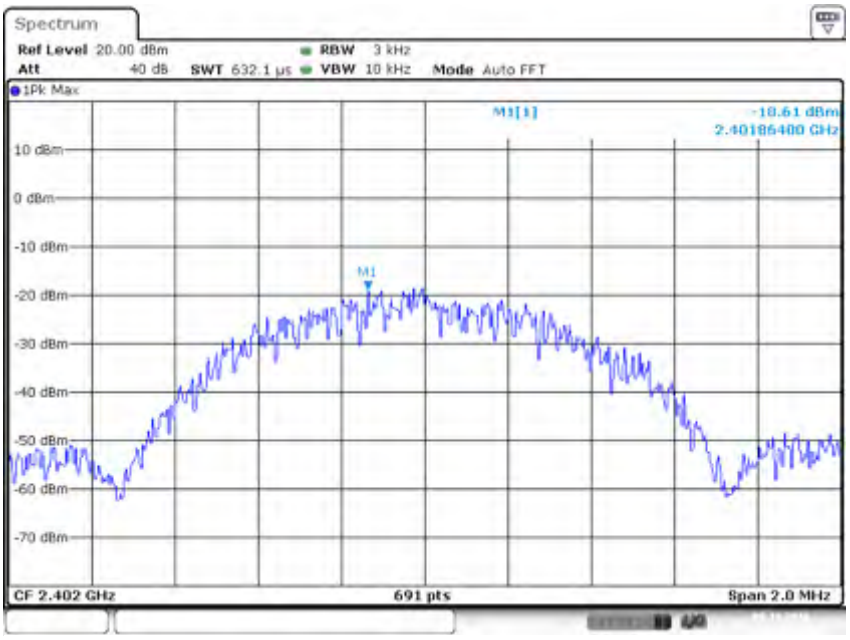
Appendix A.2: Test Plots of Conducted Power Spectral Density

Low Energy Mode



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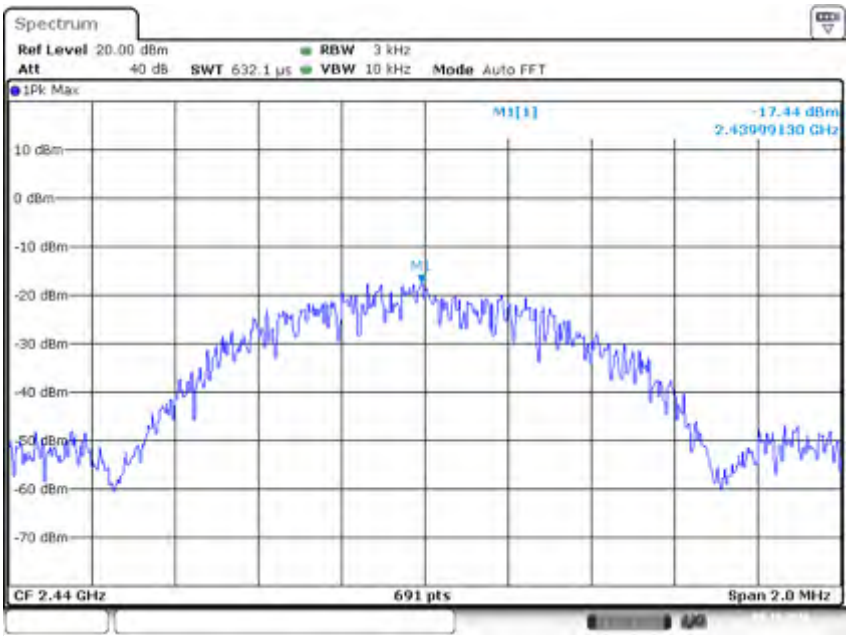

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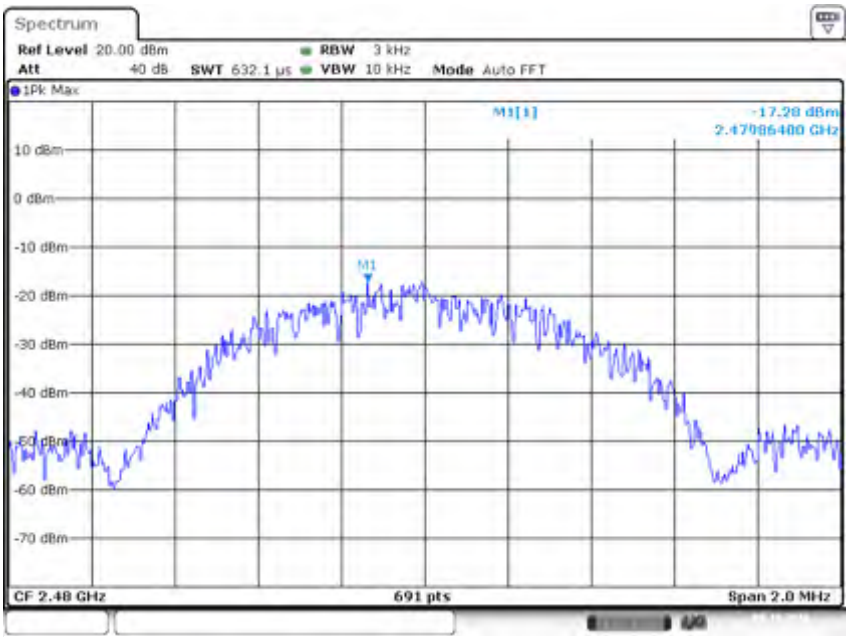

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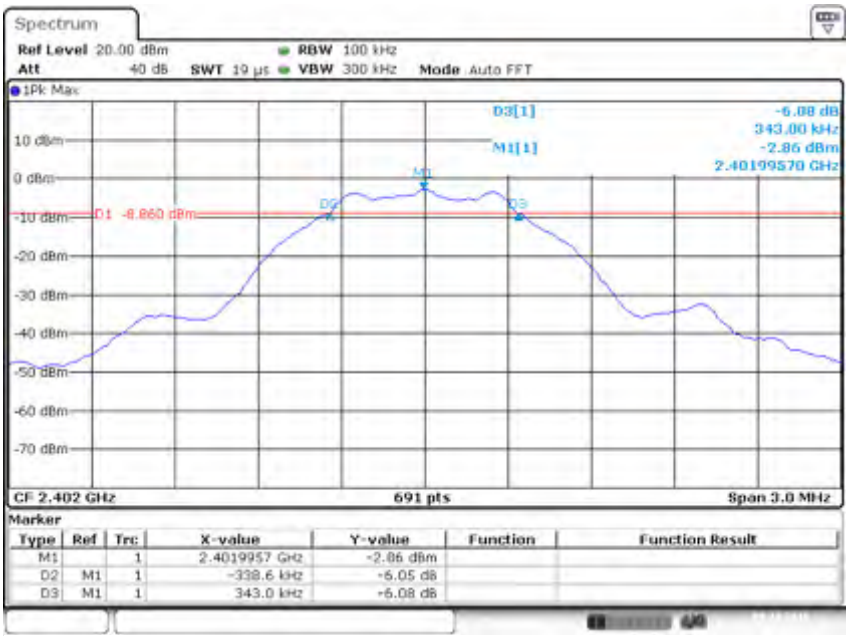
Appendix A.3: Test Plots of 6dB Bandwidth

Low Energy Mode



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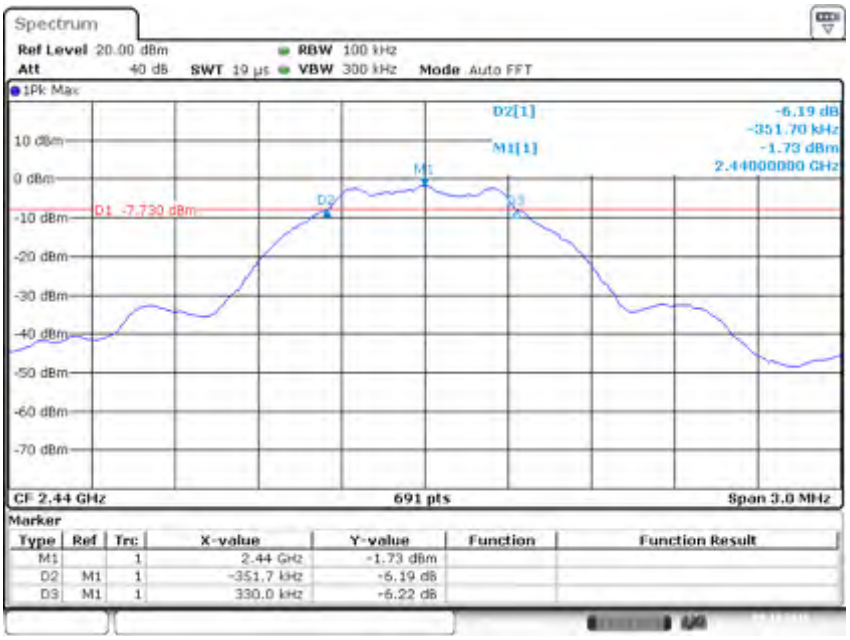

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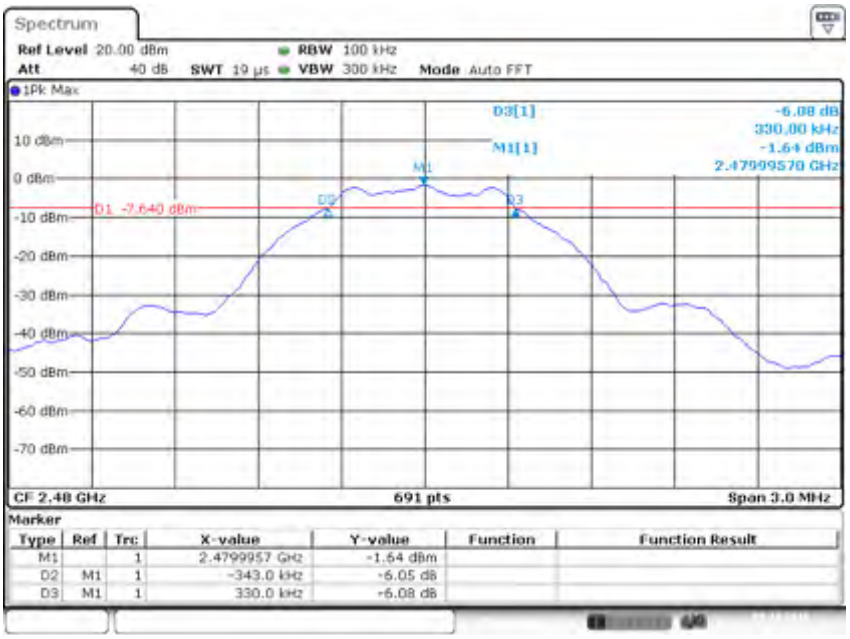

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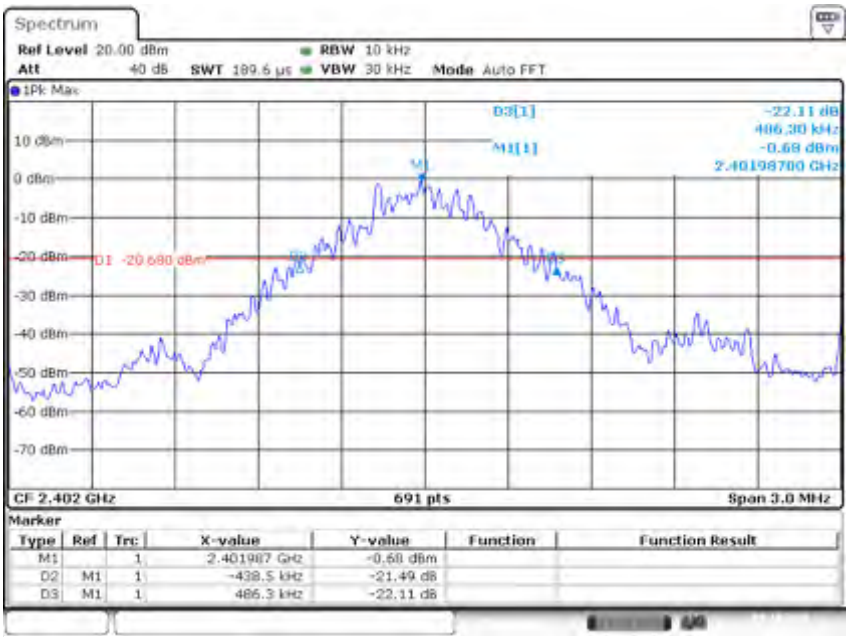
Appendix A.4: Test Plots of 20dB Bandwidth

BDR Mode, DH1



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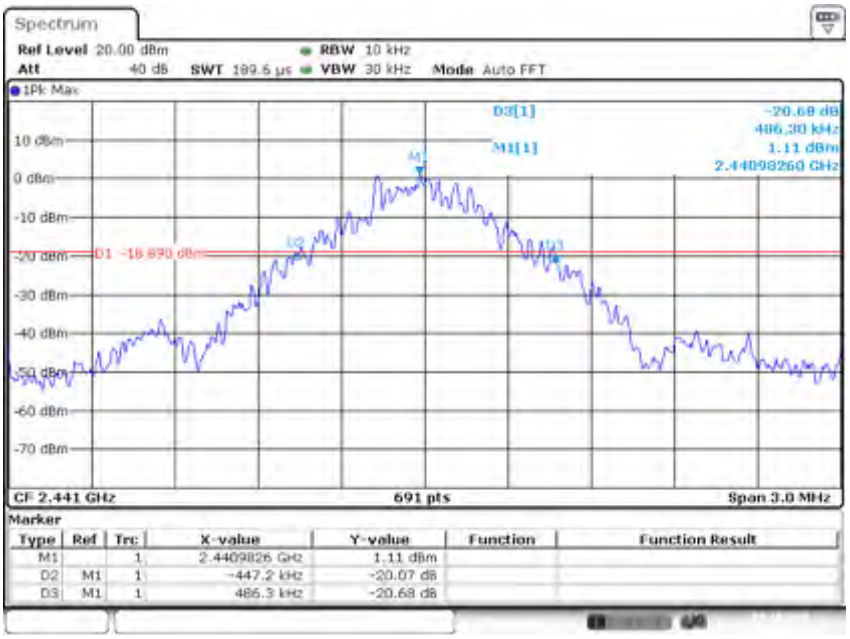

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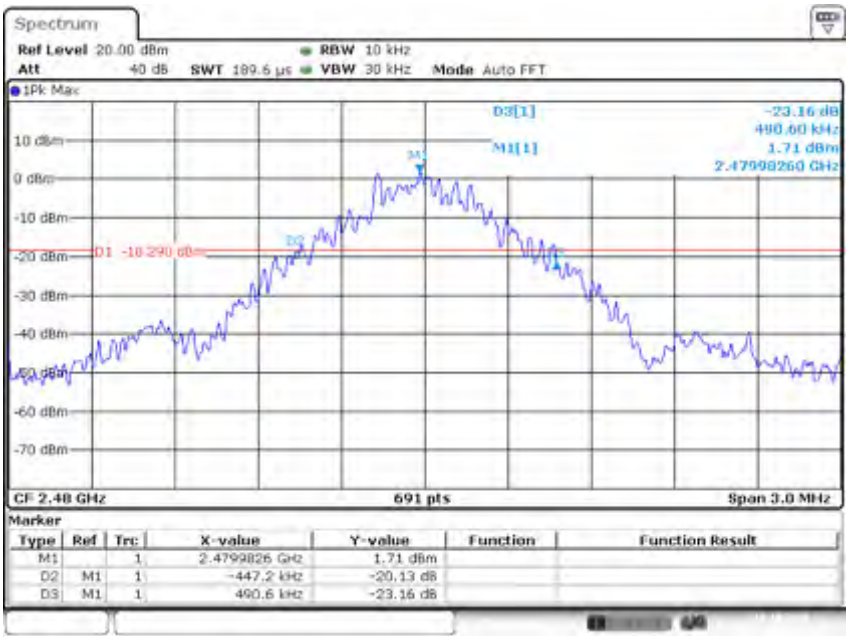

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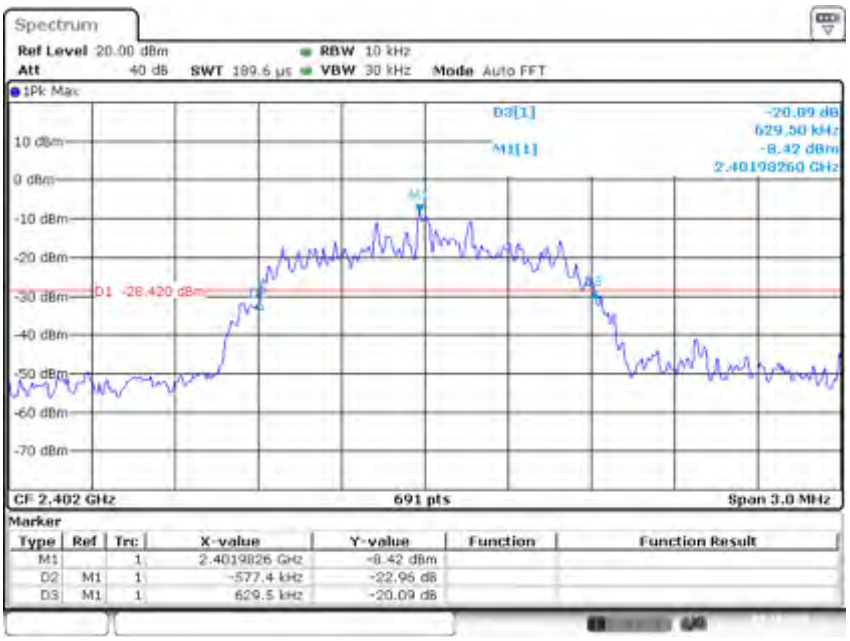
EDR Mode, 3DH1



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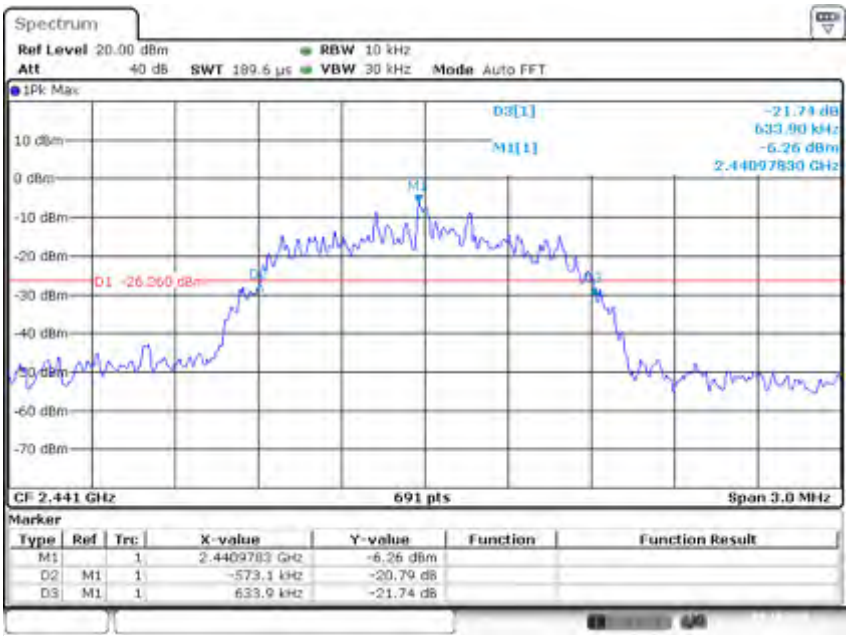

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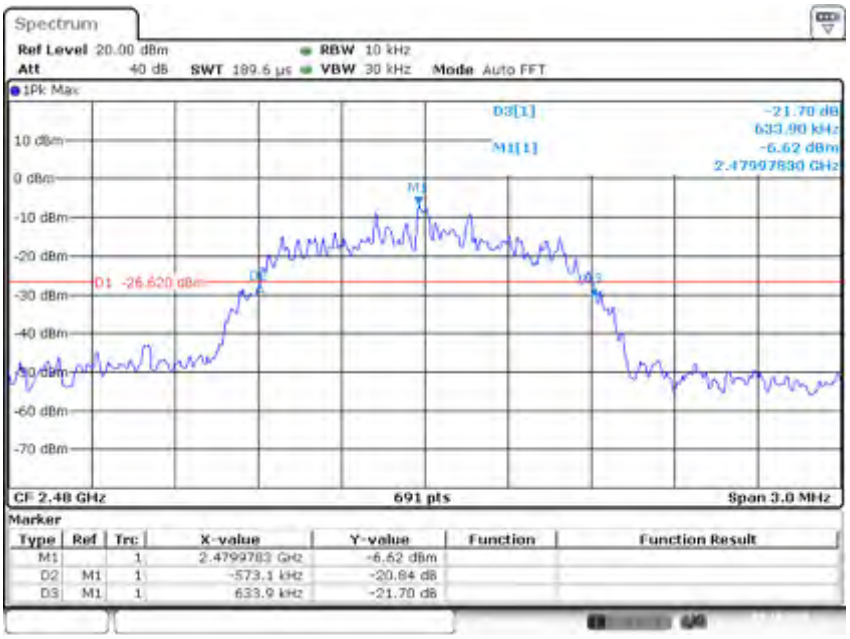

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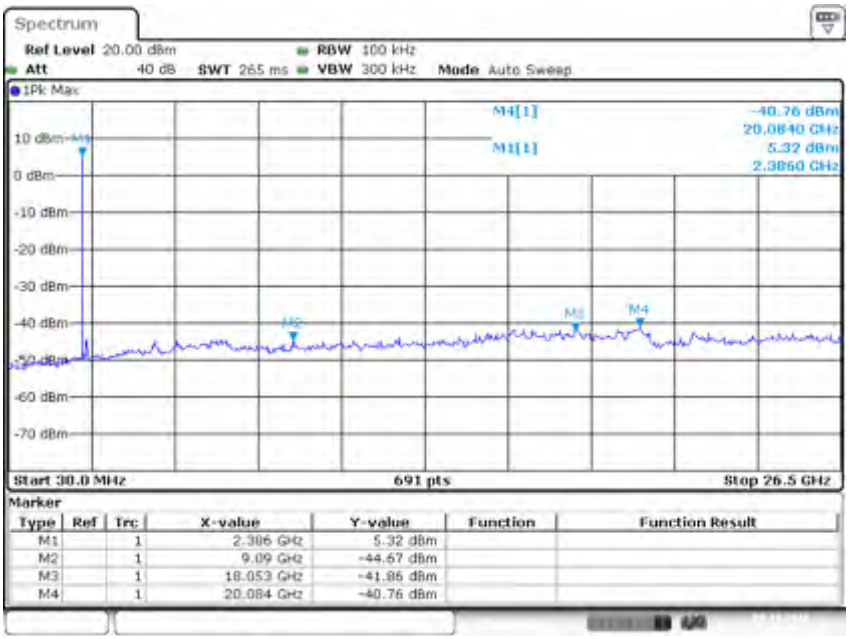
Appendix A.5: Test Plots of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

BDR Mode, DH1



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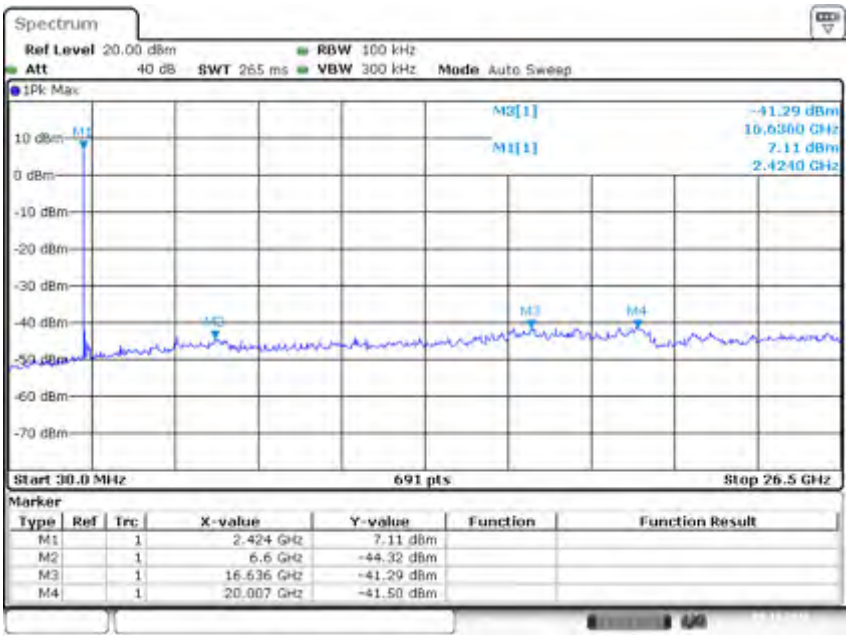

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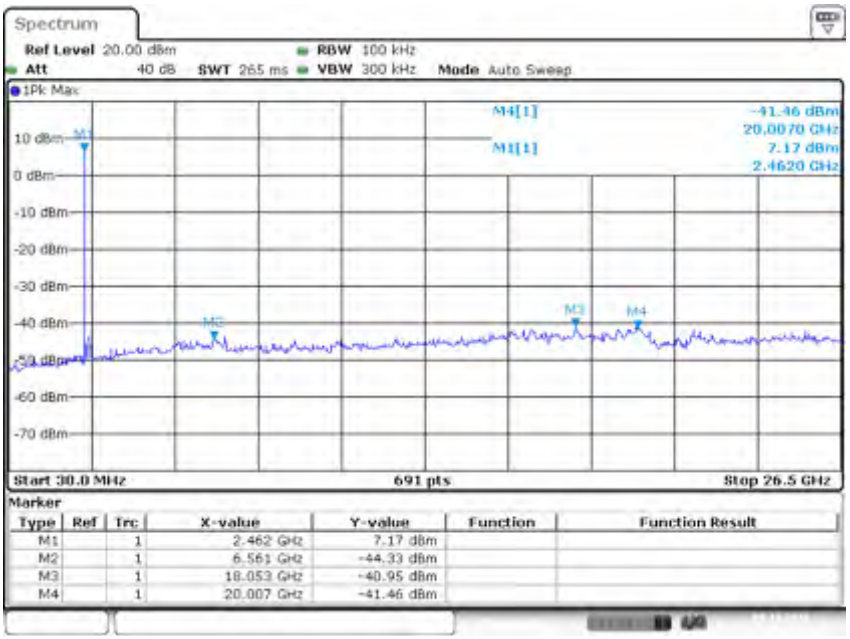

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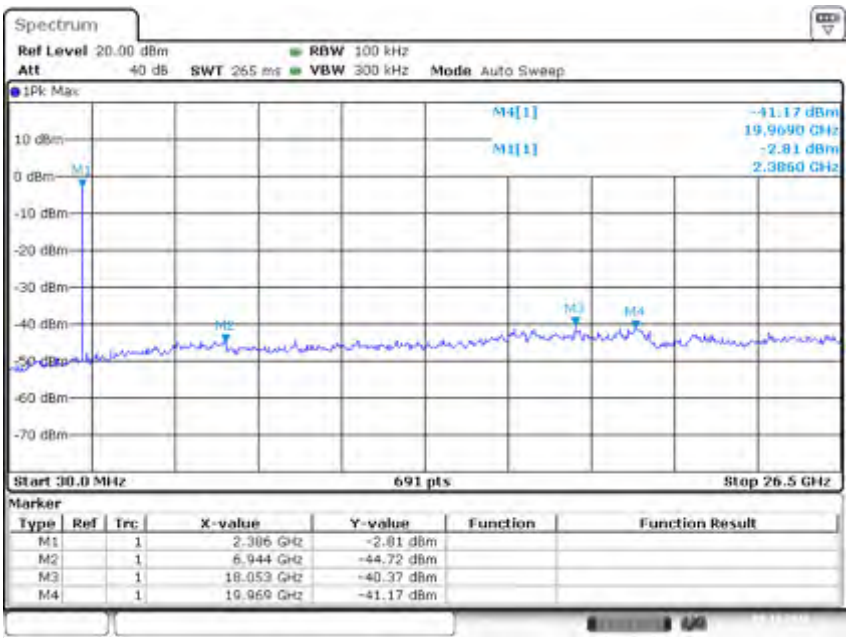
EDR Mode, 3DH1



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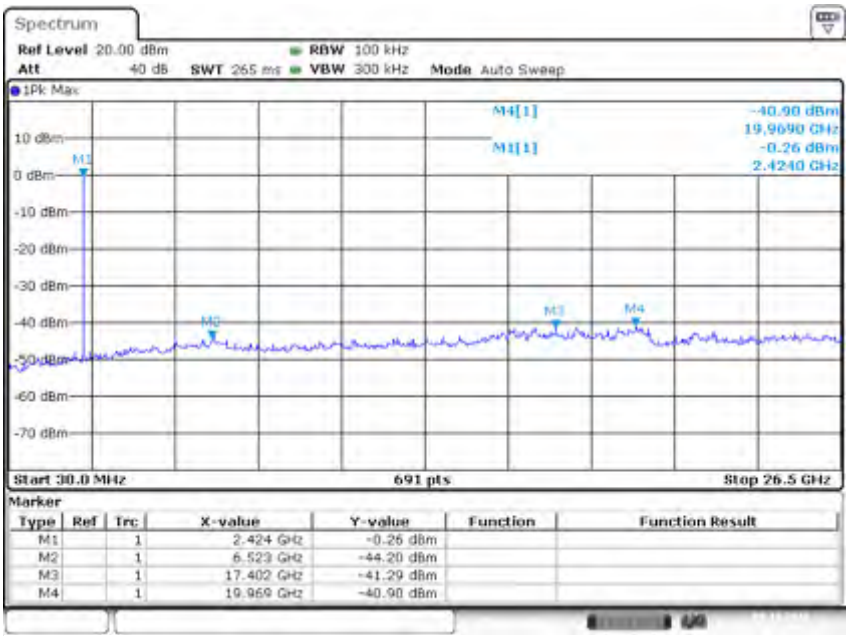

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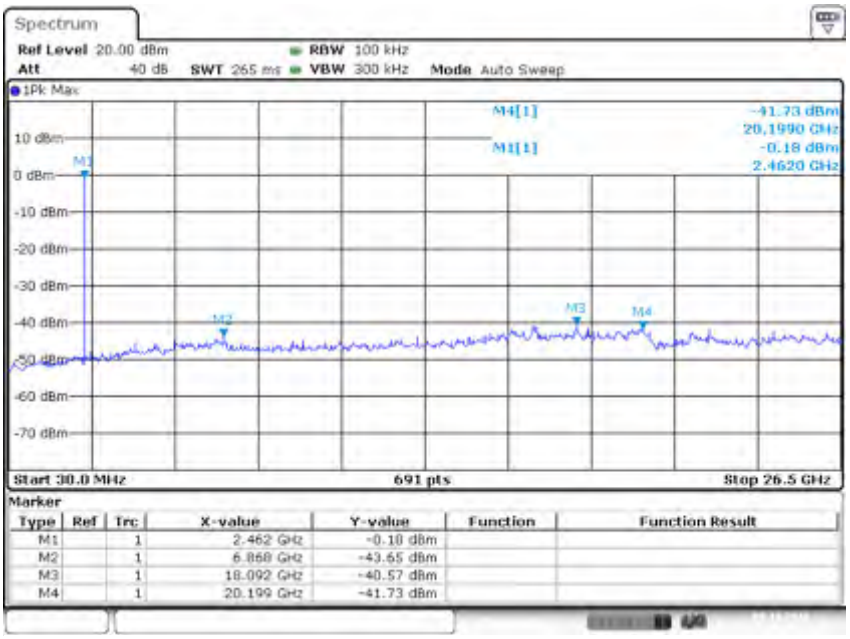

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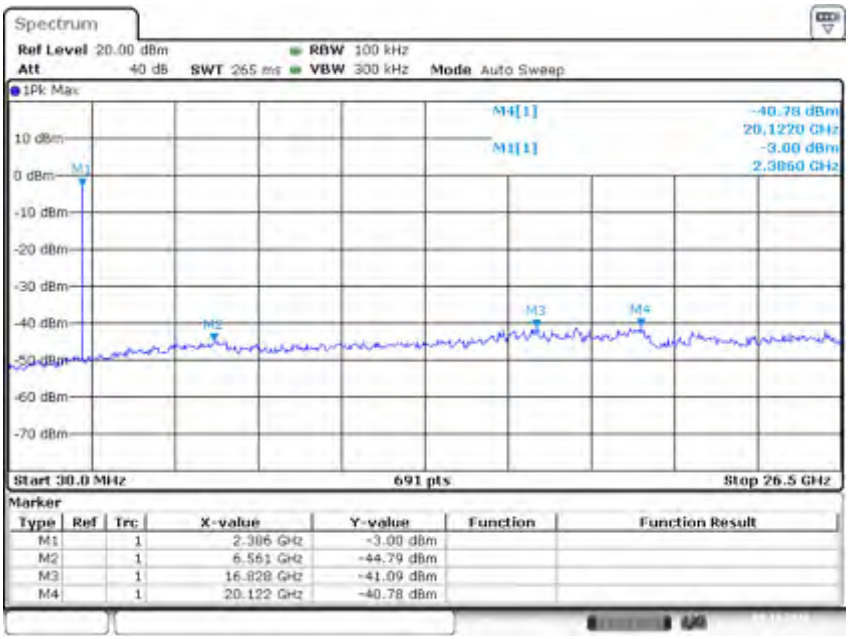
Low Energy Mode



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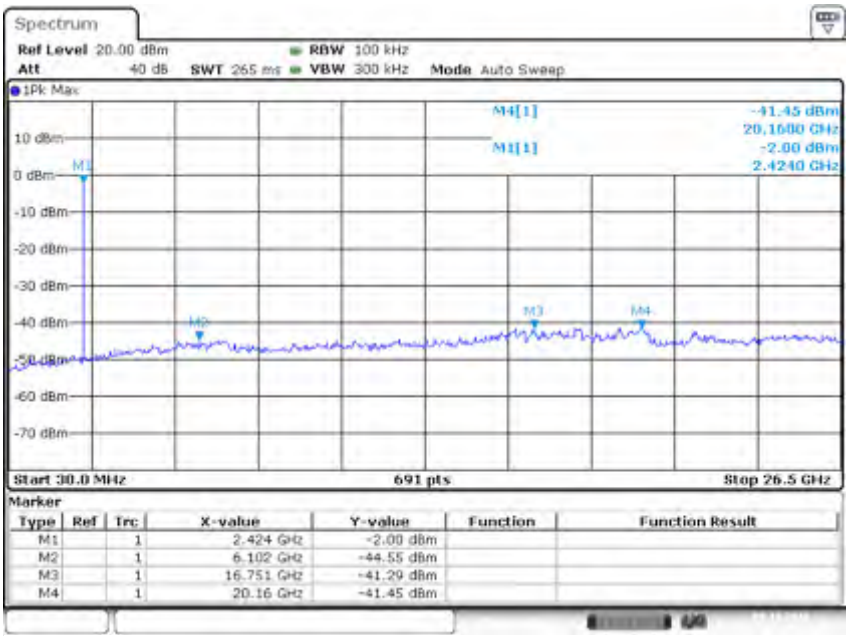

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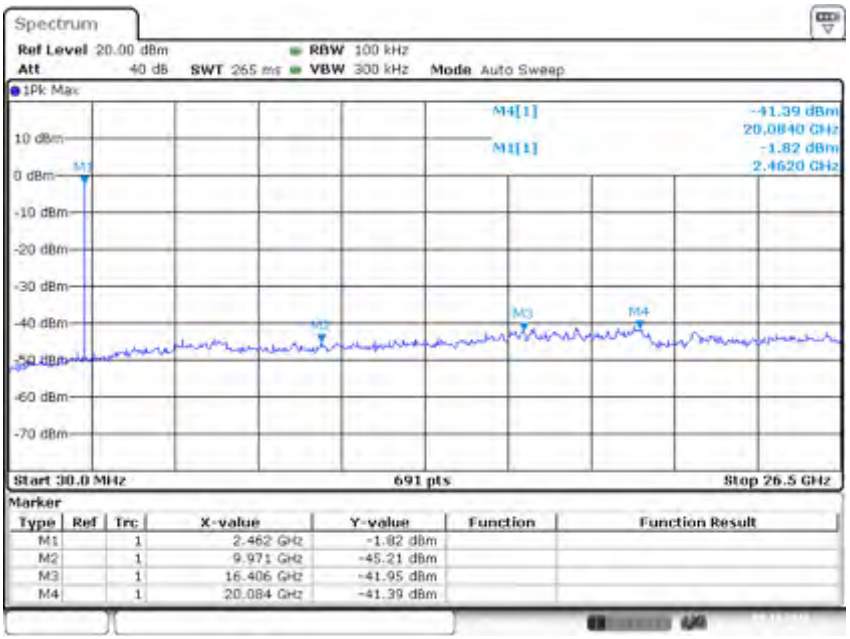

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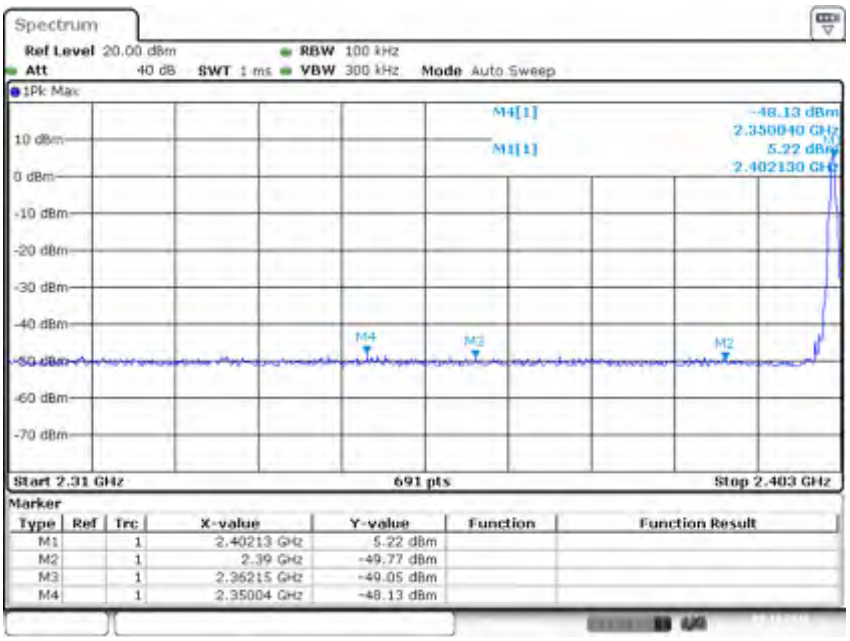
BDR Mode, Band Edge



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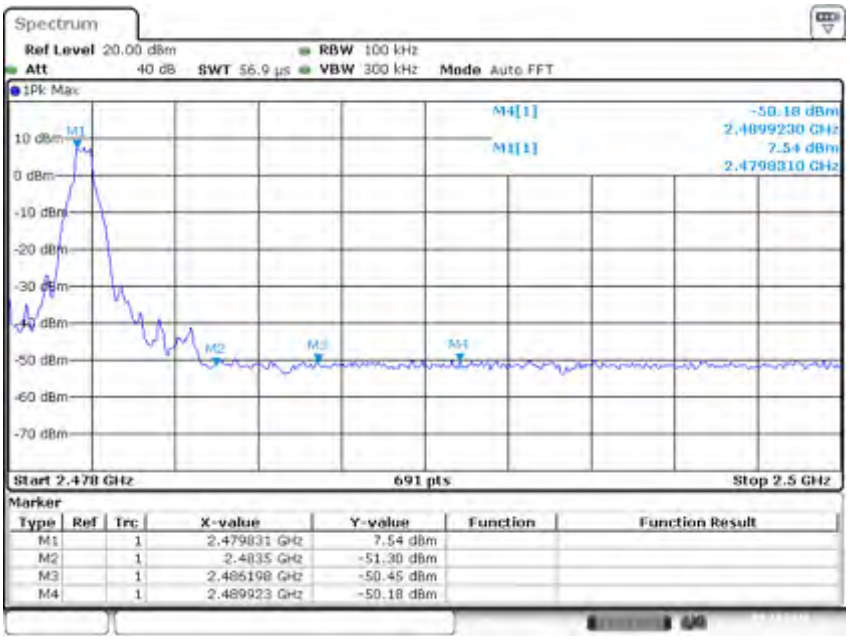

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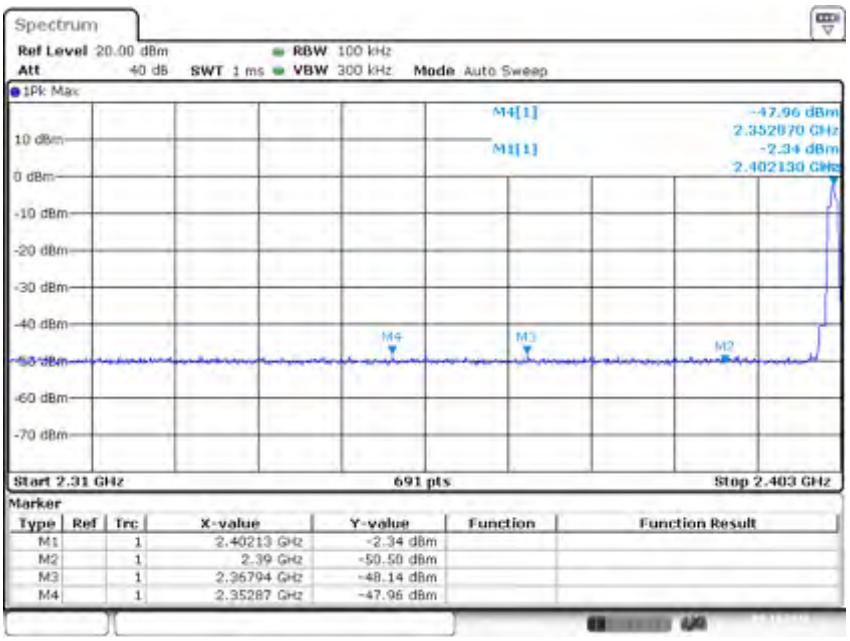
EDR Mode, Band Edge



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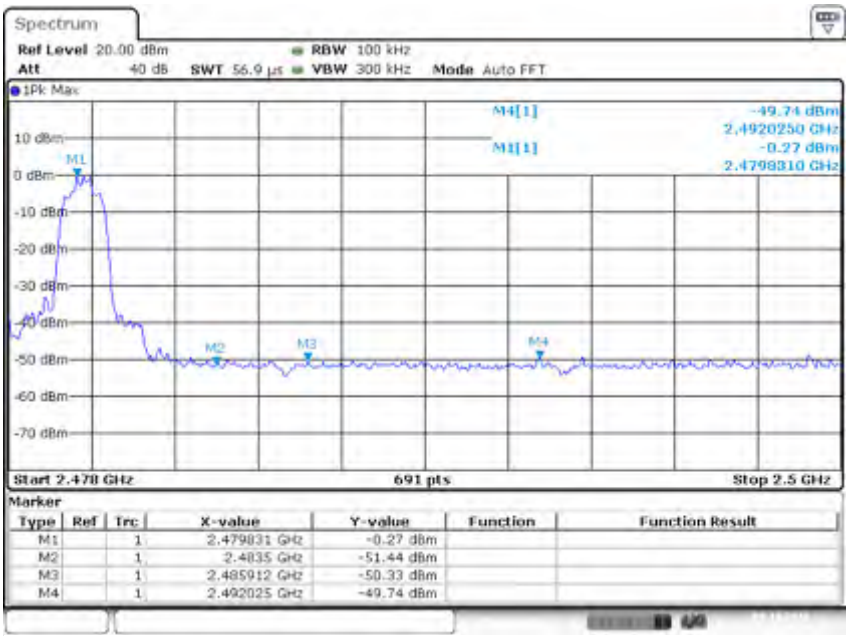
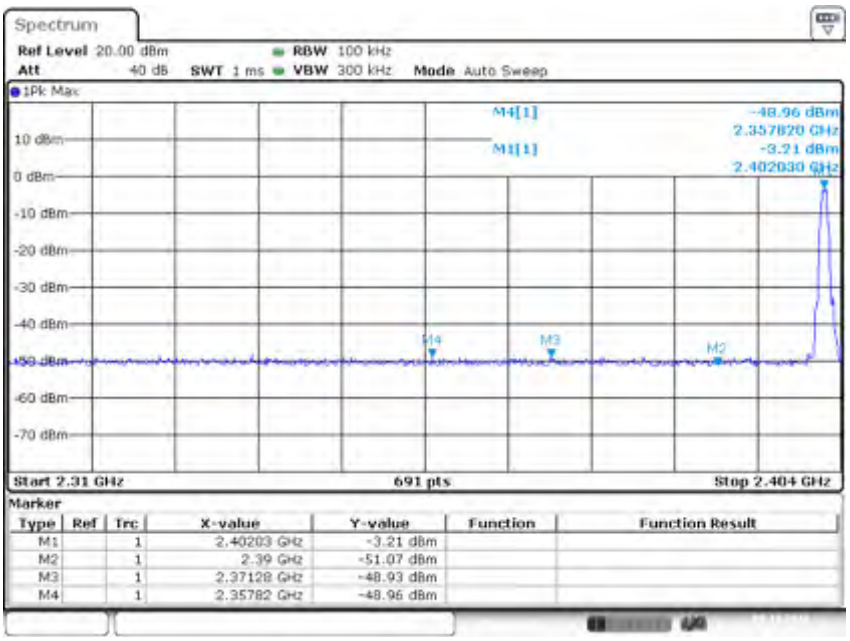


Date: 9.OCT.2016 15:36:26

Low Energy Mode, Band Edge



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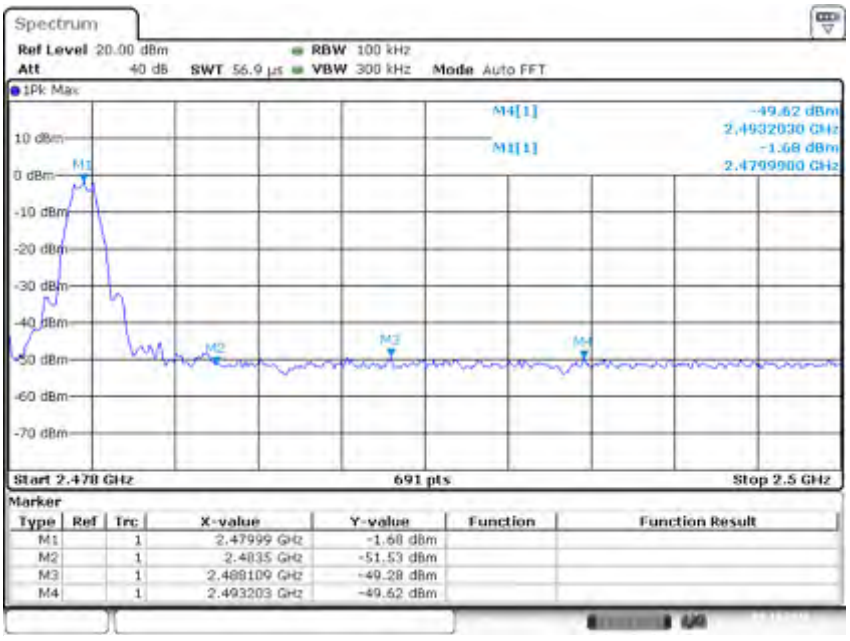

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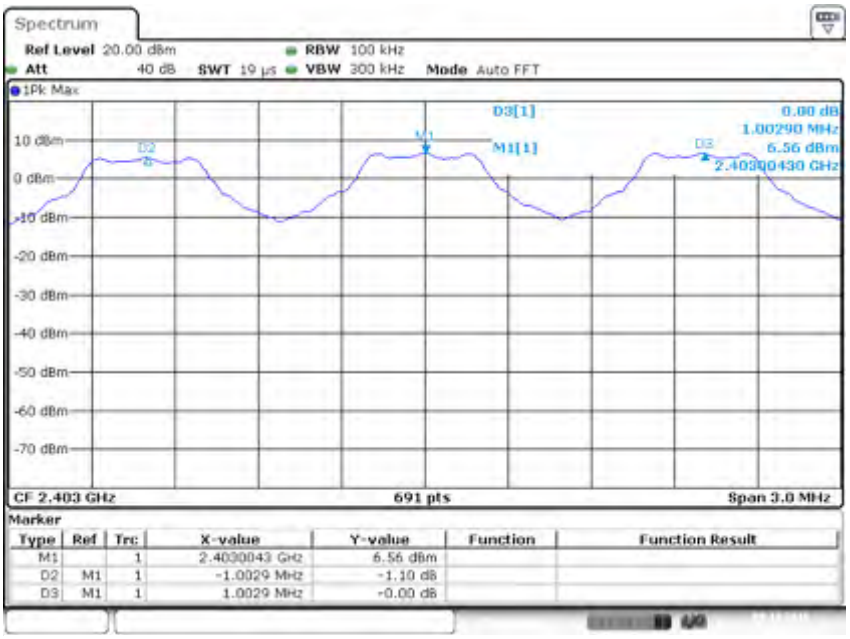
Appendix A.6: Test Plots of Carrier Frequency Separation

Hopping Mode



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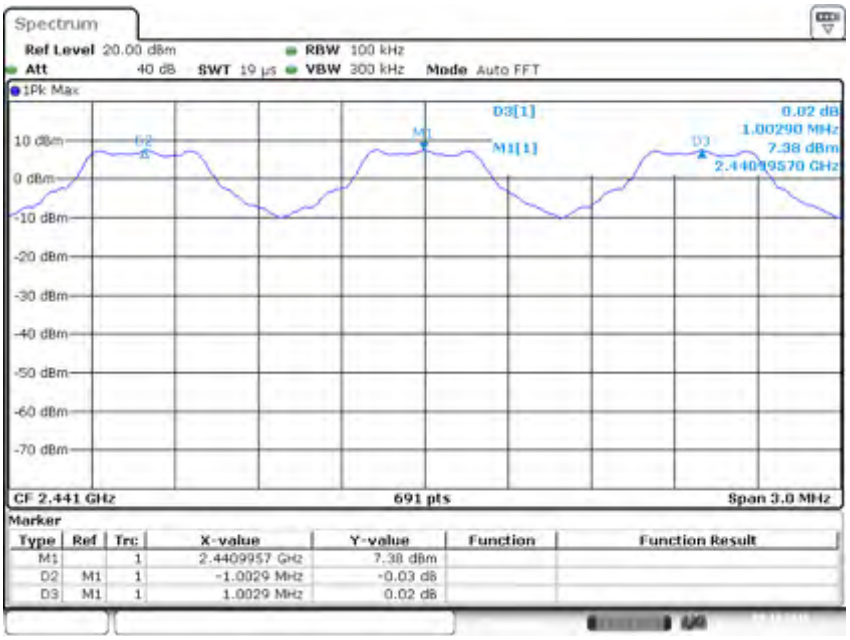

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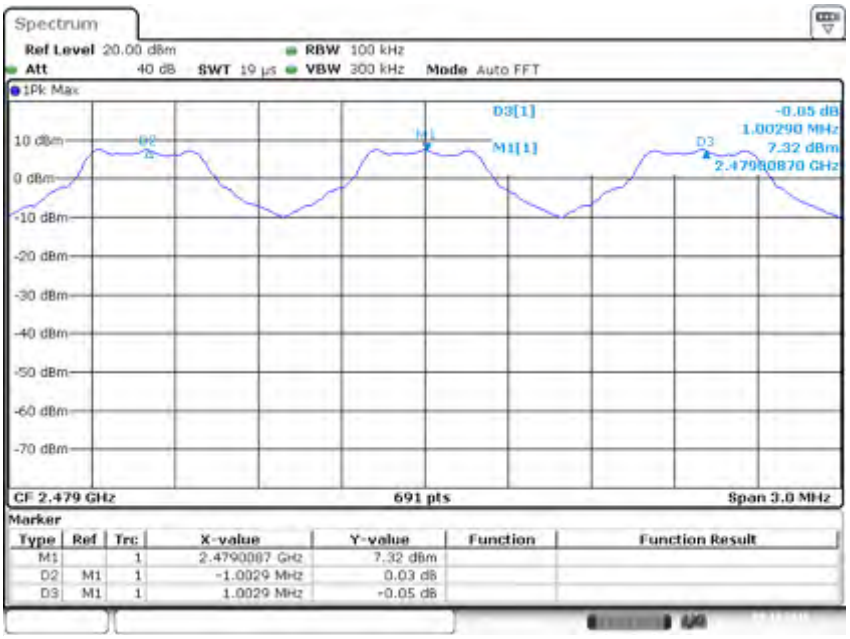
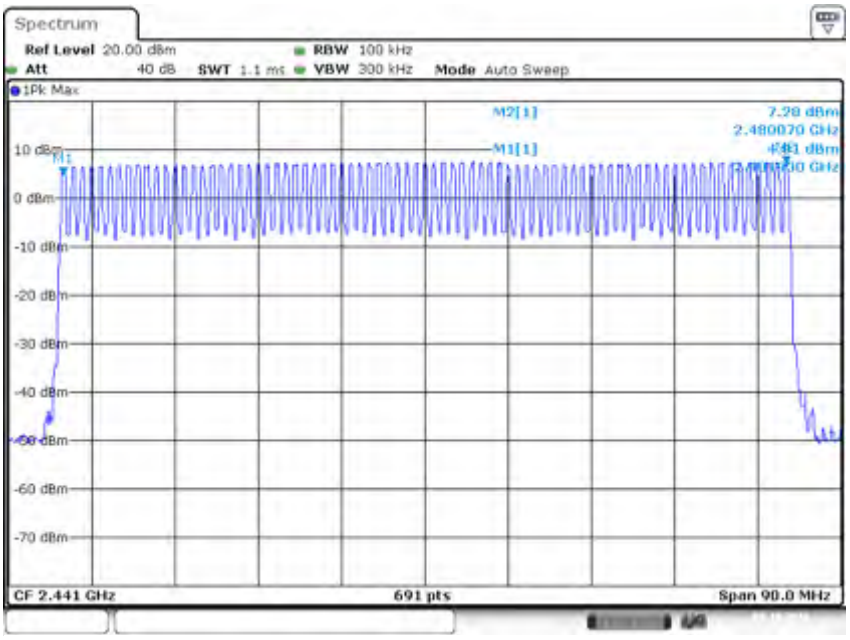


Date: 9.OCT.2016 14:19:26

Appendix A.7: Test Plots of Number of Hopping Frequency

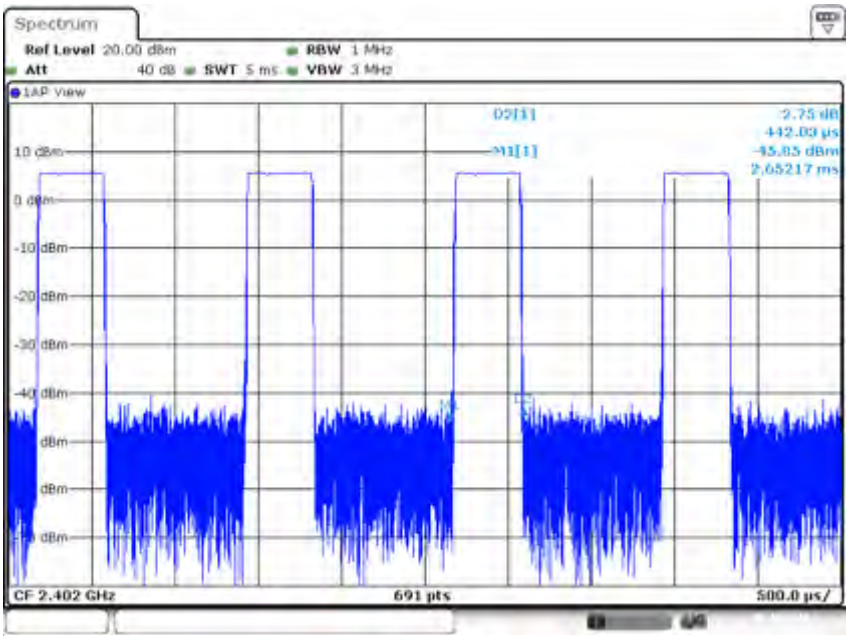
Hopping Mode



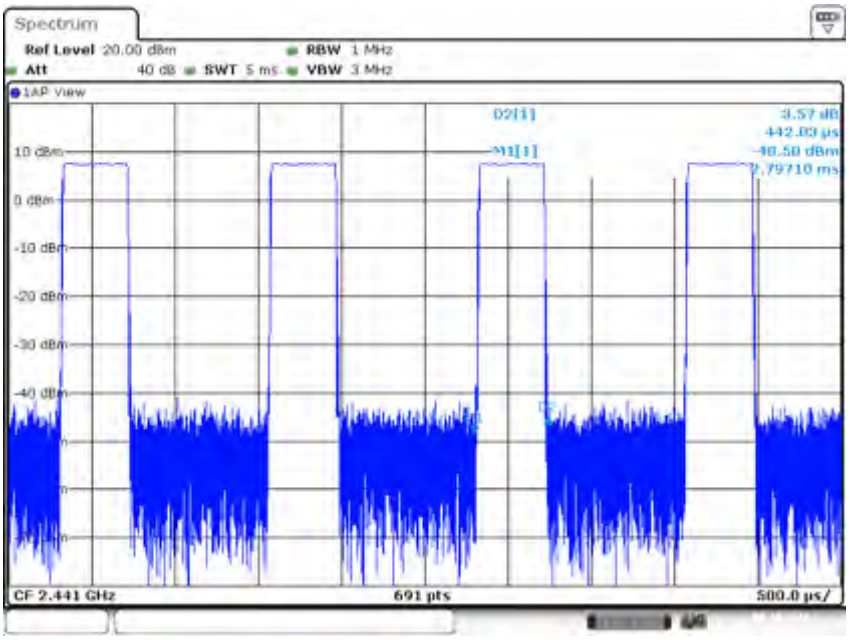
Date: 9.OCT.2016 14:26:22

Appendix A.8: Test Plots of Time of Occupancy

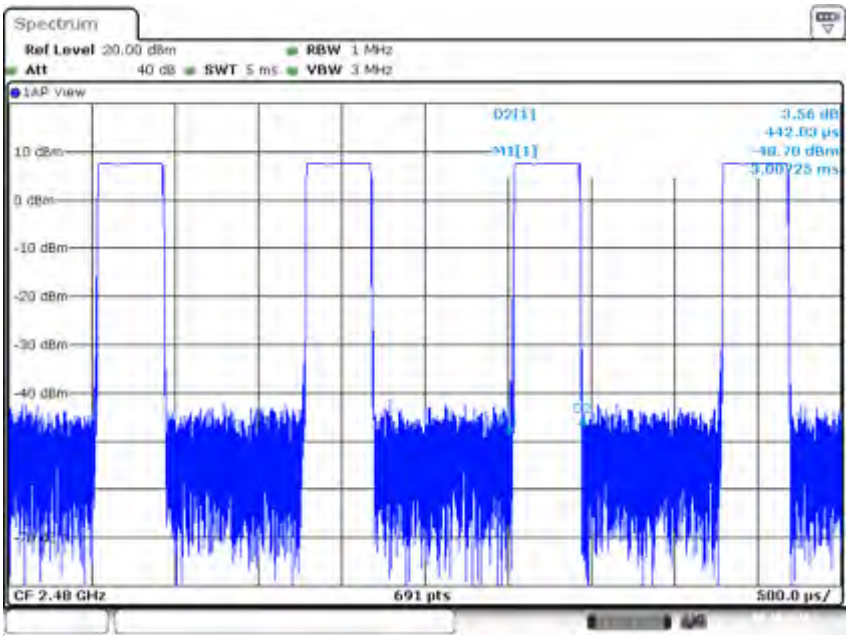
BDR Mode, DH1



Date: 9.OCT.2016 14:50:35

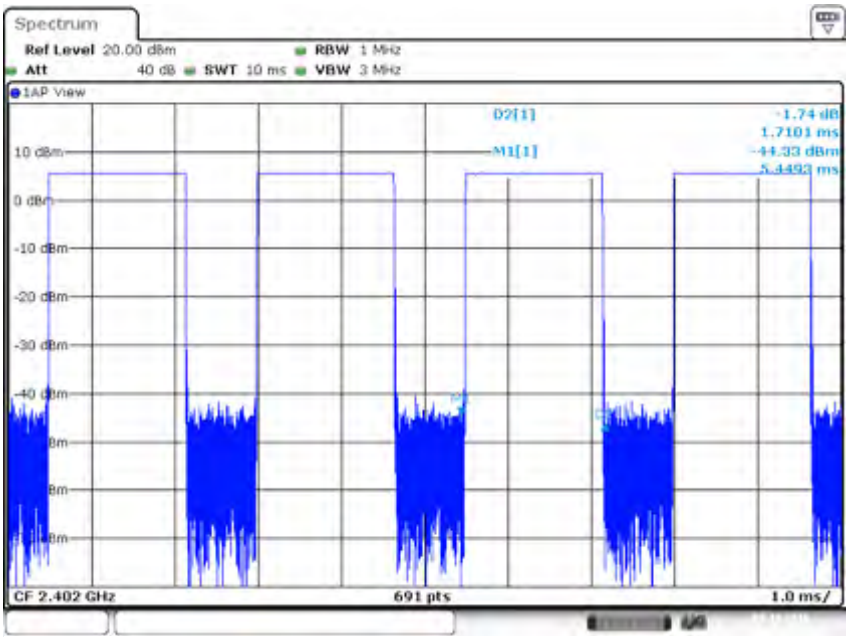


Date: 9.OCT.2016 14:51:15

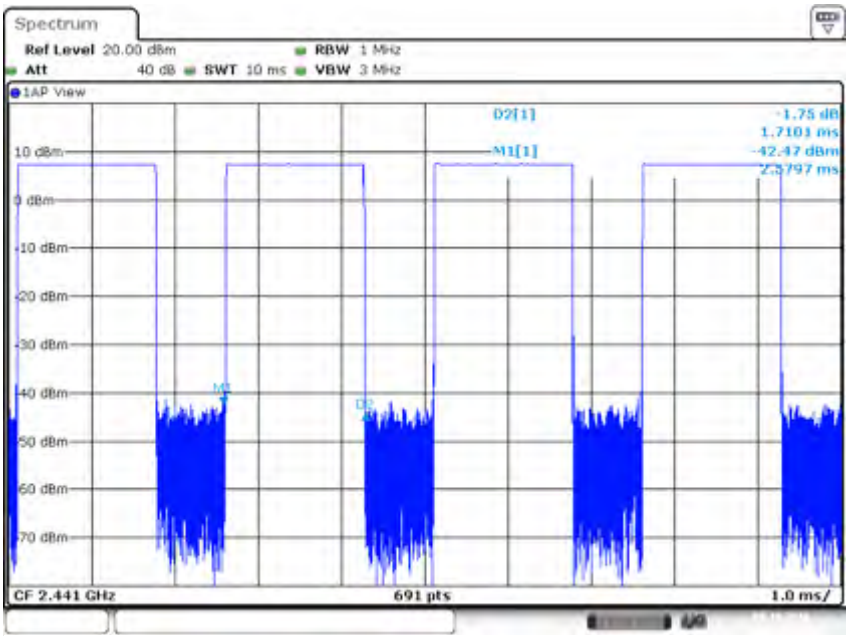


Date: 9.OCT.2016 14:51:53

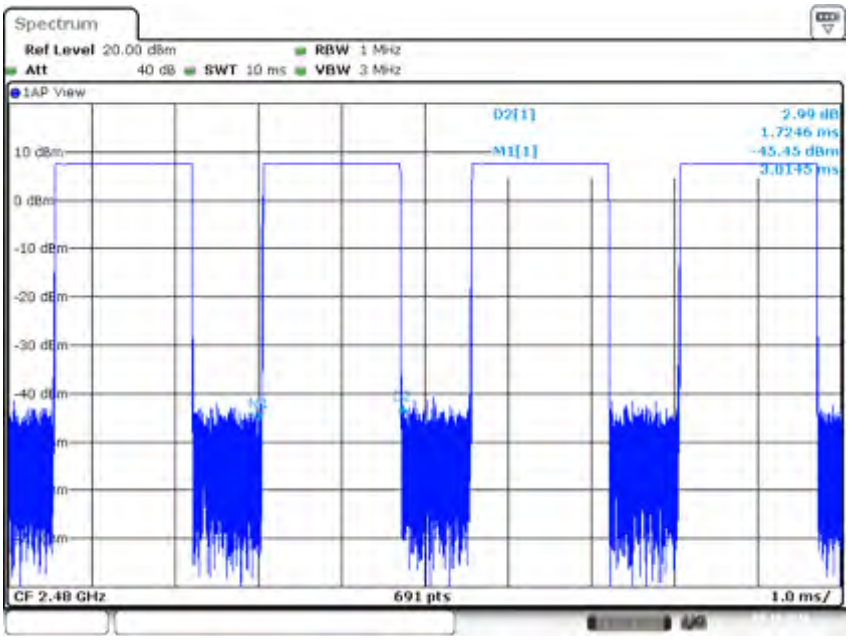
BDR Mode, DH3



Date: 9.OCT.2016 14:49:27

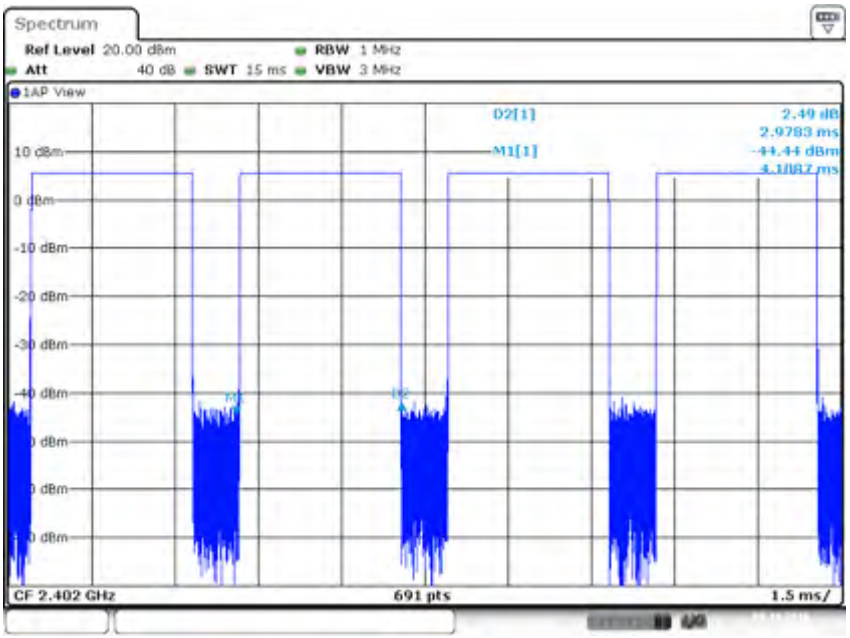


Date: 9.OCT.2016 14:48:44

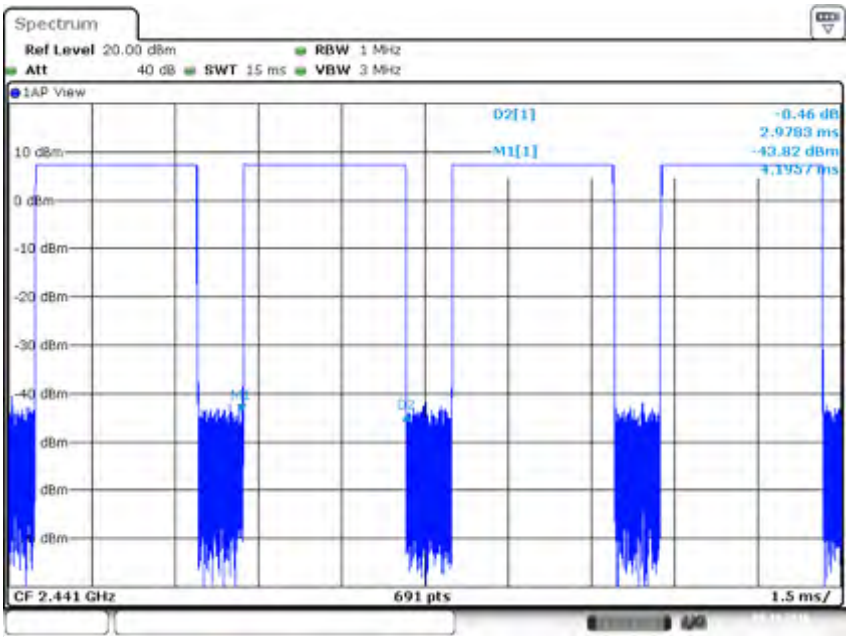


Date: 9.OCT.2016 14:47:45

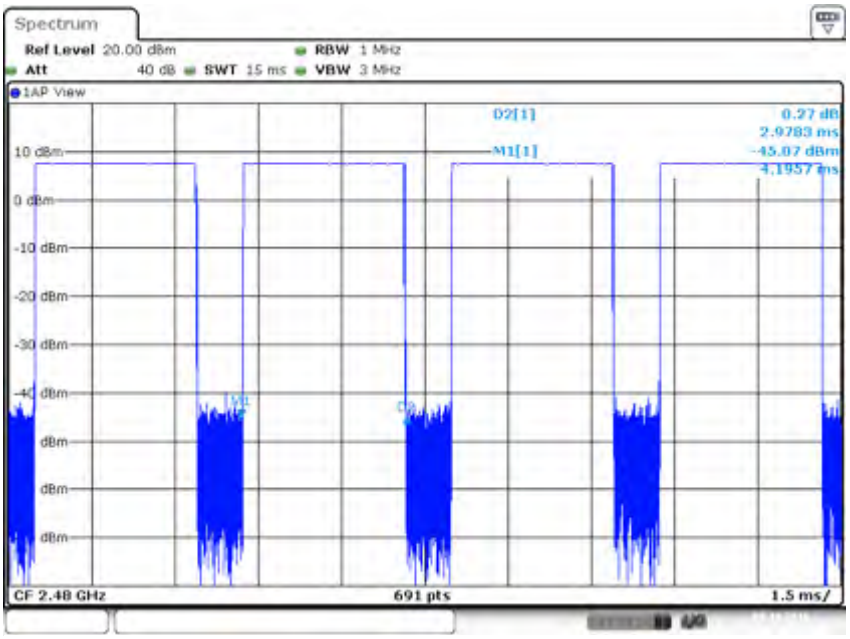
BDR Mode, DH5



Date: 9.OCT.2016 14:43:35

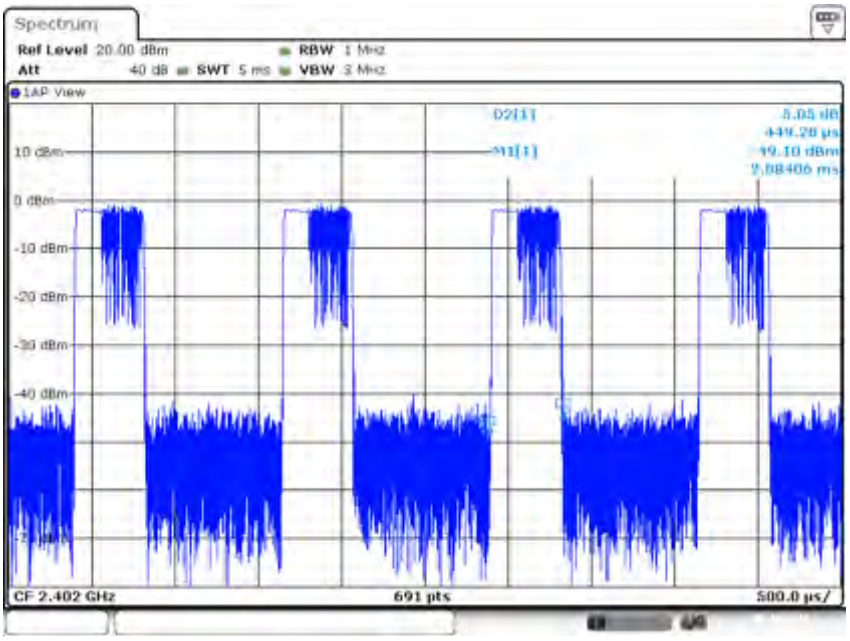


Date: 9.OCT.2016 14:44:52

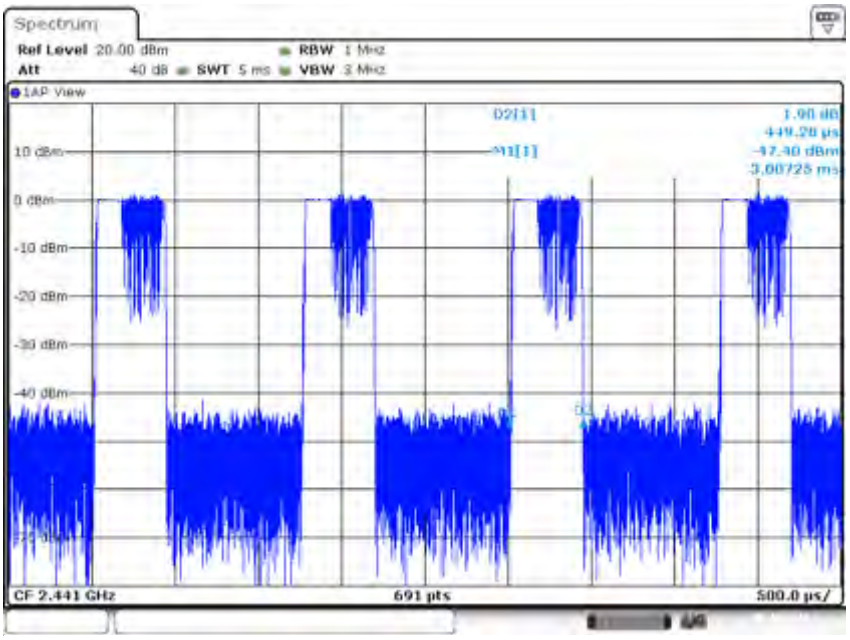


Date: 9.OCT.2016 14:45:44

EDR Mode, 3DH1



Date: 9.OCT.2016 16:03:45



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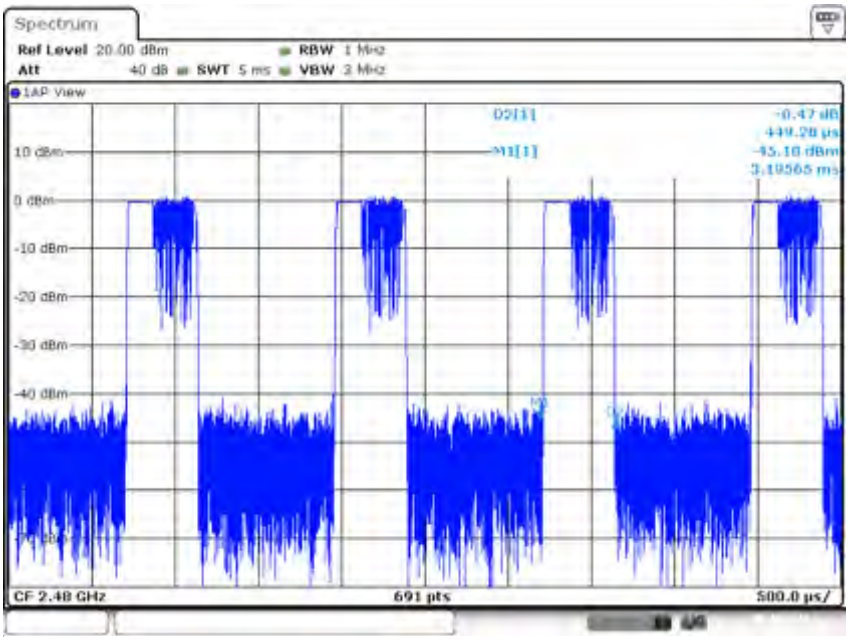
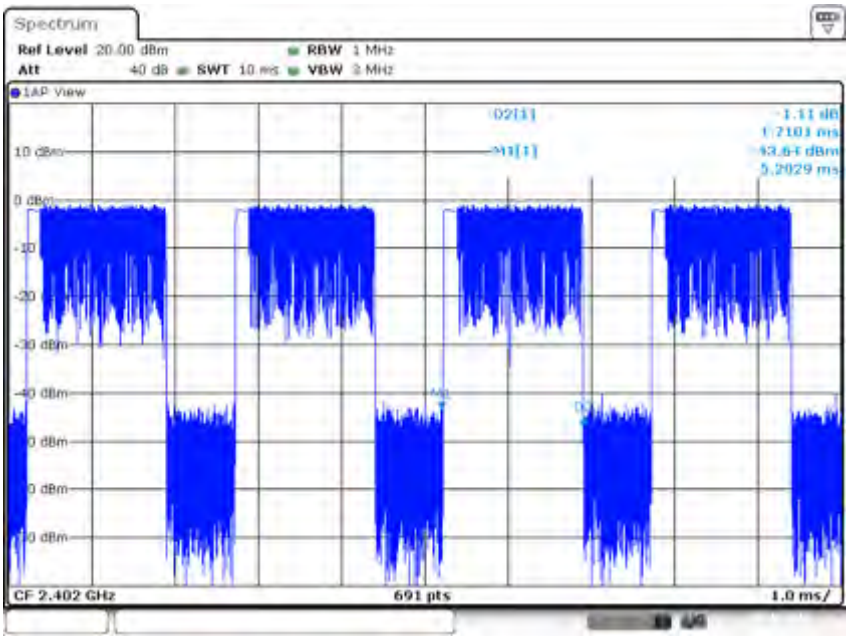


Date: 9.OCT.2016 16:02:37

EDR Mode, 3DH3



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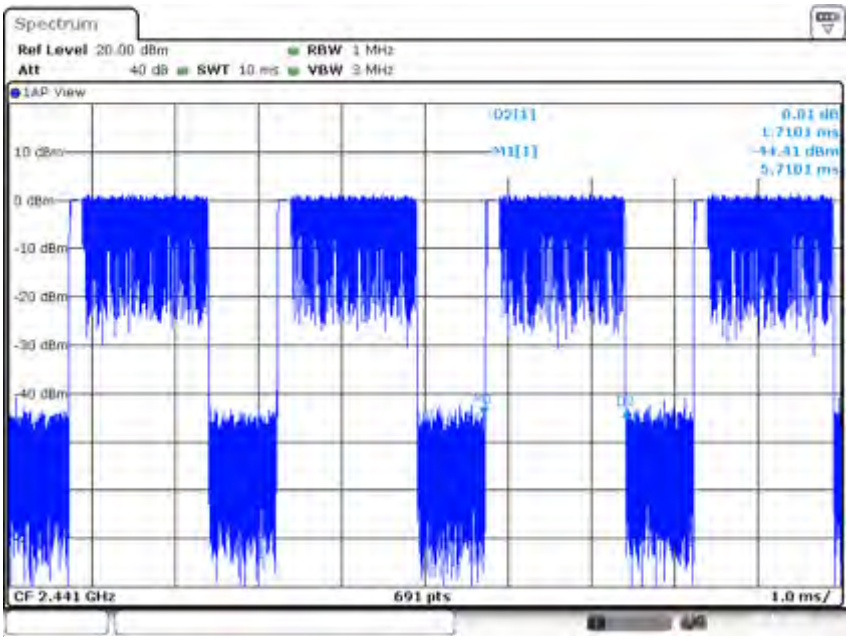
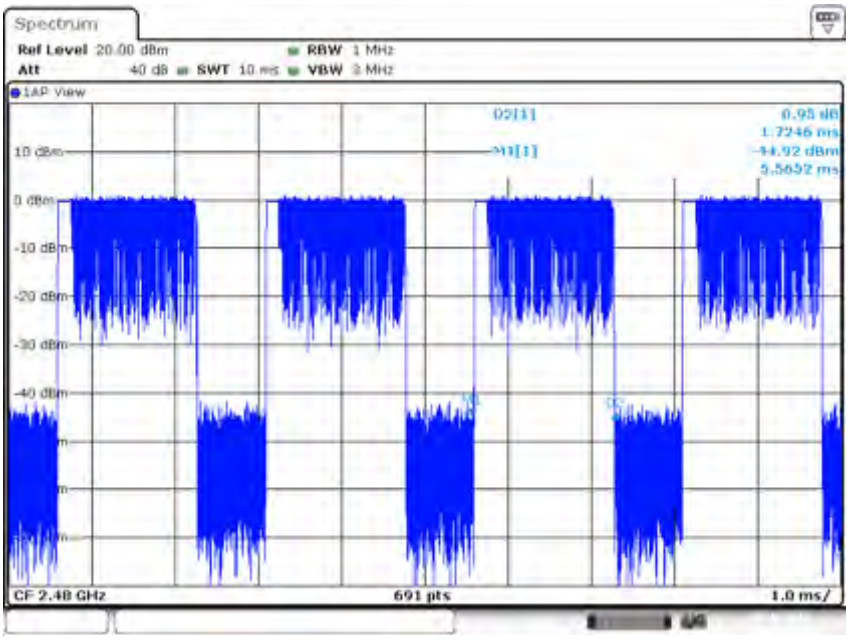
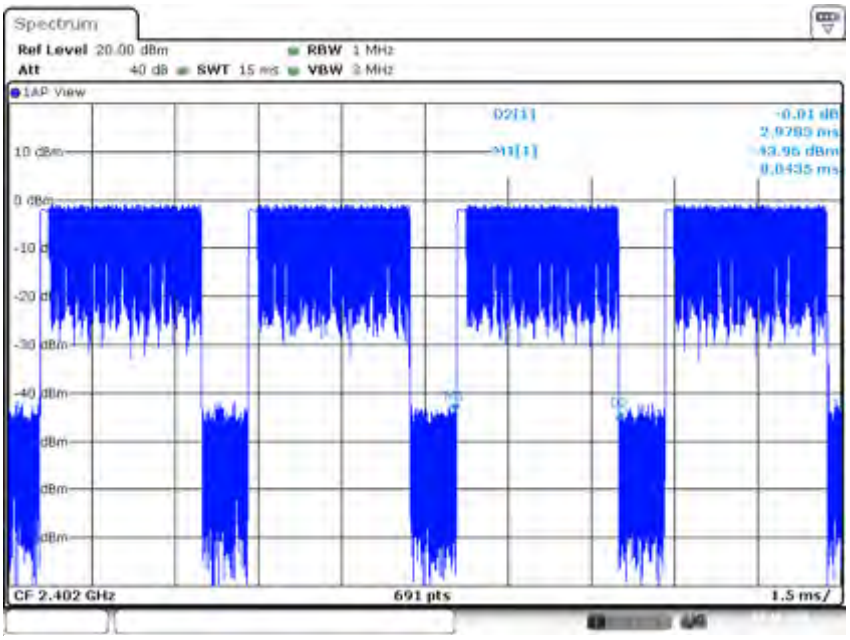


Date: 9.OCT.2016 16:00:46



Date: 9.OCT.2016 16:01:27

EDR Mode, 3DH5



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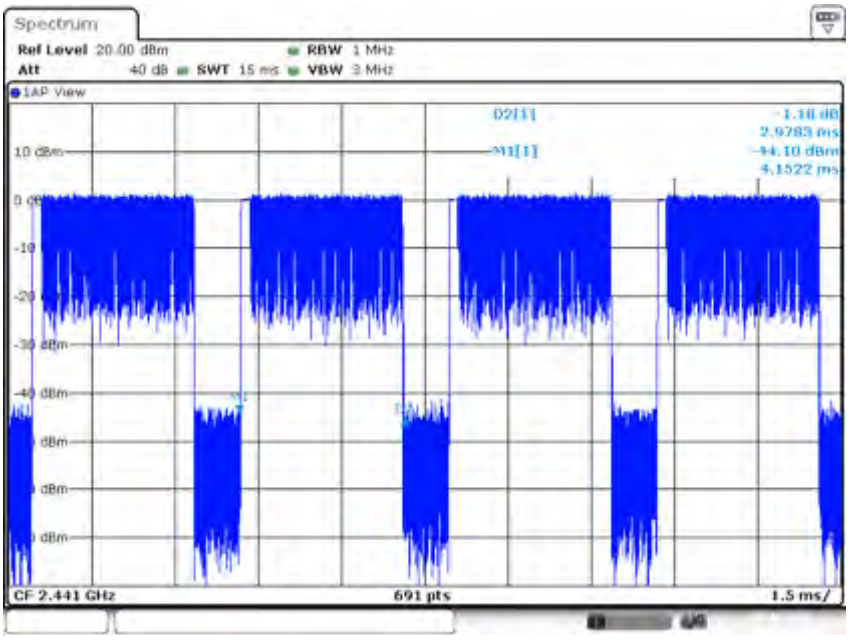
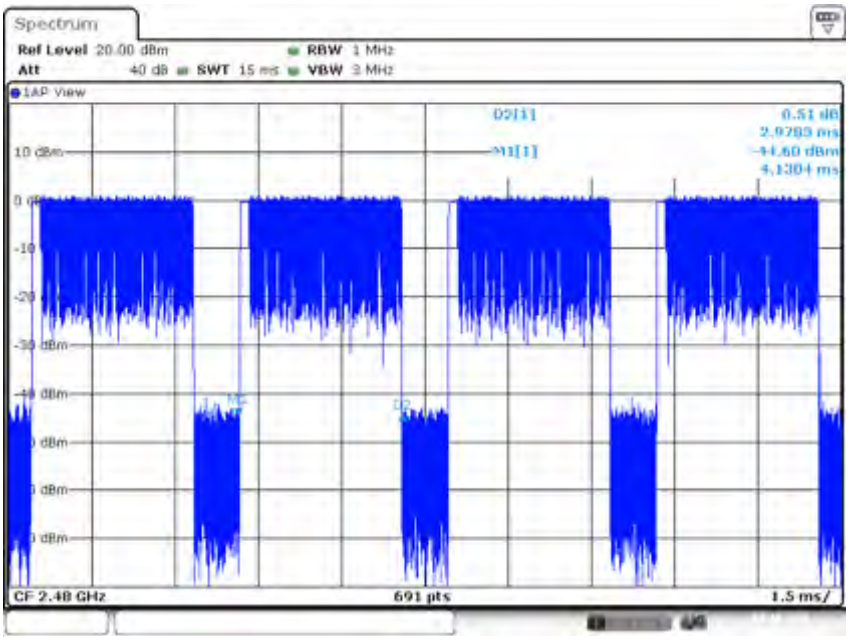


Date: 9.OCT.2016 15:57:06



Date: 9.OCT.2016 15:56:20

Appendix B

Test Results of Bluetooth 4.0 (Dual mode) of Radiated Testing

APPENDIX B 1

APPENDIX B.1: TEST PLOTS OF RADIATED SPURIOUS EMISSION 2
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Appendix B.1: Test Plots of Radiated Spurious Emission

BDR mode, 30MHz - 1GHz

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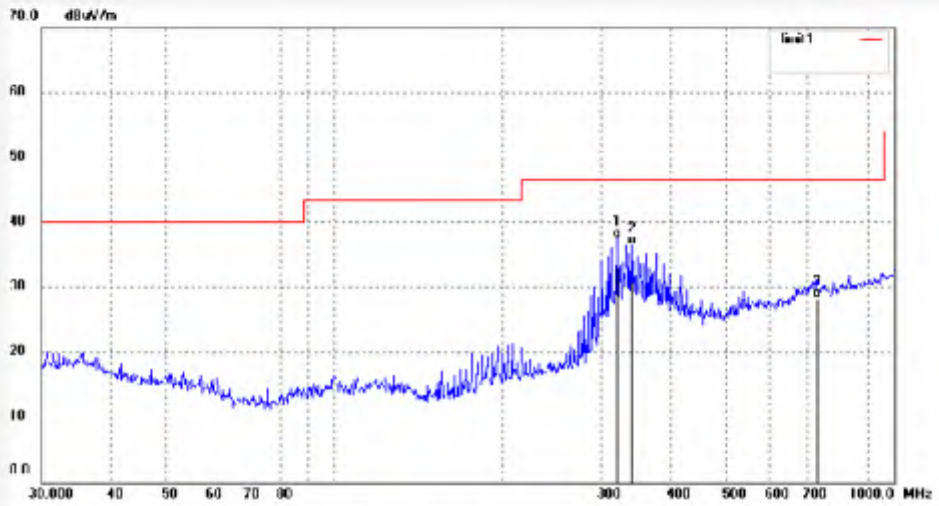
Job No.: LGW2015 #3246	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	319.9370	44.33	-6.75	37.58	46.40	-8.82	QP			
2	340.7817	42.46	-6.05	36.41	46.40	-9.99	QP			
3	729.3582	27.56	0.64	28.20	46.40	-18.20	QP			

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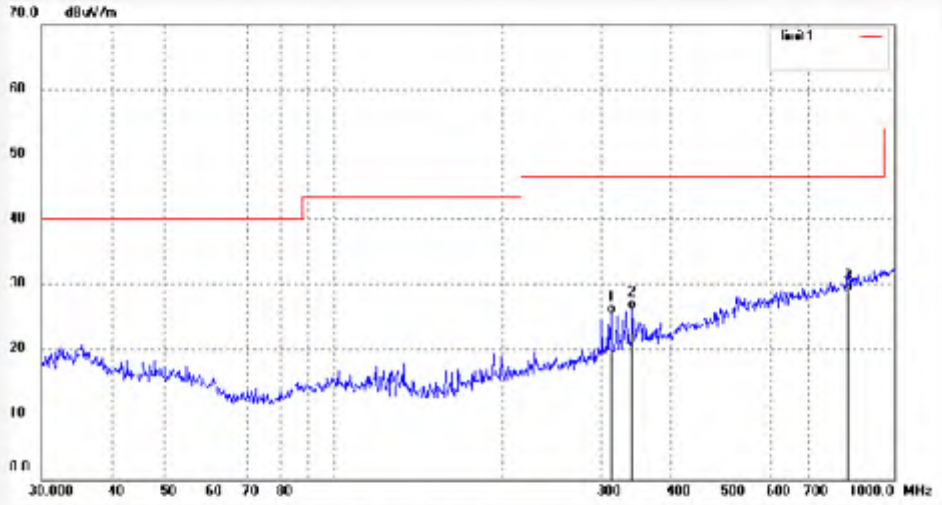
Job No.: LGW2015 #3247	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	312.1792	32.41	-6.95	25.46	46.40	-20.94	QP			
2	340.7817	32.25	-6.05	26.20	46.40	-20.20	QP			
3	827.4933	26.32	2.48	28.80	46.40	-17.60	QP			

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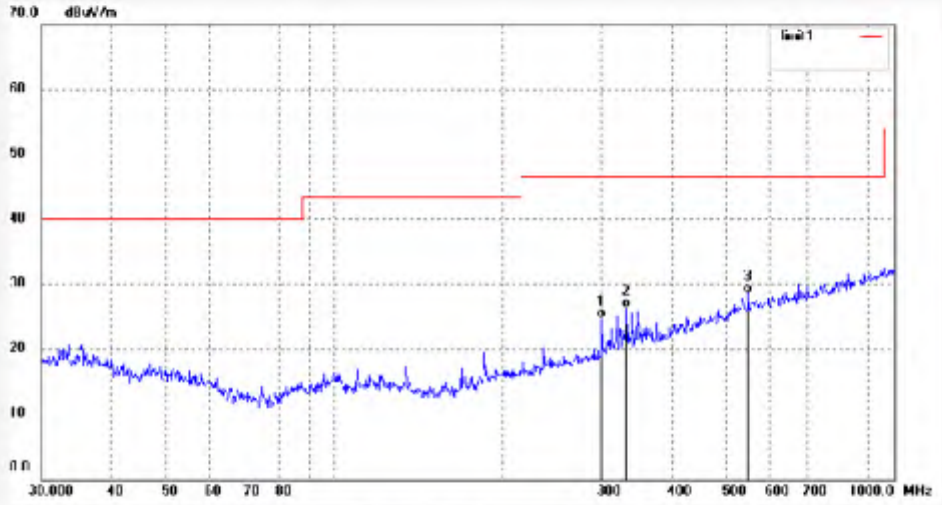
Job No.: LGW2015 #3248	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	300.3672	32.08	-7.29	24.79	46.40	-21.61	QP			
2	332.5187	32.69	-6.30	26.39	46.40	-20.01	QP			
3	549.0193	30.21	-1.65	28.56	46.40	-17.84	QP			

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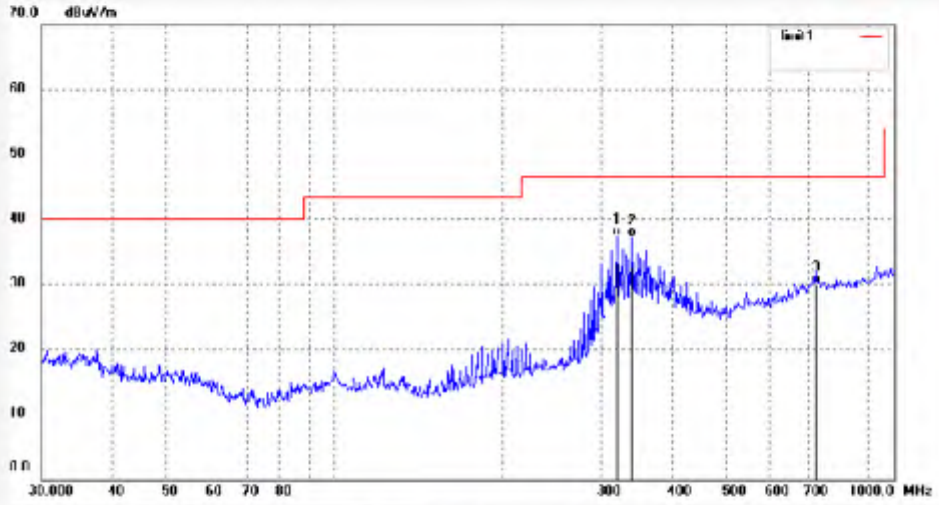
Job No.: LGW2015 #3249	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2441MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	319.9370	44.12	-6.75	37.37	46.40	-9.03	QP			
2	340.7817	43.18	-6.05	37.13	46.40	-9.27	QP			
3	724.2611	29.42	0.58	30.00	46.40	-16.40	QP			

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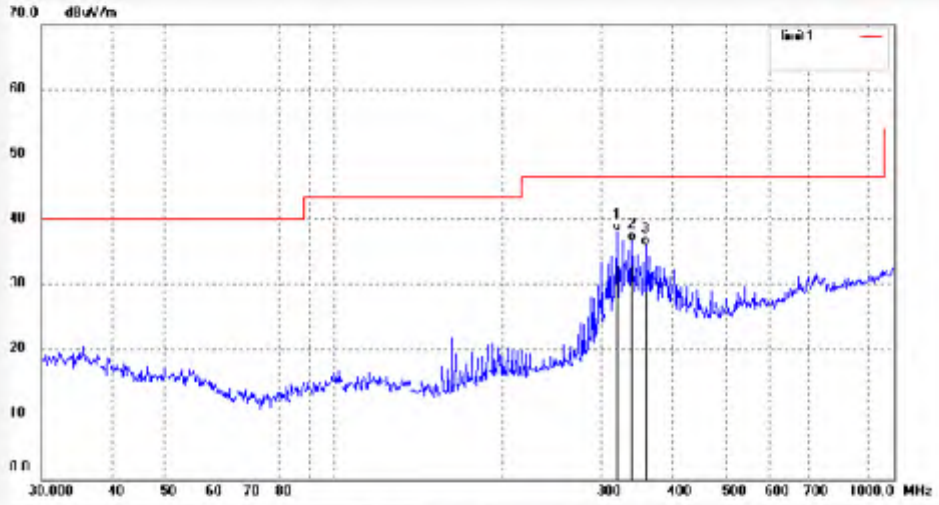
Job No.: LGW2015 #3250	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	319.9370	44.75	-6.75	38.00	46.40	-8.40	QP			
2	340.7817	42.66	-6.05	36.61	46.40	-9.79	QP			
3	360.4476	41.61	-5.60	36.01	46.40	-10.39	QP			

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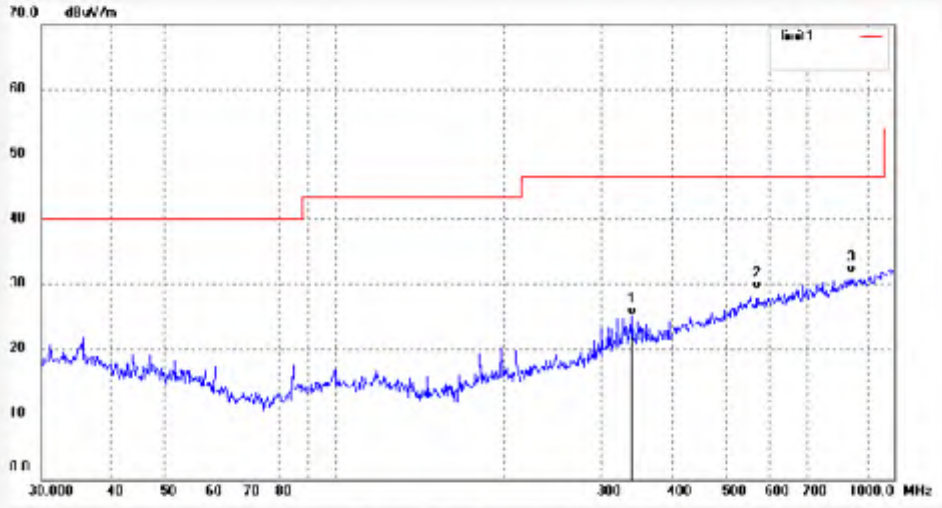
Job No.: LGW2015 #3251	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	340.7817	31.20	-6.05	25.15	46.40	-21.25	QP			
2	568.6127	30.48	-1.34	29.14	46.40	-17.26	QP			
3	839.1816	28.91	2.64	31.55	46.40	-14.85	QP			

BDR mode, 1GHz - 18GHz

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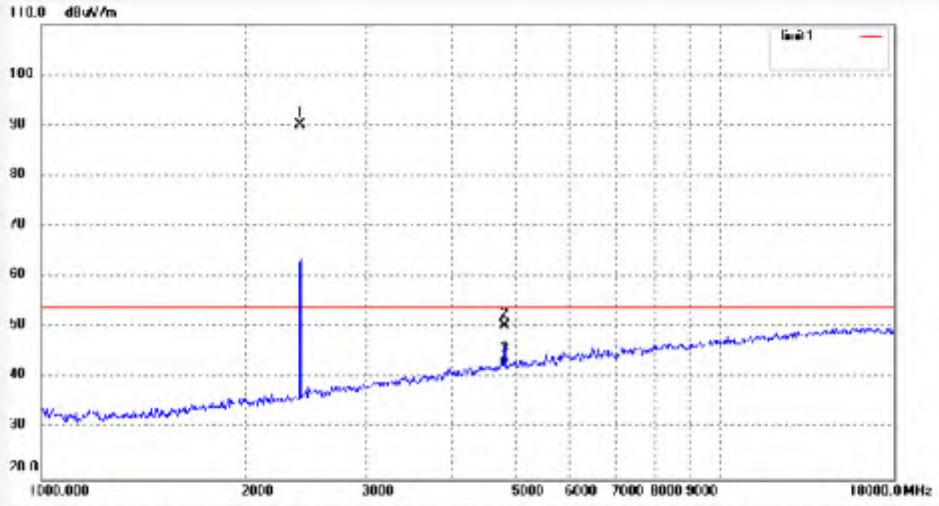
Job No.: LGW2015 #3214	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	97.48	-7.45	90.03	/	/	peak			
2	4804.025	50.62	-0.30	50.32	74.00	-23.68	peak			
3	4804.025	42.87	-0.30	42.57	54.00	-11.43	AVG			

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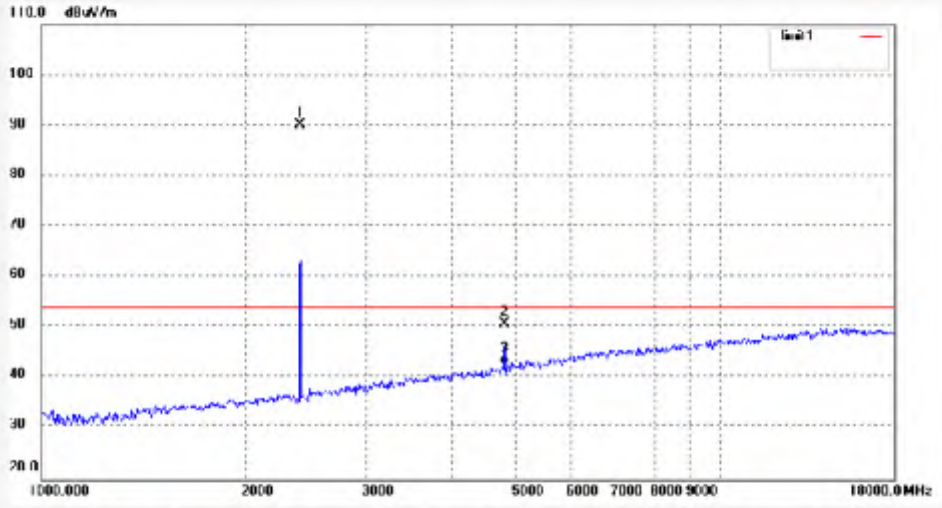
Job No.: LGW2015 #3215	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	97.58	-7.45	90.13	/	/	peak			
2	4804.026	51.09	-0.30	50.79	74.00	-23.21	peak			
3	4804.026	42.91	-0.30	42.61	54.00	-11.39	AVG			

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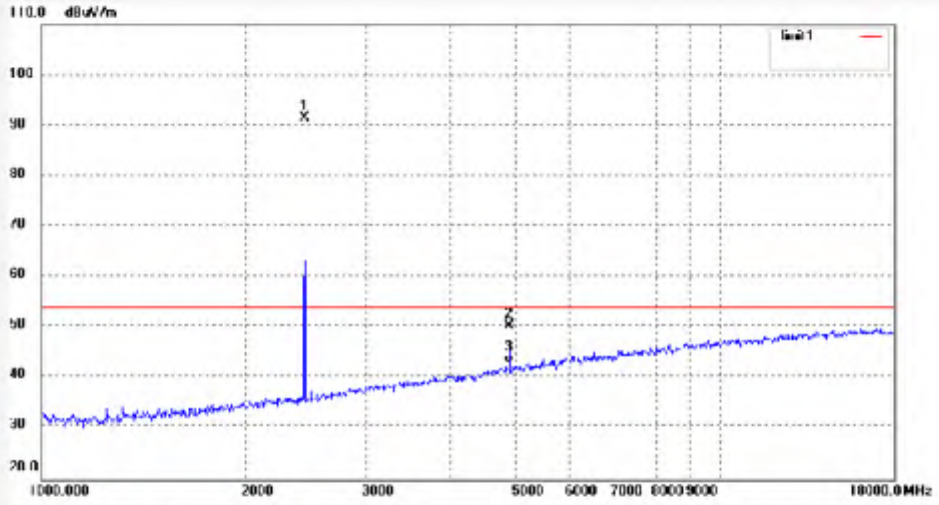
Job No.: LGW2015 #3218
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth sports earphones
Mode: TX 2441MHz
Model: BTSPTEPPRM
Manufacturer:

Polarization: Horizontal
Power Source: DC 3.7V
Date: 16/10/09/
Time:
Engineer Signature: LGWADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	98.71	-7.35	91.36	/	/	peak			
2	4882.023	50.23	0.14	50.37	74.00	-23.63	peak			
3	4882.023	42.60	0.14	42.74	54.00	-11.26	AVG			

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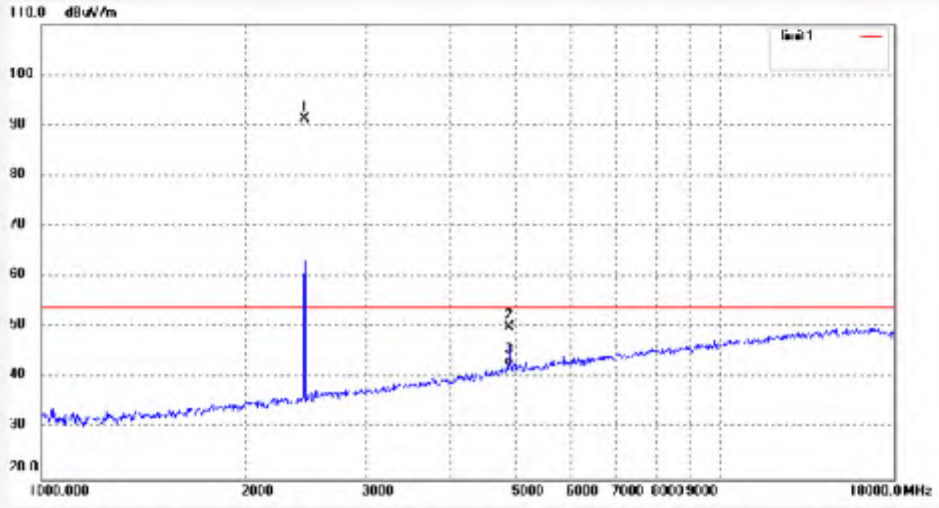
Job No.: LGW2015 #3219
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth sports earphones
Mode: TX 2441MHz
Model: BTSPTEPPRM
Manufacturer:

Polarization: Vertical
Power Source: DC 3.7V
Date: 16/10/09/
Time:
Engineer Signature: LGWADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	98.51	-7.35	91.16	/	/	peak			
2	4882.024	49.95	0.14	50.09	74.00	-23.91	peak			
3	4882.024	42.20	0.14	42.34	54.00	-11.66	AVG			

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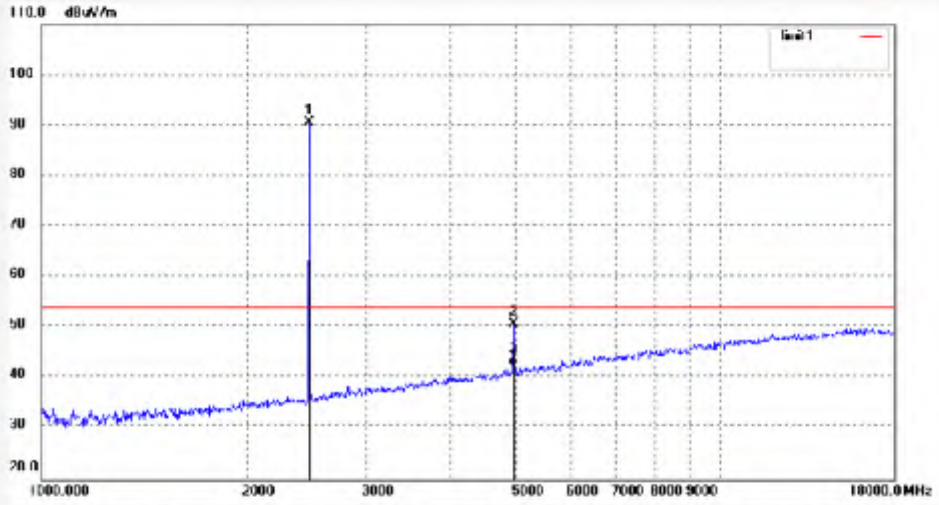
Job No.: LGW2015 #3220	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	97.93	-7.37	90.56	/	/	peak			
2	4960.027	50.16	0.52	50.68	74.00	-23.32	peak			
3	4960.027	41.81	0.52	42.33	54.00	-11.67	AVG			

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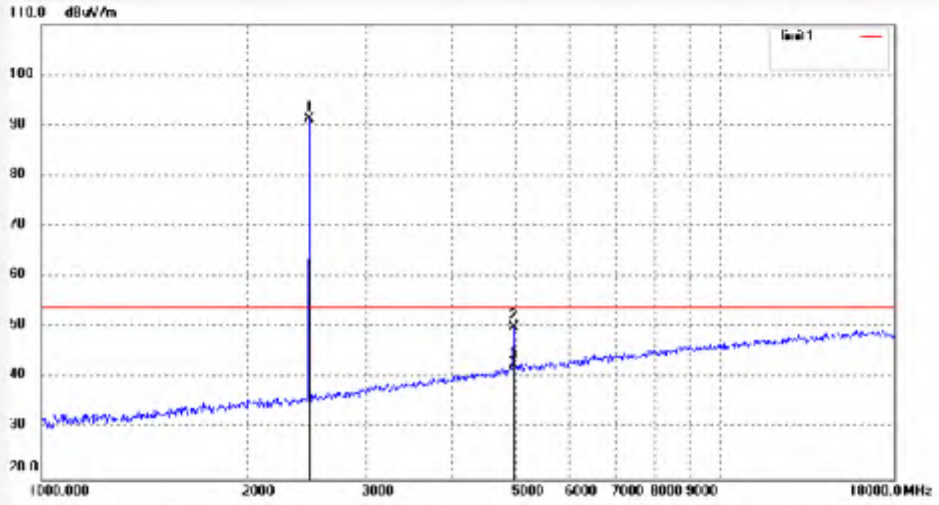
Job No.: LGW2015 #3221
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth sports earphones
Mode: TX 2480MHz
Model: BTSPTEPPRM
Manufacturer:

Polarization: Horizontal
Power Source: DC 3.7V
Date: 16/10/09/
Time:
Engineer Signature: LGWADE
Distance: 3m

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	98.68	-7.37	91.31	/	/	peak			
2	4960.024	49.44	0.52	49.96	74.00	-24.04	peak			
3	4960.025	40.85	0.52	41.37	54.00	-12.63	AVG			

Low Energy mode, 30MHz - 1GHz

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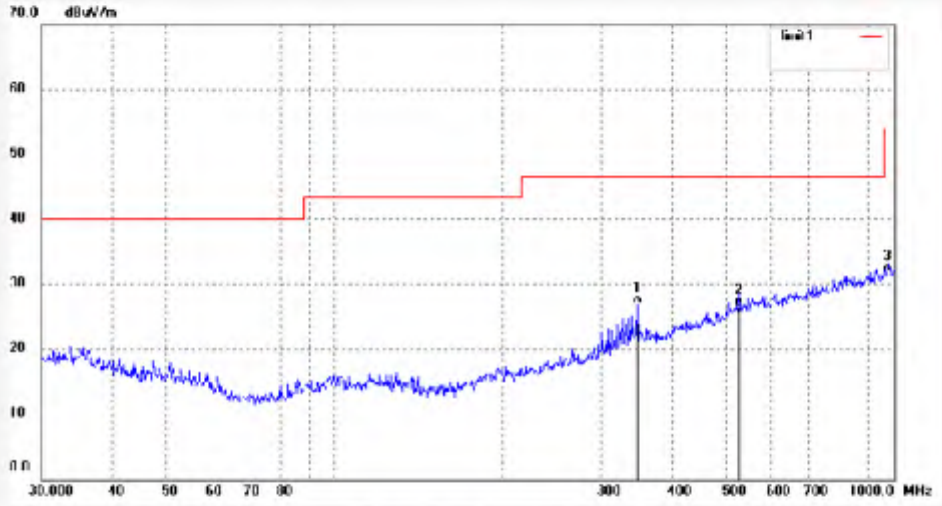
Job No.: LGW2015 #3252	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	348.0274	32.66	-5.80	26.86	46.40	-19.54	QP			
2	528.2458	28.80	-2.22	26.58	46.40	-19.82	QP			
3	975.7527	27.28	4.51	31.79	54.00	-22.21	QP			

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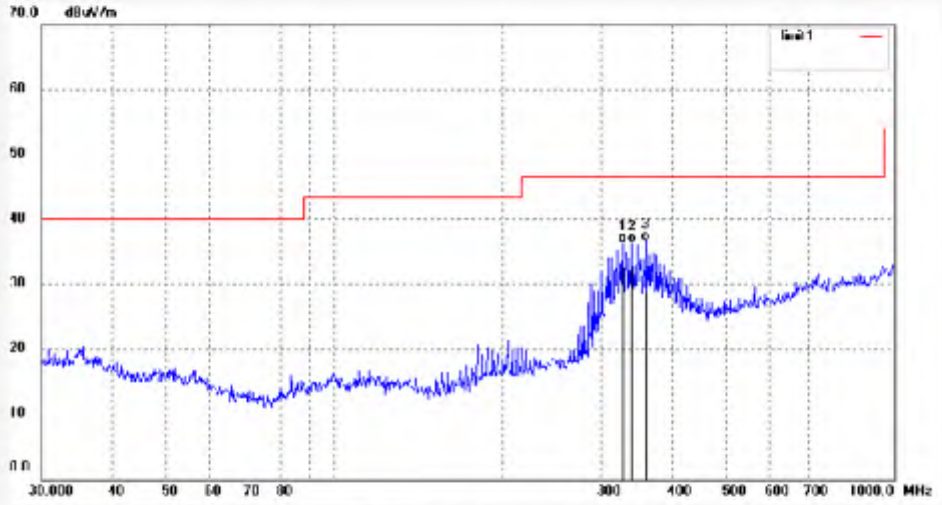
Job No.: LGW2015 #3253	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	327.8872	42.81	-6.43	36.38	46.40	-10.02	QP			
2	340.7817	42.36	-6.05	36.31	46.40	-10.09	QP			
3	360.4476	42.23	-5.60	36.63	46.40	-9.77	QP			

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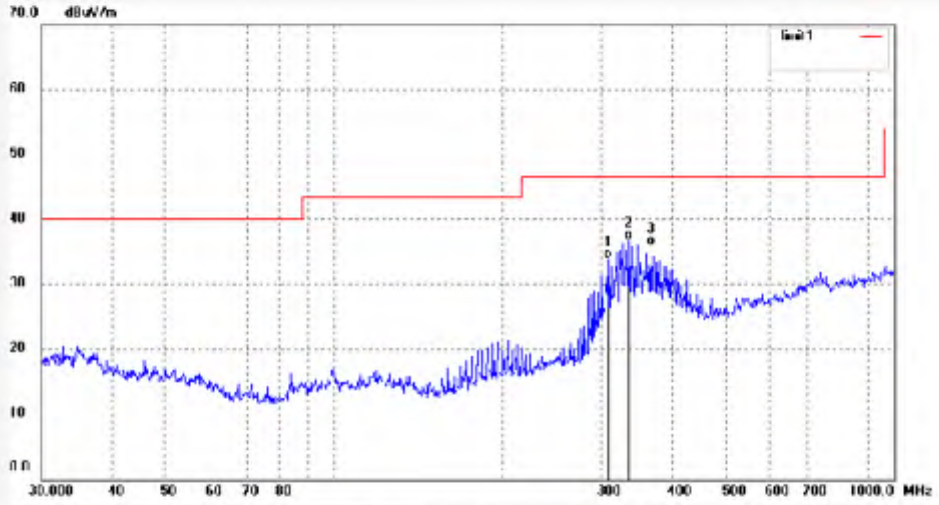
Job No.: LGW2015 #3254	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2440MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	307.8312	40.91	-7.09	33.82	46.40	-12.58	QP			
2	336.0351	43.05	-6.23	36.82	46.40	-9.58	QP			
3	368.1116	41.47	-5.52	35.95	46.40	-10.45	QP			

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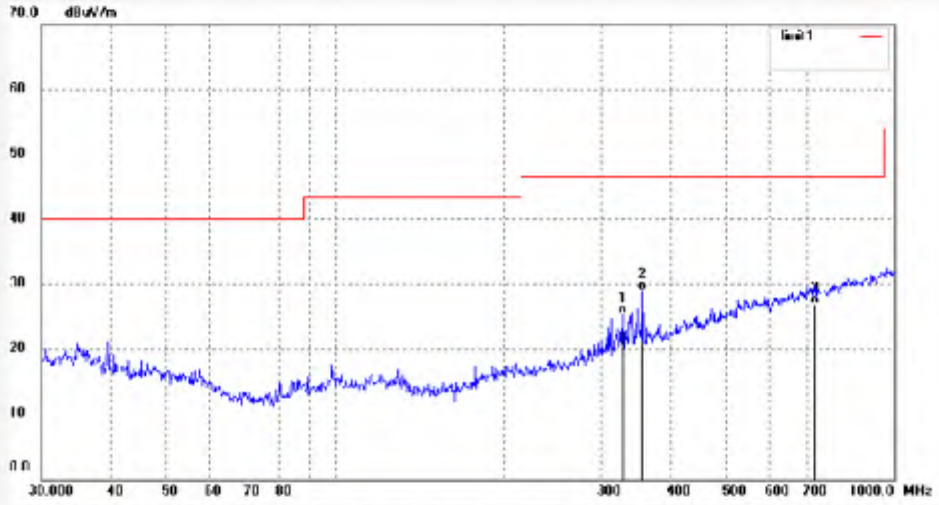
Job No.: LGW2015 #3255	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2440MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	327.8872	31.70	-6.43	25.27	46.40	-21.13	QP			
2	355.4273	34.58	-5.70	28.88	46.40	-17.52	QP			
3	721.7259	26.35	0.54	26.89	46.40	-19.51	QP			

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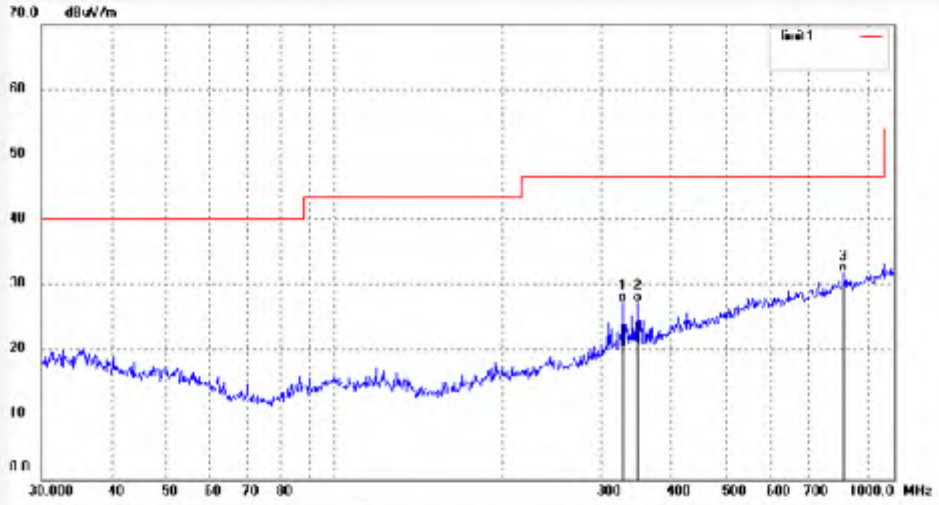
Job No.: LGW2015 #3256	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	327.8872	33.65	-6.43	27.22	46.40	-19.18	QP			
2	348.0274	32.93	-5.80	27.13	46.40	-19.27	QP			
3	813.1115	29.57	2.23	31.80	46.40	-14.60	QP			

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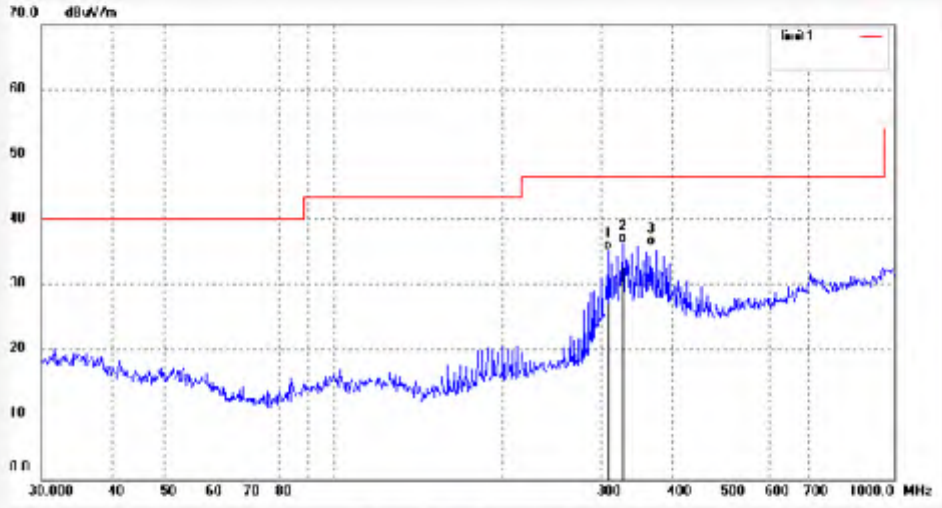
Job No.: LGW2015 #3257	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	307.8312	42.32	-7.09	35.23	46.40	-11.17	QP			
2	327.8872	42.69	-6.43	36.26	46.40	-10.14	QP			
3	368.1116	41.42	-5.52	35.90	46.40	-10.50	QP			

Low Energy mode, 1GHz - 18GHz

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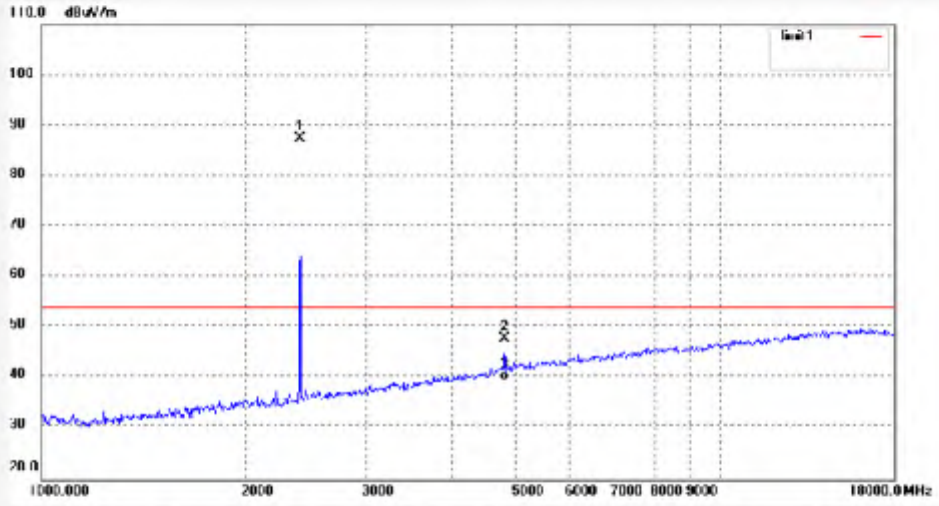
Job No.: LGW2015 #3230	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	94.77	-7.45	87.32	/	/	peak			
2	4804.026	48.06	-0.30	47.76	74.00	-26.24	peak			
3	4804.026	39.75	-0.30	39.45	54.00	-14.55	AVG			

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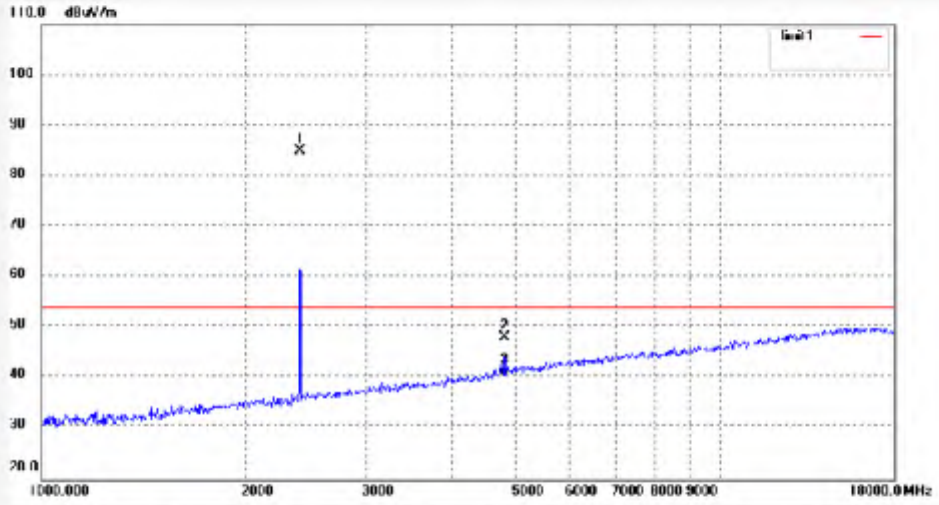
Job No.: LGW2015 #3231	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	92.26	-7.45	84.81	/	/	peak			
2	4804.025	48.37	-0.30	48.07	74.00	-25.93	peak			
3	4804.025	40.71	-0.30	40.41	54.00	-13.59	AVG			

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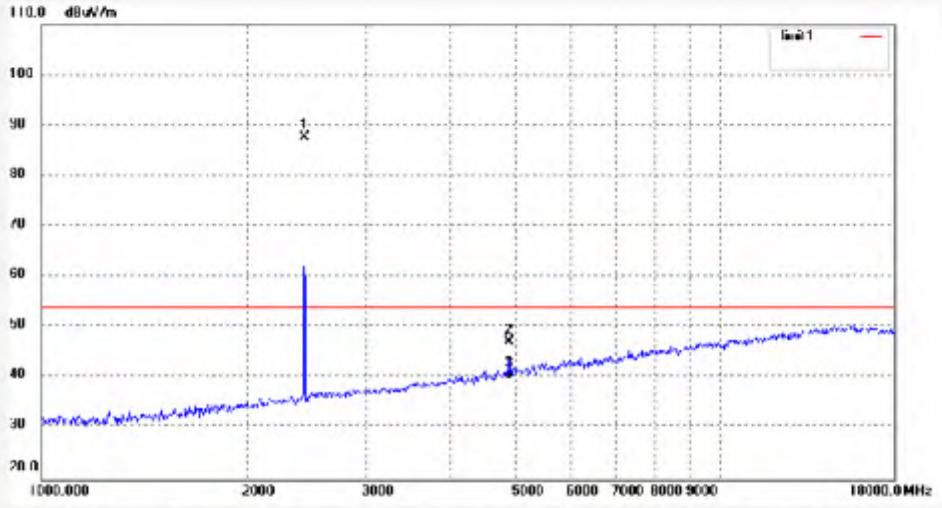
Job No.: LGW2015 #3234	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2440MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	95.03	-7.36	87.67	/	/	peak			
2	4880.028	47.06	0.13	47.19	74.00	-26.81	peak			
3	4880.028	39.61	0.13	39.74	54.00	-14.26	AVG			

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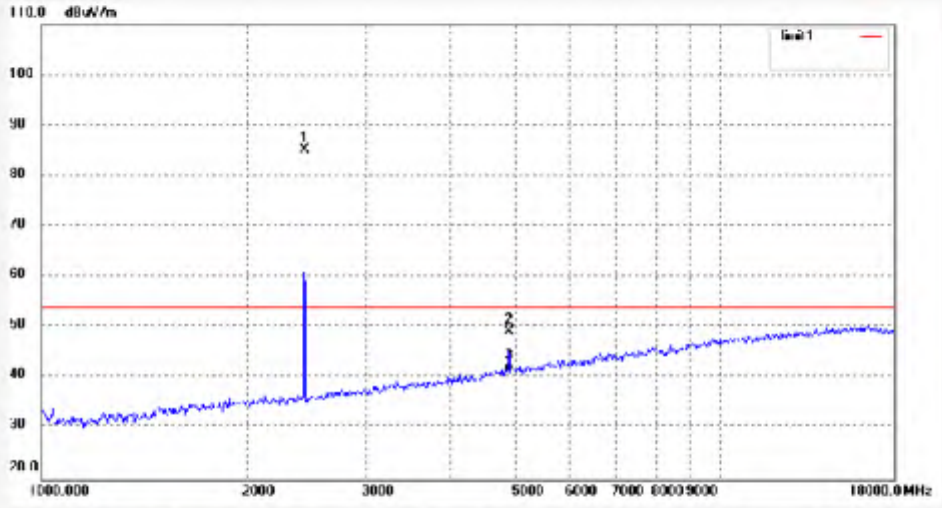
Job No.: LGW2015 #3235	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2440MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	92.51	-7.36	85.15	/	/	peak			
2	4880.029	49.01	0.13	49.14	74.00	-24.86	peak			
3	4880.029	41.21	0.13	41.34	54.00	-12.66	AVG			

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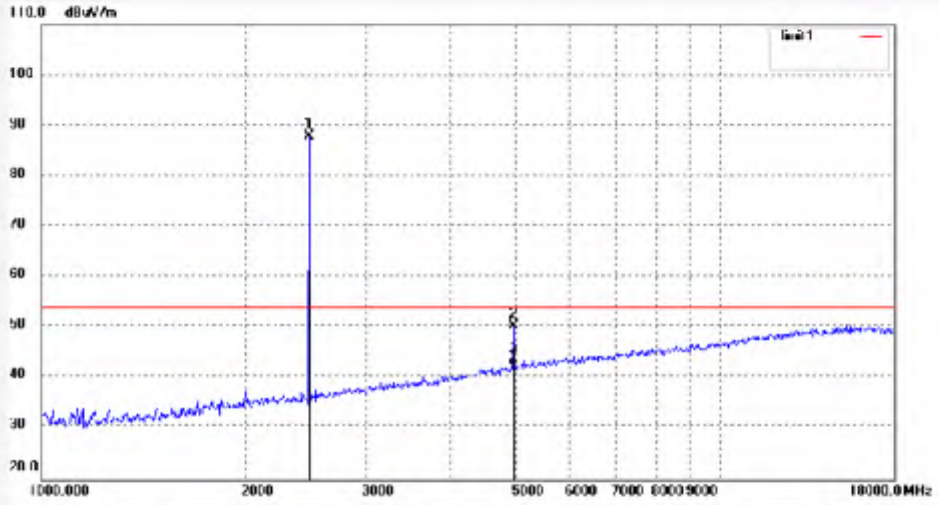
Job No.: LGW2015 #3236	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	95.21	-7.37	87.84	/	/	peak			
2	4960.023	49.74	0.52	50.26	74.00	-23.74	peak			
3	4960.023	41.89	0.52	42.41	54.00	-11.59	AVG			

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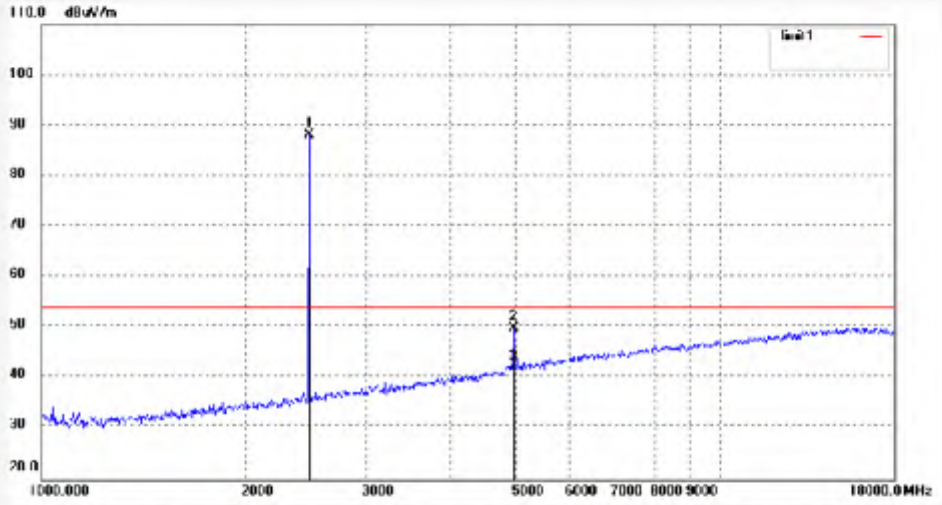
Job No.: LGW2015 #3237	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	95.44	-7.37	88.07	/	/	peak			
2	4960.024	49.33	0.52	49.85	74.00	-24.15	peak			
3	4960.024	40.51	0.52	41.03	54.00	-12.97	AVG			

Appendix B.2: Test Plots of Band Edge (Radiated)

BDR mode, Low Channel

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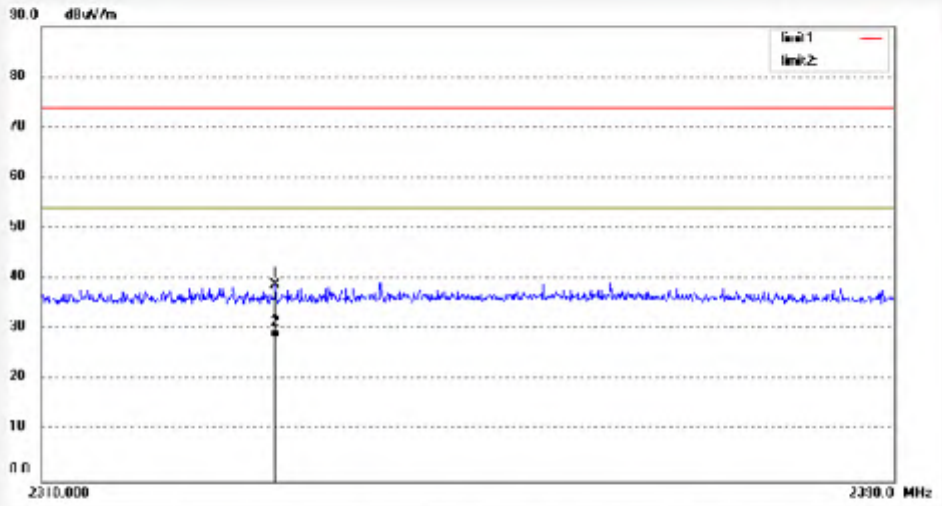
Job No.: LGW2015 #3216	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2331.680	46.59	-7.81	38.78	74.00	-35.22	peak			
2	2331.680	35.97	-7.81	28.16	54.00	-25.84	AVG			

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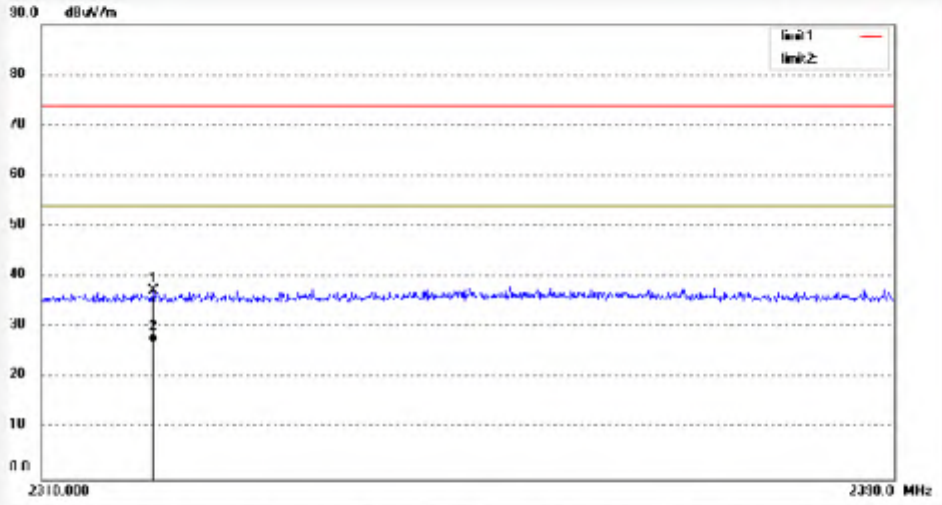
Job No.: LGW2015 #3217	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2320.400	44.95	-7.81	37.14	74.00	-36.86	peak			
2	2320.400	34.81	-7.81	27.00	54.00	-27.00	AVG			

BDR mode, High Channel

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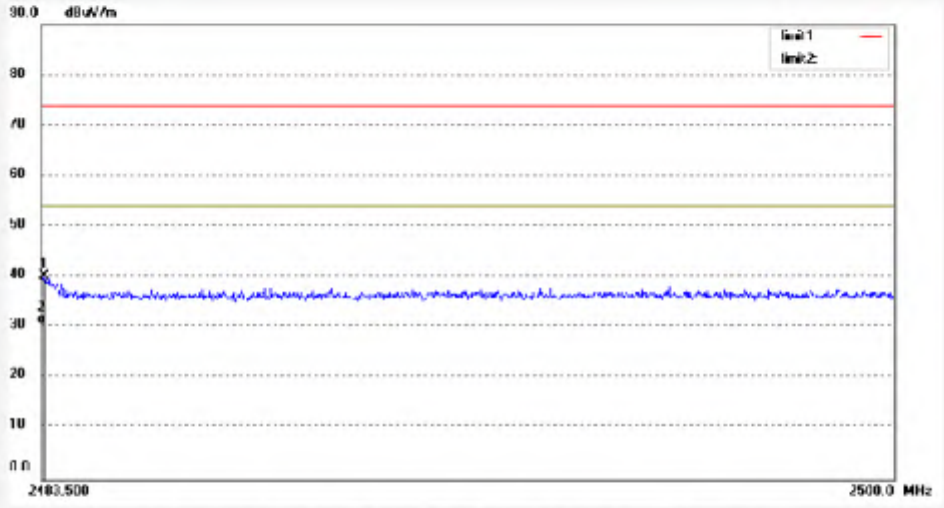
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2015 #3222	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.550	47.62	-7.37	40.25	74.00	-33.75	peak			
2	2483.550	38.12	-7.37	30.75	54.00	-23.25	AVG			

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Job No.: LGW2015 #3223	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.533	45.32	-7.37	37.95	74.00	-36.05	peak			
2	2483.533	34.91	-7.37	27.54	54.00	-26.46	AVG			

Low Energy mode, Low Channel

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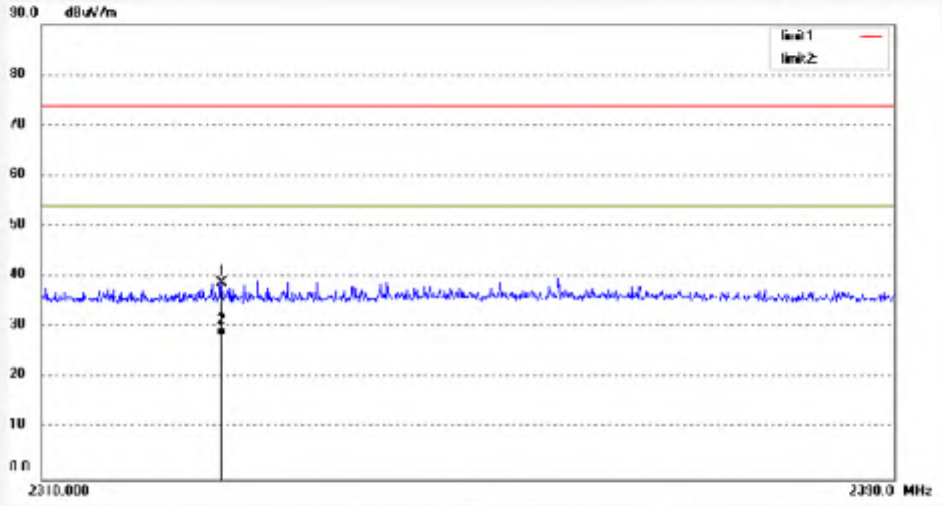
Job No.: LGW2015 #3232	Polarization: Vertical
Standard: FCC (Bank Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth 4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2326.720	46.53	-7.81	38.72	74.00	-35.28	peak			
2	2326.720	36.15	-7.81	28.34	54.00	-25.66	AVG			

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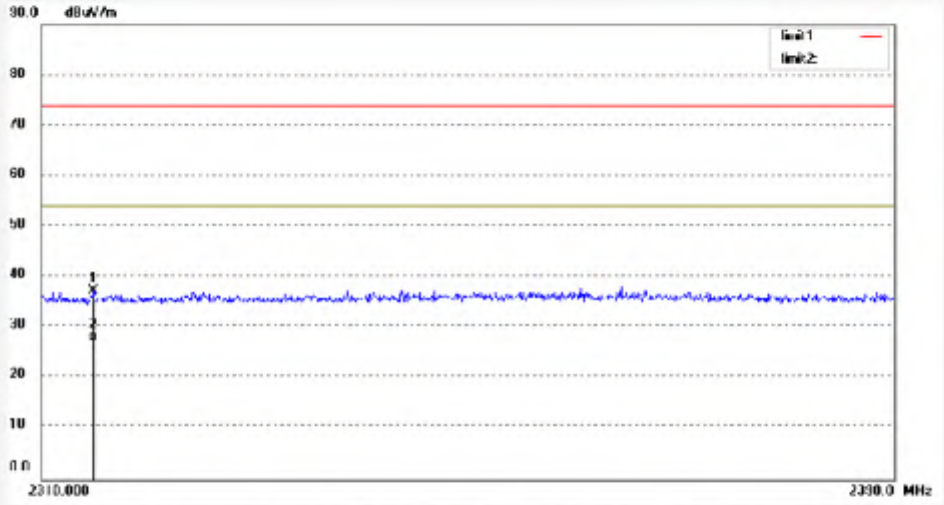
Job No.: LGW2015 #3233	Polarization: Horizontal
Standard: FCC (Bank Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2402MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth 4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2314.880	45.01	-7.81	37.20	74.00	-36.80	peak			
2	2314.880	35.18	-7.81	27.37	54.00	-26.63	AVG			

Low Energy mode, High Channel

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Fax:+86-0755-26503396

Job No.: LGW2015 #3238	Polarization: Horizontal
Standard: FCC (Bank Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth 4.0

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.615	47.77	-7.37	40.40	74.00	-33.60	peak			
2	2483.615	37.38	-7.37	30.01	54.00	-23.99	AVG			

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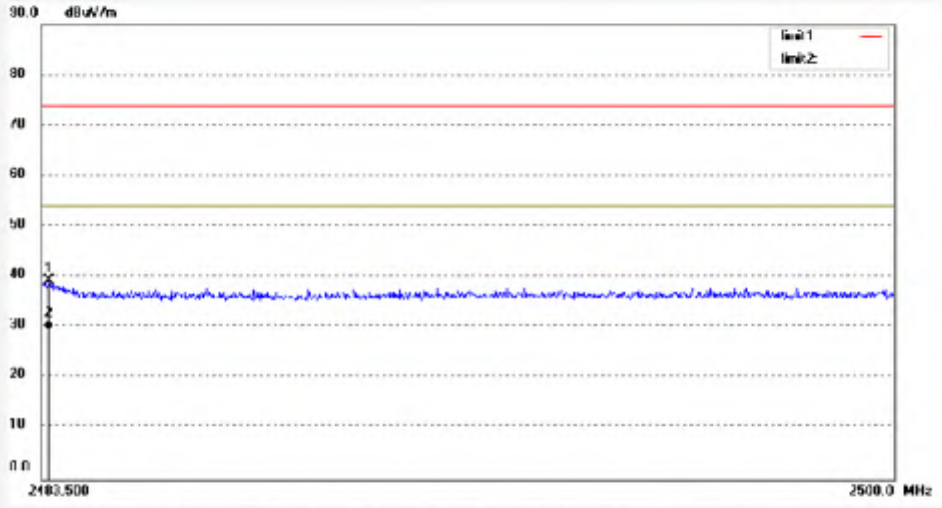
Job No.: LGW2015 #3239	Polarization: Vertical
Standard: FCC (Bank Edge)	Power Source: DC 3.7V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: TX 2480MHz	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer:	

Note: Bluetooth 4.0



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.648	46.53	-7.37	39.16	74.00	-34.84	peak			
2	2483.648	36.91	-7.37	29.54	54.00	-24.46	AVG			

Appendix B.3: Test Plots of Conducted Emission

C Mode

ACCURATE TECHNOLOGY CO.,LTD

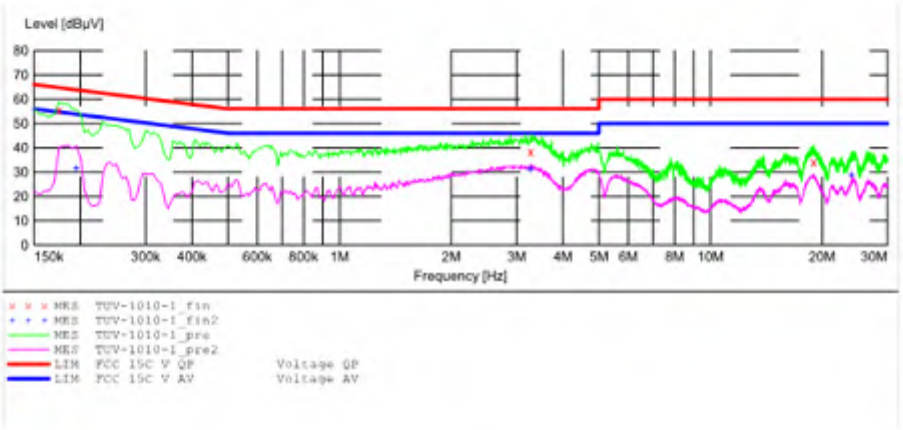
CONDUCTED EMISSION STANDARD FCC PART 15 C

```
EUT:                  Bluetooth sports earphones M/N:BTSPTEPPRM
Manufacturer:         THUMBS UP UK LTD
Operating Condition:  Transmitting
Test Site:            1#Shielding Room
Operator:             LGWADE
Test Specification:   N 120V/60Hz
Comment:              Mains Port
Start of Test:        10/10/2016 /
```

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "TUV-1010-1_fin"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.175000	55.50	10.5	65	9.2	QP	N	GND
3.270000	38.40	11.1	56	17.6	QP	N	GND
18.970000	34.10	11.4	60	25.9	QP	N	GND

MEASUREMENT RESULT: "TUV-1010-1_fin2"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.195000	31.60	10.5	54	22.2	AV	N	GND
3.270000	31.10	11.1	46	14.9	AV	N	GND
23.995000	28.80	11.5	50	21.2	AV	N	GND

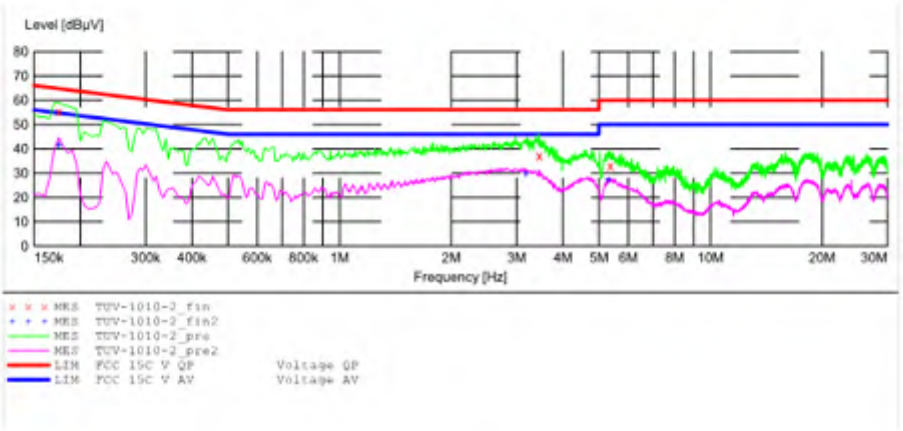
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

```
EUT:                    Bluetooth sports earphones M/N:BTSPTEPPRM
Manufacturer:           THUMBS UP UK LTD
Operating Condition:    Transmitting
Test Site:              1#Shielding Room
Operator:               LGWADE
Test Specification:     L 120V/60Hz
Comment:                Mains Port
Start of Test:          10/10/2016 /
```

SCAN TABLE: "V 9K-30MHz fin"

```
  Short Description:                    SUB_STD_VTERM2 1.70
  Start       Stop        Step          Detector  Meas.     IF       Transducer
  Frequency   Frequency   Width                   Time      Bandw.
  9.0 kHz     150.0 kHz   100.0 Hz      QuasiPeak 1.0 s     200 Hz   NSLK8126 2008
                                        Average
  150.0 kHz   30.0 MHz    5.0 kHz       QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                        Average
```



MEASUREMENT RESULT: "TUV-1010-2_fin"

```
10/10/2016
   Frequency     Level   Transd   Limit   Margin   Detector   Line    PE
         MHz     dBµV       dB     dBµV       dB

    0.175000     55.30    10.5      65      9.4   QP         L1      GND
    3.450000     37.10    11.1      56     18.9   QP         L1      GND
    5.360000     33.00    11.2      60     27.0   QP         L1      GND
```

MEASUREMENT RESULT: "TUV-1010-2_fin2"

```
10/10/2016
   Frequency     Level   Transd   Limit   Margin   Detector   Line    PE
         MHz     dBµV       dB     dBµV       dB

    0.175000     41.40    10.5      55     13.3   AV         L1      GND
    3.180000     29.70    11.1      46     16.3   AV         L1      GND
    5.300000     27.30    11.2      50     22.7   AV         L1      GND
```

D Mode

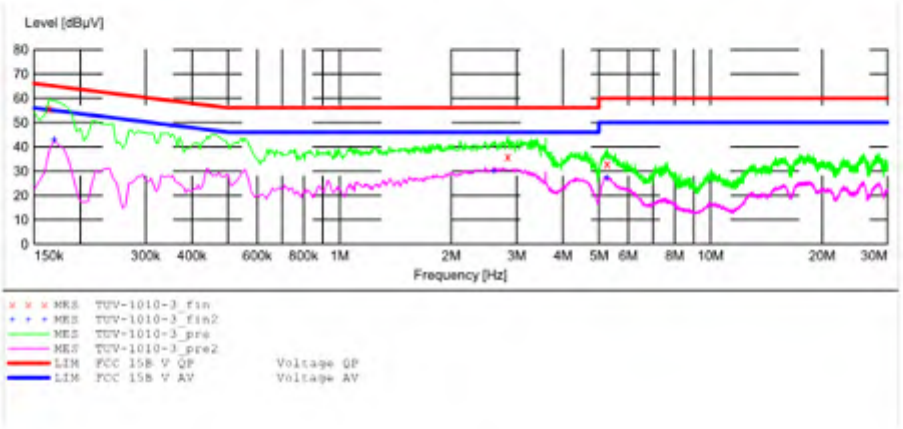
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

```
EUT:                  Bluetooth sports earphones M/N:BTSPTEPPRM
Manufacturer:         THUMBS UP UK LTD
Operating Condition:  Charging
Test Site:            1#Shielding Room
Operator:             LGMADE
Test Specification:   L 120V/60Hz
Comment:              Mains Port
Start of Test:        10/10/2016 /
```

SCAN TABLE: "V 9K-30MHz fin"

```
  Short Description:                  SUB_STD_VTERM2 1.70
  Start      Stop       Step         Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width                  Time      Bandw.
  9.0 kHz    150.0 kHz  100.0 Hz     QuasiPeak 1.0 s     200 Hz   NSLK8126 2008
                                     Average
  150.0 kHz  30.0 MHz   5.0 kHz      QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                     Average
```



MEASUREMENT RESULT: "TUV-1010-3_fin"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.165000	55.80	10.5	65	9.4	QP	L1	GND
2.840000	35.90	11.0	56	20.1	QP	L1	GND
5.260000	33.00	11.2	60	27.0	QP	L1	GND

MEASUREMENT RESULT: "TUV-1010-3_fin2"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.170000	42.90	10.5	55	12.1	AV	L1	GND
2.600000	30.00	11.0	46	16.0	AV	L1	GND
5.240000	27.30	11.2	50	22.7	AV	L1	GND

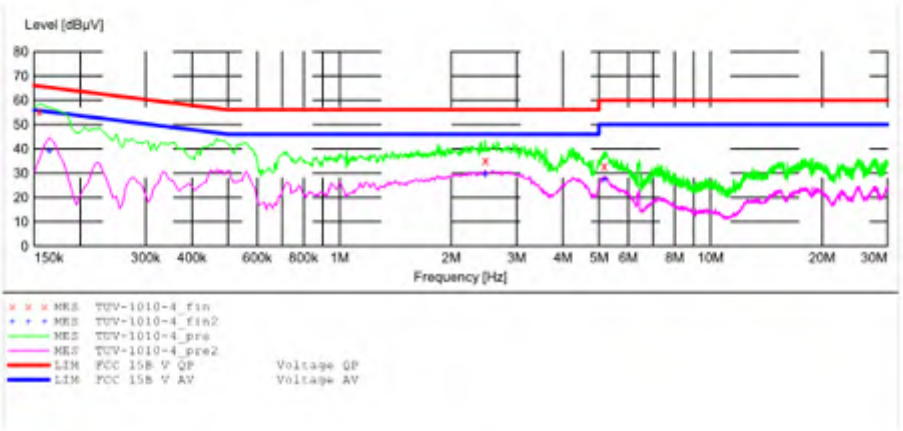
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 B

```
EUT:                    Bluetooth sports earphones M/N:BTSPTEPPRM
Manufacturer:           THUMBS UP UK LTD
Operating Condition:    Charging
Test Site:              1#Shielding Room
Operator:               LGWADE
Test Specification:     N 120V/60Hz
Comment:                Mains Port
Start of Test:          10/10/2016 /
```

SCAN TABLE: "V 9K-30MHz fin"

```
  Short Description:                    SUB_STD_VTERM2 1.70
  Start       Stop        Step          Detector  Meas.     IF       Transducer
  Frequency   Frequency   Width                   Time      Bandw.
  9.0 kHz     150.0 kHz   100.0 Hz      QuasiPeak 1.0 s     200 Hz   NSLK8126 2008
                                        Average
  150.0 kHz   30.0 MHz    5.0 kHz       QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                        Average
```



MEASUREMENT RESULT: "TUV-1010-4_fin"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.155000	55.40	10.5	66	10.3	QP	N	GND
2.470000	35.20	11.0	56	20.8	QP	N	GND
5.160000	32.90	11.2	60	27.1	QP	N	GND

MEASUREMENT RESULT: "TUV-1010-4_fin2"

10/10/2016

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.165000	39.10	10.5	55	16.1	AV	N	GND
2.470000	29.50	11.0	46	16.5	AV	N	GND
5.180000	27.40	11.2	50	22.6	AV	N	GND

Appendix B.4: Test Plots of Radiated Emission

D Mode

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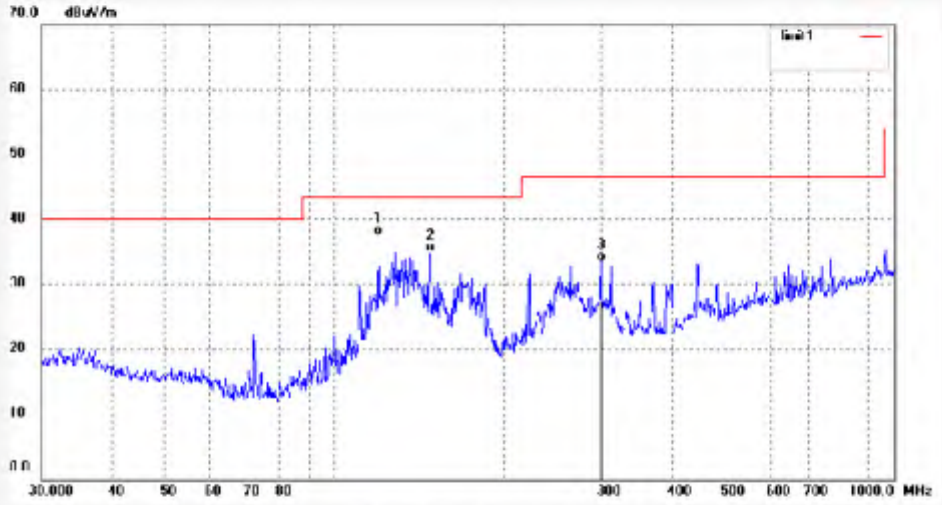
Job No.: LGW2015 #3258	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.8555	48.77	-11.15	37.62	43.50	-5.88	QP			
2	148.4410	48.18	-13.18	35.00	43.50	-8.50	QP			
3	299.3158	40.85	-7.29	33.56	46.40	-12.84	QP			

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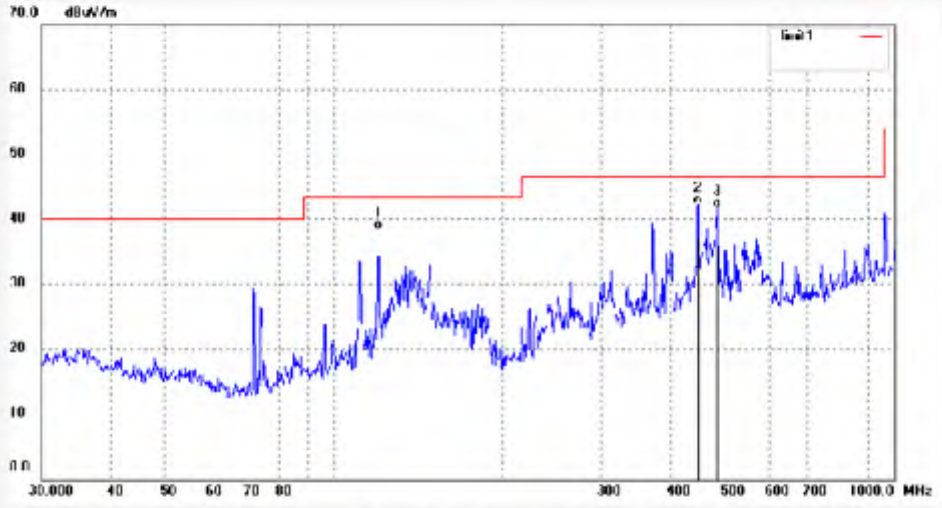
Job No.: LGW2015 #3259	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.8555	49.55	-11.15	38.40	43.50	-5.10	QP			
2	446.4141	46.18	-3.84	42.34	46.40	-4.06	QP			
3	483.9094	45.04	-3.28	41.76	46.40	-4.64	QP			

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Tel:+86-0755-26503290
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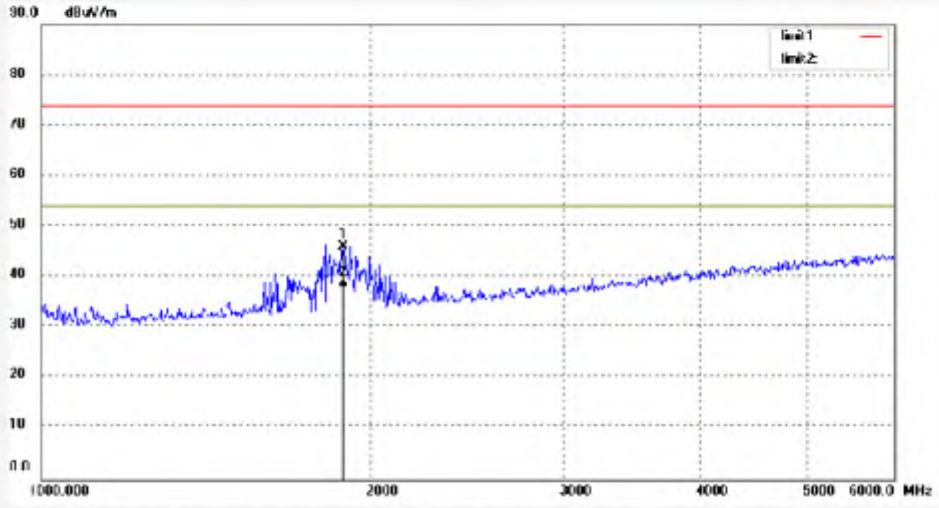
Job No.: LGW2015 #3260	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 16/10/09/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth sports earphones	Engineer Signature: LGWADE
Mode: Charging	Distance: 3m
Model: BTSPTEPPRM	
Manufacturer: THUMBS UP UK LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1885.669	55.58	-9.67	45.91	74.00	-28.09	peak			
2	1885.669	47.32	-9.67	37.65	54.00	-16.35	AVG			

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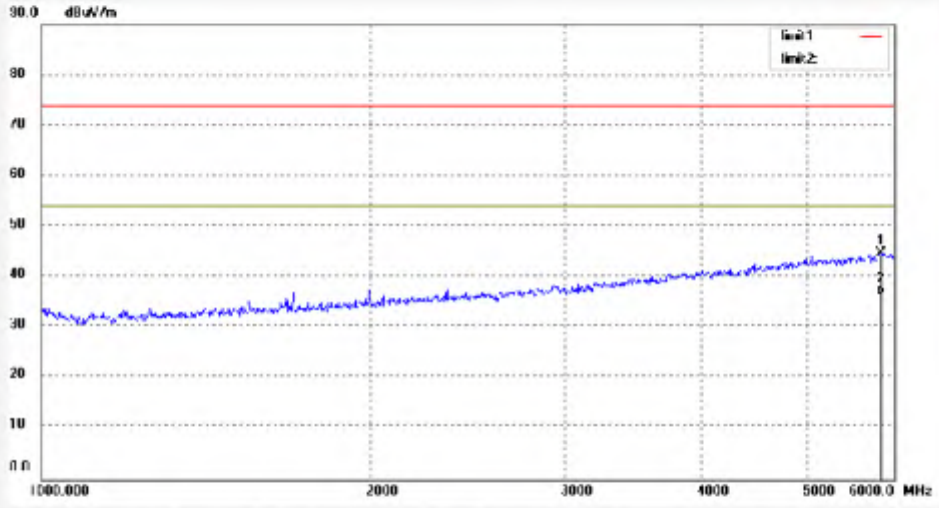
Job No.: LGW2015 #3261
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth sports earphones
Mode: Charging
Model: BTSPTEPPRM
Manufacturer: THUMBS UP UK LTD

Polarization: Horizontal
Power Source: DC 5V
Date: 16/10/09/
Time:
Engineer Signature: LGWADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5840.889	42.78	1.97	44.75	74.00	-29.25	peak			
2	5840.889	34.29	1.97	36.26	54.00	-17.74	AVG			